

**Not So Cheap Talk – Is Listening to Your Doctor Good
Advice?**

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Abstract

Studies have long shown a positive correlation between religiosity and health, but until recently, the connection has been more serendipitous¹ than conscientious. The so-called “salutary effects” of religion on health have been documented in a largely uncorrelated body of experimental and anecdotal evidence over the last century. Studies to date have focused on health outcomes under disease models and the consensus findings have favored a positive, valid association between religiosity and health by looking at intermediary lifestyle benchmarks. By isolating the propensity to seek advice on a range of health-related topics, I hope to get closer to the core of the religion/health rapport by studying how the promotion of certain lifestyle behaviors by religious groups might incline believers to seek health care advice more often than non-believers. Exploratory survey results are mixed, but point definitively to areas for further scrutiny. In addition to explicit studies of religion and health, there are several bodies of established literature, including advice, compliance, and cheap talk, which hold promising applications to the topic at hand.

The challenge remains to solidify causality arguments about religion and health. Religious involvement affords a complex network of psychological, bio-behavioral and psychosocial² avenues enhancing, for believers, many quality of life metrics, including better health. Religion’s role in promoting utilization of health care services seems an important link in establishing causality.

¹ Levin (1994), p. 1475.

² Levin *et al* (1996), p. 224.

Motivation

Studies have long shown a positive correlation between religiosity and health, but until recently, the connection has been more serendipitous³ than conscientious. Ideological and institutional barriers in medicine have historically relegated the role of religion to one of background noise – a “part of the folklore of discussion on the fringes of the research community.”⁴ The so-called “salutary effects” of religion can be generalized as being greater in the behaviorally stricter denominations (Mormons, Orthodox Jews) and with higher levels of religiosity (loosely defined as frequency of attendance of religious services).⁵ With the most rapid U.S. growth occurring in the stricter, sectarian, conservative denominations (like the Mormons),⁶ it is reasonable to assume these benefits will increasingly impact mortality rates. Researchers have looked at a wide range of epidemiological factors (e.g., cardiovascular disease, hypertension, several types of cancer) over various groups in establishing this general relationship. Levin (1994), for example, cites evidence as to why Seventh-Day Adventists exhibit lower incidences of hypertension than members of other religious groups:⁷

...the avoidance of red meat (leading to low levels of dietary fat and cholesterol); the discouragement of intermarriage (supporting a trend toward selecting out of the population those persons predisposed to hypertension); an emphasis on family solidarity and religious fellowship (buffering the adverse psychological consequences of life stress and anxiety); a theological emphasis on self-responsibility and positive health directedness (encouraging self-care and beneficial health-related behavior); a sense of trust and peace engendered both through expectations of God’s directly transforming the world and through ritual experience of transformation through divine power (preventing or ameliorating state anxiety, hassles and uplifts, anger, etc.); and a sense of purpose and well-being because the worldview and piety of Adventists is believed to be promotive of health (reinforced by the relative lack of hypertension-related morbidity among co-religionists)

³ Levin (1994), p. 1475.

⁴ *Ibid.*

⁵ *Ibid.*, p. 1476.

⁶ Iannaccone (1998), p. 1471.

⁷ Levin (1994), p. 1478.

Specifically, the promotion of certain lifestyle behaviors by religious groups, such as prohibitions of alcohol, tobacco, premarital sex, and birth control, and encouragement of specific dietary practices, demonstrates a remarkable congruence between religion and health in a number of significant areas. Further, the positive psychosocial effects of prayer, meditation, religious ritual, and belonging to a supportive group seem to offset some of the negative biological damage inflicted by life stress (see Levin and Iannaccone), while belief systems themselves can mirror certain personality constructs.⁸ There is also preliminary evidence for a “placebo effect” of religion with promises of healing to the faithful promoting salutogenesis and strengthening of the immune system through positive belief formation.⁹ Despite these observations (and apart from Karl Popper’s contention that hypotheses can be refuted, but never proven), no claim of causality can be made here. Although research supports arguments for consistency, coherence and plausibility that religiosity leads to better health, the mechanism remains a mystery.

This observation opens an interesting window for analysis - if religiosity and health are reinforcing, how are their respective institutions, so apparently different in nature and purpose, in fact mutually supportive in promoting health? Are people who describe themselves as religious more (or less) likely to seek advice from their doctors on overlapping issues of diet, tobacco, alcohol, premarital sex, birth control, and exercise? In cases of conflict, does religion or medicine have more influence on ultimate behavior? Finally, given the proven importance of supportive social structure, do religious people, in general, seek advice more often on a wide range of lifestyle behaviors? Prior studies have focused on the impact of religiosity on lifestyle parameters, which are *intermediary determinants* of wellness and longevity. For this exploratory study, the role of advice-seeking is used to

⁸ Levin (1994) discusses the “Protestant work ethic” as the socialized version of “Type A” personality, among others.

⁹ Levin *et al* (1996) p. 221.

establish *primary motivations* in seeking health care, and whether religious belief systems reinforce this propensity.

Survey Design and Methodology

Survey Design

To address these questions, I designed a pilot study consisting of random samples from two populations: n-pop (“n” for neighborhood) contains 21 individuals characterized as married, with children, and an average age of 44 years. There are 13 females and 8 males in the sample. G-pop (“g” for GMU) contains 10 GMU economics students, primarily single, with an average age of 25 years. There are 5 females and 4 males in this sample. Despite the overall small sample size,¹⁰ the presence of i.i.d. (independence and identical distribution) conditions should allow generalization of results (at least regionally) to the larger populations of (respectively) upper middle class, highly educated, married parents and upper middle class, single college students. In characterizing the population, standard demographic information was collected, including age, sex, marital status, education, occupation, income,¹¹ religious affiliation,¹² religious service attendance, whether or not respondent has health insurance, and whether (s)he has ever smoked cigarettes.

Demographic summary statistics are provided in Table I.

