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INTENTION AND UNCERTAINTY AT LATER STAGES OF
CHILDBEARING: THE UNITED STATES 1965 AND 1970; THE
INTERGENERATIONAL TRANSMISSION OF RELIGIOUS BEHAVIOR:
THE EFFECT OF PARENTS ON THEIR CHILDREN'S FREQUENCY OF
PRAYER; PRAYER AND HAPPINESS

The University of Arizona

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STATES 1965 AND 1970; THE INTERGENERATIONAL TRANSMISSION OF
RELIGIOUS BEHAVIOR: THE EFFECT OF PARENTS ON THEIR CHILDREN'S
FREQUENCY OF PRAYER; PRAYER AND HAPPINESS

by

Samuel Philip Morgan

A Dissertation Submitted to the Faculty of the

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In Partial Fulfillment of the Requirements
For the Degree of

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In the Graduate College

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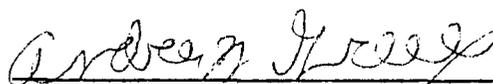
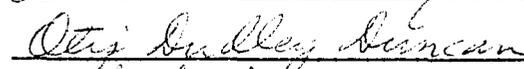
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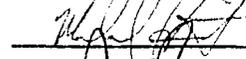
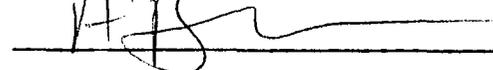
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Intention and Uncertainty at Later Stages of Childbearing:
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Children's Frequency of Prayer; Prayer and Happiness
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ABSTRACT

Part I

While births provide researchers with a natural dichotomy, fertility intentions are not inherently dichotomous. Intentions are predictions about the future and, as such, are couched in considerable uncertainty. Ignoring this uncertainty hides much of what could be learned from data on fertility intentions. This paper presents a model which allows analysis of the full range of intentions. After selecting a sample of women in the later stage of childbearing (women who intend less than two additional children) from the 1965 and 1970 National Fertility Studies, I show that: 1) substantial portions of women at this stage of the reproductive life cycle are indeed uncertain of their parity specific intention, 2) this certainty, like more firm intentions, varies by age and parity as our model predicts, and 3) there were significant shifts in the level of certainty between 1965 and 1970. Specifically, while intentions for third, fourth, and fifth births declined, more women "didn't know" if they intended to have another child or not. Among those not intending another child, more seemed uncertain of this intention in 1970 than did comparable women in 1965. In contrast, those intending another child seemed more certain in 1970. These changes in intentions and uncertainty suggest a need for caution in forecasting a decline in intended family size since this pool of uncertain women has the potential to increase the birth rate substantially.

Part II

Adolescence brings into play forces which aid and hinder the intergenerational transmission of religious behavior. First, there is identification with parents and the inertia of childhood religious training. Secondly, a countervailing force is rebellious and assertive, and is aided by the American normative context of religious freedom. This analysis focuses on a net result of these forces -- the correspondence between the prayerfulness of Catholic parents and their offspring in the period 1963 to 1974. Results indicate that parents strongly influence the frequency of their offspring's prayer. But the strength of the effect does vary significantly by the parent's sex, the adolescent's sex, and the nature of the parent's behavior (i.e. whether parents pray frequently, infrequently, or with moderate frequency). Over this period, however, there was great stability in the structure of religious socialization within the Catholic family. Observed marginal change indicates that the frequency of mother's and daughter's prayer declined, and to a lesser extent, so did father's and son's prayer. Importantly, the decline in adolescent's prayer does not indicate a lesser parental influence. Instead, parents seem less religious due, I argue, to the impact of the birth control encyclical, *Human Vitae*. The adolescent's decline in prayer is evidence of an "echo" in the following generation.

Part III

The modernization process and America's unique historical development caused changes in both the structure and function of American religion. The trend has been toward more individualized beliefs and privatized

religious behaviors. The structure of this "privatized religion" seems capable of performing important functions in post-industrial society. Firm beliefs provide a sense of meaning and belonging in everyday life and allow answers to "ultimate questions". These beliefs can provide support in times of crisis. Finally, privatized religious behaviors can provide rewarding experiences in and of themselves. Using frequency of prayer as a measure of the intensity of privatized religious beliefs, I find that prayer is associated with greater happiness or psychological well-being. This effect is pervasive with respect to the respondent's sex and the Protestant-Catholic distinction. However, prayer most affects the happiness of those under 30 years of age and those over 50. This variation by age suggests that prayer is most important where institutional ties and support are weakest.

PART I

INTENTION AND UNCERTAINTY AT LATER STAGES OF CHILDBEARING: THE UNITED STATES 1965 AND 1970

Most research on fertility intentions employs models similar to those used to analyze actual births. But unlike births, which either occur or do not occur in a specific time period, intentions are not inherently dichotomous. Fertility intentions are predictions about the future and, as such, are couched in considerable uncertainty. By treating fertility intentions as dichotomous responses, past research has clouded our understanding of changes in intentions. In this paper, I develop a model of uncertainty that permits analysis of the full range of intentions, including "don't know".

The model posits that uncertain intentions occupy a middle position between firm intentions to have or to prevent future births. Following Coombs (1974, 1978, 1979), I assume that respondent's first choices regarding family size lie somewhere in a range of acceptable family sizes. Uncertainty arises at those stages of the life cycle after minimal acceptable family size has been attained and before "too many" children will result from another birth. Before attaining minimal acceptable family size, couples have no difficulty stating a firm intention to have at least one more child and, after passing through the acceptable range, they can firmly state that they will not have another. While they are between the minimum and the maximum, however, they feel

uncertain about whether or not to prevent future births.

After selecting a sample of women in the later stages of child-bearing (women who want less than two additional children) from the 1965 and 1970 National Fertility Studies, application of this model leads to the following findings and conclusions. First substantial proportions of respondents in this sample are uncertain of their parity-specific intention. In fact, of those in my sample presumably fecund, one-third either "don't know" whether or not they intend another child or, if they do state an intention, admit that they might change their mind. For women aged 25-29, the proportion uncertain approaches 50 percent.

Second, uncertainty, like firm intentions, is related to age and parity in a consistent fashion and in a manner predicted by our model. This uncertainty is not "noise" in the data that should be ignored, discarded, or removed by some post-hoc coding procedure. Rather it is a real phenomenon inherently part of fertility decision-making.

Third, while the 1965 to 1970 period included a rapid decline in period fertility (Westoff and Ryder, 1977a) and fertility intentions (Lee and Khan, 1978; also see Table 2 and accompanying discussion), the level of uncertainty, registered by "don't know" answers to "do you intend more children?", rose substantially. This increase in uncertainty was greatest for younger women. This change occurred because the cohorts in the heart of the childbearing years maintained higher levels of uncertainty than would be expected given the cross-sectional relationship of uncertainty and age. In addition, uncertainty increased most at higher parities where the decline in both period fertility (Westoff and

Ryder, 1977a:Table X-17) and birth expectations (see Table 2 and accompanying discussion) was greatest. Further uncertainty was uncovered by questions asked of those who initially stated a clear intention. These questions probed the respondents about the certainty attached to their stated intention. In terms of change between 1965 and 1970, the likelihood that a respondent intending no more children would be uncertain increased. In contrast, those intending one more child seemed more certain. Given these changes and my model, I argue that women have revised their stated intentions downward toward the minimal acceptable family size. Consequently, those intending more births were more likely to be below their minimal acceptable family size and, therefore, certain of their intentions to have an additional child. Those women reaching this minimal level intended no more children but held the option of revising intentions upward (i.e. were uncertain) if relevant conditions changed. Overall, the findings warn that the decline in intentions was much more tentative than otherwise thought. By 1970 there existed the potential for a sizeable upturn in the birth rate. The absence of such an upturn could be explained by period-specific antinatalist propaganda (Blake, 1974) or age structure related cohort effects (Easterlin, 1979).

The Intention to Have More Children

Fertility survey interviewers commonly ask: "do you intend to have another child?" The usual analytical procedure divides respondents into two categories: those who want more children and those who do not. Investigators then use this dichotomous response to identify individuals

or couples who intend to proceed to the next parity. But while birth provides researchers with a natural dichotomy, the dichotomous intention to have another child is the creation of the researcher. This somewhat artificial dichotomy may not be optimal in many cases. It combines into one group, for instance, those who definitely want another child and those who intend another but might change their minds. Clearly the parity progression ratio and the factors affecting it may vary depending upon the certainty the respondent attaches to her intention (Westoff and Ryder, 1977b). For example, women may consider the next birth non-substitutable if present family size lies below minimal acceptable levels. Others hold less firm intentions and may be affected by a complex of expectations, preferences, and changing socioeconomic conditions.

A more realistic representation of the intention to have another child would allow respondents to be distributed along a continuum. Women at the polar extremes of such a continuum would have firm intentions to have and not to have, respectively, another birth. Results presented later demonstrate that substantial numbers of respondents do fall between the polar extremes (i.e. are uncertain) and that there are shifts along this dimension not detectable in simple "yes" or "no" answers.

As stated earlier, uncertain intentions occur at certain stages of the reproductive life cycle -- at certain ages and parities. Although modal family desires vary over time in the United States, they do so within the range from two to four children. Therefore, uncertainty should be least for couples with less than two or more than four children. Variance in uncertainty is also expected by the age factor. Given the

preference of American women to terminate childbearing between the ages of 35 and 40 (Rindfuss and Bumpass, 1978), certainty about stopping at current parity should increase as this age range is approached.

Changes in the level of uncertainty can also be understood in terms of the model being developed here. Couples that move into the uncertain, transitional stage between childbearing and post-childbearing (i.e. those within an acceptable family size range) can move through this stage by avoiding additional births and becoming "too old" to have additional children. Or they may pass through this stage by increasing their parity and moving toward a family size which is "too large". If relevant factors (such as unfavorable economic conditions or antinatalist propaganda) delay couples from moving beyond minimum acceptable family sizes, then they remain in an uncertain status until they are "too old" to have more children or until circumstances permit them to have another child. If a given woman passes through this stage via aging, then on the average she will remain uncertain longer than if she passes through this stage via increasing parity. For example, a woman who considers two or three children acceptable may have her second birth by age 25. If she proceeds through the transitional stage via aging she might remain moderately uncertain for ten years or longer. If she were to have an additional child before becoming "too old", the period of uncertainty would be shorter. Increasing aggregate uncertainty, then, could indicate that increasing numbers of women have halted childbearing at minimal acceptable levels and are proceeding through this stage via aging. This pool of uncertain women has the potential to substantially increase

fertility levels if many of them revise their intentions upward.

Data, Variables, and Methods

Data

The cases (2720 and 3651 in 1965 and 1970, respectively) analyzed here were selected from the 1965 and 1970 National Fertility Studies (Ryder and Westoff, 1971; Westoff and Ryder, 1977a). Since interest focuses on fertility intentions and uncertainty in the later stages of childbearing, I omit those respondents who intend to have two or more additional children. I attempt to insure a family context for fertility decision-making by selecting only married, spouse present women. These selection criteria also help control for the effects of divorce, separation, and abandonment on fertility intentions and uncertainty. Currently pregnant women were excluded because of their unique status with respect to parity-specific decisions.

Non-white women were also excluded because they are too few to support the kind of cross-tabular analysis used here and because interactions among color and other variables analyzed here are likely. The 1965 sample contains women in the 1921 to 1948 birth cohorts; the 1970 sample contains those in the 1926 to 1953 cohorts (those 17-44 as of January 1965 or 1970).

The response items analyzed here only make sense to, and were only asked of, those who claimed to be fecund. As a result, women who have been sterilized or who have husbands that are sterilized were not asked the questions about intending additional children. However, sterilized couples are the ones most certain about wanting no more

children. Excluding the sterilized inflates both the estimates of the proportion intending another child and the proportion uncertain.

Furthermore, if the proportion sterilized increased over the 1965 to 1970 period, then the exclusion of the sterilized would overestimate both intentions and uncertainty in 1970 compared to 1965. Westoff and Jones (1977) show that sterilization has increased dramatically over the 1965 to 1975 period. Most of the increase, however, occurred after 1970. Nevertheless, between 1965 and 1970 sterilization increased among those eligible for inclusion in this sample.¹ For the above reasons, respondents who are not fecund due to surgical sterilization (regardless of reason) are included in this analysis and are coded as definitely not intending another child. (The major findings remain the same, however, if the sterilized are ommitted.)

Variables

The set of response items analyzed in this paper are reproduced below. Unfortunately, for my purposes, the 1970 interview schedule was not an exact duplicate of the 1965 one: 1) new questions were added to the schedule and some old ones removed, 2) the sets of questions which I analyze appear at different parts of the schedule, and 3) the questions which are repeated are, in this case, not exact duplicates (in 1970 the referent for the question was "you and your husband" and in 1965 it was "you"). These changes in the measurement instrument could produce artifactual changes. However, these shortcomings are not unique to this

1. The odds that a respondent would be sterilized increased by a factor of 1.18.

study but apply to many studies that have used these well respected data sets. Nevertheless, the reader should be cautioned (see Ryder, 1973).

1970 National Fertility Study

- Q. 212. Do you and your husband intend to have another child?
- Q. 214. How many more children do you intend to have?
- Q. 217. (If one to Q. 214) Do you think you might later change your minds and decide not to have another child?
- Q. 219. (If no to Q 212) Do you think you might later change your minds and decide to have another child?

1965 National Fertility Study

- Q. 44. Do you intend to have another child?
- Q. 45. How many more children do you intend to have?
- Q. 47. (If no to Q. 44) Do you think you might later decide to have another child?
- Q. 51. What is the smallest number of children you would consider having altogether?

These items quiz the respondent on both the number of additional children intended and her degree of certainty about that choice.

Do you intend to have another child? Many women were unable to answer questions 212 or 44 with a definite "yes" or "no". (These respondents were coded "don't know" or "no answer" in 1970 and as "don't know" in 1965. For comparability, the 1970 "no answers" were treated as "don't knows".) Their inability to respond "yes" or "no" indicates that these respondents are uncertain about whether to have one more child. This interpretation of the "don't know" response is bolstered by a response to a follow-up question used in 1970 (Q. 218). Approximately one-half of the respondents unable to answer "yes" or "no" to Q. 212 said that they were more likely to have another child than not. The other half claimed they would be more likely not to have another. Findings presented in the next section also support the characterization of "don't know" responses as uncertain.

As a first approximation, then, of a variable measuring the desire for an additional child, I replace the usual dichotomy (yes-no) with a polytomy (yes-uncertain or don't know-no). Again the uncertainty registered by a "don't know" response to Q. 212 or 44 refers to having one more child; I compare these uncertain women with those who want no more children and those who want one more child.

If the respondent intends no more, might she change her mind?

Questions 219 and 47 were asked of respondents who intend to have no more children. These questions attempt to measure the degree of certainty attached to the intention to have no more children. "No" responses indicate that the respondent is certain she will not change her mind. "Yes" indicates that the respondent is indeed uncertain about the decision to have no more children. And again sizeable proportions of the relevant respondents did not offer a "yes" or "no" answer. These "don't know" responses are again treated as uncertain responses. Consequently, we have another polytomous variable to measure the strength of attachment to the intention to have no more children.

If the respondent intends one more child, might she decide not to have another? In the case of questions 219 and 47 (discussed above) the uncertainty registered by a "yes" or "don't know" response referred to revising intentions upward (i.e. changing one's mind and deciding to have an additional child). But for women who intend an additional birth there can also be different levels of certainty attached to that intention. Earlier I stated that certainty about remaining at current parity should increase with age. Whereas older women are less likely to say they might

change their minds and have more, they should be more likely to say that they might decide to have fewer children. Likewise, willingness to revise intentions downward should increase with parity since these later births are, in a normative sense, substitutable. Although this reversal may seem awkward, think of it in the following way. On a dimension of desire for additional children, one would expect to find those who definitely do not want another child at an extreme. As we move along such a dimension, we should next find those who do not want another child but might change their minds, followed by those who genuinely don't know, those who are uncertain but intend another, and finally, those who definitely intend another. Mean age and parity should decrease as we move along such a scale. Thus, the order of the certain and uncertain responses shift depending upon whether one focuses on the "yes" or "no" answers.

Question 217 of the 1970 survey asks relevant respondents if they would consider not having another child. A strictly comparable question does not appear in the 1965 interview schedule. However Q. 51 asks respondents to identify the smallest family size they would consider. I subtract the response to Q. 51 from the intended family size. If this difference is positive I assume the respondent would consider having fewer than intended. The differences between the 1965 and 1970 measures are problematic since the change in question form could produce artificial results. Consequently, results obtained with these measures are only suggestive. (The method of computing the 1965 measure creates a dichotomy. The 1970 measure allows for "yes", "don't know", and "no" answers. For comparability, I combine the "yes" and "don't know" responses

to form a 1970 dichotomy. Such a procedure is legitimate statistically since this partition of the 1970 response is a legitimate partition of the likelihood ratio chi-square statistic for the tables cross-classifying this response by the factors age and parity. Collapsing the variable in this way also meets substantive expectations since the "don't know" response indicates a degree of uncertainty.)

The independent variables or factors. The factors used in this analysis are wife's age (or cohort), wife's parity, and the survey year. Using birth year, age as of January 1965 and 1970 was recoded into six categories: 17-19, 20-24, 25-29, 30-34, 35-39, 40-44. These categories allow for two observations of the cohorts: 1926-30, 1931-35, 1936-40, 1941-45. Parity equals the number of live births reported and has six categories: 0, 1, 2, 3, 4, 5. Given the small number of women at parities greater than 5, I chose to eliminate them from the analyses which involve parity. The survey year also enters all analyses as a dichotomous factor.

Methods

Since the variables used in this analysis are ordinal, I use a set of log-linear models which allow me to exploit this property in constructing structural models. These models are termed structural since the models' parameters are not affected by changes in sample size or marginal shifts and since these parameters are regarded as constants which govern the process that gave rise to the data.

Goodman (1979) discusses the class of models used. The models were fit using procedures similar to those described by Duncan and McRae

(1978) or with Haberman's (1979:571-96) computer program Freq.² The data analysis involves an attempt to separate random from systematic variation in the analyzed tables. I claim that the model identified as the preferred model captures the systematic variation in the table while ignoring the random component. In selecting such a preferred model, there are several considerations: goodness of fit, parsimony, and substantive plausibility. I assess the fit of a given model by comparing the observed cell frequencies (f) with those expected under this model (F) by computing the likelihood ratio chi-square statistic, $L^2 = 2 \sum f \log(f/F)$. The degrees of freedom associated with a model and the ease of explicating a model indicate its degree of parsimony. And, since the number of models which will fit a given set of data is always quite large, the search for and the selection of a preferred model are ultimately based on substantive considerations.

The structure of the models will be described in terms of odds ratios -- the measure of association used throughout this paper. Given four cells in adjacent rows and columns of some ordered cross-classification, the expected odds ratio under a given model can be computed as in equation 1: where i refers to an arbitrary row i , and j

$$(1) \quad \theta_{ij} = (F_{ij} \cdot F_{i+1,j+1} / F_{i,j+1} \cdot F_{i+1,j})$$

an arbitrary column. The odds ratio, as a measure of association, has a number of desirable properties (Fienberg, 1978:17). Among them is a straightforward interpretation. The odds ratio measures the change in

2. Haberman's program fits these models very expeditiously. After becoming aware of this more advanced technology, I used it in some partial reanalysis of this data.

the odds, $F_{i,j}/F_{i+1,j}$, which results from a shift from column j to column $j+1$. Goodman (1969) shows that the total association in a given table can be completely captured by odds ratios computed from a "basic set of subtables". Models I employ place meaningful constraints on the values the odds ratios take, thereby allowing for adequate but simple descriptions of the association among variables. Frequently I constrain the basic set of odds ratios such that all of those are equal which are computed from expected frequencies in a given pair of rows. Since age or parity comprise the column variable and response is the row variable in tables analyzed here, this constraint requires that the odds on a response category (yes:no or don't know:no) increase or decrease by a constant fashion as age or parity increases. If the odds ratios computed from the first two rows (θ_{1j}) equals 1.1, for instance, then as we move from left to right across columns (as age or parity increases), the expected odds decrease by a factor of .91 ($1/\theta_{1j}$). Goodman (1979) calls such a model a row effects association model.

Data Analysis

The analysis follows the logic of the previously discussed sets of response items. I first analyze responses to: "do you intend to have more children?" Then I move to an analysis of the degree of certainty attached to responses given this question.

Do You Intend to Have More Children?

In both 1965 and 1970, NFS respondents were asked if they intended to have another child (Q. 212 and 44). Table 1 shows the distribution of

Table 1. The Intent for More Children by Respondent's Age and Survey Year

Year (3)	More Children? (2)	Age (1)						Row Totals
		17-19	20-24	25-29	30-34	35-39	40-44	
1970	Yes, one more	85	149	143	61	17	8	463
	Don't know	14	55	129	93	56	33	380
	No	38	138	496	682	724	730	2808
1965	Yes, one more	21	93	123	64	32	21	354
	Don't know	1	28	51	54	39	26	199
	No	8	131	272	508	567	681	2167
<u>Expected Frequencies under Model 1.6</u>								
1970	Yes, one more	86.48	136.43	148.62	63.59	21.15	6.75	463
	Don't know	21.88	61.61	119.79	91.48	54.31	30.93	380
	No	28.64	143.96	499.59	680.94	721.54	733.33	2808
1965	Yes, one more	18.08	103.48	105.66	74.52	34.88	17.39	354
	Don't know	3.34	29.75	47.23	51.78	37.69	29.21	199
	No	8.58	118.77	293.12	499.70	565.43	681.40	2167
Selected Models	Marginals Fit	Parameterization of the (12) Association	θ_{1j1}	θ_{2j1}	θ_{1j2}	θ_{2j2}	L^2	d.f.
1.1	(23) (31)	Null association	1.0	1.0	1.0	1.0	1270.62	20
1.2	(23)(31)(12)	Unconstrained effect	b	b	b	b	25.77	10
1.3	(23) (31)	Row effect association	1.93	1.68	1.58	1.54	21.12	16
1.4	(23) (31)	Row effect association I	1.93	1.68	1.55	1.55	21.13	17
1.5	(23) (31)	Uniform association	1.68	1.68	1.68	1.68	39.44	19
1.6 ^a	(23) (31)	Uniform association I	1.78	1.78	1.55	1.55	23.42	18

^aOdds ratios computed from expected frequencies may vary slightly due to rounding error.

