# Exercises on Measurement and Data Analysis for Religion

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# Preface

The data set used in this exercise is the 2018 General Social Survey. The name of the data set is GSS18REL.SAV which is a subset of the full data set. Some of the variables in the GSS have been recoded to make them easier to use and some new variables have been created.  The data have been weighted according to the instructions from the National Opinion Research Center.  These exercises use SPSS to analyze the data but you could also easily use PSPP.  A good reference on using SPSS is [*SPSS Statistics (Version 26): A Basic Tutorial*](http://www.ssric.org/node/696)by Edward Nelson and John Korey.

The focus of these exercises is on measurement and data analysis. They develop measures of religiosity and Christian fundamentalism and discuss validating the measure of religiosity. The sections on data analysis use crosstabulation with two and three-variable tables. The exercises also introduce the idea of replication, explanation, and spuriousness.

The exercises do not explain how to use SPSS. For that you could use the [SPSS tutorial](http://www.ssric.org/node/696) referred to throughout the exercises. I have added to the data set the variables that students are asked to create. The names of these variables all start with ZZ. That means you could skip some of the SPSS procedures by referring students to these variables in the data set. I have also included in the data set some variables not used in the exercises so you could develop your own exercises around these variables.

You have permission to use these exercises and to revise them to fit your need which would include adding materials of your own or deleting parts of the exercises that you don't want to use.

# Exercise 1 – Exploring Measurement, Validity, and Relationships Among Variables

## Goal of Exercise

The goal of this exercise is to create and validate a measure of religiosity.  Validity refers to whether we are measuring what we think we are measuring.  If we can demonstrate that we are indeed measuring what we say we are measuring, that we have validated the measure.  Once we have validated the measure, then we’ll see how it is related to other variables.  This exercise also gives you practice using several SPSS commands – RECODE, SELECT CASES, COMPUTE, and IF to create new variables, as well as FREQUENCIES, and CROSSTABS to explore relationships among variables.

## **Part I—Recoding**

We’re going to use the General Social Survey (GSS) for this exercise.  The GSS is a national probability sample of adults in the United States conducted by the National Opinion Research Center.  For this exercise we’re going to use a subset of the 2018 GSS survey. Your instructor will show you how to access this data set which is called GSS18REL.SAV. You can also download it by clicking on this [link](http://ssric.org/node/476).

Religiosity is the strength of an individual’s attachment to his or her religious affiliation.  Several questions in the GSS are possible indicants of religiosity.  One of the questions asks respondents to estimate the strength of their religious affiliation.  That variable is named RELITEN.  Respondents were also asked how often they attend religious services (ATTEND) and how often they pray (PRAY).  These are all possible indicants of religiosity.  Instead of choosing one, let’s combine all three variables into one composite variable.

Before you start, run FREQUENCIES in SPSS to get the frequency distributions for these three variables: RELITEN, ATTEND, PRAY.  Some of you have used SPSS, the statistical package we're using, and know how to get a frequency distribution. Others of you are new to SPSS. There is a tutorial that will show you how to get a frequency distribution and carry out other types of statistical analysis that we'll be using in these exercises. This tutorial is freely available on the Social Science Research and Instructional Center's [**website**](http://ssric.org/node/696).

Let’s start by reducing the number of categories for each variable by using RECODE in SPSS. The variable RELITEN records the respondent’s self-reported strength of affiliation.  The categories are strong (1), somewhat strong (2), not very strong (3), and no religion (4).  Let’s combine somewhat strong, not very strong, and no religion into one category and give that category a value of 2.  Now we have two categories--strong (1) and not strong (2).  When you use RECODE in SPSS, you can recode in two different ways—into the same variable or into different variables.  If you recode into the same variable, be careful.  It’s easier, but if you make a mistake, you will not be able to go back and recode it again.  You will have to close SPSS without saving the data set and then reopen the data set to get a fresh, clean copy of the data. So for this exercise recode into different variables.  You’ll have to give your recoded variable a new name.  Call this one RELITEN1.  (See Chapter 3, Recoding into Different Variables in the online SPSS book for a review of how to recode.)  To make your output more readable, add value labels for this variable.

Now let’s recode ATTEND and call the recoded variable ATTEND1.  Let’s combine every week (7) and more than once a week (8) into one category and give this category a value of 1.  Combine once a month (4), two to three times a month (5), and nearly every week (6) into another category and give this a value of 2.  Finally, combine never (0), less than once a year (1), once a year (2), and several times a year (3) into another category and give this a value of 3.  Now we have three categories--often (1), sometimes (2), and infrequently (3).  To make your output more readable, add value labels for this variable.