¹⁰ The rather poor response rate of 30% may be due to the length of the survey or a reluctance to reveal preference information as I am part of both populations (scientist is inside the model).

¹¹ In asking for “annual household income,” I failed to consider students would include income of their parents, therefore age was used as a proxy for earning power, given all respondents either have, or are currently pursuing, at least an undergraduate degree.

¹² None listed, atheist, and agnostic are included as “None.”

TABLE I: DEMOGRAPHICS SUMMARY

AGE	AVERAGE: 38 YEARS	RANGE: 20 – 52 YEARS
SEX	FEMALE: 18	MALE: 13
MARITAL STATUS	SINGLE: 8 DIVORCED: 0	MARRIED: 23 WIDOWED: 0
# CHILDREN	AVERAGE: 1.7 KIDS	RANGE: 0 TO 4 KIDS
EDUCATION	100% BACHELOR'S DEGREE OR IN PROGRESS	50% GRADUATE DEGREES
EMPLOYMENT	PROFESSIONAL: 15 STUDENT: 7	HOMEMAKER: 2 NONE LISTED: 7
ANNUAL HOUSEHOLD INCOME	AVERAGE > \$100,000	MINIMUM: \$50,000
RELIGIOUS AFFILIATION	CATHOLIC 9 PROTESTANT 12 MORMON 1	JEWISH 1 NONE 8
RELIGIOUS SERVICE ATTENDANCE	AVERAGE: 21 DAYS/YR	RANGE: 0 – 52 DAYS/YR
HEALTH INSURANCE	30 OF 31 RESPONDENTS ARE COVERED	
SMOKING HISTORY	NEVER: 22 FORMER: 8	CURRENT: 1

The body of the survey consists of 50 questions organized as ten behaviors one might seek advice for, from five experts. Frivolous items like vacation and computer purchases are included as control items and to disguise survey objectives. Behaviors include (numbers correspond to categories on charts which follow):

1. Dietary advice
2. Vacation advice
3. Marriage/relationship advice
4. Advice about pre-marital sex
5. Birth control advice

6. Advice about job relocation
7. Advice about smoking
8. Advice about consumer purchases (survey asked about computer operating systems)
9. Advice about alcoholic beverages
10. Advice about exercise

Respondents were asked whether they would be “Likely” or “Unlikely” to follow advice about these behaviors from each of five experts:

1. Religious counsel
2. Doctor
3. Best friend
4. Coworker
5. Internet sources

The last section of the survey contains 20 questions designed to roughly determine respondents’ Jung/Myers-Briggs personality types.¹³ A cursory identification of personality type may shed additional light on patterns in the survey data as well as providing a plausible context for social interaction and overall reliance on advice from others.

Methodology

The survey data was used to test the hypothesis that on average, the U.S. religious population adheres more strictly to doctors’ advice with respect to certain dietary restrictions, pre-marital sexual behavior, birth control, alcohol consumption, cigarette smoking, and exercise than does the non-religious population. If this is true, endogenous factors in religious practice such as dietary restrictions and prohibitions against premarital sex, birth control, alcohol and smoking, and tacit encouragement of self care through exercise

¹³ www.humanmetrics.com Jung/Myers/Briggs determines level of extroversion (E)/introversion (I), sensing (S) /intuition (N), thinking (T)/feeling (F), and judging (J)/perceiving (P) based on a series of questions. I used an abridged format here.

may be reinforcing to healthy behavior and add explanatory value to the correlation between religion and health. This hypothesis, and its alternative, can be formulated as:

- Ho: $\mu = \mu_0$ the average U.S. citizen, self-described as religious, is just as likely as non-religious individuals to follow advice about [diet/pre-marital sex/birth control/alcohol/smoking/exercise] from their doctors.
- H₁: $\mu \neq \mu_0$ the average U.S. citizen, self-described as religious, is more or less likely than non-religious individuals to follow advice about [diet/pre-marital sex/birth control/alcohol/smoking/exercise] from their doctors.

Out of the sample of 31, 23 respondents reported having some level of religious beliefs and eight reported agnosticism, atheism, or no religious affiliation. Sample results for advice-seeking are compiled as:

BEHAVIOR	DOCTOR ADVICE [Non-Religious]	DOCTOR ADVICE [Religious]
DIET	7/8 = 88%	23/23 = 100%
PRE-MARITAL SEX	8/8 = 100%	18/23 = 78%
BIRTH CONTROL	8/8 = 100%	22/23 = 96%
ALCOHOL	8/8 = 100%	23/23 = 100%
SMOKING	5/8 = 63%	17/23 = 74%
EXERCISE	7/8 = 88%	22/23 = 96%

Survey Results

Survey results are mixed, and without confidence intervals or a better understanding of underlying behavior-wise probability distributions, cannot be generalized without further analysis. Religious people in the sample are *more likely* to seek advice from their doctors about diet, cigarette smoking, and exercise [implies alternative hypothesis is true] and *equally likely* to seek advice about alcohol consumption [implies null hypothesis is true].¹⁴

¹⁴ Cochran *et al* (1988) - Support for this result is given in which persons attending religious services several times a week are proportionately less likely to use alcohol than those who do not attend. Religiosity

This is consistent with studies which claim significant associations between religiosity and discrete health behaviors, which strongly correlate with utilization of health care services.¹⁵ Religious people, according to the survey, are *less likely* than non-religious people to seek advice from their doctors about pre-marital sex and birth control [implying the alternative hypothesis should be accepted], in contradiction to predictions about adolescent sexual conduct and preventive behaviors.¹⁶ Possible explanations for this lie in demographic differences. Although the non-religious group is equally divided between n-pop and g-pop, average age is 44 years versus 25 years; all of the n-pop group is married with children, none of the g-pop group are either married or parents; all of the n-pop group have undergraduate degrees or better, all of the g-pop group are working towards undergraduate degrees; and all of the n-pop group hold professional positions while all of the g-pop group are full-time students.