^bThere are no intrinsic restrictions (constraints) placed on the form of the association (values of these odds ratios) in this model.

respondents by their answer to question 212 (for 1970) or 44 (for 1965), their age, and the survey year.

Examination of the observed frequencies in Table 1 indicates a substantial degree of uncertainty among women in the later stages of childbearing. In response to the question "do you intend to have another child?", 10.4 percent of women responded "don't know" in 1970. In 1965, 7.3 percent gave this response. To see if this change in uncertainty is significant I use the row totals of Table 1 to create a 2 x 2 table of response (don't know vs. no) by year (1970 vs. 1965). The odds ratio computed from this table equals 1.47 indicating that the conditional, observed odds on DK:NO (don't know/no) were raised by a factor of 1.47 in 1970. We can be assured this level of change is significant due to the L^2 statistic value, 18.26, associated with the model of independence for this table. (This value allows for easy rejection of the model of independence given the 1 degree of freedom in this table.) The same procedure indicates that there was no change in the odds on YES:NO. This second finding is not easily interpreted, however, in the absence of a control on parity.

The observed frequencies in Table 1 also indicate that the relative frequency of "yes" and "don't know" responses decline with age. In order to specify the functional form of this relationship and to test for change in this relationship over time, I sought a preferred model to characterize the association between response and age in both years (the 12 association). Model 1.6 is the preferred model for these data; expected frequencies obtained under this model appear below the observed in Table 1. The fit of these expected frequencies to the observed is quite good as indicated

by the L^2 statistic, 23.42, with 18 degrees of freedom. The constraints imposed by this model are shown graphically in Figure 1 where I have plotted the expected odds.

The solid lines in Figure 1 show that the expected odds on YES:NO and DK:NO decline linearly (on a logarithmic scale) with age in both 1965 and 1970. This figure also shows that the odds on DK:NO (uncertainty) decline less steeply with age than do the odds on YES:NO (intentions). In 1965 uncertainty declines by a factor of .65 ($1/\theta_{1j}$) with an increase in the age category; the odds on YES:NO decrease by a factor of .42 (or $.65^2$). In 1970, the odds on DK:NO (uncertainty) and YES:NO decline by factors of .56 and .31 (or $.56^2$), respectively. For both years then, the model chosen is the model of uniform association (Goodman, 1979). This model treats both row and column variables as linear scales and constrains the association between age and response (the 12 association) to be distributed uniformly throughout the table. In terms of their distribution by age, those responding "don't know" lie half way between those giving "yes" and those giving "no" responses. Note, however, that age has a greater effect on response in 1970 than in 1965.

Figure 1 also shows that the greatest increase in uncertainty occurs for the youngest women. In contrast, the largest decline in intentions occurs for older women. These data allow for cohort comparisons too. The dotted lines indicate the change in intentions and uncertainty for each cohort. Note that the odds on YES:NO decline more rapidly for these cohorts than one would have expected given the cross-sectional relationship of age and intention. In contrast, the

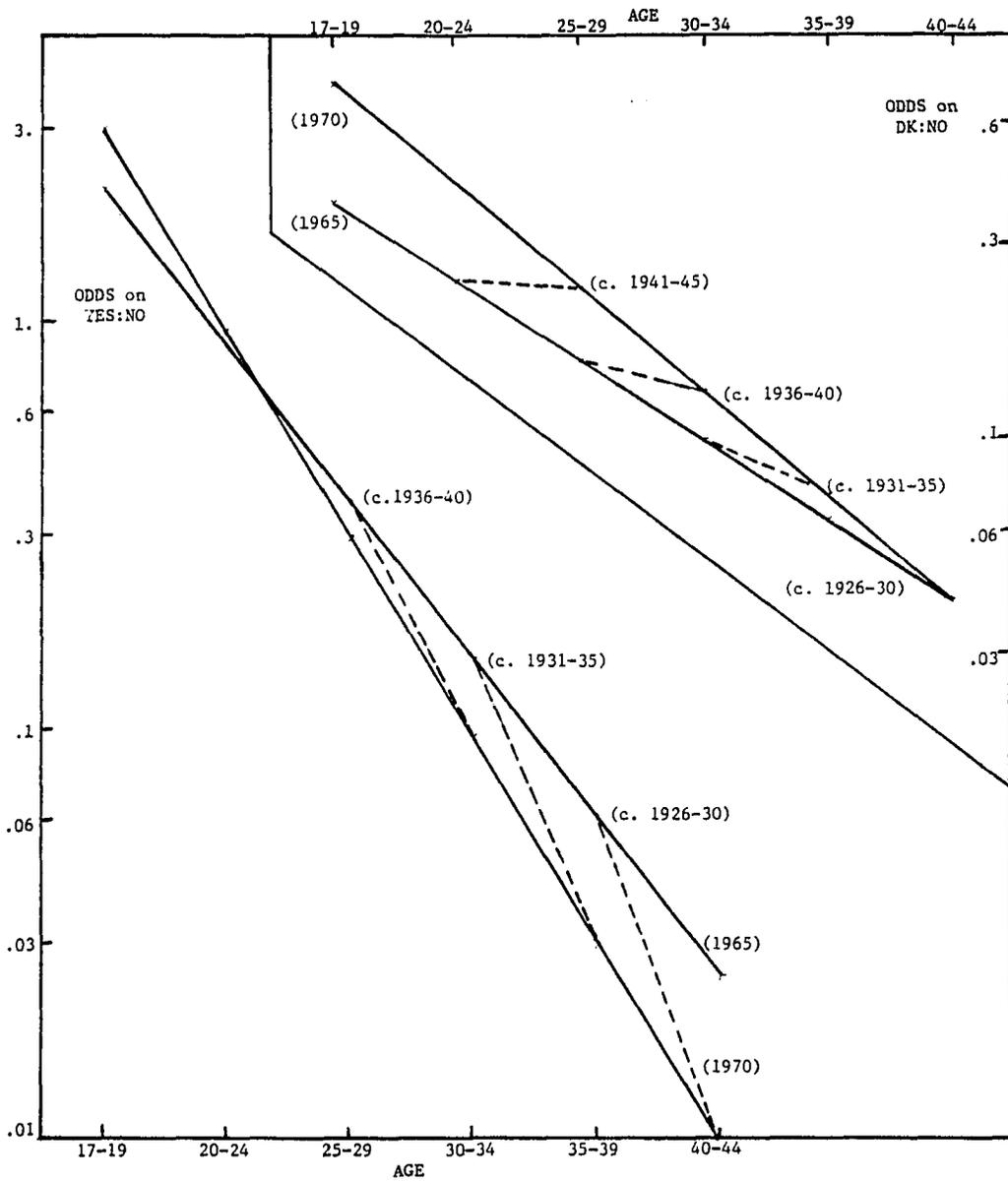


Figure 1. Plot of the expected odds showing change in intention and uncertainty by the respondent's age and the survey year

likelihood of being uncertain declines less over this five year period than one would have expected on the basis of cross-sectional data. Evidently, women in these cohorts halted childbearing earlier, as the stronger effect of age indicates. But those in the heart of the childbearing years (i.e. the younger women) left open the option of having another child later (i.e. were uncertain). In sum, intentions for another child fell sharply while uncertainty remained at inflated levels.

Table 2 shows the distribution of respondents by their intention for more children, their parity, and the survey year. The preferred model chosen to represent these data and to characterize the relationship of response to parity is model 2.4. This model is more complex than the age model due to the significant nonlinearities present in the data. These nonlinearities indicate that the rates of change in the odds on YES:NO and DK:NO vary by parity. Numerical estimates of these changes (i.e. odds ratios) can be obtained from the expected frequencies. The specific changes of interest to this discussion can be seen in the plot of the expected odds in Figure 2.

In figure 2 the odds on YES:NO (stating an intention to have another child) are greatest for women who are at parity 1. These women have begun the process of family formation and are pushed toward parity 2 by the strong norms against one child families. With this exception at parity 1, we can say that the odds on intending an additional child decline with parity. This finding was expected since at each higher parity more women reach, proceed into, or pass through, the acceptable family size range. Using similar reasoning, the decline in the odds on DK:NO (uncertainty) with parity can be explained.

Table 2. The Intent for More Children by Respondent's Parity and Survey Year

Year (3)	More Children? (2)	Parity (1)						Row Totals	
		0	1	2	3	4	5		
1970	Yes, one more	13	282	106	45	9	5	460	
	Don't know	27	56	153	67	49	12	364	
	No	70	221	885	530	284	150	2608	
1965	Yes, one more	20	140	90	75	19	9	353	
	Don't know	17	37	69	41	21	3	188	
	No	56	143	620	580	375	191	2506	
<u>Expected Frequencies under Model 2.4</u>									
1970	Yes, one more	17.93	282.00	106.00	37.43	12.87	3.77	460	
	Don't know	21.77	52.83	157.81	67.00	46.65	17.95	364	
	No	70.29	224.17	880.19	756.57	449.48	227.29	2608	
1965	Yes, one more	21.99	140.00	89.82	75.00	20.59	6.38	353	
	Don't know	17.67	29.93	74.87	43.04	17.17	5.32	188	
	No	54.13	150.06	614.31	577.96	377.24	191.30	2506	
Selected Models	Marginals Fit	Additional Classes Fit ^a	Parameterization of the (12) association	θ_{1j1}	θ_{2j1}	θ_{1j2}	θ_{2j2}	L^2	d.f.
2.1	(23) (13)	None	Null association	1.0	1.0	1.0	1.0	1028.06	20
2.2	(23)(13)(12)	None	Unconstrained effect	b	b	b	b	35.42	10
2.3	(23) (13)	None	Row effect association	2.05	1.48	1.19	1.70	296.23	16
2.4	(23) (13)	(2)(3)(10) (20)(22)	Row effect associa- tion I	1.31	1.31	1.00	1.63	14.48	13

^aThe additional classes fit constrain certain cells to equal the observed. Cells are denoted by numbers 1 through 36 where 1 through 6 are in the first row, 7 through 12 in the second row, etc.

^bSee note for Table 1.

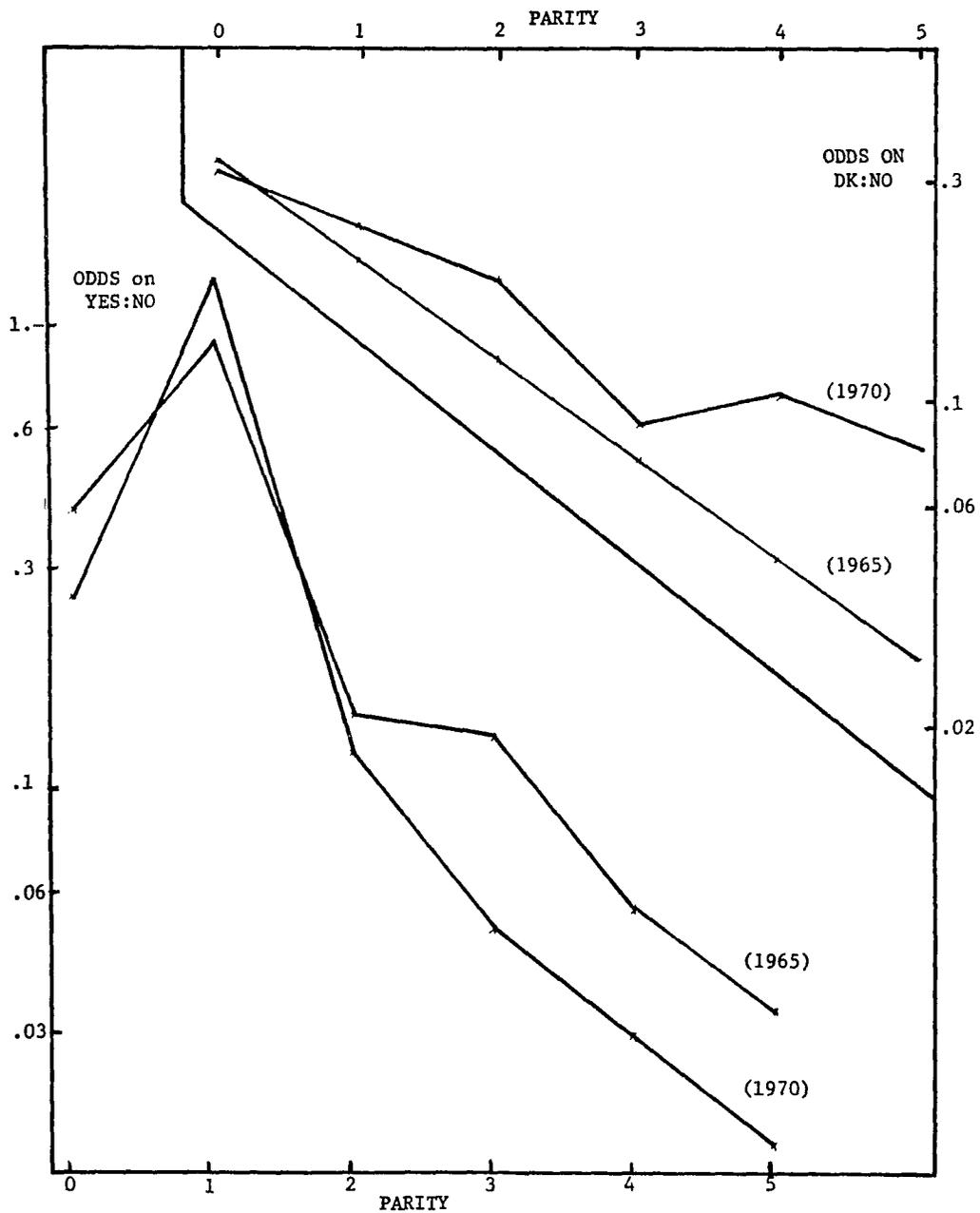


Figure 2. Plot of the expected odds showing change in intention and uncertainty by the respondent's parity and the survey year.

The most obvious change between 1965 and 1970 occurred at parities 2 through 5. There was a clear decline in the likelihood that respondents at these parities would say "yes" (I intend to have another child). Such a change might be expected given the decline of births of these orders in the late 1960s (Westoff and Ryder, 1977a:Table x-17). On the other hand, uncertainty (odds on DK:NO) increased substantially at these same parities. Specific tests indicate that the observed increase in uncertainty is significant (at the .05 level) at parity 2, parity 4, and parity 5. It appears that the change in intentions can be described as a decrease in intended parity accompanied by increasing uncertainty about remaining at that parity.

At parity 0, the preferred model constrains the odds on YES:NO and DK:NO to be lower in 1970 than in 1965. Such a change suggests a non-vacillating increased acceptance and practice of voluntary childlessness. However, more specific tests indicate that these changes are not individually significant. The odds on YES:NO are significantly greater at parity 1 in 1970. This finding results from more women at this parity stating a desire for one more child, a pre-condition for inclusion in this sample. In 1965 more women at this parity expressed a desire for more than one child. The two-child intention, then, did seem to become more popular in the late 1960s.

In summary, the decline in the odds on YES:NO is generally matched by an increase in the odds on DK:NO. Such a change suggests that the decline in intentions was a tentative one. One suspects that if relevant conditions had changed, many of these women might have revised their intentions upward.

If the Respondent Intends to Have NO More Children, Might She Change Her Mind and Have Another?

Questions 219 and 49 were asked of those who intend no more children. These questions quiz the relevant respondents about the degree of certainty they attach to this intention. Table 3 shows the cross-classification of responses to these questions by the respondent's age and the survey year. "Yes" responses indicate that the respondent admits that she might change her mind and have another child. "No" responses indicate the respondent considers a change of mind unlikely. "Don't know" responses indicate an intermediate degree of uncertainty.

The observed frequencies in Table 3 reveal that many respondents are indeed uncertain about their stated intention to have no more children. In 1970, 6.0 percent, and in 1965 6.8 percent, admit that they might change their minds and have another child. In addition, 10.6 percent and 5.8 percent in 1965 and 1970, respectively, indicate a more moderate level of uncertainty by responding "don't know". One can show that the two-fold (2.19) increase in the odds on DK:NO between 1965 and 1970 is clearly significant (by creating a 2 x 2 table of response by year as described in the discussion of Table 1). The hypothesis of no change in the odds on DK:NO is easily rejected in light of the L^2 value of 36.84 and the 1 degree of freedom associated with this model. The much smaller change in the odds on YES:NO is not statistically significant.

Since both "yes" and "don't know" responses indicate uncertainty in this case, why does only the frequency of the "don't know" response increase significantly? This pattern of change could mean that the

Table 3. If No More Children Intended, "Might You Change Your Mind and Have More?" by Respondents' Age and Survey Year

Year (3)	Change mind and have more? (2)	Age (1)					Row Totals	
		17-19	20-24	25-29	30-34	35-39		40-44
1970	Yes	9	34	62	47	14	3	169
	Don't know	10	33	103	91	39	23	299
	No	19	71	331	544	671	704	2340
1965	Yes	5	32	52	39	17	4	149
	Don't know	1	18	27	34	28	18	126
	No	2	81	192	434	522	659	2165
Expected Frequencies under Model 3.6								
1970	Yes	14.11	32.13	60.86	38.23	16.91	6.76	169
	Don't know	12.68	38.28	96.14	80.07	46.96	24.88	299
	No	11.21	67.60	339.00	563.70	660.13	698.36	2340
1965	Yes	4.25	42.14	43.53	35.51	16.06	7.51	149
	Don't know	.99	15.93	26.85	35.74	26.37	20.13	126
	No	2.76	72.94	200.62	435.75	524.75	653.36	2165
Selected Models	Marginals Fit	Parameterization of the (12) association	θ_{1j1}	θ_{2j1}	θ_{1j2}	θ_{2j2}	L^2	d.f.
3.1	(23) (31)	Null association	1.0	1.0	1.0	1.0	619.89	20
3.2	(23)(31)(12)	Unconstrained effect	b	b	b	b	13.14	10
3.3	(23) (31)	Row effect association	1.33	2.00	1.55	1.68	26.54	16
3.4	(23) (31)	Uniform association	1.68	1.68	1.68	1.68	41.14	19
3.5	(23) (31)	Row effect association I	1.33	2.00	1.62	1.62	26.83	17
3.6 ^a	(23) (31)	Row effect association II	1.33	2.00	1.63	1.63	26.84	18

^aThe constraint imposed here is $(1.33 \cdot 2.00) = (1.63)^2$. This constraint forces the odds on YES:NO to decline by identical factors in both years.

^bSee note for Table 1.

uncertainty results from factors beyond the control of the respondent. If relevant factors were to change in a pronatalist direction many of these uncertain respondents might revise their intentions upward (i.e. decide to have an additional child). Since respondents cannot predict or control changes in relevant factors, they simply respond "don't know".

Now I analyze this response by age and the survey year. I wish to determine whether uncertainty about the intention to have no more children varies by age and if this relationship changed between 1965 and 1970. The model selected to characterize this relationship, model 3.6, generates the expected frequencies in Table 3. Expected odds computed from these frequencies are plotted in Figure 3.

The solid lines of Figure 3 indicate that uncertainty (i.e. the odds on YES:NO and DK:NO) declines with age -- as women become "too old" to have another child. In 1965 and 1970 the odds on YES:NO declined by a factor of .38 with an increase in the age variable. Coupled with the earlier finding of no significant shift in the odds on YES:NO between 1965 and 1970, this finding of no differential change allows one to conclude that there was no increase in the likelihood of a "yes" response regardless of the respondent's age. Furthermore, the possible cohort comparisons produce the same estimates of change as the cross-sectional ones.

With respect to age, the decline in the odds on DK:NO (moderate level of uncertainty) was steeper in 1970 than in 1965 (these declined by factors of .50 and .61, respectively). But the uncertainty registered by "don't know" answers increased for all age groups. The dotted lines in

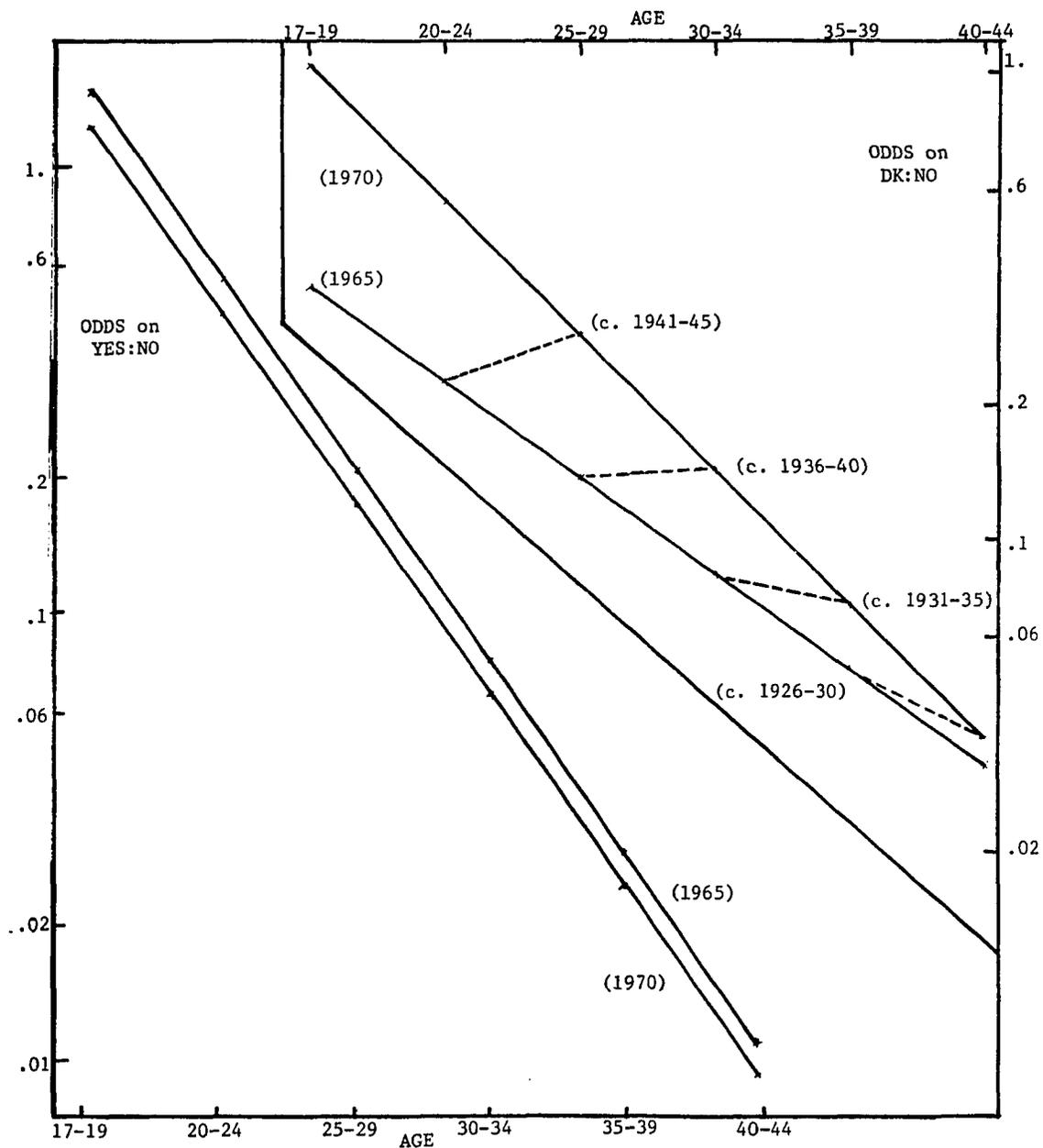


Figure 3. Plot of the expected odds showing change in uncertainty concerning the intention to have no more children by the respondent's age and the survey year.