Finally, let’s recode PRAY and call the recoded variable PRAY1.  Combine several times a day (1) and once a day (2) into one category and give that a value of 1.  Combine several times a week (3) and once a week (4) into another category and give that a value of 2.  Combine less than once a week (5) and never (6) into another category and give that a value of 3.  Now we have three categories--often (1), sometimes (2), and infrequently (3)  To make your output more readable, add value labels for this variable.

Now that you have recoded these variables, run FREQUENCIES in SPSS to get a frequency distribution for these three variables.  Compare these distributions to the distributions you ran before you recoded to see if you made any mistakes.

Notice that if we don't recode a particular value, those values are changed into a missing value that is called SYSMIS which is short for system missing.[[1]](#footnote-1) That means that all the missing values are lumped together into this system missing value.

## **Part II—Creating a Measure of Religiosity**

Now that we have reduced the number of categories into a more manageable number, let’s create a new variable, which will be a combination of these three variables.  We’ll call this new variable REL.  To do this we’ll use the SELECT CASES, COMPUTE, and IF commands in SPSS.

If individuals say they have a strong attachment to their religious affiliation (recoded value of 1 on RELITEN1), attend church often (recoded value of 1 on ATTEND1), and pray often (recoded value of 1 on PRAY1), then they are highly religious.  Let’s give these individuals a value of 1 on our new variable REL.

If individuals say they don’t have a strong attachment to their religious affiliation (recoded value of 2 on RELITEN1), attend church infrequently (recoded value of 3 on ATTEND1), and pray infrequently (recoded value of 3 on PRAY1), then they are not religious.  Let’s give these individuals a value of 3 on REL.

Everyone else will be somewhere between highly religious and not religious.  Let’s give these individuals a value of 2 on REL.

How are we going to handle missing information (i.e., cases with missing data)? We'll start by removing them from our analysis. We can do that by using SELECT CASES in SPSS. Click on DATA in the menu bar at the top of your screen. This will open a drop-down menu. Click on SELECT CASES toward the bottom of the menu. Click on the circle to the left of IF CONDITION IS SATISFIED and then click on the IF button directly below. We're going to use this to select only the cases that have valid information **for all three variables**. In other words, we're going to omit any case that has missing information on any of the three variables. In the box at the top of the screen to the right of the arrow, enter the following and then click on OK.

 ATTEND1 <= 3 & PRAY1 <= 3 & RELITEN1 <=2

You can enter this manually or you can click on the variable name and then move it over into the box and use the keypad to enter the other information. Notice what this is telling SPSS to do. It tells SPSS to select all the cases where ATTEND1 is less than or equal to 3 AND PRAY1 is less than or equal to 3 AND RELLITEN1 is less or equal to 2. In other words, SPSS is selecting those cases for which there is no missing information in **any of these three variables**. To check to make sure you did this correctly, rerun FREQUENCIES to get frequency distributions for ATTEND1, PRAY1, AND RELITEN1. You shouldn't see any cases with missing values in your output.

Now we're ready to create our measure of religiosity which we're going to name REL. We'll do that by using both the COMPUTE and the IF commands. Click on TRANSFORM in the menu bar at the top of your screen and then click on COMPUTE VARIABLE. Enter the name of the new variable, REL, in the TARGET VARIABLE box.  We're going to start by assigning the value 2 **to all our cases**. All you have to do to accomplish this is enter 2 in the NUMERIC EXPRESSION box and then click on OK. Remember that 2 is our code for respondents who are somewhat religious.

Now click again on TRANSFORM in the menu bar and then click on COMPUTE VARIABLE and change the value in the NUMERIC EXPRESSION box to 1. Click on the IF button at the bottom of your screen and select the option that says INCLUDE IF CASE SATISFIES CONDITION by clicking on the circle to the left of it. Enter the following statement in the large box just below.

 ATTEND1 = 1 & PRAY1 = 1 & RELITEN1 = 1

This tells SPSS to change the value of REL to 1 if these conditions are met. These are the respondents who are highly religious. Click on CONTINUE and then on OK. SPSS will ask you if you want to CHANGE EXISTING VARIABLE; click on OK.

Now all we have to do is change the value of REL to 3 for those who are not religious. Click on the IF button at the bottom of your screen and select the option that says INCLUDE IF CASE SATISFIES CONDITION by clicking on the circle to the left of it. Enter the following statement in the large box just below. Enter the following statement in the large box just below.

 ATTEND1 = 3 & PRAY1 = 3 & RELITEN1 = 2

This tells SPSS to change the value of REL to 3 if these conditions are met. These are the respondents who are not religious. Click on CONTINUE and then on OK. SPSS will ask you if you want to CHANGE EXISTING VARIABLE; click on OK.

If you have problems doing this part of the exercise, your instructor will help you.