As my hypothesis argues religious people actually seek health care advice more frequently than non-religious people, there are several possibilities to explore:

- First, we must look for clues in the data on advice-seeking about alcohol (equally likely), and pre-marital sex and birth control (less likely) to determine if some demographic or endogenous factor has been missed. Similarly for diet, smoking, and exercise. Is the greater frequency in seeking medical advice in these areas driven or co-driven by some other factor such as personality type?
- Next, we must determine if there are significant differences in the types of advice sought from doctors as related to religiosity. Perhaps being a religious practitioner does not make you any more or less likely to view yourself as having serious enough problems with alcohol to seek medical advice.

has a strong inverse effect on alcohol use in denominations where its use is proscribed, or in cases of strong religious affiliation.

¹⁵ Levin *et al* (1996), p. 221.

¹⁶ *Ibid.*

- Possibly the truth of the hypotheses varies with the medical issue presented. Previous studies have linked positive health outcomes from religiosity to more “traditional” disease models like cancer or hypertension. Unlike smoking, alcoholism, obesity, premarital sex, or birth control, these disease models carry no social stigma. If evidence for this can be amassed, it would be most insightful.

Another difficult question to answer is whether, in cases of conflict, religious or health care advice has more influence on mean individual behavior. This would seem to depend upon the degree of religiosity – how seriously one follows his religious tenets – roughly gauged by church attendance. Studies of the “epidemiology of religion”¹⁷ support this claim. In examining a wide variety of health outcomes, both objectively indicated and subjectively reported, against several dimensions of religiousness (church attendance, affiliation, subjective religiosity and beliefs) consensus findings are for “salutary effects” of religion on health.¹⁸ Examples of conflicts in religious and health advice might be:

- The doctor recommends drinking 1-2 glasses of red wine daily to offset cardiovascular risks,¹⁹ but religious practice prohibits alcohol consumption;
- The doctor recommends quitting tobacco use, but religious rites include smoking tobacco;
- The doctor prescribes birth control medication to regulate hormonal fluctuations, but religious doctrine forbids use of artificial means of contraception.

To gain insight as to how factors related to health decisions are made by individuals, it is instructional to look at a broader spectrum of decision-making patterns, by returning to the five experts and ten behaviors surveyed:

¹⁷ Levin *et al* (1996) , p. 220.

¹⁸ *Ibid.*

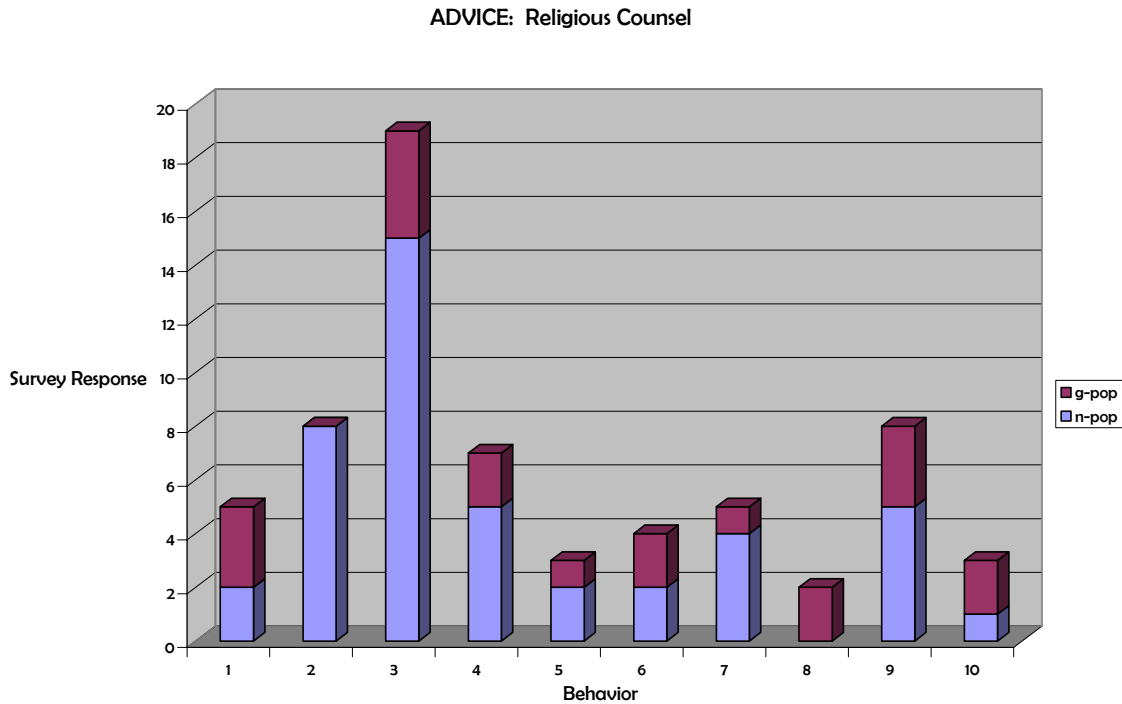
¹⁹ Cordova, *et al.*

Religious Counsel

As shown below, it is no surprise that advice from religious counsel was most frequently sought regarding marriage/relationship [3] issues. It is puzzling that while 75% of respondents identified themselves as affiliated with a particular denomination, only 61% indicated they would be likely to seek relationship advice from their church counsel, which implies the sample *underestimates* the true population average. Sample birth control results [5] also appear to *underestimate* population averages, with only 10% of the respondents reporting they would be likely to seek advice about contraception from their religion. Contraceptive policy is generally very explicit in religious doctrine, ranging from complete acceptance by Hindu, Conservative and Reform Jewish, and most Protestant traditions to limited acceptance by Eastern Orthodox and Islamic traditions, to complete prohibition by Catholic, Anglican, Evangelical, and Christian fundamentalist traditions.²⁰ Combining survey results of 29% of the sample claiming affiliation with the Roman Catholic Church, with an average family size of two children, implies an overwhelming rejection of Church doctrine on birth control. Interestingly, respondents are equally likely to consult their religious counsels about exercise programs [10] as they are about birth control [5]. This could reflect part of the overall view by most religions that we are divinely created and obligated out of respect for our deity to care for ourselves. 13% (twice as many individuals in the younger group) say they would seek advice from their religious counsel about job relocation [6]. This would seem to infer either a particular religious counselor's advice is regarded as valuable, or the importance of relocating to an area with familiar religious demographics, or both. Also of interest is religious counsel as a resource for computer system purchases, but only for the younger group. [One irreligious individual even cited her willingness to consider this advice, but this is likely an error in answering the question because she is unlikely to ask for advice on any other topic from religious sources.] Finally, only one in four individuals would consult their religion about alcohol consumption. In fact,