Figure 3 show the change for each cohort. For the younger of these cohorts the level of uncertainty registered by a "don't know" response actually increased between 1965 and 1970. In the older cohorts, the decline in these odds was less than would be expected given the estimated cross-sectional relationships. This pattern of change might be described in this way: current conditions caused many women to revise their intentions downward, afterall they were less likely to say they intended more children at parities 2 through 5. But the young, with more childbearing years left, were less certain about the permanance of this revision. Note that this pattern of change is very similar to the change characterized in Figure 1.

The data in Table 4 allow for a similar analysis with respect to parity. Again the effects of parity cannot be constrained to be linear. The expected odds under the preferred model, model 4.5, are plotted in Figure 4. This figure shows that in 1970 the odds on YES:NO and DK:NO generally decline with parity. In 1965 the odds on YES:NO are greater at parity 2 than at any other parity. Otherwise, there is no significant association between response and parity in 1965. The differential change between 1965 and 1970 indicates that the increase in uncertainty was greatest at the lowest parities.

In summary, uncertainty regarding the intention to have no more children declined with age and parity as my model predicted. The uncertainty registered by a "don't know" response increased significantly between 1965 and 1970. Yougn women and women at low parities showed the greatest increase.

Table 4. If No More Children Intended, "Might You Change Your Mind and Have More?" by Respondent's Parity and Survey Year

Year (3)	Change mind and have more? (2)	Parity (1)					Row Totals		
		0	1	2	3	4		5	
1970	Yes	4	26	67	39	20	7	163	
	Don't know	8	29	127	65	46	14	289	
	No	58	166	691	645	385	211	2156	
1965	Yes	3	8	59	36	27	11	144	
	Don't know	6	10	36	31	19	10	112	
	No	47	125	525	512	329	170	1708	
Expected Frequencies under Model 4.5									
1970	Yes	8.62	21.26	62.89	42.84	19.69	7.69	163	
	Don't know	9.05	25.90	129.21	70.31	37.52	17.01	289	
	No	52.33	173.84	692.89	635.85	393.79	207.29	2156	
1965	Yes	3.63	9.28	56.79	37.57	24.33	12.39	144	
	Don't know	3.22	8.23	34.66	33.32	21.58	10.99	112	
	No	49.14	125.49	528.55	508.11	329.09	167.62	1708	
Selected Models	Marginals Fit	Additional Classes Fit	Parameterization of the (12) association	θ_{1j1}	θ_{2j1}	θ_{1j2}	θ_{2j2}	L^2	d.f.
4.1	(23) (31)	None	Null association	1.0	1.0	1.0	1.0	56.35	20
4.2	(23)(31)(12)	None	Unconstrained effect	b	b	b	b	14.97	10
4.3	(23) (31)	None	Row effect association	1.10	1.23	.95	1.12	22.13	16
4.4	(23) (31)	None	Uniform association I	1.17	1.17	1.0	1.0	25.90	19
4.5 ^a	(23) (31)	(9+19) ^a	Uniform association II	1.17	1.17	1.0	1.0	13.39	18

^aIn addition to the marginals indicated, and the constrained (12) effect, the sum of cells 9 and 19 is fit exactly. Cells are numbered 1 through 36 where 1 through 6 are in the first row, 7 through 12 in the second row, etc.

^bSee note for Table 1.

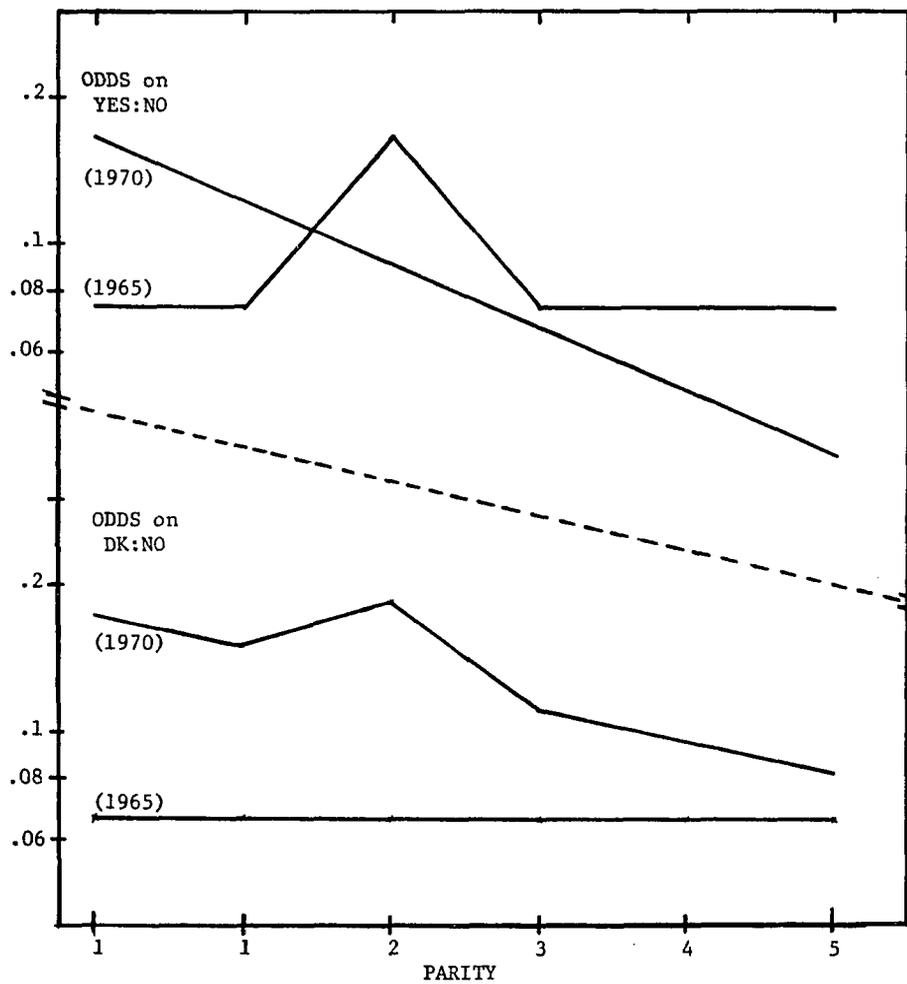


Figure 4. Plot of the expected odds showing change in uncertainty concerning the intention to have no more children by the respondent's parity and the survey year.

If the Respondent Intends Another Child, Might She Change Her Mind and Decide Not to Have Another?

Table 5 shows the cross-classification of respondents by willingness to revise intentions downward (i.e. decide not to have another child), age, and the survey year. Using the row totals one can show that the odds on YES:NO (uncertain about the intention to have another child) declined by a factor of .67 between 1965 and 1970. Rejection of the model of independence ($L^2 = 7.54$ with 1 d.f.) for the 2 x 2 table of response (yes vs. no) by year (1970 vs. 1965) indicates that the aggregate level of change was significant. Unlike uncertainty concerning original intention or uncertainty for those stating an intention to have no more children, uncertainty attached to the intention to have another child declined.

The preferred model chosen to characterize the association of uncertainty to age, model 5.5, produces the expected frequencies in Table 5. The expected odds are also shown in the third pannel of this table. All of the 1970 expected odds equal .678; so there is no relationship of uncertainty to age. In 1965 the expected odds increased by a factor of 1.26 with each increase in age. This pattern of differential change (produced by the comparison of the 1965 and 1970 expected odds) suggests that by 1970 women were choosing an intended family size which lies much closer to the minimum family size than did comparable women in 1965. Consequently, by 1970 both older and younger women stated an intention to have an additional birth only when below minimal acceptable family size. As a result, the flexibility of these intentions did not vary by age.

A similar analysis was performed using parity as a factor. Table 6 shows the relevant data and the expected frequencies under the preferred

Table 5. If One More Child Intended, "Might You Change Your Mind and Have Fewer?" by Respondent's Age and Survey Year

Year (3)	Change mind and have fewer? (2)	Age (1)						Row Totals
		17-19	20-24	25-29	30-34	35-39	40-44	
1970	Yes	31	62	58	26	8	2	187
	No	54	87	85	35	9	6	276
1965	Yes	8	40	57	33	18	14	170
	No	13	49	62	26	14	5	169
<u>Expected Frequencies under Model 5.5</u>								
1970	Yes	34.33	60.18	57.76	24.64	6.87	3.23	187
	No	50.67	88.82	85.24	36.36	10.13	4.77	276
1965	Yes	7.97	38.78	58.71	32.52	19.45	12.57	170
	No	13.03	50.22	60.29	26.48	12.55	6.43	169
<u>Expected Odds Computed from the Expected Frequencies Above</u>								
1970	Yes/No	.678	.678	.678	.678	.678	.678	.678
1965	Yes/No	.612	.772	.974	1.228	1.550	1.995	1.005
Selected Models	Marginals Fit	Parameterization of the (12) association		θ_{1j1}	θ_{1j2}	L^2	d.f.	
5.1	(23) (13)	Null association		1.0	1.0	10.00	10	
5.2	(23)(31)(12)	Unconstrained effect		b	b	5.06	5	
5.3	(23) (13)	Row effect association		1.05	1.26	2.72	8	
5.4	(23) (13)	Uniform association		1.15	1.15	5.56	9	
5.5	(23) (13)	Row effect association I		1.0	1.26	2.87	9	

^aSee note for Table 1.

Table 6. If One More Child Intended, "Might You Change Your Mind and Have Fewer?" by Respondent's Parity and Survey Year

Year (3)	Change mind and have fewer? (2)	Parity (1)						Row Totals
		0	1	2	3	4	5	
1970	Yes	4	95	53	25	5	4	186
	No	9	187	53	21	4	1	275
1965	Yes	1	50	53	46	13	5	168
	No	10	88	36	28	4	4	170
<u>Expected Frequencies under Model 6.4</u>								
1970	Yes	3.20	97.34	48.74	26.62	6.19	3.90	186
	No	9.80	184.66	57.26	19.38	2.81	1.10	275
1965	Yes	3.12	53.79	45.19	46.22	12.38	7.30	168
	No	7.88	84.21	43.81	27.78	4.62	1.70	170
<u>Expected Odds Computed from the Expected Frequencies Above</u>								
1970	Yes/No	.327	.527	.851	1.37	2.20	3.55	.677
1965	Yes/No	.396	.639	1.03	1.66	2.68	4.29	.988
Selected Models	Marginals Fit	Parameterization of the (12) association		θ_{1j1}	θ_{2j1}	L^2	d.f.	
6.1	(23) (13)	Null association		1.0	1.0	49.59	10	
6.2	(23)(13)(12)	Unconstrained effect		b	b	5.01	5	
6.3	(23) (13)	Row effect association		.64	.61	10.73	8	
6.4	(23) (13)	Uniform association		.62	.62	10.85	9	

^bSee note for Table 1.

model, model 6.4. Again the expected odds are shown in the third panel of the table. In both years the odds on revising intentions downward increased by a factor of 1.61 with an increase in parity. If these expected odds were plotted on semi-log graph paper, the lines representing the change in the odds on YES:NO would be represented by upward sloping parallel lines, one for 1970 and one for 1965. The constant positive slope would represent the increasing level of uncertainty which accompanies movement to higher parities. The constant vertical difference between these lines represents the significant decline in uncertainty in this five year period. In summary, the likelihood that respondents who intend another child will consider revising that intention downward increased with parity but declined over time.

Discussion

Large proportions of respondents in this sample attached a degree of uncertainty to their parity-specific fertility intentions. In 1970, 10.4 percent admitted that they just "don't know" if they intend another child. Among those intending no more children, 16.6 percent were somewhat uncertain about this intention. And of those who stated an intention to have another child, 40.3 percent seemed uncertain. The comparable figures for the 1965 sample were 7.3, 12.7, and 50.1 percent, respectively.

Given this level of uncertainty, the substantial degree of inconsistency between dichotomous intentions and reproductive behavior is not surprising. Failure in predicting which couples proceed to the next parity does not necessarily indicate that such prediction is impossible or fruitless. Instead it suggests the need for new, richer treatment of the

desire for additional children. While it is disconcerting to find that large proportions of respondents who claimed to want no more children actually gave birth in an ensuing five year period, it would be much less troubling to learn that many of these respondents would have warned the investigator that they might change their minds. Westoff and Ryder (1977b) demonstrate that respondents who are certain of their intention are much more likely to realize a stated intention. (See Appendix A for further comments on the predictive validity of reproductive intentions.)

Not only are large proportions of respondents uncertain about their parity-specific intention, but this uncertainty appears at the stages of the reproductive life cycle predicted by my model. In terms of parity and age, uncertainty behaves as if it were a transitional stage between childbearing and post-childbearing stages. "Don't know" answers to the question, "do you intend to have more children?", decline with age and parity but at a slower rate than do "yes" answers. Similarly, uncertainty attached to the stated intention to have no more children declines with age and parity. Such cross-sectional relationships would be produced if women move into the acceptable family size range, become uncertain of their parity-specific intention, and then move into a post-childbearing stage by increasing current parity or by aging. Finally, we have seen that uncertainty regarding the intention to have another child varies with parity and age. Women at higher parities are more likely to consider revising intentions downward since disproportionately many have reached or passed minimal acceptable family size. Older women were more likely to revise their intentions downward in 1965, but there was no such

significant relationship with age in 1970. I expected older women to be more uncertain about having another child for several reasons: 1) they may believe they are "too old" to have more children or may be influenced by peers who believe so; 2) the time since the last birth may have become "too long" placing the respondent in a position where having another child would violate norms about proper length of the open interval; and 3) increasing age allows women additional time to develop non-familial interests that would compete with the desire for more children (Rindfuss and Bumpass, 1978). More generally, this expectation is consistent with the view that the postponement of additional births increases the likelihood that couples will revise their intentions downward. The absence of such a relationship in 1970 indicates that unfavorable conditions pushed women toward small intended family sizes and caused many to postpone childbearing. Consequently those intending more births, young and old, were below or close to minimal acceptable family size and, therefore, certain of their intention for another child.

I have also demonstrated that the level of certainty has changed. Uncertainty registered by "don't know" answers to "do you intend more children?" increased while intentions for another child decreased. This increasing uncertainty was greatest at parities 2 through 5. In terms of age, the increase in uncertainty was greater for younger women and occurred partly because younger cohorts maintained higher levels of uncertainty than would be expected given the cross-sectional relationship of uncertainty and age.

Questions which probed respondents concerning the level of

certainty attached to a stated intention also indicate changes between 1965 and 1970. "Don't know" responses increased to the question, "do you think you might change your mind and have another child?" I interpret this to mean that more respondents were uncertain in 1970 of their stated intention to have no more children. This increase, coupled with no significant increase in "yes" answers to this question, indicates that respondents are uncertain about factors beyond their immediate control. Consequently, they just "don't know" if they might change their mind and have an additional child. In contrast, 1970 respondents seemed more certain of their stated intention to have one more child. Although the differences in the 1965 and 1970 measures of certainty (see earlier discussion) are reason for caution, I find the nature of the change quite interpretable. That is, relatively large numbers of women stating an intention to have another child had current family sizes which fell below minimal acceptable levels. As a result, more were sure of their intention to have an additional child.

The usual dichotomous treatment of fertility intentions would have ignored these changes in uncertainty altogether. But these changes qualify the observed decline in intentions during this period. That is, the shift toward smaller family size was a tentative one. As Blake (1974: 32) has argued, women have not taken an "irreversible quantum jump" to views supporting small families. Such a cautious shift could be explained by antinatalist propaganda (Blake, 1974; Westoff and McCarthy, 1979). Perhaps women in this sample stopped childbearing at minimal acceptable levels because of their concern over population growth or because they

feared the disapproval of those peers who were so concerned. Some evidence (Westoff and McCarthy, 1979) suggests that such concern about over-population may be subsiding. If so we might expect to see the effects as increasing intended parity and decreasing uncertainty.

A second explanation of these findings postulates that shifts in age structure influence the relative well-being (i.e. wage and employment conditions) of cohorts throughout their lifespans (Easterlin, 1979: 404). The larger cohorts moving into the prime reproductive years during the late 1960s did experience relatively poor economic conditions (Easterlin, 1979). Consequently, fertility fell as women halted childbearing at minimal acceptable family sizes. But because many women held out the option of revising intentions upward once economic conditions improved, uncertainty rose. Instead these unfavorable economic conditions have accompanied most women in this sample through the heart of the childbearing years and the hope of revising intentions upward disappears as they become "too old" to have more children.

Although there existed the potential for a sizeable upturn in the birth rate by 1970, no such evidence of an upturn has yet appeared. by and large this sample of women has moved into the post-childbearing stage by the late 1970s. Future research should continue to monitor the trends in uncertainty. Was there an equally large potential for an upturn in 1975 as in 1970? If yes, then under more pronatalist conditions such potential may be partially or fully realized. On the other hand, if uncertainty declines, then we have evidence that the move toward smaller intended family size has become more firmly established.

Although not reported here, my initial analyses of women at relatively early stages of childbearing (i.e. women who intend to have two or more additional children) in 1965 and 1970 indicate that women intended smaller families and were more certain about these intentions in 1970 than in 1965. Perhaps as these women move into the later stages of childbearing they will maintain these higher levels of certainty. Consequently, the potential for an upturn in fertility will diminish. Or perhaps this certainty at early stages of childbearing is a luxury that will be abandoned as the decision to terminate childbearing becomes concrete rather than hypothetical. As Blake (1974:43) states:

... people can entertain inconsistent attitudes simultaneously as long as such attitudes are kept compartmentalized. When it comes to desires concerning family size, time (and, a fortiori, age) forces confrontations of incongruent goals and preferences. As young women approach their thirties, they must decide whether they really wish to be childless or to have only one child. As the forties loom, couples face the irrevocable decision of living alone for a quarter of a century or more or filling these years with one or two additional children. One may expect that a distribution of resolutions to these conflicts will result. Not everyone, not even most people, will necessarily resolve them in a manner consonant with very small families.

In summary, the decline in intentions between 1965 and 1970 was a tentative one. Maybe the decline will become firmer if new cohorts maintain small family size intentions and if uncertainty declines. Perhaps uncertainty will remain high. Future research can address these questions. But one conclusion is clear now: many women at the later stages of childbearing are uncertain of their parity-specific intention and could be influenced by shifting socioeconomic conditions.

My findings and conclusions support the views of Blake (1974) and Easterlin (1979) and caution against prematurely concluding that U. S. population growth will continue to subside.

APPENDIX A

A NOTE ON THE PREDICTIVE VALIDITY OF REPRODUCTIVE INTENTIONS

Early studies showed that there was much individual level inconsistency between stated intentions and subsequent fertility. But investigators believed such inconsistency was averaged out in aggregate data which showed stability in expectations over time (Freedman et. al., 1965), so that expectations accurately predicted fertility behavior in the aggregate (Whelpton et. al., 1966). Ryder and Westoff (1971:Ch.3), however, show that fertility projections based on birth expectations can contain substantial error. My results and those of Westoff and Ryder (1977b) show how such error can occur.

This discussion will be made clearer by stating the issue formally. First of all I have shown that fertility intentions are not dichotomous and that they are better represented as polytomies (actually it may be better to consider intentions as continuous, but I will state the argument in discrete terms). To represent varying degrees of certainty in the intention to have no more children, let us assume that we group respondents into N_1 different categories. Similarly, respondents intending another child fall into one of Y_1 different groups.

Secondly, Westoff and Ryder (1977b) show that the parity progression ratio not only varies with the respondent's stated intention, but also with the level of certainty attached to that intention. Consequently, let us assume that there are parity progression ratios, P_{ni} and P_{yi} ,

associated with intentions to have no more children and the intention to have more, respectively.

I can now state the parity progression ratio for those intending no more children (PPR_n) as $PPR_n = \sum_{k=1}^i P_{nk} N_k$; for those intending more,

the parity progression ratio (PPR_y) equals $\sum_{k=1}^i P_{yk} Y_k$. The errors in prediction based on the stated intention to have another child (E_y)

equals $\sum_{k=1}^i (1 - P_{yk}) Y_k$ or $(1 - PPR_y) \sum_{k=1}^i N_k$. The errors in prediction

for those intending no more (E_n) is simply $\sum_{k=1}^i P_{nk} N_k$ or $PPR_n \sum_{k=1}^i N_k$.

And finally, for errors to balance in the aggregate E_n must equal E_y

$$\text{or } \sum_{k=1}^i P_{nk} N_k = \sum_{k=1}^i (1 - P_{yk}) Y_k.$$

The above formalizations clearly shows the strong assumption accepted by those who attempt to predict aggregate fertility from dichotomized data on birth intentions. In this paper, I have shown that the relative proportions of respondents in the categories N_i and Y_i can shift substantially in a five year period. The values of P_{ni} and P_{yi} can also shift over time. Westoff and Ryder (1977;447) note "a much stronger disposition to change positive intentions downward than to change negative intentions upward". They suggest this may be a stable characteristic of fertility intentions. Even if they are correct, much more must be known before fertility levels can be accurately predicted from intentions.