Run FREQUENCIES in SPSS to get a frequency distribution for your new variable, REL.  There is another variable in the data set, RELIGOS, which should be identical to your variable, REL.  Run FREQUENCIES for RELIGOS and compare the two distributions.  If they are not the same, you made a mistake and will have to start over.  See your instructor if you can’t figure out your mistake.

## **Part III—Validity**

We created a variable, REL, which we think is a measure of religiosity.  But how do we know it measures religiosity?  This is a question of validity.  Are we measuring what we say we are measuring?

What we can do is look for variables that we except to be related to religiosity and see if they are related in the way we expect.  For example, if our measure is a valid measure of religiosity, then we would expect highly religious individuals to be more likely to believe in life after death than less religious individuals.  The variable POSTLIFE tells us whether respondents say they believe in life after death.  We would also expect highly religious respondents to be less likely to have seen an X-rated movie in the last year (variable is XMOVIE).

If our new variable, REL, behaves as we expect it to, then we can claim that we have demonstrated its validity.  This is called construct validity.  If it does not behave as we expect it to, then it’s a little more complicated.  It may be that our measure is not valid.  Or it may be that our expectations are wrong.  Or it may be there is something wrong with the way the questions were asked in the survey.  But the important point is that if REL behaves as we expect it to, then we have evidence of the construct validity of our new measure.

To check on the validity of your new measure, REL, run two crosstabulations—one for REL and POSTLIFE and another for REL and XMOVIE.  (See Chapter 5, Crosstabulations in the online SPSS book for a review of how to run crosstabs.)  Think carefully about which should be the independent variable and which should be the dependent variable.  Be sure to get the appropriate percents, Chi Square, and an appropriate measure of association.  Write a paragraph indicating whether you think your measure of religiosity, REL, is a valid measure.  Indicate your reasoning.

### **Part IV—Analysis**

Now that we have created a measure of religiosity, REL, and have some evidence that it is valid, we can explore its relationship with other variables.  Let’s look in the data set for other variables that you think should be related to religiosity. You can click on UTILITIES in the menu bar of SPSS and then on VARIABLES in the UTILITIES menu to see a list of the variables in the data set.[[2]](#footnote-2)  There are questions on the legalization of marijuana (GRASS), homosexual relations (HOMOSEX), suicide (SUICIDE1), allowing incurable patients to die (LETDIE1), pornography laws (PORNLAW), sex before marriage (PREMARSX), and others.  Select one variable from this list that you think ought to be related to religiosity and complete the following steps:

1. Write a hypothesis stating how you expect religiosity, REL, to be related to this variable.

2.  Write a paragraph that indicates why you think your hypothesis is true.  In other words, write an argument in which your hypothesis is the conclusion to the argument.

3.   Use SPSS to run the crosstabulation of REL and your variable.  Think about which is the independent and which is the dependent variable.  Remember to get the correct percentages.  Use Chi Square and an appropriate measure of association.

4. Write a paragraph interpreting the table that SPSS gave you and indicate whether the data support your hypothesis.  Use the percentages, Chi Square, and the measure of association to help you interpret the table.

## Part V – Summary

In this exercise we developed a measure of religiosity which is a composite variable made up of three other variables – RELITEN, ATTEND, and PRAY. We validated our measure and explored its relationship to other variables.

In Exercise 2 we'll continue to explore the relationship between religiosity and other variables using crosstabulation.  The next exercise will focus on two-variable and three-variable relationships and will discuss the concepts of replication, explanation, and spuriousness.  It will also provide practice in using several SPSS commands – RECODE, FREQUENCIES,  and CROSSTABS.

# **Exercise 2 –** Exploring Relationships Among Variables and Spuriousness

## **Goals of Exercise**

The goal of this exercise is to explore the relationship between religiosity and other variables using crosstabulation.  This exercise will focus on two and three-variable relationships.  The concepts of replication, explanation, and spuriousness will also be explored.  The exercise provides practice in using several SPSS commands – RECODE, FREQUENCIES,  and CROSSTABS to explore relationships among variables.

## **Part I—Recoding**

We’re going to use the General Social Survey (GSS) for this exercise.  The GSS is a national probability sample of adults in the United States conducted by the National Opinion Research Center.  For this exercise we’re going to use a subset of the 2018 GSS.  Your instructor will show you how to access this data set which is called GSS18REL.SAV. You can also download it by clicking on this [link](http://ssric.org/node/476).

Religiosity is the strength of an individual’s attachment to his or her religious affiliation.  Several questions in the GSS are possible indicants of religiosity.  One of the questions asks respondents to estimate the strength of their religious affiliation.  This variable in the data set is named RELITEN.  Respondents were also asked how often they attend religious services (ATTEND) and how often they pray (PRAY).  These are all possible indicants of religiosity, but we’re going to use ATTEND in this exercise.