²⁰ O'Grady, pp. 1-3.

the sample under-represents denominations which prohibit alcohol (like Baptists, Mormons); with these additions, we would expect results to be much higher.

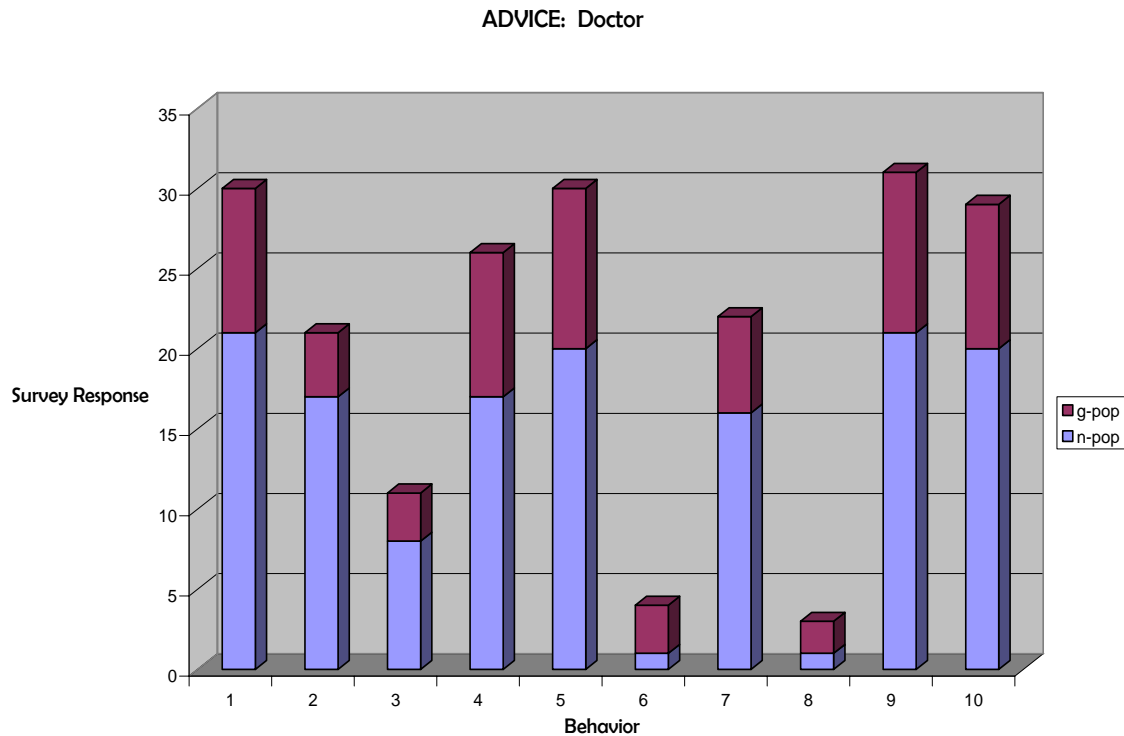


Doctors

In the sample, doctors appear to be a significant resource for advice, perhaps due to the generally trusting nature of patient-physician relationships or a halo effect which over-attributes knowledge in a specific area to overall expertise. The types of advice sought by patients include things you would predict (diet [1], sexual behavior [4], birth control [5], alcohol consumption [9], and exercise [10]). Notably, all of the survey respondents indicated they would consult their doctors about drinking. Of nearly equal concern at 97% each, are diet and birth control. A surprising result is that more people would ask their physician about issues relative to taking a vacation than about helping them to quit smoking. Is this because we think our doctors are privy to the best vacation destinations? Are we looking for “permission” to take time off? Perhaps the sample is misrepresentative of the general population in this instance in that three out of four have never smoked, and only one

individual admits to being a current smoker (hedged by the comment “occasionally” in his response). This seems plausible as non-smokers may not think to ask their doctors questions about smoking – they have already self-determined it is deleterious to their health. One study looked at the impact of physician advice on the average number of cigarettes smoked by adults in the U.S.²¹ and found that because 70% of smokers see their doctors annually, physicians are well-positioned to significantly impact smoking behaviors.