As Westoff and Ryder (1977b) do, I warn against the use of data on intentions for projection purposes. However, recognizing and monitoring

the uncertainty inherent in fertility intentions should allow forecasters to more accurately assess the potential for major shifts in the birth rate.

PART II

THE INTERGENERATIONAL TRANSMISSION OF RELIGIOUS BEHAVIOR; THE EFFECT OF PARENTS ON THEIR CHILDREN'S FREQUENCY OF PRAYER

Within the disciplines which study either religion or the family, scholars frequently attribute the central role in religious socialization to parents. Despite their acknowledged importance, this study is one of the few to assess the effect of parent's religious behavior on that of their offspring. The study focuses on Catholic parents and their adolescent sons and daughters. The time frame of the analysis is 1963 to 1974, and the religious behavior of interest is private prayer. Several questions are addressed: 1) How did parents' and adolescents' frequency of prayer change between 1963 and 1974 ? 2) Does the parent's frequency of prayer strongly affect their children's prayer ? 3) What is the nature or functional form of the parental effect ? 4) Does the strength or functional form of the association vary by the sex of the child, the sex of the parent, or the frequency of the parent's prayer ? And 5) does the strength or functional form of the association shift over the period 1963 to 1974 ?

Parents' and Adolescents' Prayer

Parents exert a strong influence on the very young (pre-adolescent) child's prayerfulness. Two processes produce such a relationship: first, children often identify with parents and may simply, and unquestioningly, imitate their parents' religious behavior.

Secondly, parents teach their children to pray by praying with them. Prayers, often said aloud, are part of many children's daily routine. Ritche and Koller (1964:150) characterize the parents' effect on the religious behavior of pre-adolescents by saying:

Choices are rarely offered if at all, and the children are exposed to religious or non-religious conditioning as soon as feasible. If there is some sort of piety, the mysteries of a given faith may not be crystal clear to children but they tend to identify with it. If parents do not include religion as part of their interests and activities, then the child tends to follow suit and may judge religion as some foolish superstition that somehow survived from darker, more benighted, times.

As children develop, the direct effect of parents weakens and the nature (form and content) of prayer changes. Long et. al. (1967) describe three developmental stages in the form and content of children's prayer. At Stage I (ages 5-7), children have only a very vague notion of prayer. Most often, children recite memorized prayers aloud at certain times of the day. "Now I lay me down to sleep" at bedtime, for instance. The Second (ages 7-9) and Third (ages 9-12) Stages bring a much fuller understanding of the concept of prayer. As a result " the older child comes to view prayer more abstractly, more objectively, and in a more differentiated fashion than his younger counterpart" (Long et. al., 1967:105). And, whereas younger children prayed aloud at specific times of the day, older ones prayed silently and less routinely. They "communicated with God" (Long et. al., 1967: 105) when "worried, upset, lonely or troubled"(Long et. al., 1967:106), for instance. Most of the adolescent children studied by Stewart (1967: 129-30) claimed to have stopped routine bedtime prayer by age twelve.

As children move into adolescence, the physical and intellectual growth which brought about changes in the form and content of prayer also engender conflict with parents (Davis, 1940) and raise questions about religious teaching (Argyle and Beit-Hallahmi, 1975:59-65). First, ideological adolescents may perceive inconsistencies between parents' stated religious beliefs and their actual behavior. Adolescents may respond by rebelling against parental beliefs or against the behavior they view as **inconsistent** -- by rebelling against "religion" or becoming "holier than thou". Often times overt rebellion against parents' beliefs or behaviors does not occur because the adolescents fear rejection by parents or the broader community. In such an instance, adolescents may participate in religious, public activities. But they may privately reject traditional religious beliefs. Beale and Willets (1967) use a similar argument to explain why children attend church relatively frequently while praying less frequently and having lower levels of "belief in God" compared to adults.

Secondly, adolescence is marked by the increasing importance of non-familial agents of socialization -- the schools, peer groups, the church, and the mass media. One result is the appearance of numerous alternative role models who may have drastically different religious outlooks than parents. Another effect is to make public religious behavior (i.e. church attendance) attractive for social reasons -- the chance to meet and interact with friends. Wright and Cox (1967) claim that many young persons go to church for social reasons, thereby explaining their relatively high level of public religious participation

and their relatively low level of prayer and belief (Beale and Willets offer an alternative explanation for this observation. See the comment above.)

By early adolescence then, we have several forces at work. First, there is identification with parents and the inertia of childhood religious training. Secondly, a countervailing force is rebellious and assertive, and is aided by a normative context of religious freedom. Moreover, the direct effect of parents is eased due to the private nature of the religious behavior on which I focus, the frequency of prayer.

The operation of the above forces can be especially strong or weak contingent upon a number of factors. Researchers have focused little attention on the factors of interest here: the sex of parent, the sex of the child, the nature (i.e. religious or non-religious) of the parents' behavior, and over time change.

In terms of sex of parent, Argyle and Beit-Hallahmi (1975:32) claim that most evidence indicates that the mother's religious influence is most important. This evidence (cited by Argyle and Beit-Hallahmi) is consistent with the Parsons and Bales (1953) notion of the mother as the socio-emotional leader and the adult primarily responsible for the socialization of the young. McCready's (1972) work produces an interesting counterargument. He claims that adolescents discount the religious behavior of the mother, who is expected to be religious, and instead look to the father for clues concerning appropriate religious behavior.

The strength or functional form of the association between parents' and offsprings' frequency of prayer may also vary by the sex of the child. The majority view would likely maintain that identification of the child would be greatest with the same-sex parent. For instance, Newcomb and Svehla (1937) report that the greater religious influence of the mother results from the especially strong religious influence of mother on daughter. Such identification with the same-sex parent would tend to perpetuate, the generally acknowledged greater religiosity of women. A minority view, strongly influenced by Freudian psychology, could assert that attraction and identification might be greatest with the opposite-sex parent.

Next, the strength and form of the parental effect may vary by the nature of the parental behavior, in this case their frequency of prayer. More specifically, does a parent who prays frequently affect his/her offspring to the same degree as a parent who prays infrequently? And is this effect the same if the parent prays with intermediate frequency? That is, do children show the same tendency to adopt (or reject) parental behavior regardless of that behavior? Such variation has never been addressed in past research. Nevertheless, one might suspect that frequent parental prayer would have the strongest effect since it is supported by broader normative standards and the institutional church. Alternatively, adolescents may be strongly drawn toward atypical behavior. If being non-religious constitutes a visible characteristic, then it may be disproportionately likely to be adopted.

The nature of the parental effect may also vary over time. Perhaps the overall influence of parents will become less pervasive if Catholic youth are granted more freedom in 1974 compared to an earlier decade. Greeley et. al (1976:39) suggest instead that the 1968 birth control encyclical lessened the ability of parents to influence their children religiously. They state: "the acceptance of the Catholic sexual ethic has declined drastically, despite Human Vitae. Catholics seem uncertain about some of the tenets of the faith that were once considered to be of crucial importance, and they lack confidence in their capacity to hand on religious values to their children".

Finally, the effect of sex of parent, sex of child, and nature of the parental effect (i.e. whether religious or non-religious) may have differing effects in 1963 than in 1974. Using Detroit Area Study data, Duncan and Duncan (1978) report an overall decline in sex typing, and they document an apparent decline in religious sex typing. Such a change might reduce both the effect of sex of parent and sex of child. Also over this period, many have noticed a decline in the importance of religion, and an apparently conflicting trend toward religious experimentation or "new religions" (Wuthnow, 1978). Both these trends lessen the normative support for the most devout behavior (i.e. frequent prayer) and, consequently, the effect of parents' infrequent prayer pattern may increase relative to the more prayerful behavior.

Before moving to a discussion of the data, variables, and methods, let me make a few comments about the selection of prayer as

the religious behavior of interest. Prayer measures a "devotionalism dimension" of religiosity -- an orientation that values personal communication with God (Lenski, 1963). Similarly, Morgan (1980) maintains that prayer measures the intensity of ones privatized religious beliefs. Although a traditional religious behavior, Lenski (1963) finds a weak association between frequency of prayer and doctrinal orthodoxy; Greeley and Morgan (1980) find no significant relation between the frequency of prayer and doctrinal orthodoxy among Catholics. In sum, prayer is a traditional behavior which indicates the intensity of one's religious belief, but which is a privatized behavior often performed beyond the confines of the institutional church, and which does not imply acceptance of the church's doctrinal positions. This behavior was selected because it is primarily private and, therefore, relatively free from the direct influence of other family members. Overt behavior, given social pressures toward conformity, likely would overestimate the effect of parents on the intensity of adolescents' personal religious beliefs. Secondly, the focus of this paper on prayer could be justified by arguing that the devotionalism dimension of religiosity has become increasingly important in terms of its impact on individuals' behavior and their sense of well-being (Morgan, 1980).

Data Variables and Methods

Data analyzed here come from a 1963 and a 1974 national survey of American Catholics conducted by the National Opinion Research Center.

The universe sampled is the noninstitutionalized Catholic population of the United States, aged 23 to 57 in 1963, and over 20 years of age for the 1974 sample. As part of the 1963 study two additional populations were sampled: 1) spouses and 2) adolescent offspring of respondents in the main sample. The main sample of respondents was interviewed. Spouses and adolescents were left self-administered questionnaires. Appendices to The Education of Catholic Americans (Greeley and Rossi, 1966) contain notes on sampling and fieldwork as well as duplicates of the main respondent, spouse, and adolescent questionnaires. In 1974, one adult respondent was interviewed in each household and adolescents were left self-administered questionnaires. Catholic Schools in a Declining Church (Greeley et. al., 1976) includes the 1974 questionnaires and information on sampling and fieldwork.

If there was more than one adolescent in a given family, then one was randomly selected for use in analyses. This procedure introduces a possible bias. Since the chance of an adolescent being in the sample varies inversely with birth order, the sample should over-represent first born children, and to a decreasing extent, second and third born children. Some studies (Palmer, 1966; Harris and Howard, 1968) suggest that first born children are most likely to strongly identify with parents. If this is the case, the estimates of the parental effect may be exaggerated accordingly.

The variables used in this analysis are frequency of prayer, the respondent's sex, and the survey year. In 1963, the prayer measure for adolescents asked: Do you pray ? Adolescents were then suppose

to circle the response that matched their frequency of prayer most closely. For adults in 1963 and 1974, and for adolescents in 1974, the prayer measure asked: About how often do you pray privately ? The change in the adolescent prayer question may produce an artifactual decline in adolescent prayer since the frequency of private prayer excludes some types of prayer that might be included in a response to "Do you pray ?" (the question used in 1963). The change in question wording could also affect the association between variables. However, the nature of the findings argue against such an assertion.

This analysis makes use of a wide range of log-linear models. The general strategy is to propose substantively appealing, statistical models which will accurately describe the structure of the data. Specific models will be discussed in conjunction with the data analysis, but the general procedure involves fitting certain cell frequencies, or certain sums of cell frequencies (often marginal frequencies) by the procedure of iterative proportional fitting (Fienberg, 1977:33-35). This iterative procedure produces frequencies which would be expected in a population subject to the set of constraints imposed. One can find the probability that the data are drawn from such a population by comparing the fit of the expected frequencies under a given model (F) with the observed frequencies (f). On the basis of its relative fit, parsimony, and substantive plausibility, a model can be chosen to represent the data.

The likelihood ratio chi-square statistic, $L^2 = 2 \sum f \ln(f/F)$ measures the goodness of fit between model and data. The degrees of

freedom associated with a model and the ease of explicating that model indicate its degree of parsimony. And since the number of models which will fit a given set of data is always quite large, the search for, and selection of, a model are ultimately based on substantive considerations.

The primary advantage of this analytical strategy, over others commonly used in the social sciences, is that discovery of an association between variables is not conditional upon a priori assumptions about the functional form of the association. These techniques can discern any departure from statistical independence whether the form of the association be linear, monotonic, or non-monotonic. Goodman (1979) discusses a set of models which, in addition to fitting sums of cell frequencies, constrain the association between ordered variables to take a linear form (on a semi-logarithmic scale). But such constraints are imposed only if they are legitimate (i.e. if they do not significantly worsen the fit of the model).

Data Analysis

Table 1 presents the four-way cross-classification of mother's prayer, offspring's prayer, sex of the child, and survey year. Table 2 shows similar data for father and offspring. These two tables provide the data used in this analysis.

Before moving to an analysis of the association between parent's and adolescent's prayer, let us examine several questions that refer to the marginal distributions of Tables 1 and 2. The first question is: how has the frequency of prayer changed for fathers, sons, mothers and daughters ? By creating a 2 x 3 table of year by respondent's

Table 1. Cross-classification of Mother's Prayer, by Offspring's Prayer, Sex of Offspring, and Survey Year

Survey Year (Y):	Offspring's Sex (S):	Offspring's* Prayer (O):	Mother's Prayer (M)*			(N)
			Frequent	Moderate	Infrequent	
1963	Son	Frequent	41	16	6	(63)
		Moderate	7	10	3	(20)
		Infrequent	0	1	12	(13)
		(N)	(48)	(27)	(21)	
	Daughter	Frequent	45	10	2	(57)
		Moderate	3	15	1	(19)
Infrequent		1	1	10	(12)	
	(N)	(49)	(26)	(13)		
1974	Son	Frequent	13	13	4	(30)
		Moderate	9	21	2	(32)
		Infrequent	0	3	20	(23)
		(N)	(22)	(37)	(26)	
	Daughter	Frequent	21	10	2	(33)
		Moderate	6	24	3	(33)
Infrequent		1	9	19	(29)	
	(N)	(28)	(43)	(24)		

* Frequent = at least daily

Moderate = several times a week or weekly

Infrequent = less than once a week

Table 2. Cross-classification of Father's Prayer, by Offspring's Prayer, Sex of the Offspring, and Survey Year

Survey Year (Y)	Offspring's Sex (S)	Offspring's Prayer (O)	Mother's Prayer (M)*			(N)
			Frequent	Moderate	Infrequent	
1963	Son	Frequent	20	12	7	(39)
		Moderate	10	18	6	(20)
		Infrequent	3	4	10	(17)
		(N)	(33)	(34)	(23)	
	Daughter	Frequent	22	8	7	(37)
		Moderate	12	17	2	(31)
Infrequent		0	9	3	(12)	
	(N)	(34)	(34)	(12)		
1974	Son	Frequent	22	6	2	(30)
		Moderate	8	16	0	(24)
		Infrequent	0	2	21	(23)
		(N)	(30)	(24)	(23)	
	Daughter	Frequent	24	8	1	(33)
		Moderate	8	21	6	(35)
Infrequent		1	7	21	(30)	
	(N)	(33)	(36)	(28)		

*Frequent = at least daily

Moderate = several times a week or weekly

Infrequent = less than once a week

prayer for each, I estimate that the odds on more frequent prayer (computed from adjacent prayer categories) declined by a factor of .82 for men, .79 for sons, .56 for mothers, and .53 for daughters.¹ All changes are significant at the .05 significance level except fathers'. Further tests indicate that the observed decline for daughters is significantly greater than the change for sons. The mothers' observed decline in prayer is also greater than fathers'. But since the mother and father samples are not independent in 1963, significance tests of the kind applied to the son-daughter difference cannot be used to test for such a difference among parents.

Given the change in the adolescent prayer question (discussed earlier), the relative decline in the prayer of parents and offspring should be cautiously interpreted. The change in question wording, most likely, artifactually increases the degree of change observed for offspring. Consequently, the slightly larger observed decline in prayer for adolescents should not be taken seriously. A more cautious conclusion does seem justified: prayer declined somewhat for adult and adolescent males, but the decline for females, mothers and daughters, was greater. This differential change eliminated all evidence of a sex differential in prayer for parents. For adolescents, daughters

1. The magnitude of the decline was estimated by fitting the the row effects model (Goodman, 1979) to the 2 x 3 table of year by respondent's prayer. The fit of this model to the data for fathers, mothers, sons, and daughters is, respectively, 1.56, 5.95, 2.77, and .021; with 1 d.f. Only the change for mothers seems not to be fully described by such a model. Note that the 2 x 3 tables for sons and daughters includes respondents from Tables 1 and 2.

prayed somewhat more than sons in 1963 and somewhat less than sons in 1974. Neither adolescent prayer differential proved significant. (The pattern of change in prayer observed here is substantially different than that for all Catholics. I comment on these differences in the discussion section of this paper.)

Finally, do parents or children pray more frequently ? Formal tests for marginal homogeneity (Ireland et al, 1969) in each of the 3 x 3 cross-classifications of parent's prayer by offspring's prayer indicate great similarity between the frequency of parents' and offsprings' prayer. Sons pray significantly less than mothers in 1963, but the hypothesis of marginal homogeneity cannot be rejected in the other parent-offspring pairings (results not reported here).

Using the data in Table 1, I will now characterize the association between the prayer of mothers and offspring. Table 3 shows a set of selected models which provide potential descriptions fo the association, and which indicate the logic of the model fitting procedure. The poor fit of model 1.1, the null association model, indicates that there is indeed a strong association between frequency of parent's and offspring's prayer. A substantively appealing way to characterize this association calls for the adolescent's prayer to increase as mother's prayer increases. Row effects association, and uniform association models posit this type of association (Goodman, 1979). The row effects model, for instance, postulates that the odds on more frequent prayer (computed from expected frequencies in adjacent prayer categories for adolescents) changes by a constant factor as mother's prayer increases.

Table 3. Selected Models Fit to the Data in Table 1

Model Number	Marginals Fit	Parameterization of the (MC) association within sex-by-year (SY) categories	L^2	d.f.
1-1	(\emptyset SY)(MSY)	Null association (fit to each (SY) sub-table)	216.10	16
1-2	(OSY)(MSY)	Row effects association (fit to each (SY) sub-table)	21.20	8
1-3	(OSY)(MSY)	Column effects association (fit to each (SY) sub-table)	41.77	8
1-4	(OSY)(MSY)	Uniform association	*	9
1-5	(OSY)(MSY)	Quasi-independence I: diagonal cells fit exactly $f_{1111}, f_{1121}, f_{1112}, f_{1122}, f_{2211}, f_{2221}, f_{2212}, f_{2222},$ $f_{3311}, f_{3321}, f_{3312}, f_{3322}$ ^a	5.56	4
1-6	(OSY)(MSY)	Quasi-independence II: $f_{1111}, f_{1121}, f_{1112}, f_{1122}, f_{3311}, f_{3321}, f_{3312}, f_{3322}$ ^a	7.51	8
1-7	(OSY)(MSY)	Quasi-independence III: $(f_{1111} + f_{1112}) (f_{1121} + f_{1122}) (f_{3311} + f_{3321} + f_{3312} + f_{3322})$ ^a	10.82	13
1-8	(OSY)(MSY)	Quasi-independence IV: $(f_{1111} + f_{1112} + f_{1121} + f_{1122}) (f_{3311} + f_{3321} + f_{3312} + f_{3322})$ ^a	16.74	14

* The L^2 value for model 1-4 cannot fall below the L^2 values for models 1-3 or 1-4.

^a The subscripts for f_{ijkl} ; i = mother's prayer, j = offspring's prayer, k = offspring's sex, l = year

Such a relationship is linear if plotted on semi-logarithmic paper. The fit of this model, model 1-2, is unacceptable judging from the L^2 value and the degrees of freedom associated with it. Similarly, the uniform association model produces one parameter to describe the association between two ordinal variables. This parameter is somewhat akin to a regression coefficient since it constrains the association between two variables to be constant across the entire range of the variables. Since this model incorporates the constraints of the row effects and column effects models (i.e. the models are hierarchical), the uniform association model cannot provide an adequate fit to the data.

Examination of the observed odds ratios suggested why the linear specifications were inadequate, and that one of a set of quasi-independence models might provide a good fit to the data. These models fit some sub-set of cells, or sum of cells in the table, and posit independence in the other portions of the table. In this case, if one fits the three cells along the main diagonal of each mother's-prayer by adolescent's-prayer sub-table ($f_{11..}$, $f_{22..}$, $f_{33..}$; where .. denote all combinations of sex and year), and posits independence in the remaining cells of the table, then an excellent fit of model to data is obtained (model 1-5, $L^2=5.56$; d.f.=4). Later we will see that the association between father's and offspring's prayer can be characterized by a similar model. Similar structures characterize other intergenerational data too (Duncan, 1979; Knoke, 1976; McRae, 1980).

What does such a model mean substantively? The structure of the data, characterized by a model similar to model 1-5, indicates that

adolescents are disproportionately likely to pray with the same frequency as their parents. However, if they do not pray with the same frequency as their parents, then there is no net effect of parent's prayer on the adolescent's prayerfulness. This pattern could be easily explained by the simultaneous operation of the two conflicting forces mentioned earlier: 1) the tendency for adolescents to adopt parental behavior, and 2) the tendency to reject it. The primary tendency is to adopt parental behavior. But the tendency to reject parental behavior counter-balances any tendency toward approximating it. (In Appendix A, I discuss a model of a different form which produces expected frequencies that are equal to the ones produced by the model on which I focus here. This model also has slightly different substantive implications.)

Table 4 shows the parameters estimated from the expected frequencies under model 1-7 and model 1-5 (in Appendix A, I present the expected frequencies under model 1-7, and describe how the parameters of Table 4 were computed). Although I focus on two models, they both take the same general form. Model 1-5 provides unconstrained estimates (shown in parentheses) by fitting a parameter to each diagonal cell. Model 1-7 places an acceptable and meaningful set of constraints on the parameters of model 1-5. For instance, I attempted to constrain the effect of mother to be the same on both son and daughter (i.e. constrain the parameter, P , to be the same for sons and daughters; $P_{1111} = P_{1121}$, $P_{1112} = P_{1122}$, etc., by fitting the sums, $f_{1111} + f_{1121}$, $f_{1112} + f_{1122}$, etc.). Model 1-7 contains all legitimate across-sex

Table 4. Parameterization of the Association Between Mother's Prayer *
and Offspring's Prayer, by the Offspring's Sex and the Survey Year

Survey Year (Y):	Offspring's Sex (S):	Offspring's Prayer (O):	Mother's Prayer (M)		
			Frequent	Moderate	Infrequent
1963	Son	Frequent	3.03(3.92)	1.	1.
		Moderate	1.	1. (1.01)	1.
		Infrequent	1.	1.	34.5(57.9)
	Daughter	Frequent	11.6(5.87)	1.	1.
		Moderate	1.	1. (3.71)	1.
		Infrequent	1.	1.	34.5(40.8)
1974	Son	Frequent	3.03(1.69)	1.	1.
		Moderate	1.	1. (1.44)	1.
		Infrequent	1.	1.	34.5(48.9)
	Daughter	Frequent	11.6(10.1)	1.	1.
		Moderate	1.	1. (0.88)	1.
		Infrequent	1.	1.	34.5(17.5)

* All constrained parameters not equal to 1.0 are at least twice the magnitude of their standard error. Standard errors were computed by Haberman's (1980) computer program Freq.

and across-year constraints. The effect of parents cannot be constrained to be the same over the range of the prayer variable. In model 1-7 then, parameters different from 1.0 indicate significant effects. Unequal parameters indicate that the estimated parameter values are significantly different.