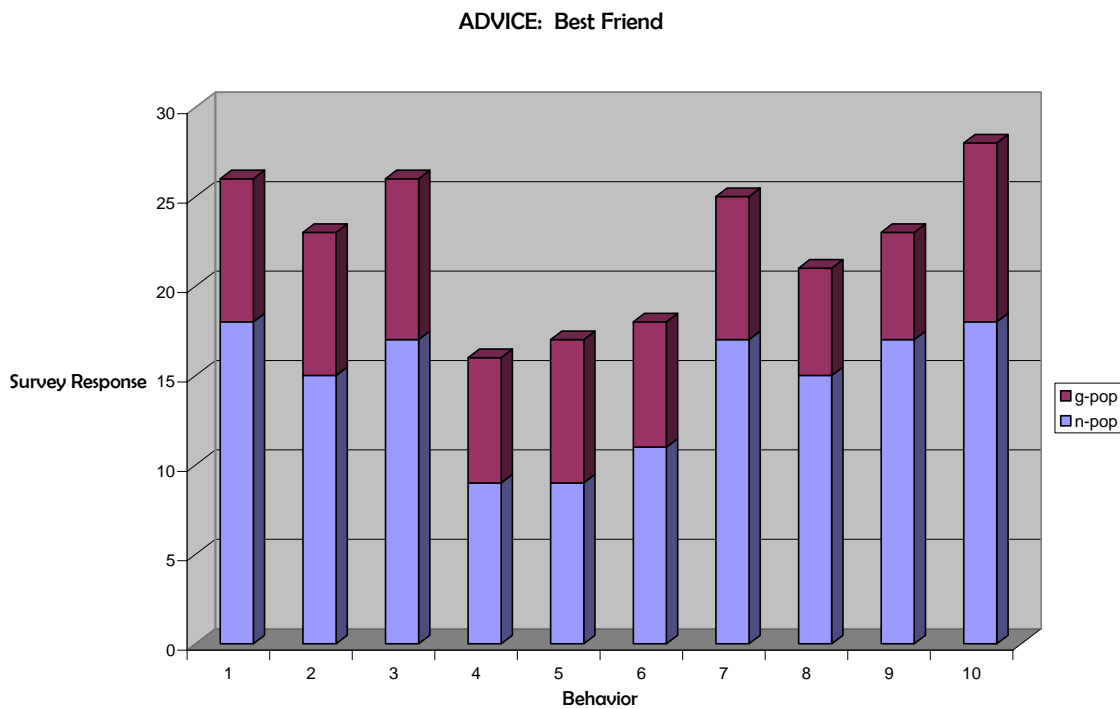
It is noteworthy that only a third of respondents would seek relationship advice [3] from their doctors, as opposed to 61% who would consult their religious counsel. This may be due to narrowly defining “doctor” to the exclusion of psychiatrists or doctors of psychology whose advice is traditionally sought for relationship difficulties, or to a predominance of clergy who are trained in relationship counseling.



²¹ Tauras and Liang.

Best Friend

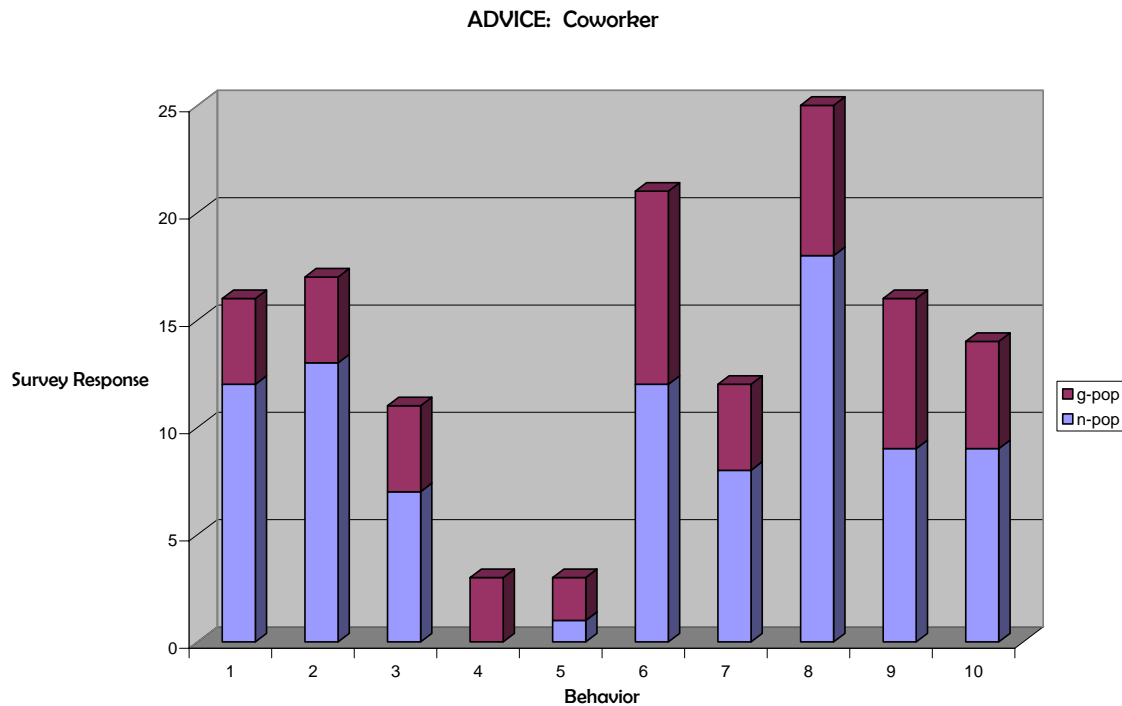
Our best friends are clearly are biggest resource for advice, according to the survey. We consult them more frequently than religious counsel on everything, seeking their advice over our doctors on everything except diet [1], vacation [2], pre-marital sex [4], birth control [5], and alcohol [9], and at nearly the same rate about exercise [10]. For everything other than diet [1], computer purchases [8], and alcohol [9], the younger group relies substantially more than the older group on advice from best friends.



Coworker

Predictably, coworker advice centers on job relocation [6] and computer system purchase [8] advice. We also value their advice about diet [1], vacation [2], alcohol consumption [9], and exercise [10], but to a much lesser degree than other expert sources. We are equally likely to discuss relationship issues [3] with our coworkers as we are with our doctors, but only the younger group would discuss pre-marital sex [4] with coworkers.

Interestingly, according to the survey, we are equally comfortable discussing contraception [5] with coworkers and religious counsel.



Internet

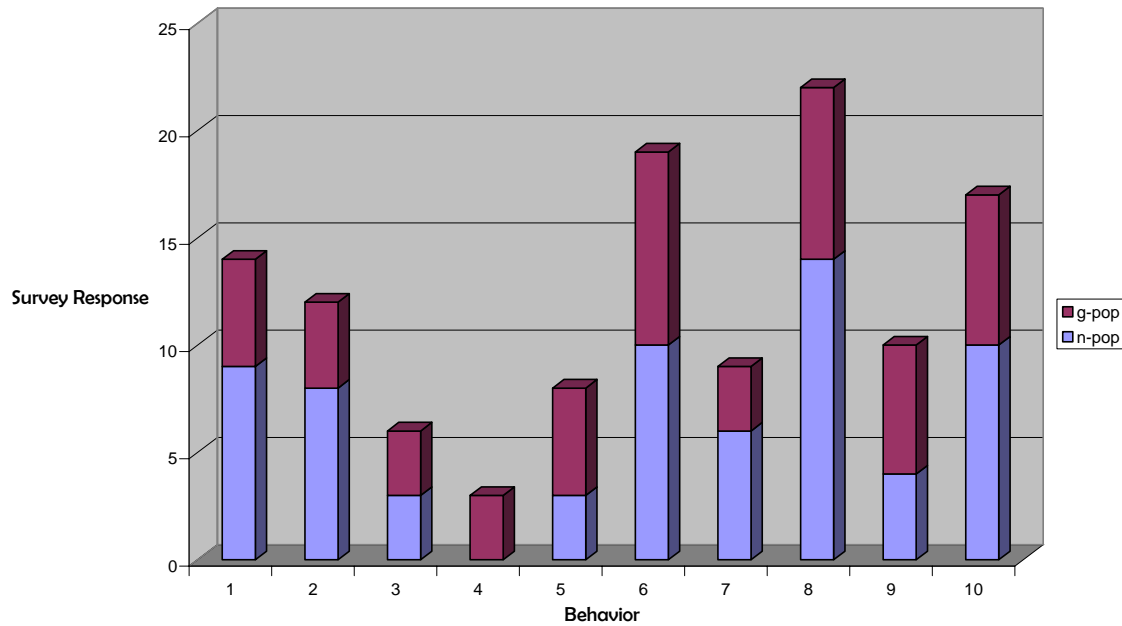
The Internet has rapidly developed into a significant sociological influence on advice-seeking, which has yet to be fully analyzed. Overall, the younger group was overwhelmingly more likely to consult the Internet for every single behavior surveyed. For this group, it was the number one source for advice about jobs [6] and computer purchases [8] and roughly equal to alcohol [9] and contraceptive advice [5] from friends. The anonymity afforded by the Web should lead to a propensity to use it regularly as a resource for all kinds of advice needs, but the survey results don't support this claim – exactly. Predictably, people use the Internet as a source of information in purchasing computer systems [8], but less frequently than asking coworkers, and only slightly more frequently than asking friends. It may be

that for technological advice, we seek information from several sources, using the Internet to reinforce advice given based on personal experiences of friends and coworkers.

Also predictably, the Internet is a common source for job-related searches, again used in tandem with advice from coworkers and friends. Just over half of respondents use the Internet to research exercise programs [10], relying mainly on doctors and friends for guidance. Nearly half of the sample views the Internet as an important source for dietary information, which, I think, grossly underestimates the truth. Most food websites contain search engines which allow for easy selection of recipes based on specific dietary restrictions and contain information about nutritional content and portion recommendations. The developers of the “new and improved” food pyramid (www.MyPyramid.gov) obviously bet on an increased demand for web-based dietary advice in developing this interactive program. Vacation advice [2] also seems to be understated with roughly 40% of both age groups reporting Internet usage for this purpose. Technology has rendered travel agencies quite obsolete. Twenty years ago, travelers contemplating alternate vacation destinations would pick up brochures from the local travel agency, and then often book their trips through that agency. Today, any information about any destination can be retrieved in seconds from the Web, and within minutes entire itineraries can be planned and paid for. The huge savings in terms of time, and the ability to rapidly search for the best prices, should both be expected to stimulate demand for the Internet as an important source of vacation advice

With the explosion of web-based sites on health care topics (Web-MD, About.com, and many others), it will be interesting to see whether people become more reliant on the Internet for advice previously sought from individuals within their sphere of influence. The ability to design meal plans and exercise programs around medical needs, compare birth control alternatives, and check symptoms ranging from pregnancy to alcoholism, among others, are just a few examples as to how the Internet may be increasingly relied on for advice in the future.

ADVICE: Internet



Reference Literature

Theoretical support for this study can be found in four bodies of literature: Advice, Compliance, “Cheap Talk,” and Religion/Spirituality. The relevance of each in providing insight about the hypotheses is discussed in turn:

Advice

Experimental literature in social learning has confirmed the existence of an “advice puzzle.”²² In a phenomenon of “words speaking louder than actions,”²³ laboratory subjects in a given social learning environment with and without advice are more likely to follow the *advice* as opposed to imitating observed *actions* of players who preceded them in the game.

²² Celen *et al* (2002), p. 2.

²³ *Ibid.*

The puzzle arises because both scenarios are informationally equivalent in equilibrium, although observed action is richer in content.²⁴

For our purposes, people choose doctors based not only how crowded the waiting room is, but by also asking advice, primarily from friends and referrals from other doctors. The advice puzzle predicts we are less likely to rely on observation than advice, assuming perfect translation to real-world settings and removal of simplifying assumptions. Although empirically, taking advice leads to the correct outcome, on average, some of the unanswered questions include why people are so willing to follow the advice given, and why the advice is more correct, on average, than observing actions.²⁵

Some insights may be gleaned by viewing advice as a market between advice-seekers and advisors. Experimentally, subjects bid the most for *data* (mean bid = \$1.20 in one study) because *ex ante* they believe it has the highest information content and is unfiltered by potentially less-than-rational experts.²⁶ The mean bid for *beliefs* is \$0.89²⁷ in the study which reflects a continuum of information which may be drawn on. Lastly, \$0.77 is bid for *advice* in the study because its binary go/no go nature is viewed as less valuable in the market for information. Additionally, there are both formal (paid consultants) and informal (influence, reputation) aspects to this market²⁸ and advice-seekers will bid different amounts (in terms of search time and out-of-pocket costs) for different types of advice from different advisors. This bid amount can theoretically be measured as the quantity of data a rational decision maker would forgo in exchange for a piece of advice given by an advisor who has just experienced the same decision.²⁹ This gives the market value of the advice to the advice-seeker. This value can be distorted by *perception rents* which are prices paid for advice from some advisors which exceed the expected informational content, a source of inefficiency in

²⁴ *Ibid.*

²⁵ *Ibid*, p. 26.