One should interpret the parameters in Table 4 in the following way: the 3.03 value in the first row and first column indicates that the odds on a child praying "frequently" (i.e. "frequently" vs. "moderate" or "frequently" vs. "infrequently") are raised by a factor of 3.03 if the mother also claims to pray "frequently". Or one could say that there are 3.03 times as many adolescents in this cell as would be expected if parents had no effect on offspring. Values of 1.0 indicate that adolescents are distributed in these cells as under the null association model.

The constrained parameters of Table 4 show that the mother's effect is similar for sons and daughters, and that her effect is the same in both years. The only significant variation by the offspring's sex occurs if the mother prays frequently. Daughters are more likely than sons ($3.03/11.6=3.65$ times more likely) to adopt this frequent pattern of prayer. Regardless of the adolescent's sex or survey year though, mother's intermediate frequency of prayer has no significant effect on the offspring's prayer. Finally, offspring seem strongly attracted to the mother's infrequent pattern of prayer. The odds that an adolescent will claim to pray infrequently are raised by a factor of 34.5 if the mother also prays infrequently. In sum, the greatest

variability in the mother's effect results from the nature of her behavior (i.e. whether she prays frequently, infrequently, or with intermediate frequency).

Using the data in Table 2, I perform a similar analysis in order to characterize the association between father's and their offspring's prayer. Selected models fit to this data are shown in Table 5. Again there is a strong association which cannot be described adequately by saying: the offspring's prayer increases as his/her father's prayer increases (note the fit of models 2-1 through 2-4). Instead a model similar to the one fit to the data in Table 1 provides an adequate description of the association. Model 2-6 fits each diagonal cell in the four father's-by-offspring's-prayer sub-tables, plus cell f_{2121}^2 . Table 6 shows the legitimate constraints which were placed on the unconstrained effects estimated under model 2-6. These unconstrained estimates are again given in parentheses. Constrained estimates were computed from expected frequencies under model 2-11 (expected frequencies and a discussion of the procedure for calculating these parameters can be found in Appendix A).

The parameters of Table 6 indicate that daughters are again more likely to adopt the parent's (in this case, the father's) frequent praying behavior. The father's frequent prayer raises the odds on his offspring praying frequently by a factor 15.33 for daughters, and by a

2. In 1963, given that the father prays frequently his daughter is more likely to pray with moderate frequency than expected.

Table 5. Selected Models Fit to Data in Table 2

Model Number	Marginals Fit	Parameterization of the (MC) association within sex-by-year (SY) categories	L^2	d.f.
2-1	(OSY)(FSY)	Null association (fit to each (SY) sub-table)	179.78	16
2-2	(OSY)(FSY)	Row effects association (fit to each (SY) sub-table)	30.07	8
2-3	(OSY)(FSY)	Column effects model (fit to each (SY) sub-table)	31.42	8
2-4	(OSY)(FSY)	Uniform association (fit to each (SY) sub-table)	*	12
2-5	(OSY)(FSY)	Quasi-independence I: diagonal cells fit exactly ^a $f_{1111}, f_{1121}, f_{1112}, f_{1122}, f_{2211}, f_{2221}, f_{2212}, f_{2222},$ $f_{3311}, f_{3321}, f_{3312}, f_{3322}$	20.55	4
2-6	(OSY)(FSY)	Quasi-independence II: cells fit in 2-5, and f_{2121} ^a	5.90	3
2-7	(OSY)(FSY)	Quasi-independence III: ^a $f_{1111}, f_{1121}, f_{1112}, f_{1122}, f_{2221}, f_{3311}, f_{3321}, f_{3312}, f_{3322},$ f_{1212}	8.58	6
2-8	(OSY)(FSY)	Quasi-independence IV: ^a $(f_{1111} + f_{1112}), f_{1121}, f_{1122}, f_{2221}, f_{3311}, f_{3321}, f_{3312}, f_{3322},$ f_{1212}	10.18	7

Table 5.--Continued Selected models fit to data in Table 2

Model Number	Marginals Fit	Parameterization of the (MC) association within sex-by-year (SY) categories	L ²	d.f.
2-9	(OSY) (FSY)	Quasi-independence V: (f ₁₁₁₁ +f ₁₁₁₂)(f ₁₁₂₁ +f ₁₁₂₂)(f ₂₂₂₁)(f ₃₃₁₁)(f ₃₃₂₁)(f ₃₃₁₂)(f ₃₃₂₂) (f ₂₁₂₁)	13.36	8
2-10	(OSY) (FSY)	Quasi-independence VI: (f ₁₁₁₁ +f ₁₁₁₂)(f ₁₁₂₁ +f ₁₁₂₂ +f ₁₂₁₂)(f ₂₂₂₁)(f ₃₃₁₁)(f ₃₃₂₁)(f ₃₃₁₂) (f ₃₃₂₂)	14.05	9
2-11	(OSY) (FSY)	Quasi-independence VII: ^a (f ₁₁₁₁ +f ₁₁₁₂)(f ₁₁₂₁ +f ₁₁₂₂ +f ₁₂₁₂)(f ₃₃₁₁ +f ₃₃₁₂)(f ₃₃₂₁ +f ₃₃₂₂) (f ₃₃₁₁ +f ₃₃₂₁)(f ₂₂₂₁)	14.17	10
2-12	(OSY) (FSY)	Quasi-independence VIII: ^a (f ₁₁₁₁ +f ₁₁₁₂)(f ₁₁₂₁ +f ₁₁₂₂ +f ₁₂₁₂)(f ₃₃₁₁ +f ₃₃₁₂)(f ₃₃₂₁ +f ₃₃₂₂) (f ₂₂₂₁)	38.46	11
2-13	(OSY) (FSY)	Quasi-independence: ^a (f ₁₁₁₁ +f ₁₁₁₂ +f ₁₁₂₁ +f ₁₁₂₂ +f ₁₂₁₂)(f ₃₃₁₁ +f ₃₃₁₂)(f ₃₃₂₁ +f ₃₃₂₂) (f ₂₂₂₁)	20.12	11

* The L² value for model 2-4 cannot fall below the L² value for models 2-2 or 2-3.

^a The subscripts for f_{ijkm}; i = father's prayer, k = offspring's prayer, k = offspring's sex, m = year

Table 6. Parameterization of the Association Between Father's Prayer *
and Offspring's Prayer, by the Offspring's Sex and the Survey Year

Survey Year (Y):	Offspring's Sex (S):	Offspring's Prayer (O)	Father's Prayer (F)		
			Frequent	Moderate	Infrequent
1963	Son	Frequent	3.52(1.88)	1.	1.
		Moderate	1.	1. (1.58)	1.
		Infrequent	1.	1.	5.31(4.81)
	Daughter	Frequent	15.3 ^a	1.	1.
		Moderate	15.3 ^a	3.74(7.38)	1.
		Infrequent	1.	1.	.51 (.38)
1974	Son	Frequent	3.52(3.16)	1.	1.
		Moderate	1.	1. (2.27)	1.
		Infrequent	1.	1.	156.0(146.)
	Daughter	Frequent	15.3(19.5)	1.	1.
		Moderate	1.	1. (.41)	1.
		Infrequent	1.	1.	15.0 (25.8)

* All constrained parameters not equal to 1.0 are at least twice the magnitude of their standard error. Standard errors were computed using Haberman's (1980) computer program Freq.

^a The unconstrained estimates for these parameters are very large because of the observed 0 in cell f_{1321} (see Table 2).

factor of 3.52 for sons. Father's intermediate frequency of prayer affects only daughters in 1963 (raises her odds on intermediate prayerfulness by a factor of 3.74). As with mothers, the father's ability to pass on intermediate prayerfulness is not great. Thirdly, sons are more likely to adopt father's infrequent prayer than are daughters. However, the ability of fathers to pass on the infrequent pattern of prayer increased between 1963 and 1974, regardless of the child's sex (by a factor of 29.4).

Discussion

Since results have been numerous, let us begin with a brief summary. Afterward, I will discuss the substantive significance of each.

1. The marginal distributions of Tables 1 and 2 indicate that prayer declined for all groups. However, the decline in prayer was greater for mothers and daughters than for fathers and sons. This differential change by sex leaves no significant sex differential in prayer by 1974. Finally, the frequency of parent's and adolescent's prayer are very similar in both years.

2. The functional form of the association between parent's and adolescent's prayer suggests the operation of two conflicting forces: a tendency to adopt parental behavior, and a weaker tendency to reject the behavior of parents.

3. The strength of the association between parent's and offspring's prayer indicates that the prayerfulness of parent's strongly affects their children's prayerfulness. This is an expected, but pervasive finding that should not be lost in the more subtle detail.

Nevertheless, the magnitude of the models' parameters indicate variation in the effect of parents by sex of the parent, sex of the child, frequency of the parent's prayer, and survey year. More specifically:

- A. Daughters are more likely than sons to adopt their parent's (mother's or father's) frequent prayer.
- B. Sons are more likely than daughters to adopt their father's infrequent pattern of prayer.
- C. Neither fathers or mothers effectively transmit intermediate prayerfulness to their offspring.
- D. The father's ability to transmit the infrequent prayer pattern to his offspring increased between 1963 and 1974.
- E. With the exception noted above (D), no changes were found in the association of parent's and adolescent's prayer. There seems to be stability in the structure of religious socialization in the Catholic family.

Greeley et. al. (1976) have documented the decline in Catholics' religious behavior which occurred over the 1963 to 1974 period. For instance, the proportion confessing monthly fell by 54 percent, and the proportion attending church weekly declined by 30 percent. Greeley and Morgan (1980) show that the change in the frequency of prayer cannot be characterized as an across the board decline. For all Catholics aged 21 to 50 there occurred a symmetric, saw-toothed pattern of change toward less regular and less ritualized prayer. Prayer "several times a week" and "almost weekly" increased at the expense of categories "daily" and "weekly". Given the decline of the Catholic Church in this period (Greeley et. al., 1976), the pattern of change in prayer suggests that

many have rejected the institutional church (causing a decline in regular, ritualistic prayer, as well as, a decline in the frequency of confession and mass attendance), but they still believe in God (as is indicated by their frequent, although less regular prayer).

In contrast, the observed change in prayer for those with adolescent offspring (and for the offspring as well) shows a clear trend toward less frequent prayer. Analyses not reported here show that these different results are not caused by the way the prayer variable was collapsed in this analysis. Evidently, among those in this sample there occurred a genuine decline in devotionism. Moreover, the factors leading to the decline had their greatest effect on women. If Greeley et. al. (1976) are correct in attributing a major part of the Church's decline to Human Vitae, then perhaps this factor did affect parents, but especially women, with adolescent offspring most. Westoff and Jones (1977) show that the percentage of Catholic women who follow the "Church teaching on birth control" declines with marital duration. As a result those married long enough to have adolescent children are most likely to be non-conforming. Afterall, given normal birth intervals and family size, those with adolescent children have likely achieved their desired family size. Consequently, the birth control issue could have been especially decisive since birth control provided a means to prevent subsequent "unwanted" births. Westoff and Jones also show that recent marriage cohorts increasingly reject the Church's position on birth control. In sum, if the reaction to Human Vitae was greatest among those segments of the population most likely to be non-conforming, then one could have anticipated the most striking response from those with adolescent

children in the more recent marriage cohorts.

The non-linear functional form of the association between parent's and adolescent's prayer can be explained by the developmental perspective outlined earlier in the paper. Children enter adolescence with parents as the primary role models and with the inertia of childhood religious training behind them. Adolescence brings conflict with parents and questions about traditional religious beliefs. The net effect of these forces makes it most likely that the child will adopt the behavior of his/her parents. However, if adolescents do not adopt their parent's behavior there is no tendency to approximate that behavior because, I argue, of the countervailing trend toward rejecting parental behavior.

As most would have expected, parents strongly influence the religious behavior of their adolescent offspring. This influence is pervasive despite the privatized nature of prayer (private prayer is not directly observed or influenced by parents). The effect of parents did vary by the factors analyzed. This variation provides clues to the process of adolescent religious socialization.

No attempt was made to constrain the effect of father and mother to be the same, due to the dependence of the 1963 and 1974 mother and father samples. If one visually compares the coefficients for mothers (Table 4) and fathers (Table 6), they appear similar. There is no clear evidence to support the widely held view that mother's religious influence is greater than father's. Perhaps respondents are more likely to credit the mother's influence since religious socialization has traditionally been the purview of mothers. To not credit the mother's

religious influence may be normatively unacceptable. Or perhaps, the mother's influence was more obvious and the father's more subtle. Note that I have not measured the impact of mother and father net of spouse's influence. Such a test could shed further light on the relative effects of father and mother.

Sex of parent does enter into two interactions: father's infrequent prayer is more likely to be adopted by sons, and the effect of father's infrequent prayer increases, for both sons and daughters, between 1963 and 1974. These interactions will be discussed below.

This analysis uncovered clear variation in the parental effect by the adolescent's sex. There is some evidence that the same-sex parent is most important. Specifically, father's infrequent prayer is more likely to be transmitted to sons than to daughters. On the other hand, daughters are more likely than sons to adopt parents' frequent pattern of prayer (regardless of the parent's sex). One cannot, therefore, say that daughters emerge from adolescence more religious than sons simply because they identify more strongly with their mothers. After all daughters also seem more receptive to father's prayerful behavior. Perhaps this finding should have been expected, there are other socializing agents which subtly, or not so subtly, inform daughters that they should take religion seriously.

This analysis is unique in considering that the magnitude of the parental effect may vary with the nature of the parental behavior. Earlier I mentioned that traditional behavior (i.e. the more religious or prayerful behavior) might be more easily transmitted since this

behavior would receive a good deal of extra-familial support. On the other hand, adolescents may be especially drawn to the atypical behavior of parents (the infrequent prayer pattern). For mothers at least, there is evidence to support the notion that infrequent prayer, the atypical behavior, is most readily transmitted to offspring. Such a tendency is not so clearly seen for men, but neither is the religious stereotype of men as well defined as women's.

Variation in the parental effect (by the nature of the parental behavior) was also uncovered which does not seem to run along a "typical-atypical" dimension. I found that parents do not readily transmit intermediate prayerfulness to their offspring. In retrospect at least, this finding seems interpretable. Erikson (1968) characterizes adolescence as a quest for the answer to "who am I?". Given this search for meaning and belonging, adolescents are drawn toward unambiguous role models. Whether they accept or reject traditional religion, a parent who takes a firm position (prays frequently or infrequently) exercises the strongest influence on the adolescent. After all, firm positions provide the answer to "who am I?".

Finally, only one shift in the parent's effect was noted over the period of study. That was, the ability of fathers to transmit the infrequent prayer pattern to offspring increased. The declining importance of the institutional Catholic Church (Greeley et. al., 1976) and the growth of "new religions" (Wuthnow, 1978) most likely made the infrequent prayer pattern more normatively acceptable. Or perhaps, the lower level of religious traditionalism allowed fathers to be "more

visible" or "open" about their lack of traditional religious faith. The decline in sex typing noted elsewhere (Duncan and Duncan, 1978) did not alter the variation by sex of parent or sex of child. The disappearance of the sex differential in prayer (noted earlier) was not due to a change in the structure of the adolescent socialization process. Instead it resulted from the differential response to the 1968 birth control encyclical.

Conclusion

Overall, there was great stability in the structure of the socialization process between 1963 and 1974. Contrary to Greeley et. al.'s (1976:39) assertion that Catholic parents were losing their ability to transmit religious values to offspring, these results show that parents have the same ability to transmit a given behavior to youngsters. Instead what has occurred is a sharp decline in the prayer (devotionalism or degree of religious faith) of parents. The faith of parents was evidently shaken by the Papal Encyclical of 1968 which reaffirmed the Church's teaching on birth control (Greeley et. al., 1976). A virtually identical decline in the prayer of adolescents is evidence of an "echo" in the generation following Human Vitae.

For those concerned about the future of the Catholic Church, these findings are both troubling and reassuring. They are troubling because they suggest that the decline of the Catholic Church observed in this period, although the result of a period specific factor (the birth control encyclical), is being transmitted to the younger generation. The

reassuring part is that the family, long the crucial agent of socialization, has not lost its influence on adolescents. If the Pope's current crusade to "bring the young back to the Church" is an attempt to influence adolescents, then an effective strategy might be to "bring the parents back to the Church". Such a strategy might include a shift in the Church's conservative position (or its widely perceived position) on women's issues, in general, and on birth control specifically.

APPENDIX A

PROCEDURE FOR CALCULATING PARAMETERS IN PART II

Given a 3 x 3 cross-classification like Table A.1., parameter estimates for A, B, and C can be obtained. Once estimated, such a table could be used as a "start table" for the procedure of iterative proportional fitting (see Duncan and McRae (1978) for a discussion of start tables). If row and column marginals are fit to such a table, then the expected frequencies for a given model will be produced. This procedure justifies using the "start table" as a description of the association between variables since the odds ratios (the measure of association used here) computed from the start table and from the expected frequencies are equal. This procedure also has heuristic value since it shows that the estimated parameters measure the association between variables independent of marginal shifts or changes in sample size.

Goodman (1969) shows that the association in a 3 x 3 table can be completely described by four odds ratios computed from a "basic set of subtables". These subtables are formed from four cells taken from adjacent rows and columns: F_{ij} , $F_{i+1,j}$, $F_{i,j+1}$, and $F_{i+1,j+1}$ are four such expected frequencies. The expected odds ratios are computed as follows: $\theta_{ij} = F_{ij} \cdot F_{i+1,j+1} / F_{i+1,j} \cdot F_{i,j+1}$.

The model I wish to parameterize has three independent parameters, one in each diagonal cell. The basic set of odds ratios (i.e. odds ratios computed from the basic set of subtables) computed from expected

Table A.1. Preferred Parameterization of the Association Between Parent's and Offspring's Prayer

Offspring's Prayer :	Parent's Prayer		
	Frequent	Moderate	Infrequent
Frequent	A	1	1
Moderate	1	B	1
Infrequent	1	1	C

Table A.2. Alternative Parameterization of the Association Between Parent's and Offspring's Prayer

Offspring's Prayer	Parent's Prayer		
	Frequent	Moderate	Infrequent
Frequent	A	1	B
Moderate	1	1	1
Infrequent	B	1	C

frequencies under a model of this form equal the set computed from the start table associated with it. So:

$$\theta_{11} = (F_{11} \cdot F_{22}) / (F_{12} \cdot F_{21}) = (A \cdot B) / (1 \cdot 1) = A \cdot B$$

$$\theta_{12} = (F_{12} \cdot F_{23}) / (F_{13} \cdot F_{22}) = (1 \cdot 1) / (1 \cdot B) = 1/B$$

$$\theta_{21} = (F_{21} \cdot F_{23}) / (F_{22} \cdot F_{31}) = (1 \cdot 1) / (1 \cdot B) = 1/B$$

$$\theta_{22} = (F_{22} \cdot F_{33}) / (F_{23} \cdot F_{31}) = (B \cdot C) / (1 \cdot 1) = B \cdot C .$$

By plugging in expected frequencies one can first obtain estimates of B, and then solve for A and C.

Note that the parameterization shown in Table A.1. is not the only one that can produce the above pattern of odds ratios (different parameterizations would produce different estimates of A, B, and C). Table A.2. provides an interesting alternative. Such a model could indicate the same general process as the model discussed in the text. That is, A would represent the tendency to adopt parent's daily prayer; B the tendency to reject it. Likewise C would represent the tendency to adopt parent's infrequent prayer; B the tendency to reject it. Note that this model constrains the tendency to reject parental behavior to be the same for frequent or infrequent prayer. This model also does not allow for an effect of parent's intermediate prayerfulness.

One cannot choose between the models in Tables A.1. and A.2. on the basis of fit and parsimony -- they both produce the same expected frequencies and have the same degrees of freedom. In this analysis, I chose to focus on the model shown in Table A.1. because, on a priori reasoning, it seemed unwise to assume that parent's intermediate prayerfulness would have no effect on offspring. Empirical results reported

Table A.3. Expected Frequencies Under Model 1-7

Survey Year (Y)	Offspring's Sex (S)	Offspring's* Prayer (O)	Mother's Prayer (M)*		
			Frequent	Moderate	Infrequent
1963	Son	Frequent	40.04	16.97	6.17
		Moderate	7.26	9.32	3.42
		Infrequent	.70	.89	11.41
	Daughter	Frequent	44.07	11.29	1.64
		Moderate	4.30	12.83	1.87
		Infrequent	.63	1.88	9.49
1974	Son	Frequent	13.96	13.40	2.65
		Moderate	7.09	20.80	4.11
		Infrequent	.95	2.80	19.25
	Daughter	Frequent	21.93	10.18	.89
		Moderate	4.80	25.94	2.26
		Infrequent	1.27	6.88	20.85

* Frequent = at least daily

Moderate = several times a week or weekly

Infrequent = less than once a week

Table A.4. Expected Frequencies Under Model 2-11

Survey Year (Y)	Offspring's Sex (S)	Offspring's Prayer (O)	Father's Prayer (F)*		
			Frequent	Moderate	Infrequent
1963	Son	Frequent	21.76	12.04	5.21
		Moderate	8.95	17.48	7.57
		Infrequent	2.29	4.48	10.23
	Daughter	Frequent	21.82	9.03	6.15
		Moderate	10.92	17.00	3.08
		Infrequent	1.26	7.97	2.78
1974	Son	Frequent	20.24	8.88	.87
		Moderate	8.88	13.67	1.35
		Infrequent	.87	1.35	20.78
	Daughter	Frequent	25.26	6.31	1.43
		Moderate	6.14	23.52	5.34
		Infrequent	1.61	6.17	21.23

* Frequent = at least daily

Moderate = several times a week or weekly

Infrequent = less than weekly

here suggest that such an assumption may indeed be realistic. Consequently, models of the type shown in Table A.2. become more appealing for future work.