²⁶ Nyarko, *et al* p. 29

²⁷ *Ibid*, p. 30.

²⁸ *Ibid*, p. 2.

²⁹ *Ibid.*

the advice market.³⁰ Survey results point to perception rents in advice given by religious counsel and doctors about vacations and computer purchases; and coworkers on birth control, pre-marital sex, and exercise. Perception rents on advice from the Internet and best friends are less clear. Chauvinistic bias³¹ is another source of advice market distortion, which leads advice-seekers to place greater value (and thus a higher price) on advisors with similar characteristics to themselves. This partially explains the broad reliance on best friends for advice. Representative bias³² refers to the relative weights given by rational decision-makers to prior experience versus new information. The prediction would be that younger people would weight new information heavily relative to their lower base of experience as compared with the older group. Survey results confirm, at least, that younger people seek out advice (and presumably new information) more often than older people on pre-marital sex, birth control, jobs, alcohol, and exercise, areas in which they are likely to have limited experience. Finally, conservative bias³³ distorts markets by lending more than the Bayesian-optimal weight to prior experience. Survey results may be conservatively biased in individuals with no religion or very strict religious beliefs, and by older people who may subscribe to an “if it ain’t broke, don’t fix it” mentality with an attendant reluctance to incorporate new information into decision making.

The biggest lessons which can be learned from the advice literature seem to be about making predictions as to the likelihood of particular individuals to follow advice, given certain types of bias, and what prices various types of advisors may command in the marketplace.

Compliance

Compliance is an enormous factor in both religion and health care. Religious identity and the efficacy of recommended medical interventions depend almost entirely on compliance

³⁰ *Ibid.*

³¹ *Ibid.*

³² *Ibid.*, pp. 2-3.

³³ *Ibid.*, p. 2.

with established practices. Compliance can be distinguished as to the level of coercion used to attain it – for our purposes, we will think only about voluntary compliance relative to these two markets. Much of the literature focuses on compliance as a process which reduces cognitive effort for decision-makers.³⁴ For decisions with *many alternatives* (non-compensatory decisions), rules are designed to quickly eliminate less desirable choice alternatives, leaving the decision-maker with a more manageable set of options. Dominance rules eliminate choice alternatives based on the dominance of one choice alternative over others, while lexicographic rules select a specific attribute for comparison among choice alternatives. Religion and health care both accomplish this through prescribed (and proscribed) practices. In the survey, this equates to making rational choices about where to seek advice. For example, if “car mechanic” were included as a possible expert, few if any individuals would rationally seek advice about contraception from this source. The structure of the survey questions, then, contains some degree of institutional-based compliance tendency built in, and the forced binary choice simplifies choice comparisons.

This brings us to the second class of decisions – those with *few alternatives* (compensatory decisions). These decisions are more difficult to make (require greater levels of cognitive effort) because attributes of choice alternatives must be defined and ordinalized to make pairwise comparisons of superiority/inferiority. These set of alternatives, already whittled down through non-compensatory processes, are precisely the best fit for rule-making or guidelines. In fact, majority rule is one example of a compensatory decision rule. Through a compensatory process, religious institutions have evolved structures for easing decision-making. Religious doctrine, beliefs, and practice allow issue-by-issue comparisons of one’s own beliefs against denominational practices. To the extent one’s beliefs mostly correspond to those of the denomination, a particular set of religious practices are adopted. There is no need to look at the entire set of possible beliefs on all relevant issues for all

³⁴ Seidl and Traub, p. 1.

existing faith groups. Compliance with a given set of beliefs confers membership in that group.

Similarly, the institutional structures of health care practices reduce cognitive effort for patients. Choices about whether to seek advice from a general practitioner or specialist, surgeon or internist, physician or dentist, are simplified through the natural division of labor. Choice of health care practitioner seems to be a strong indicator of subsequent compliance. For example, if you hold strong religious beliefs which prohibit blood transfusions (Jehovah's Witnesses), there is a strong likelihood you would not comply with orders for surgery which included a possibility of transfusion.

To date, much of the health care compliance studies have been done with respect to pharmaceutical compliance. In such cases, there is a two-fold decision process – the doctor determines the appropriate prescription and the patient decides whether or not to fill it and take as directed. Doctors, as agents for patients, filter all of the information about possible drugs to prescribe based on optimal matching between patient and drug.³⁵

Cheap Talk

Cheap talk is a concept borrowed from game theory which places little value on communications which do not *directly* affect payoffs, and can provide some understanding about the dynamics between religious counselor and member, and physician and patient, because to the extent the cheap talk is acted upon, it *indirectly* affects payoffs.³⁶ If any party has any motivation to misrepresent his intentions, with a suitably small risk of being disbelieved, serious inefficiencies are introduced into the advice market.³⁷ In the cases of religion and medicine, years of study are required to become knowledgeable enough to dispense professional advice, and Hanson's conclusions about regulator banning of pharmaceuticals³⁸ can be extended to modeling advice markets, where prior knowledge of

³⁵ Ellickson (1999)

³⁶ Farrell and Rabin (1996), p. 3.

³⁷ Hanson (2001), p. 2.

³⁸ Hanson (2001).

advice seekers plays a critical role in advisor incentives for cheap-talk. When advice seekers are relatively well-informed about the issues they seek advice on, the model predicts doctors and religious counsel would be more likely to restrict their advice to specific areas of expertise. Similarly, when advisor interests are sufficiently aligned with those of the advice-seekers, and even in cases where there are incentives to deceive, evidence suggest that people tend to be truthful in giving advice.³⁹ For the survey, you wouldn't observe doctors or religious counsel advising about vacations or computer systems, on average. When advice-seekers are relatively uninformed, advisor latitude in advising increases.

Experimental findings are that cheap talk is more likely to have utility when the advice is both “self-committing and self-signaling”⁴⁰ – the cheap talk is advice coming from a credible source. Conversely, when the source is not credible, advice-seekers would be better off observing action (“actions speak louder than words”).⁴¹ In the extreme cases, there will either be no incentive to tell the truth, or communication will lead to Pareto nirvana; the “truth” likely lies somewhere in the middle.⁴² For the advice-seeker, there is always the option to ignore cheap talk entirely.

Religion and Health

The richness of this literature has already been alluded to in the opening paragraphs, but certain topics would be most useful in understanding the advice-seeking (and advising) aspects of this interrelationship. Studies of the prohibitions inherent in religions which discourage smoking, alcohol abuse or sexual experimentation⁴³ may favorably bias individuals who seek medical advice in these areas towards compliance. Equally compelling is the anecdotal evidence in which people turn to their faith in times of serious illness,

³⁹ Farrell and Rabin (1996), p. 3.

⁴⁰ Charness and Grosskopf (2001), p. 15-16 define self-commitment as being satisfied when the advisor's message, if believed, binds him to playing the signaled action and that action is the best response to the advice-seeker's best response. Advice is self-signaling when the advisor prefers the advice-seeker to play the best response to given advice if and only if the advisor truly intends to play the signaled action.

⁴¹ *Ibid*, p. 15.

⁴² Farrell and Rabin (1996), p. 3.

⁴³ Idler (1995), p. 684.

reversing the direction of causality.⁴⁴ By working the argument backwards, weak correlations may be strengthened. Viewing health through the eyes of the religious may expand the definition of health. Idler's (1992) survey results showed a broad range of responses to the paired questions:

Would you rate your health as excellent, good, fair, or poor?

When you answered the last question about your health, what did you think of?

Her results suggested that patients evaluate their health on many criteria (the "physical and non-physical self") – the comparative health of others, their emotional state, social network, and ability to perform certain valued activities given any limitations of their health condition.⁴⁵

Religion and alcohol consumption is another research area with promising clues to advice-seeking relative to alcohol behavior. Different normative orientations held by different denominations would provide a sort of very specific proxy for comparing religiosity by observing compliance with restrictions or freedoms related to alcohol consumption.

Religious reference group ideas provide a theoretic construct for evaluating individual behavior in the context of an influential group.

Implications of Religiosity on Health Care

The utility of any pilot study is its ability to refine the focus of analysis. The salutary effects of religiosity on health care spans a broad range of mostly scattered literature; the challenge is to narrow the study enough to elicit meaningful results which can be generalized from sample to population. For this study, the role of advice-seeking is used to establish primary motivations in seeking health care, and whether religious belief systems reinforce this propensity. With this in mind, the next steps should include:

⁴⁴ *Ibid*, p. 685.

⁴⁵ *Ibid*, p. 686.

- Gather more data⁴⁶ - I discovered with the small sample size, though it seems to be representative of the population from which it is drawn, any single outlier can distort the mean, and if the outlier is due to response error, the validity and strength of the data is reduced. With a larger data set, this effect would be mitigated.
- Survey Redesign – the original survey is long and complex, but its symmetry allows for straightforward isolation of influential factors. The redesigned survey should narrow its focus to the areas overlapping religion and health (diet, premarital sex, contraception, and alcohol) and permit a continuum of responses (Very Likely, Likely, Neutral, Unlikely, Very Unlikely) for two experts – religious counsel and health care practitioners (more broadly defined to include psychiatry, nurse practitioners, alternative care practitioners). Another issue to be addressed is the tradeoff between specificity of survey questions and uniformity for ease of analysis. By structuring the questions uniformly, it is difficult to establish a common basis of knowledge about individual issues; for example, surveyor and respondent may have different conceptions about what is meant by religious influence on diet or the role of the Internet in seeking advice about vacations.
- Signaling – individual signaling of compliance to religious doctrine forms an important foundation for group cohesiveness. Those who “walk the walk and talk the talk” empirically derive greater benefits from their religiosity, which spill over to other lifestyle behaviors. Can incentives for improved compliance with health care directives be devised, and if so, would we observe the same synergistic effects?
- Contracts – are we more likely to seek and comply with advice if payments are enforced by social contracts, as opposed to commercial contracts? For most religious denominations, tithing is discretionary but at the same time, it is informally, but mostly effectively, enforced through social pressure. Payments to doctors, on the

⁴⁶ In the words of Professor Robin Hanson, “you will find you always want more data.”

other hand, are mandatory – that is, we seek out doctor’s advice with the full knowledge that we are obligated by legal contract to pay a lot of money for it.

- Intertemporal Preferences – I am interested in understanding whether health and the after-life promised by most religious denominations are on the same time continuum, or is there a discrete, step function jump at a certain point of diminishing health, to after-life preferences. If the latter is true, we should observe even the most terminally ill, non-religious patients opting for continued health care and heroic treatments more often than religious people.

To develop a fuller understanding of the role of religiosity in promoting health care, regression analysis of the enhanced data set will be used to determine the contributions of various demographic and psychosocial characteristics to advice-seeking behavior. In a small sample size, it is impossible to tease out nuances in data which might reinforce or contradict the influence of religiosity on health. Once the critical independent variables are identified, a game theoretic approach to modeling compliance could yield predictive information about differential levels of advice compliance.

The challenge remains to solidify causality arguments about religion and health. Religious involvement affords a complex network of psychological, bio-behavioral and psychosocial⁴⁷ avenues enhancing, for believers, many quality of life metrics, including better health. Religion’s role in promoting utilization of health care services seems an important link in establishing causality.

⁴⁷ Levin *et al* (1996), p. 224.

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