Part III

PRAYER AND HAPPINESS

A pressing problem in post-industrial society is the maintenance of morale or personal happiness. Though modern sociologists give it little attention, morale was one of the unifying concerns of early sociologists. The structural transformation that produced and accompanied industrialization (i.e. modernization) cut workers away from control of their labors, disrupted community and familial social supports, and replaced traditional values with material concerns. These themes run through the work of Marx, Durkheim, Tonnies, and Weber (see, for instance, Marx, 1964; Durkheim, 1964; Tonnies, 1957; Weber, 1946). In a more recent work, Mills (1953), like Marx, argued that modernization produced widespread alienation.

Others have taken a more benign view of the effects of modernization. Hawley (1972), in a defense of the city and urbanization, cites as advantages accompanying urbanization and industrialization: a wider range of opportunities, the freedom to associate with those of one's own choosing, and exposure to education, cosmopolitanism, and innovative ideas. Similarly, Goode (1963) argues that modernization brings about egalitarian changes in family systems, including greater freedom for women, and for those of both sexes in terms of mate selection and divorce. Goode admits that modernization cannot be shown to yield greater "happiness" or "adjustment". But he views modernization and the emergence of

the conjugal family with favor since they offer greater individual freedom. He states:

I welcome the great changes now taking place, and not because it might be a more efficient instrument for industrialization. ... Rather I see in it (i.e. the conjugal family) and in the industrial system that accompanies it the hope of greater freedom: from the domination of elders, from caste and racial restrictions, from class rigidities. Freedom is for something as well: the unleashing of personal potentials, the right to love, to equality within the family, to the establishment of a new marriage when the old has failed.

(Modernization offers) people at least the potentialities of greater fulfillment, even if most do not seek it or achieve it.

Overall, whether they view the changes as positive or negative, all those mentioned above would likely agree that modernization has shifted responsibility for material sustenance from the individual to societal institutions. Meanwhile individual freedom has increasingly placed the responsibility for psychic well-being on the individual. These changes are reflected in the popularly acknowledged, American preoccupation with "being happy" and the lack of everyday concern over acquiring basic necessities.

In a modest revival of the concern over individual happiness or psychological well-being, this paper examines the association between private devotion (i.e. prayer) and personal happiness. Although religious institutions have not withered away, and although church attendance and church membership may contribute to happiness, I argue below that modernization has increased the relative importance of the devotion-alism dimension of religiosity. As Durkhiem (1915) envisioned, modernization has lead to greater religious individualism and privatized

religious behavior outside religious institutional structures. "The religious force which animates the clan particularizes itself by incarnating itself in particularly consciousnesses" (Durkheim, 1915:472). The structure of more privatized religion is capable of performing important functions in modern society: 1) it provides a world view with which to address ultimate questions, and a set of values to guide one in everyday life, 2) it acts as a resource in times of crisis, and 3) private devotion or communication with "God" can provide a rewarding and uplifting experience in and of itself. Each of these functions can contribute to greater happiness or to a greater sense of well-being.

Modernization, Individualism, and Privatized Religious Behavior

Modernization strongly influences the religious social institution. These effects are commonly characterized as a process of secularization whereby science replaces religion as an interpretative scheme or world view for most individuals. This view has been strongly rejected by some (see Greeley, 1972a; 1972b).

Instead of characterizing the changes in the religious institution as one of lessening importance (i.e. secularization), I argue that modernization has fostered changes in both the structure and function of American religion. The change in structure has been away from institutionalization and toward more privatized forms (Berger, 1969). The change in function has been one of social differentiation, whereby the functions of religion are narrowed, or whereby the social institution becomes more specialized (Parsons, 1960).

In acknowledging that religiosity has many dimensions, we leave

open the possibility that the relative importance of its dimensions can shift over time. I argue that institutional ties have become weaker and that individuals are more free to fashion their own set of beliefs. Consequently, a religious dimension such as "doctrinal orthodoxy" is less salient today than is "devotionalism" (see Lenski, 1963; for a characterization of these dimensions). As Durkheim predicted modernization has led to privatized religious forms (the individual cult) outside institutional structures. "As individuals have differentiated themselves more and more and the value of the individual has increased, the corresponding (individual) cult has taken a relatively greater place in the totality of religious life" (Durkheim, 1915:472). Or as Berger (1969:138) phrases it, "the religious tradition, which previously could be authoritatively imposed, now has to be marketed" (emphasis in original). "The consumer status of the individual vis-a-vis competing legitimating systems in modern society provides, if nothing else, at least the illusion of freedom" (Berger and Luckman, 1963:424). In terms of religious behavior, Greeley (1980:86) has noted that private devotion may have been infrequent in primitive societies. But in "complex industrial society, particularly in the West where individualism is strongly emphasized, private devotion may be anterior to public devotion". The movement within Protestantism toward private interpretation of scripture (from Luther to Calvin to Wesley) typifies the change being described.

This shift in the structure of religion toward more privatized forms results from the effects of factors which accompany industrialization. Residential mobility, frequent in post-industrial society,

breaks existing ties to a given church and lowers the probability that strong new ones will be formed at the point of destination (Wuthnow and Christiano, 1979). Social mobility may have similar effects by reducing the number of shared interests or experiences of group members and, as a result, lessens the cohesion of the group.

More generally, economic development brings into contact populations which hold diverse religious beliefs. The availability of alternative religions (given a degree of religious tolerance and freedom) means that the "religious ex-monopolies can no longer take for granted the allegiance of their client populations" (Berger, 1969:138). Instead they must compete for adherents. Especially in the American case, the religious body has become a "fully voluntary association" (Parsons, 1960:138). In addition, greater affluence allows individuals the time, and increasing educational attainment the intellectual tools and tolerant environment, to question or challenge doctrinal positions. The emphasis on individualism in Western society provides further normative support for such endeavors. Reminiscent of Durkheim's (1951) distinction between the Catholic (who accepts his faith ready made) and the Protestant (who is far more the author of his faith), the modern individual is much more free to forge her/his own religious position. Greater religious freedom loosens ties to the institutional church and may even create rifts between the church and the individual on grounds of doctrinal position. Of course, those who leave the church "in protest" against doctrinal positions are still religious in the sense that they believe in "God" and hold a religious "world view".

There is no doubt, for instance, that the Catholic Church alienated many Americans with the Papal Encyclical of 1968 which reaffirmed the traditional teaching of the Church on birth control (Greeley et. al., 1976). It is doubtful that these alienated Catholics became athiests. Instead they are religious, by most meanings of the term, but are less tied to the institutional Church than before.

Accompanying the change in structure toward more individualized beliefs and privatized behaviors, there have been changes in the functions of religion, which occurred as part of the process of social differentiation (Parsons, 1960:304). Social welfare and service, once the domain of institutional religion, kin networks, and the community, are now performed by government agencies. Furthermore, a myriad of social organizations and groups compete with the church to provide social interaction and entertainment. Although this differentiation seems endemic to the process of modernization, Parsons (1960:Ch. 10) points out that social differentiation has proceeded to an advanced stage in the United States. He argues that this is partially the result of America's unique historical and religious development. Specifically, the seperation of church and state, codified in the U. S. Constitution and realized largely due to ethnic and religious pluralism, led to the establishment of public education seperate from any religious body and allowed no religious group access to the government as an agent to enforce church dogma. Instead, it guaranteed individuals religious freedom.

In a sense these changes lessen the importance, power, and control of the church. But as Parsons argues, differentiation of function allows for specialization and, consequently, greater efficiency and effectiveness. Berger(1969:147) claims that "religious institutions have accommodated themselves to the moral and therapeutic needs of the individual in his private life". He maintains that "it is in these areas that religion continues to be relevant even in highly secularized strata" (emphasis in original). In short, the structure of more privatized religion seems most appropriate for contributing to an individual's emotional or psychic well-being. Religious beliefs, stories, symbols, and rituals can provide an integrative, interpretative scheme (i.e. a world view) for answering "ultimate questions" as well as dealing with the problems and joys of everyday life. Take, for instance, the following refrain from Wayfaring Stranger, a traditional Appalachian ballad:

I am a poor, wayfaring stranger
 Traveling through this world of woe.
 Yet there's no sickness, tor or danger
 In that bright world to which I go.

In this study, I use the respondent's frequency of prayer to indicate the strength or intensity of his/her private religious beliefs.

Secondly, private devotion may be more than an indicator of the intensity of personal belief. Contact and communication with "God", through prayer, may be a rewarding and pleasurable experience in and of itself. As Durkheim (1915:463) argues rites and rituals have intrinsic value. "The believer who has communicated with his god is not merely a man who sees new truths of which the unbeliever is ignorant; he is a

man who is stronger. He feels within him the force, either to endure the trials of existence, or to conquer them." Although Durkheim probably thought of such contact as resulting from public ritual performed with others, Greeley (1980) argues that the "effervesence" of public ritual can be created by a wide range of personal experiences or behaviors. McCready and Greeley (1976) show that prayer is a frequent "trigger" for such "ecstatic" experiences.

Finally, theorists often treat religion and religious belief as a mode of adaption to stressful life events (Malinowski, 1948:1-67; for discussion of the modern context see Greeley, 1972a:63-69). In other words, religious belief acts as a resource to be used in times of crisis. Stouffer et. al. (1949) report that the World War II American soldiers who were in the most danger prayed more than those in apparently less dangerous positions. Similarly, Lindenthal et. al. (1970) show that prayer does increase in crisis periods such as: serious injury to oneself or to loved ones, pregnancy, childbirth, major changes in relationships with friends, etc. Frequently those who resort to prayer in crises say that prayer helped them (Stouffer, et. al., 1949; McCann, 1962).

Given the functions mentioned above, one's privatized religious beliefs should increase happiness or the level of psychological well-being. Note that I do not deal with the question of "real happiness" which Marx (1963:44) raises. Marx's assertion that religion acts as an "opiate of the masses" producing only "illusory happiness", does not lend itself to empirical investigation but, rather, to philosophical

debate. In this analysis I define happiness as: 1) the excess of positive feelings or experiences (positive affect) over negative ones (negative affect) in the recent past, or 2) an individual's subjective assessment of her/his happiness.

Data Variables and Methods

National Opinion Research Center (NORC) interviewers collected the data analyzed here in 1974. The 1467 respondents comprise a representative sample of the non-institutionalized, adult population of the United States.

The interview schedule focused on the respondent's religious attitudes and behaviors. The data set was used earlier by McCready and Greeley (1976) and the complete interview schedule is reproduced in Appendix A of their book. The response items used in this analysis are reproduced below.

- Q1. We are interested in the way people are feeling these days. During the past few weeks, did you ever feel:
- A. Particularly excited or interested in something ?
 - B. Did you ever feel so restless that you couldn't sit still long ?
 - C. Proud because someone had complimented you on something you had done ?
 - D. Very lonely or remote from other people ?
 - E. Pleased about having accomplished something ?
 - F. Bored ?
 - G. On top of the world ?
 - H. Depressed or very unhappy ?
 - I. That things were going your way ?
 - J. Upset because someone criticized you ?
- Q2. Taken altogether, how would you say things are these days, would you say that you are very happy, pretty happy, or not too happy ?

Q37. About how often do you pray ?

- Several times a day ...1
- Once a day ...2
- Several times a week ...3
- Once a week ...4
- Less than once a week ...5

Operationalization, always a crucial step in research, poses a difficult task when one attempts to assess individual happiness. I have closely followed Bradburn (1969) in this regard. Two approaches are used. One, individuals are asked if they have recently had certain pleasurable or rewarding experiences, and a corresponding set of questions about unpleasurable experiences or feelings. The assumption of this approach is that happiness is an excess of pleasurable over unpleasurable experiences or feelings (i.e. greater positive than negative affect). Secondly a more subjective measure is used. Respondents are simply asked how happy they have been lately.

Specifically, Bradburn (1969: Ch. 4 and Table 4-1) argues that questions 1A through 1J above can be used to construct a measure of psychological well-being or happiness. He states:

A person's position on the dimension of psychological well-being is seen as a resultant of the individual's position on two independent dimension-- one of positive affect and the other of negative affect. The model specifies that an individual will be high in psychological well-being in the degree to which he has an excess of positive over negative affect and will be low in well-being in the degree to which negative affect predominates over positive (1969:9).

Bradburn identifies items A, C, E, G, and I, as measures of positive affect and the remaining items (B, D, F, H, and J) as indicators of negative affect.

The positive and negative affect dimensions are apparently independent (Bradburn, 1969: Table 4-3). That is, knowing one's position on the positive affect scale tells us nothing about where that person might lie on the negative dimension. In addition to being statistically independent, Bradburn maintains that the positive and negative dimensions are conceptually distinct. The positive dimension correlates highly with measures of social participation while negative affect is weakly correlated with such variables (Bradburn, 1969:110-13, also see Phillips, 1967). Instead the negative dimension varies positively with many traditional measures of mental illness (Bradburn, 1969:123-46). The primary advantage of this scale is that "it gives a richer conceptual framework for investigating the correlates of psychological well-being" since some factors affect well-being or happiness by acting only on the positive or only on the negative affect dimension (Bradburn, 1969:69).

Following Bradburn, I compute an individual's scores on the positive and negative dimensions by simply adding the number of "yes" answers they give to the relevant questions. The overall score on this happiness variable is computed by subtracting one's score on the negative affect variable from the score on the positive one. Computing variables in this manner involves the strong assumption that the independent variable, prayer, is similarly related, in both magnitude and direction, to the "happy" answer to all ten items. Since this assumption is likely not met, I analyze each item separately to determine what of substance is lost by combining the items as Bradburn suggests.

Question 2 provides another measure of the respondent's happiness. In this case, the respondent is asked to make a subjective self-report of her/his happiness. Bradburn (1969:35-52) finds this self-report item to be highly correlated with a person's score on the ten item variable described above. Furthermore, he maintains that both are imperfect measures of a similar underlying dimension. Some will wonder why both measures are used since they purportedly measure the same dimension. In addition to allowing the separate measurement of positive and negative affect, the use of the ten item variable will quiet those concerned with the validity of happiness self-reports. Also, the Bradburn variable has been used in much previous research on happiness (see Bradburn and Caplovitz, 1965; Bradburn, 1969; Phillips, 1967; McCreedy and Greeley, 1976). Use of this measure, hopefully, will contribute to the continuity of research in this area. Inclusion of the happiness self-reports will mollify those skeptical of the substantive meaning of scores on the Bradburn happiness variable.

Question 37 provides a measure of the respondent's frequency of prayer. Although "never" was not a suggested category, some respondents offered it. This response was coded into a sixth response category. The factors used in this analysis are sex, age, and religious preference (i.e. Protestant or Catholic). This information was obtained in a straightforward fashion, and the exact question wording is not reproduced here.

Since the variables used in this analysis are ordinal, I use a class of log-linear models which allow me to exploit this property in

constructing structural models. These models are termed structural since the models' parameters are not affected by changes in sample size or marginal shifts and since these parameters are constants which, I claim, govern the process that gave rise to the data.

The primary advantage of my analytical strategy (over others commonly used in the social sciences) is that the discovery of an association between variables is not conditional upon a priori assumptions about the functional form of the relationship. These techniques can discern any departure from statistical independence whether the form of that relationship be linear, monotonic, or non-monotonic. In this study I find that relationships can often be described as linear (or more accurately log-linear) but such constraints are imposed only if they are acceptable.

The class of models I employ are discussed by Goodman (1979) and were fit using procedures similar to those described by Duncan and McCrae (1978)¹. The data analysis involves an attempt to separate random from systematic variation in the analyzed tables. I claim that the model identified as the preferred model captures the systematic variation in the table while ignoring the random component. In selecting such a preferred model, I used several criteria: goodness of fit, parsimony, and substantive plausibility. I assess the fit of a given model by comparing the observed cell frequencies (f) with those expected under this model (F) by computing the likelihood ratio chi-square statistic, $L^2 = 2 \sum f \log(f/F)$. The degrees of freedom associated

1. A new technology, Haberman's (1979:571-96) computer program Freq, will fit these models much more expeditiously.

with a model and the ease of explicating a model indicate its degree of parsimony. And since the number of models which will fit a given set of data is always quite large, the search for, and the selection of, a preferred model are ultimately based on substantive considerations.

The structure of the models will be described in terms of odds ratios, the measure of association used throughout this paper. Given four cells in adjacent rows and columns of some ordered cross-classification, the odds ratio can be computed according to the formula,

$$\theta_{ij} = (f_{ij} \cdot f_{i+1,j+1} / f_{i,j+1} \cdot f_{i+1,j}),$$

where i refers to an arbitrary row i , and j an arbitrary column.

The odds ratio, as a measure of association, has a number of desirable properties (Fienberg, 1978:17). Among them is a straightforward interpretation. The odds ratio measures the change in the odds, $f_{ij} / f_{i+1,j}$, which results from a shift from column j to column $j+1$.

Goodman (1969) shows that the total association in a given table can be completely captured by odds ratios computed from a "basic set of subtables". Models I employ place meaningful constraints on the values the odds ratios take, thereby allowing for adequate but simple descriptions of the relationships among variables. For instance, the model of uniform association constrains the basic set of odds ratios to be equal. Such a strong constraint treats both row and column variable as a linear scale and constrains the association to be spread uniformly throughout the table. The estimated value for these odds ratios, the uniform association parameter, is in some ways similar to a regression coefficient. A value of 1.1 for instance, would indicate that the odds,

$F_{i+1,j}/F_{i,j}$, increase by a factor of 1.1 as one moves across each column (from left to right).

The Association Between Frequency of Prayer and Happiness

Empirical evidence indicates that religious behavior increases an individual's sense of well-being or happiness. Both Gurin et. al. (1960) and McCann (1962), for instance, found that church attendance was related to various indicators of happiness and adjustment. More recently, a 1971 national survey showed a similar positive association between church attendance and indexes of well-being and life satisfaction (Hadaway, 1978).

Here I examine the association between another measure of religious behavior, the frequency of prayer (prayer), and measures of happiness previously described. Although they are related empirically,² attendance and prayer indicate different kinds of religious participation and, possibly, different motives for participating. Since church attendance is a public behavior and one that is expected of good church members, some, no doubt, attend church regularly while holding no firm religious beliefs. These persons, whose needs are "primarily social or external, may partake in the institutional aspects of religious life, largely ignoring or secondarily appreciating the internal (i.e. private) aspects of religious belief (Lindenthal et. al., 1970). Others

2. An accurate description of the association between prayer and attendance defies simple description. Generally speaking though, prayer and church attendance are positively related. See Greeley and Morgan (1980) for a more explicit characterization of this relation.

may embrace religious belief as a source of meaning and belonging in everyday life (Greeley, 1972a) while not participating in religious activities within the confines of the institutional church. Lenski (1963) seemed to recognize this distinction. He argued that church attendance measures an "associational commitment to a religious group" whereas frequent prayer indicated a "devotional religious orientation".

If religious belief affects happiness by providing individuals with a sense of meaning and belonging, then we should expect a positive association between the frequency of prayer and happiness. More frequent prayer would indicate greater religiosity and acceptance of a traditional world view and value system. Frequent church attendance or an "associational commitment to a religious group" might also contribute to greater happiness. Such social participation, whether religious or not, has been shown to be a correlate of positive affect and, consequently, greater happiness (Phillips, 1967).

Religious behavior may also contribute to happiness in and of itself (Durkheim, 1915). Religious experiences can be rewarding whether such contacts with the Sacred occur in private prayer or public ritual. This effect, like the one mentioned above, should act to produce a positive association between prayer and happiness.

Religious belief can also act as a resource in times of crisis (Malinowski, 1948). If this were the only function of religion, then one would expect a negative association between prayerfulness and happiness. That is, religious individuals would use prayer as a method of coping with life crises (McCann, 1962). As problems arose so would prayer as a means of coping with them. This increase in prayer

would not be accompanied by increases in other kinds of religious behavior, such as church attendance (Lindenthal et. al., 1970).

Of course the observed association between prayer and happiness might reflect a combination of the effects described above. In such an instance, the first two effects described may be cancelled by the tendency toward increased prayer among those suffering through crises. Such a finding would also support the secularization hypotheses that prayer has no significant effect on happiness in modern society. However, the combined effects of prayer may not cancel one another completely. To explain, if prayer affects happiness by suggesting a greater sense of meaning and belonging, or due to the positive experience resulting from communication with "God", then this effect should operate over the entire range of the happiness dimension. Increased prayer as a coping device, however, would be evident only among those struggling through life crises -- those unhappy. Consequently, among those relatively happy a positive relationship may appear, while among those relatively unhappy the combined effects of religious belief may cancel one another or the relationship may actually become negative.

Table 1 shows the cross-classification of frequency of prayer by the Bradburn happiness variable. Table 2 shows selected models that were fit to these data. The following discussion focuses on two questions: Is prayer significantly related to happiness? And, what is the functional form of this association?

Table 1. Cross-classification of Prayer by the Bradburn Variable^z

Bradburn happiness variable (H):	Prayer (P)					
	Never	Less 1 wk.	Once a wk.	Sev. tms.wk.	Once a day	Sev. tms.day
-4	1	4	0	2	5	5
(unhappy) -3	0	14	1	4	11	9
-2	3	16	3	8	10	19
-1	1	33	6	12	29	21
0	8	44	13	26	52	33
1	12	54	29	47	63	64
2	12	66	17	35	72	81
3	10	47	13	28	65	66
(happy) 4	6	20	10	17	51	50
5	2	3	6	4	22	25
Bradburn happiness variable (H):	Expected frequencies under model 5a					
-4 to 0	20.08	101.9	30.63	52.47	99.39	88.45
1	11.77	62.89	19.89	35.89	71.54	67.01
2	10.53	59.22	19.72	37.45	78.61	77.47
3	7.20	42.63	14.94	29.85	65.93	68.46
4	4.06	25.34	9.34	19.64	45.68	49.94
5	1.36	8.94	3.48	7.70	18.85	21.67

^z Variables are described in text.

Table 2. Selected Models Fit to the Data in Table 1*

Model Number	Parameterization of the (PH) association	θ_{1j}	θ_{2j}	θ_{3j}	θ_{4j}	θ_{5j}	θ_{6j}	θ_{7j}	θ_{8j}	θ_{9j}	L^2	d.f.
1-1	Null association	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	76.48	45
1-2	Row effects assoc.	.91	1.03	.96	1.00	1.04	1.04	1.03	1.12	1.17	48.30	36
a	the following models were fit to the collapsed 6 x 6 table											
1-3a	Null association	1.0	1.0	1.0	1.0	1.0						
1-4a	Row effects assoc.	1.03	1.04	1.04	1.12	1.18						
1-5a	Uniform association	1.05	1.05	1.05	1.05	1.05						

* The one-way marginals (P) (H) were fit in all models above.

Due to its inadequate fit ($L^2=76.48$; 45 d.f.), the null association model, model 1.1, is rejected, and I conclude that prayer is indeed related to the happiness variable. The model chosen to characterize this association, the preferred model, is model 1.5a. This model posits a positive association between prayer and happiness in the non-negative range of the happiness values. More specifically, I conclude that there was no significant relationship in rows -4 to 0 of Table 1. This conclusion is based on the acceptable L^2 value for the null association model fit to these first five rows ($L^2=19.26$; 16 d.f.), the failure of the row effects association model to improve on the fit of the null association model as a description of these rows, and the uninterpretable variation in the values of θ_{1j} to θ_{4j} estimated in model 1.2. Consequently, I collapse Table 1 into a smaller table with 6 rows (-4 to 0, 1, 2, 3, 4, 5) allowing for five contrasts of adjacent rows. The estimated odds ratio which represents the association between two rows (the row effect) suggests that the association becomes stronger as we move toward higher values on the happiness variable. The values of θ_{1j} to θ_{5j} in model 1-4a increase from 1.03 to 1.18. However the preferred model legitimately constrains the row effects (or the entire set of basic odds ratios) to equal 1.05. The adequate fit of this uniform association model ($L^2=33.02$; 24 d.f.) allows one to treat both row and column variables as linear scales and constrains the relationship to be distributed uniformly throughout the collapsed table. These constraints allow for this description of the association: the odds on being happier (computed from adjacent

categories of the happiness variable, $F_{i+1,j}/F_{i,j}$) increase by a factor of 1.05 (i.e. 5 percent) as we move up each step on the frequency of prayer scale.

Let us now move to an analysis of the data in Table 3. This table shows the cross-classification of prayer by self-reported happiness (i.e. responses to Q2.). Here the questions are the same as above, and we will want to compare the results obtained using this self-report measure with those above using the Bradburn happiness variable. Again I reject the null association model (model 3.1) due to its inadequate fit to the data (as judged by the L^2 statistic and d.f. displayed in Table 3). The preferred model for this table is the row effects association model, model 2.2. The estimated values of θ_{1j} and θ_{2j} equal .90 and 1.23, respectively. These values indicate that the odds on being "pretty happy" vs. "not too happy" decrease by a factor of .90 as one moves up the prayer scale. In contrast, the odds on "very happy" vs. "pretty happy" increase by a factor of 1.23 as one moves toward the more frequent prayer responses.

Figure 1 shows that the results of these two analyses are quite compatible. In short, prayer apparently leads to greater happiness among those relatively happy (regardless of measure used). Among those unhappy, there is no significant effect of prayer on happiness when using the Bradburn variable and a weak negative association when the self-report measure is used.

Table 3. Cross-classification of Prayer by Self-Reported Happiness ^z

Self-Reported Happiness (H):	Prayer (P)					
	Never	Less 1 wk.	Once a wk.	Sev. tms.wk.	Once a day	Sev.tms. day
Not too happy	6	45	7	20	58	57
Pretty happy	36	213	66	123	219	203
Very happy	13	48	30	49	115	131
Expected frequencies under model 2						
Not too happy	6.45	37.80	13.32	25.80	54.29	55.35
Pretty happy	39.59	209.77	66.78	116.87	222.24	204.72
Very happy	8.96	58.43	22.90	49.33	115.47	130.93

Selected models: *

Model Number	Parameterization of the (PH) association	θ_{1j}	θ_{2j}	L^2	d. f.
3-1.	Null association	1.0	1.0	42.32	10
3-2.	Row effects assoc.	.90	1.23	13.03	8
3-3.	Row effects assoc. I	1.0	1.21	17.30	9

^z Variables are described in the text.

* The one-way marginals (P) (H) were fit in all models above.

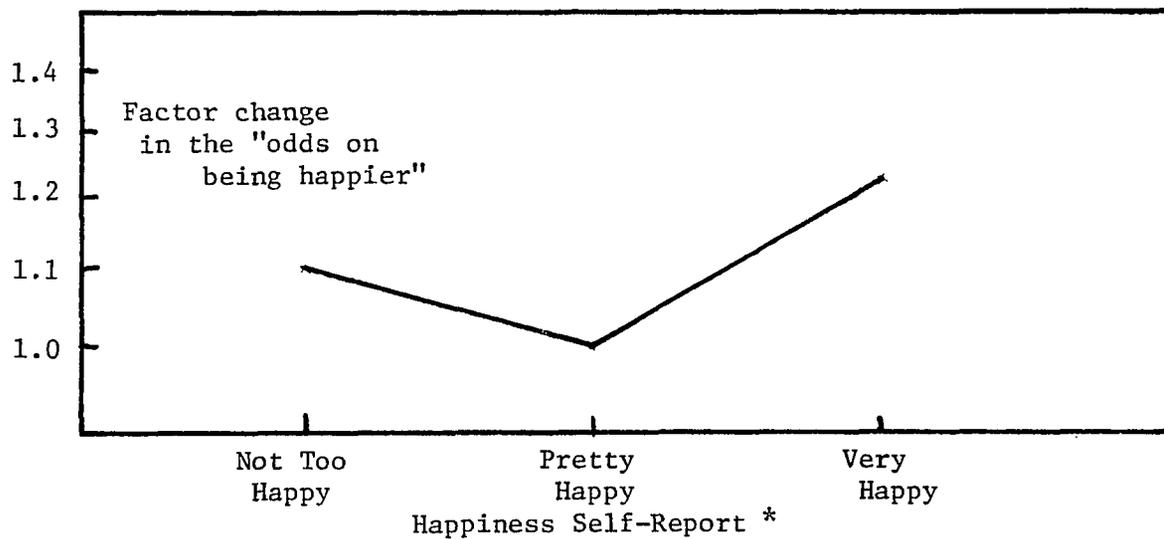
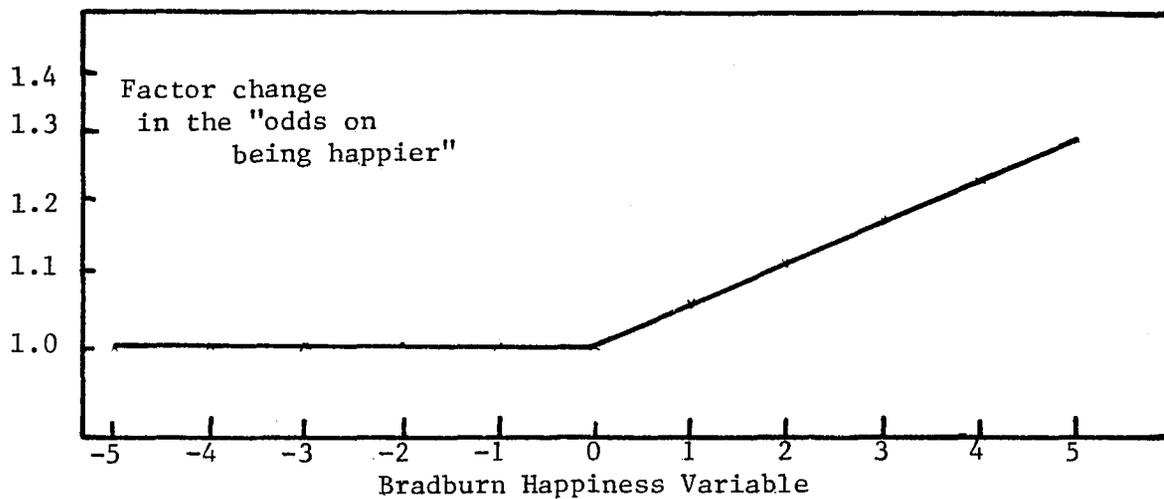


Figure 1. Change in Happiness Resulting from Increases in the Respondent's Frequency of Prayer

* Treating the happiness self-report categories as equally spaced is substantively based and is not implied by the preferred model for these data. Similarly, the implied range of the happiness self-report vis-a-vis the Bradburn Variable is arbitrarily chosen.

Now I decompose the relationship between prayer and the Bradburn variable into relationships between prayer and positive affect and between prayer and negative affect. After all, a given happiness score can be produced by various combinations of scores on the two separate affect dimensions. The question addressed is: does prayer affect happiness by increasing positive affect or by decreasing negative affect ?

Table 4 shows the cross-classification of prayer by the positive affect dimension of the Bradburn variable. The unsatisfactory fit of the null association model allows me to conclude that prayer is significantly related to positive affect. The preferred model, model 4.5a, is again the model of uniform association. However, as in the analysis of Table 1, I have fit this model to a collapsed table instead of the full 6 x 6 one. I collapsed rows 0 to 3 using the same three criteria as in Table 1 (i.e. the null association model fits rows 0 to 3 well, the row effects model does not provide a significant improvement in fit over the null association model, and the variation in θ_{1j} , θ_{2j} , and θ_{3j} in model 4.2 is not substantively interpretable). Again prayer is related to happiness only for those relatively happy. The odds on being happier (computed from adjacent categories of the collapsed positive affect variable) increase by a factor of 1.06 as prayer increases.

In Table 5 the positive affect variable is replaced by negative affect and the analysis proceeds similarly. Again prayer is related to happiness only among those relatively happy (i.e. those scoring low on the negative affect variable). Using the same criteria as in

Table 4. Cross-classification of Prayer by the Positive Affect Dimension of Bradburn's Happiness Variable^z

		Prayer (P)						
		Positive Affect (A): Never	Less 1 wk.	Once a wk.	Sev. tms.wk.	Once a day	Sev.tms. day	
not happy	0	1	16	0	4	19	9	
	1	2	32	2	15	21	29	
	2	8	57	13	26	57	57	
very happy	3	17	81	28	41	88	91	
	4	17	77	34	55	112	98	
	5	11	43	22	45	86	96	
Positive Affect		Expected frequencies under model 5a						
	0-3	32.23	169.67	52.74	95.00	187.16	177.18	
	4	14.60	81.72	27.04	51.82	108.54	109.29	
	5	9.17	54.61	19.22	39.17	87.30	93.53	

Selected models: [*]								
Model Number	Parameterization of the (PA) association	θ_{1j}	θ_{2j}	θ_{3j}	θ_{4j}	θ_{5j}	L^2	d.f.
4-1.	Null association	1.0	1.0	1.0	1.0	1.0	47.87	25
4-2.	Row effects assoc.	1.01	1.01	1.00	1.04	1.12	36.36	20
a the following models were fit to the collapsed 3 x 3 table								
4-3a.	Null association	1.0	1.0				23.92	10
4-4a.	Row effects assoc.	1.04	1.11				12.46	8
4-5a.	Uniform association	1.06	1.06				13.48	9

^z Variables are described in the text.

* The one-way marginals (P) (H) were fit in all models above.

Table 5. Cross-classification of Prayer by the Negative Affect Dimension of Bradburn's Happiness Variable^z

Negative Affect (A)		Prayer (P)					
		Never	Less 1 wk.	Once a wk	Sev. tms.wk.	Once a day	Sev. tms.day
high	5	1	18	5	12	18	20
	4	8	35	14	28	37	36
	3	8	55	18	40	56	49
	2	10	62	22	31	74	71
	1	18	81	27	49	112	93
low	0	10	54	16	29	91	113
Negative Affect (A)		Expected frequencies under model 5a					
	5-2	32.67	173.63	55.47	97.89	190.78	177.55
	1	13.56	77.50	26.63	50.50	105.80	106.00
	0	8.77	53.87	19.90	40.60	91.42	98.44

Selected models:^{*}

Model Number	Parameterization of the (PA) association	θ_{1j}	θ_{2j}	θ_{3j}	θ_{4j}	θ_{5j}	L^2	d.f.
5-1.	Null association	1.0	1.0	1.0	1.0	1.0	37.26	25
5-2.	Row effects assoc.	.94	1.00	1.05	1.00	1.17	18.19	20
a the following models were fit to the collapsed 3 x 3 table								
5-3a.	Null association	1.0	1.0				28.11	10
5-4a.	Row effects assoc.	1.03	1.16				10.59	8
5-5a.	Uniform association	1.07	1.07				13.48	9

^z Variables are described in text.^{*} The one-way marginals (P) (A) were fit in all models above.

Tables 1 and 3, rows 2 through 5 were collapsed; the uniform association model, model 5-5a, was then chosen as the preferred model for this collapsed table. This model constrains the odds on being happier (computed from adjacent negative affect scores) to increase by a factor of 1.07 as prayer increases.

The analysis of data in Tables 4 and 5 allow us to conclude that prayer increases happiness by increasing positive affect and by decreasing negative affect. The strength and functional form of the association between prayer and positive affect, and between prayer and negative affect, are virtually identical. Moreover, the form of these associations mirrors (in form and magnitude) that found between prayer and the overall measure of happiness. Evidently the tendency for prayer to increase among those unhappy hides any positive effect prayer would have on their happiness. For those relatively happy, prayer increases overall happiness by increasing positive affect and decreasing negative affect.

Finally there are strong untested assumptions involved in summing responses to construct the Bradburn happiness variables. Non-additive effects, overlooked in the process of summing items, may contain important clues to the nature of the prayer-happiness association. Below I characterize the association between prayer and each of the ten items which comprise the Bradburn variable. The data, discussion of model selection, and sets of selected models can be found in Appendix A. Considering that the following summary adequately describes the ten associations, one should be impressed with the degree of order here.

Nevertheless there are four different forms the association takes.

1) More frequent prayer increases the odds on feeling "proud", "not restless", and "not bored". 2) Frequency of prayer is not significantly related to feeling "excited", "lonely", or "depressed". 3) Respondents who pray "less than once a week" are more likely, compared with those in other prayer categories, to say they do not feel "pleased about accomplishment", "on top of the world", or as if "things are going your way". 4) Those who pray "less than once a week" and those who pray at least once a day (i.e. those praying "once a day" or "several times a day") are most likely to say that they have not recently been "upset by criticism".

Most likely the items in groups 1 and 2 are responsible for the overall association estimated from data in Table 1. "Happy" answers to the questions in group 1 seem to indicate "satisfied" responses. Such responses could result from a firm set of beliefs and an integrated world view. Quite likely, prayer is relevant to responses in group 2 also, but "excitement", "loneliness" or "depression" may be feelings which stimulate prayer. In short, the helpfulness of prayer for those in these states is hidden by the increased prayer these feelings stimulate.

In terms of what the add to the discussion, items in group 3 and 4 are most interesting. The association which characterizes the third group of items indicates that those praying "less than once a week" are more likely not to have felt "pleased about accomplishment", "on top of the world" or as if "things are going your way". Why should those

who pray "less than once a week" be especially "unhappy" on these items ? I offer the following suggestion: a firm world view is crucially important for happiness. Those respondents who offer a "never" response to the prayer question are explicitly rejecting a traditional "religious" world view. To offer such a confident rejection, one might assume that these "never praying" individuals have adopted alternative world views -- which may function as well as more traditional religious ones. If this assumption is correct, then those praying "less than once a week" may truly be suffering from anomie -- they have not rejected traditional religious views, but neither do they seem to wholeheartedly accept them.

The fourth type association can be explained within the context described above. Could it be that respondents praying "less than once a week" say "no" (I have not been recently upset by criticism) because they suffer anomie ? In contrast, those who pray frequently ("once a day" or "several times a day") are less likely to have been upset by criticism because they have a firm world view through which to assess their own actions. Consequently, criticism would be less likely to upset them.

The interpretations given the association between prayer and the ten Bradburn items should be accepted cautiously. Bradburn (1969) did not intend the items to be used separately and the substantive interpretation of each as an independent measure of happiness is far from clear. However, at an intuitive level the findings are interpretable. They suggest that a firm world view need not be religious in order to perform the functions which have been discussed here.

Variation in the Prayer-Happiness Association

Although the functions of "privatized" religious belief seem relevant for all segments of the population, should prayer be especially important for the happiness of some groups ? I provide a partial answer to this question by testing for variation in the strength of the prayer-happiness relationship by the respondent's sex, age (or cohort) and religious preference (i.e. Catholic or Protestant).

First, should we expect the association between prayer and happiness to vary by sex ? Knowledge of the two-way associations between prayer and sex, and between sex and happiness will provide the framework to address this question. Argyle and Beit-Hallahmi (1975) report that women pray more frequently than men. Analysis of these data produce a similar finding (see Appendix B: Table 1). Secondly, Phillips (1967) and Bradburn (1969) note little sex difference in happiness. But women do seem more likely than men to lie at either the happy or unhappy extremes (Phillips, 1967). Analysis of the two-way marginals in Table 6 support this characterization (see Appendix B: Table 2).

Although there is no overall difference in the happiness of men and women, the factors contributing to the happiness of men and women may be quite different. Some theories suggest that the more frequent prayer of women results because religion is somehow more important to women's happiness or well-being (see Argyle and Beit-Hallahmi's, 1975: 77-79; explanations for the sexual, religiosity differential). For instance, Wright (1971) and Benard (1949) present arguments and evidence which indicate that women have stronger guilt feelings than men. If

religious belief functions to relieve guilt feelings, then women's greater religiosity may counteract these stronger guilt feelings (creating rough parity between men's and women's level of happiness). Similarly, Luckman (1967) suggests that work involvement leads to lower levels of religiosity. One could extend this argument and posit that religious behavior is more important for women's happiness since disproportionately many have no work involvement, and since religious involvement provides a possible surrogate. Other explanations for the observed sex differential in religiosity could be extended similarly (to allow for a stronger prayer-happiness association for women).

The above arguments were built upon the observed marginal differences in men's and women's praying behavior. However, the more frequent prayer of women does not necessarily imply or require the prayer-happiness association to be stronger for women than for men. Models fit to the data in Table 6 measure the association between prayer and happiness net of any association between prayer and sex, and between happiness and sex (i.e. the prayer by sex (PS) and the happiness by sex (HS) marginals are fit in all models displayed in the last pannel of Table 6). So the outcome of the empirical test, like the validity of the above arguments, does not depend upon any observed variation in marginal frequencies.

Table 6 shows the cross-classification of the respondent's prayer by his/her score on the Bradburn variable and his/her sex. Does the association between prayer and happiness (characterized by the preferred model for Table 1) vary by the respondent's sex ? The selection of

Table 6. Cross-classification of Prayer by the Bradburn Variable and by the Respondent's Sex

Sex	Bradburn (S): Variable	Observed Frequencies						Expected frequencies under model 2					
		Prayer (P) (H): Never	Prayer (P)					Prayer (P) (H): Never	Prayer (P)				
			Less 1 wk.	Once wk.	Sev. tms.wk.	Once day	Sev.tms. day		Less 1 wk.	Once a wk.	Sev. tms.wk.	Once day	Sev.tms. day
Male	-4 to 0	8	69	11	19	40	24	14.42	63.18	15.56	20.55	32.74	24.54
	1	8	38	14	18	24	20	8.82	41.12	10.78	15.15	25.69	20.44
	2	11	49	9	20	31	28	9.08	45.06	12.55	18.78	33.86	28.67
	3	8	33	10	14	28	24	6.03	31.80	9.43	15.00	28.79	25.96
	4	5	11	8	8	15	17	2.74	15.37	4.85	8.21	16.75	16.07
	5	2	2	3	2	7	10	.92	5.46	1.83	3.30	7.17	7.32
Female	-4 to 0	5	42	12	33	67	63	5.41	37.99	15.10	32.46	67.24	63.79
	1	4	16	15	29	39	44	2.89	21.60	9.13	20.90	46.08	46.40
	2	1	17	8	15	41	53	2.13	16.90	7.60	18.51	43.37	46.49
	3	2	14	3	14	37	42	1.40	11.85	5.66	14.68	36.62	41.79
	4	1	9	2	9	36	33	.89	7.99	4.07	11.22	29.74	36.10
	5	0	1	3	2	15	15	.28	2.67	1.44	4.23	11.95	15.43

Selected models:

Model no.	Marginals fit	Parameterization of the (PH) association	θ_{ij1} (Men)	θ_{ij2} (Women)	L^2	d.f.
6-1.	(PS) (HS)	Null association	1.0	1.0	74.07	50
6-2.	(PS) (HS)	Uniform association I	1.06	1.06	46.14	49
6-3.	(PS) (HS)	Uniform association II	1.05	1.075	45.92	48

model 6.2 as the preferred model for this table indicates no sexual difference in the association (i.e. the hypothesis that the association is the same for men and women cannot be rejected). Model 6.3, which allows the uniform association parameter to vary by sex, provides virtually no improvement in fit over the more highly constrained, preferred model. While women pray more than do men, prayer affects the happiness of men and women similarly.

In Table 7, I substitute a three category age variable for sex and ask a similar question: does the strength of the prayer-happiness association vary by age (or across cohorts) ? Again let us begin by describing the two-way associations between prayer and age, and between age and happiness. First, prayer seems to increase steadily with age (Stark, 1968; Greeley and Morgan, 1980). Secondly, and in apparent support of the belief that "the good old days are products of poor memories", analysis of the relevant marginals in Table 7 shows that those under 30 years of age are least happy (see Appendix B: Table 3). Given these two-way associations, one could have argued that the prayer-happiness association is spurious. In fact though, this analysis shows this not to be the case.

Instead one might hypothesize that prayer would be most important for those with the fewest integrating ties. Earlier I argued that the increasing importance of "private" religion resulted because modernization severed ties from the community, the family, and institutional religion (the church). The lack of such ties increases the individual's freedom and his/her responsibility for social and emotional well-being.

Stouffer et. al. (1949) seem to substantiate my reasoning. Specifically, replacements to platoons in World War II, who would have less group support, more frequently claimed that prayer helped them.

In terms of life-cycle changes, the young and the old would seem to have the fewest integrating ties. Growing old is sometimes referred to as a process of disengagement from society. Also, early adulthood can be a period of "preengagement", since this is a period when ties are becoming established -- to a family of procreation, a community, and a work place. In contrast, the mid-life period (31-50) is characterized by high levels of social participation. At these ages, adults are involved in the activities of adolescent children, and reach the height of productivity in the work sphere. Glenn and others (Glenn and Grimes, 1968; Glenn and Hefner, 1972) use a similar life-cycle argument to explain age variation in political participation.

Different arguments suggest the the strength of the association will increase steadily with age (or will decline in younger cohorts). First, Stark (1968) argues that "private devotionism" increases with age as does "belief in an afterlife". Orthodoxy and ritual participation do not show such a relationship, he claims. Stark then argues that the primary function of the devotionism dimension of religiosity is to allay fears about death. If older persons are more concerned about death, then this could explain the observed increase of prayer with age. Furthermore, one could argue that prayer would be increasingly important for the happiness of older persons since it could reduce anxiety about death.

Stark's argument seems to overstress the fear of death. All stages of the life-cycle have their crises. A recent bestseller, Passages (Sheehy, 1976), discusses a score of mid-life crises. Likewise, if we take a look at events that are likely to elicit a prayerful response, according to Lindenthal et. al. (1970: Table 3), some would seem especially pertinent for young persons, for instance: engagement, marriage, pregnancy, birth of the first child, relocation to a new job or neighborhood, etc. Clearly there are crises throughout the life-cycle. Prayer might prove an effective tool in dealing with many of them.

A second argument could be constructed around the popular notion of secularization. According to this view, religion gradually loses its importance in the everyday life of most individuals. Given the central role of the cohort in social change (Ryder, 1965), one could argue that religious belief would be less important to each succeeding cohort (and the strength of the association between prayer and happiness would be weaker in each successive cohort). Such a process of social change would produce a relationship between prayer and happiness that becomes stronger with age (in a cross-sectional survey). In an earlier section, I argued against the "secularization view" of change in the religious institution.

Now to address this issue empirically, I test to see if the association between prayer and happiness varies by age, using data in Table 7. The preferred model, model 7.4, suggests an affirmative

Table 7. Cross-classification of Prayer by the Bradburn Variable and Age

Age	Bradburn (A): Variable(H):	Observed frequencies						Expected frequencies under model 4					
		Prayer (P)						Prayer (P)					
		Never	Less 1 wk.	Once wk.	Sev. tms.wk.	Once day	Sev.tms. day	Never	Less 1 wk.	Once wk.	Sev. tms.wk.	Once day	Sev.tms. day
18-30	-4 to 0	6	54	10	24	23	12	10.01	45.64	13.73	21.79	24.36	13.48
	1	7	17	13	19	16	9	5.27	25.81	8.36	14.25	17.14	10.18
	2	7	28	6	11	16	16	4.52	23.79	8.28	15.17	19.68	12.58
	3	2	14	6	9	15	11	2.50	14.18	5.30	10.45	14.57	10.00
	4	2	6	4	6	13	7	1.34	8.19	3.30	6.98	10.46	7.73
	5	0	1	1	2	7	2	.37	2.40	1.04	2.36	3.81	3.03
31-50	-4 to 0	4	33	5	13	38	33	4.66	28.98	9.06	17.08	32.60	33.63
	1	3	23	10	16	18	21	3.36	20.93	6.54	12.33	23.54	24.29
	2	2	21	8	12	26	27	3.55	22.08	6.90	13.01	24.84	25.63
	3	6	23	6	16	23	25	3.66	22.77	7.11	13.42	25.61	26.43
	4	2	10	1	7	17	14	1.89	11.73	3.67	6.91	13.20	13.61
	5	1	2	5	2	4	10	.89	5.52	1.72	3.25	6.21	6.41

Table 7. --Continued

		Observed frequencies						Expected frequencies under model 4					
		Prayer (P)						Prayer (P)					
Age	Bradburn	Less	Once	Sev.	Once	Sev.tms.	Less	Once	Sev.	Once	Sev.tms.		
(A):	Variable(H):	Never	1 wk.	wk.	tms.wk.	day	Never	1 wk.	wk.	tms.wk.	day		
50 +	-4 to 0	3	24	8	15	56	42	5.56	26.93	8.09	14.45	48.13	44.84
	1	2	14	6	12	29	34	2.83	14.73	4.77	9.15	32.77	32.76
	2	3	17	3	12	30	38	2.30	12.88	4.48	9.24	35.70	38.40
	3	2	10	1	3	27	30	1.24	7.46	2.79	6.18	25.67	29.67
	4	2	4	5	4	21	29	.83	5.37	2.16	5.14	22.95	28.56
	5	1	0	0	0	11	13	.24	1.65	.72	1.83	8.80	11.76

Selected models:

Model no.	Marginals fit	Parameterization of the (PH) association	(19-30)	(31-50)	(51+)	L^2	d.f.
			θ_{ij1}	θ_{ij2}	θ_{ij3}		
7-1.	(PA) (HA)	Null association	1.0	1.0	1.0	104.89	75
7-2.	(PA) (HA)	Uniform association I	1.05	1.05	1.05	85.51	74
7-3.	(PA) (HA)	Uniform association II	1.075	1.00	1.06	80.43	73
7-4.	(PA) (HA)	Uniform association III	1.075	1.00	1.075	80.74	74

answer to our question. This model constrains the uniform association parameter to equal 1.075 for those 30 years of age or younger, and for those over 50. There exists virtually no evidence of an association between prayer and happiness among those in the mid-life period (ages 31 to 50). This finding supports my argument that prayer would be most important for those with the fewest integrating ties.

Finally, does the association between prayer and happiness vary by the respondent's religious preference, whether Catholic or Protestant (Jews and those reporting no religious preference were excluded from this portion of the analysis). Again I begin by noting the nature of the two-way associations, which do not directly bear on the question of primary interest. Although significantly less likely to pray "several times a day" than Baptists and other fundamentalist Protestants, Catholics' frequency of prayer is very similar to most other Protestant groups (see Greeley and Morgan, 1980). Phillips (1967) claims that Protestants are somewhat happier than Catholics. Analysis of the relevant marginals in Table 8 show no such significant difference in this 1974 sample (see Appendix B: Table 4).

One could apply the Durkheimian explanation for differential suicide rates among Catholics and Protestants to the issue here (Durkheim, 1951). In the general introduction, and with respect to age variation in the prayer-happiness association, I argued that prayer or privatized belief was most important where institutional support was weakest. Durkheim (1951:158) states:

The Catholic accepts his faith ready made, without scrutiny. He may not even submit it to historical examination since the

original texts that serve as its basis are proscribed. ... The Protestant is far more the author of his faith. The Bible is put in his hands and no interpretation is imposed upon him. The Protestant clergyman is a more instructed guide than the run of worshipers but with no special authority for fixing dogma.

Extending Durkheim's argument, one could argue that the necessity for Protestants to establish their "own relationship with God" increases the importance of personal prayer. The Catholic, with more institutional support, has less need for prayer. McCann (1962), for instance, reports that Catholics are more likely to seek a priest in crisis periods than are Protestants to consult with a clergyperson. As a friend once remarked, "with an infalliable Pope and recourse to confession, Catholics don't need to pray".

After developing this argument, it, most likely, must be seriously qualified given the mid-1970 focus of this study. As Greeley (1977) has documented, Catholics have achieved parity with Protestants on most measures of socio-economic status and are a truly a mainstream American group. As such, they have, no doubt, been influenced by the forces of modernization that have weakened the ties and control of the institutional church, especially the American emphasis on individualism, freedom of religion, and secular education (see earlier discussion). Using Durkheim's terminology, today's American Catholic is much more the "author of his faith" than in earlier periods. The discrepancy between Catholic behavior and Church dogma on the issue of birth control (Westoff and Jones, 1979; Westoff, 1979) illustrates my point. Perhaps as Greeley (1979) contends, the Pope and Catholic hierarchy are still important in America, but for symbolic reasons not because of their ability to enforce Church doctrine.

Table 8. Cross-classification of Prayer by the Bradburn Variable and Religion (Catholic or Protestant)

Reli- gion(R):	Bradburn Variable(H):	Observed frequencies						Expected frequencies under model 2					
		Never	Prayer (P)					Never	Prayer (P)				
			Less 1 wk.	Once wk.	Sev. tms.wk.	Once day	Sev.tms. day		Less 1 wk.	Once wk.	Sev. tms.wk.	Once day	Sev.tms. day
Catholic	-4 to 0	0	25	8	12	38	17	1.12	23.68	10.63	15.53	30.60	18.44
	1	0	15	10	16	25	14	.74	16.60	7.93	12.33	25.86	16.54
	2	2	15	5	12	16	15	.49	11.74	5.96	9.86	21.99	14.97
	3	1	10	4	9	18	19	.37	9.50	5.13	9.03	21.43	15.54
	4	0	4	4	5	18	14	.22	6.00	3.45	6.46	16.30	12.57
	5	0	0	3	1	6	3	.05	1.47	.90	1.80	4.82	3.96
Prot- estant	-4 to 0	3	63	12	37	65	70	7.33	58.50	18.52	33.38	64.27	68.00
	1	5	34	18	28	36	48	4.20	35.23	11.73	22.29	45.23	50.32
	2	3	36	11	21	54	65	3.97	35.08	12.30	24.60	52.50	61.55
	3	4	26	9	16	43	47	2.53	23.57	8.70	18.30	41.11	50.78
	4	4	11	6	11	32	34	1.42	13.93	5.42	11.99	28.36	36.87
	5	1	2	3	3	15	22	.55	5.69	2.33	5.43	13.52	18.48

Selected models:

Model no.	Marginals fit	Parameterization of the (PH) association	θ_{ij1} (Cath.)	θ_{ij2} (Prot.)	L^2	d.f.
8-1.	(PR) (RH)	Null association	1.0	1.0	73.41	50
8-2.	(RP) (RH)	Uniform association I	1.06	1.06	52.86	49
8-3.	(RP) (RH)	Uniform association II	1.05	1.06	52.85	48

The preferred model chosen for Table 8, model 8.2, constrains the association to be the same for Protestants and Catholics. Model 8.3 allows the uniform association parameter to vary by the respondent's religious preference, but it provides virtually no improvement in fit over the more parsimonious preferred model. Prayer affects the happiness of Protestants and Catholics similarly.

Summary and Discussion

In the face of the popular notion of secularization, the primary functions of private religious belief seem highly relevant today. Religious belief can still provide meaningful answers to "ultimate questions", it can still provide a firm set of values and a sense of meaning and belonging in everyday life. Religious practices can still produce renewed vitality, and capacity for hope and action. Because of these functions, religious belief can be a source of support during inevitable periods of crisis.

Nevertheless, modernization has produced forces which lessened the power, control, and influence of institutional religion. Other unique aspects of American development have reinforced this tendency. But religious belief still particularizes "itself in the consciousness of individuals". Here "private" religion and private devotion can perform the functions mentioned above.

In this paper, I have attempted to document the effects of an intense, private religious orientation on one's happiness or sense of well-being. The preferred model for Tables 1, 3, 4, and 5 show that more frequent prayer is associated with greater happiness. However,

this association exists only for those relatively happy. This non-linear functional form (see Figure 1) suggests the simultaneous operation of the functions of "privatized" religion previously discussed.

The strength of the prayer-happiness association does not vary by sex or religious preference (Catholic or Protestant). This pervasive association attests to the general importance of religious belief. The strength of this association does vary by age suggesting that "privatized" religion might be most important where institutional ties are weakest.

In this paper, I have taken a rather narrow view of "privatized" religion. My focus has been on "religious" world views. Using a broader definition of religion that stresses the function rather than the content of religious belief, religion can be viewed as one's "ultimate concern" (Tillich, 1957). Using such a broad definition, every person has a religion although his/her set of beliefs and values can be integrated to varying degrees. Given the American climate of religious freedom, many belief sets might be devised that would function as well as more traditional religious ones (in terms of providing a sense of meaning and belonging in everyday life). Wuthnow (1976), for instance, suggests that astrology may be a functional equivalent of traditional religious belief for some individuals.

Most likely, many of the "new religions" will continue to include a "God" (consistently, national surveys report that well over 90% of Americans say they "believe in God"), although many conceptions of "God" may be unorthodox. For those who believe in no "God", prayer

does not tap the strength, intensity, or degree of integration of one's beliefs. My analysis of the individual Bradburn items suggests that respondents who claimed to pray very infrequently may be the least happy (not those who "never" pray). This finding suggests that a firm set of beliefs, an integrated world view, may be the factor which significantly contributes to happiness. This world view need not be traditionally religious. However, those who reject traditional religious world views must attempt to fashion a world view that works as well.

APPENDIX A

ANALYSIS OF THE ASSOCIATION BETWEEN PRAYER AND EACH BRADBURN ITEM IN PART III

Table A.1. shows the cross-classification of the respondent's frequency of prayer by each of the ten Bradburn items (the order of the items has been altered to ease explication of the results). Table A.2. shows the L^2 statistic and the degrees of freedom (d.f.) associated with selected models.

The data in pannels 1, 2, and 3 can be described adequately by the uniform association model. The odds on the "happy" response to "proud" (i.e. yes) increase by a factor of 1.08 as prayer increases. Similarly, the odds on feeling "not restless" and "not bored" (i.e. the happy responses to Q1.b. and Q1.f.) increase by factors of 1.07 and 1.22, respectively.

The data in pannels 4, 5, and 6 can be described by the null association model. This model fits acceptably well. And the uniform association model does not provide a significantly improved fit, considering its one fewer degree of freedom. Furthermore, none of the five basic odds ratios (in each pannel) differ significantly from 1.0.

The association parameterized by the preferred models for pannels 7,8, and 9 indicates that more of those praying less than once a week gave the "unhappy" response than expected under the null association model. The preferred model for each of these panels is obtained

by fitting cell f_{22} (in addition, of course, to the row and column marginals). This class of models is referred to as quasi-independence models (Goodman, 1969).

In the final pannel, 10, it was necessary to fit the sum of cells f_{24} and f_{25} , as well as cell f_{22} . This quasi-independence model indicates that respondents praying less than once a week, once a day, or several times a day were more likely to say "no" (i.e. the happy response) than would be expected under the null association model.

Table A.1. Cross-classification of Prayer by Each of the Ten Bradburn Items*

During the past few weeks did you ever feel:		Prayer					
		Never	Less 1 wk.	Once wk.	Sev. tms.wk.	Once day	Sev.tms. day
1. "Proud" (Q1.c.)	yes	38	211	80	139	289	295
	no	18	99	24	53	103	95
2. "Restless" (Q1.b.)	yes	35	195	65	120	228	218
	no	21	115	38	72	164	173
3. "Bored" (Q1.f.)	yes	27	157	39	87	140	116
	no	29	151	65	105	251	275
4. "Excited" (Q1.a)	yes	38	172	66	126	241	250
	no	18	139	37	65	151	141
5. "Lonely" (Q1.d.)	yes	11	89	35	68	111	101
	no	45	220	69	123	279	283
6. "Depressed" (Q1.h.)	yes	15	101	35	73	120	121
	no	41	210	68	119	270	269
7. "Pleased about accomplishment" (Q1.e.)	yes	51	250	94	167	326	338
	no	5	60	8	25	65	52
8. "Top of the world" (Q1.g.)	yes	24	84	45	82	158	157
	no	32	225	59	107	231	230
9. "As if things going your way" (Q1.i.)	yes	41	207	83	136	281	278
	no	15	100	18	53	104	106
10. "Upset by criticism" (Q1.j.)	yes	15	64	32	57	73	86
	no	40	244	71	133	317	303

* The complete wording of the Bradburn items is given in the text.

Table A.2. Selected Models Fit to the Data in Table A.1.

Item Analyzed	Parameterization of the 2-way association	L^2	d.f.
1. "Bored"	Null association	6.80	5
	Uniform association*	2.13	4
2. "Restless"	Null association	5.53	5
	Uniform association*	.87	4
3. "Bored"	Null association	39.80	5
	Uniform association*	5.98	4
4. "Excited"	Null association*	8.78	5
	Uniform association	6.67	4
5. "Lonely"	Null association*	8.96	5
	Uniform association	8.82	4
6. "Depressed"	Null association*	4.44	5
	Uniform association	4.34	4
7. "Pleased about accomplishment"	Null association	13.23	5
	Uniform association	12.70	4
	Fit f_{22} exactly*	7.42	4
8. "Top of the world"	Null association	22.26	5
	Uniform association	14.52	4
	Fit f_{22} exactly*	.71	4
9. "As if things going your way"	Null association	9.02	5
	Uniform association	8.35	4
	Fit \bar{F}_{22} exactly*	4.76	4
10. "Upset by criticism"	Null association	14.26	5
	Uniform association	13.33	4
	Fit $(f_{24} + f_{25})$	11.63	4
	Fit $(i_{24} + f_{25}); f_{22}$ *	1.63	3

* Model chosen to characterize the 2-way association

APPENDIX B

ANALYSIS OF MARGINAL FREQUENCIES FROM PART III

Appendix B reports on some two-way associations which were noted in the text, but which were not central to the major question then at hand. The parameterizations which allowed for those earlier statements are characterized here.

Prayer by sex. Table B.1. shows the cross-classification of frequency of prayer by the respondent's sex. The model of null association must be rejected on the basis of fit. The uniform association, however, does provide a good fit to the data. This model constrains the odds on more frequent prayer (computed from adjacent prayer categories) to increase by a factor of 1.42 if the respondent is female.

Sex by happiness. Table B.2. can be adequately parameterized by a curvilinear scoring of the happiness variable (categories 0 through 5 are scored: 3, 2, 1, 1, 2, 3). Such a scoring produces a parameter of 1.18 which indicates that women are more likely to score either very high or very low on the happiness variable. The sex ratio (male/female) decreases by a factor of .84 ($1/1.18$) as one moves from the middle happiness categories (i.e. 2 or 3) toward more extreme categories. But there is no tendency for men to be happier than women are vice versa.

Age by happiness. Table B.3. shows the age by happiness marginals computed from Table 7. The preferred model for these data is model 3.

Table B.1. Cross-classification of Frequency of Prayer by the Respondent's Sex

Respondent's Sex (S):	Prayer (P)					
	Never	Less 1 wk.	Once wk.	Sev. tms.wk.	Once a day	Sev.tms day
Male	43	206	59	81	151	132
Female	13	105	45	111	241	260
Expected frequencies under model 2						
Male	40.76	202.92	59.13	92.26	154.32	122.71
Female	15.24	108.08	44.87	99.74	237.68	269.29

Selected models:

Model Number	Marginals Fit	Parameterization of the (PS) association	θ_{1j}	L^2	d.f.
B.1.-1.	(P) (S)	Null association	1.0	113.03	5
B.1.-2.	(P) (S)	Uniform association*	1.42	4.39	4

* In the case of a 2 x J table, the uniform association and row effects association model are equivalent.

Table B.2. Cross-classification of the Bradburn Variable by Sex (using the marginals computed from Table 6)

Respondent's Sex (S):	Bradburn Happiness Variable (H)					
	Low --			-- High		
	-4 to 0	1	2	3	4	5
Male	171	122	148	117	64	26
Female	222	147	135	112	90	36
Expected frequencies under model 3						
Male	165.68	124.88	143.61	116.21	71.49	26.14
Female	227.32	144.12	139.39	112.80	82.51	35.86

Selected models:

Model Number	Marginals Fit	Parameterization of the (HS) association	θ_{1j}	L^2	d.f.
B.2.-1.	(H) (S)	Null association	1.0	9.34	5
B.2.-2.	(H) (S)	Uniform association	1.03	9.10	4
B.2.-3.	(H) (S)	Curvilinear association	a	2.17	4

^a If the happiness variable is scored in a curvilinear fashion: 3,2,1,2, 3; then the sex ratio (odds on male/female) changes by a factor of .84 as one moves from the middle happiness scores (2 or 3) to higher or lower scores.

This model posits that the odds on being happier (computed from adjacent happiness categories) are lowered by a factor .88 if the respondent is less than 31 years of age. Those 51 years of age or older appear slightly less happy than those aged 30-49 (see the parameterization of model 2), but the preferred model legitimately constrains these two groups to be equally happy.

Religion by happiness. Marginals computed from Table 8 are shown in Table B.4. The null association model fits these data well. The uniform association model provides virtually no improvement in fit. These results indicate that there is no apparent tendency for Protestants to be happier than Catholics.

Table B.3. Cross-classification of the Bradburn Variable by Age (using the marginals computed from Table 7)

Respondent's Age (A):		Bradburn Happiness Variable (H)					
		-4 to 0	1	2	3	4	5
18-30		129	81	84	57	38	13
31-50		126	91	96	99	51	24
51+		148	97	103	73	65	25
		Expected frequencies under model 3					
18-30		130.61	81.25	79.48	59.67	37.16	13.83
31-50		132.92	91.62	99.31	82.63	57.02	23.51
51+		139.47	96.13	104.21	86.70	59.83	24.67

Selected models:

Model Number	Marginals Fit	Parameterization of the (AH) association	θ_{1j}	θ_{2j}	L^2	d.f.
B.3.-1.	(H) (A)	Null association	1.0	1.0	14.67	10
B.3.-2.	(H) (A)	Row effects association	1.12	.96	7.21	8
B.3.-3.	(H) (A)	Row effects association I	1.11	1.0	7.93	9

Table B.4. Cross-classification of the Bradburn Variable by Religion
(using the marginals computed from Table 8)

Respondent's Religion (R):	Bradburn Happiness Variable (H)					
	Low -- -4 to 0	1	2	3	-- High 4	5
Catholic	100	80	65	61	45	13
Protestant	250	169	190	145	98	46

Selected models:

Model Number	Marginals Fit	Parameterization of the (HR) association	θ_{1j}	L^2	d.f.
B.4.-1.	(R) (H)	Null association*	1.0	4.66	5
B.4.-2.	(R) (H)	Uniform association	1.02	4.52	4

* The null association model is the preferred model for this data.

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