Before you start, run FREQUENCIES in SPSS to get the frequency distribution for ATTEND.  (See Chapter 4, Frequencies, in the online [SPSS tutorial](http://ssric.org/node/696).) ATTEND has nine categories.  Let’s start by reducing the number of categories. We’ll combine every week (7) and more than once a week (8) into one category and give this category a value of 1.  Combine once a month (4), two to three times a month (5), and nearly every week (6) into another category and give this a value of 2.  Finally, combine never (0), less than once a year (1), once a year (2), and several times a year (3) into another category and give this a value of 3.  Now we have three categories--often (1), sometimes (2), and infrequently (3).  When you use RECODE in SPSS, you can recode in two different ways—into the same variable or into different variables.

You’ll have to give your recoded variable a new name.  (See Chapter 3, Recode into Different Variables in the online SPSS book.)  Let’s call it ATTEND1.  To make your output more readable, add value labels for this variable. Use recoding into different variables in these exercises.

Now that you have recoded this variable, run FREQUENCIES in SPSS to get a frequency distribution for ATTEND1.  Compare this distribution to the distribution you ran before you recoded to see if you made any mistakes.  If you made a mistake, redo this part of the exercise. If you recoded into the same variable, you will have to exit SPSS (or close your file) being sure **NOT** to save it.  Then get back into SPSS and open the data file again.  The reason for this is that you have altered the coding of the variable and will have to get another copy of the data file to start over.  If you saved the data file, then you would have written over the original copy.  So be careful.  That’s why we said to recode into different variables in this exercise.

## **Part II—Analysis of Two-Variable Relationships**

Let’s start by exploring the relationship between our measure of religiosity and whether or not respondents think pornography ought to be illegal for everyone or only illegal for those under the age of 18. The variable PORNLAW includes the respondents’ answers to the question “Which of these statements comes closest to your feelings about pornography laws?  There should be laws against the distribution of pornography whatever the age.  There should be laws against the distribution of pornography to persons under 18.  There should be no laws against the distribution of pornography.”

Use CROSSTABS in SPSS to get the crosstabulation of ATTEND1 and PORNLAW. (See Chapter 5, Crosstabulation in the online SPSS book.)  Be careful when you select the independent and dependent variables.  Be sure to select the correct percentages, Chi Square, and an appropriate measure of association.  Write a paragraph describing the relationship between these variables using all this information.

## **Part III—More Analysis of Two-Variable Relationships**

We know that there are other variables related to ATTEND1 and PORNLAW.  Most research has shown that women are more likely than men to attend church.  There are good reasons to think that women are also more likely than men to feel that pornography ought to be illegal for everyone.  Women are typically the objects of pornography and are demeaned by pornography.  Men are more likely to view pornography than women.  Let’s see if we find these relationships in our data.

Use CROSSTABS to get the crosstabulation of SEX and ATTEND1 and the crosstabulation of SEX and PORNLAW.  Be careful to select the proper independent and dependent variables and to ask for the correct percentages, Chi Square, and an appropriate measure of association.

Write a paragraph describing the relationships you find.  Were they what you expected to find?

## **Part IV—Analysis of Multivariate Relationships**

Perhaps the reason that more religious people are more likely to feel that pornography ought to be illegal for everyone regardless of age is that women are more religious than men and women are also more likely to feel that pornography ought to be illegal for everyone.  If this was true and we were to take the effect of gender out of the relationship, then we would expect the relationship between ATTEND1 and PORNLAW to disappear (or to be reduced).  This would mean that the relationship between ATTEND1 and PORNLAW is a spurious relationship.  A spurious relationship is one in which there is a statistical relationship between two variables but that relationship is not causal.  The relationship can be explained away by some other variable (or variables).

To check on this, we would divide our sample into two groups – all men and all women.  In other words, sex would be our control variable.  If the relationship between ATTEND1 and PORNLAW goes away for both men and women (or decreases for both), then we would say the relationship was spurious and that we have explained away the relationship between religiosity and feelings about pornography laws.  This is often referred to as explanation.  In SPSS we would run a three-variable crosstab using ATTEND1 as our independent variable, PORNLAW as our dependent variable and SEX as our control variable.

If the relationship between ATTEND1 and PORNLAW does not change when we control for sex, then we would say that we have replicated the relationship.  The control variable has not affected the relationship between the independent and dependent variables.  We call this replication because the relationship between ATTEND1 and PORNLAW has been replicated (or repeated) for both men and women.

Run the three-variable crosstab using ATTEND1 as your independent variable, PORNLAW as your dependent variable and SEX as your control variable. (See Chapter 8, Multivariate Analysis in the online SPSS book.)  Be sure to get the correct percentages, Chi Square, and an appropriate measure of association.

Write a paragraph describing what you found when you controlled for sex.  Use the percentages, Chi Square, and an appropriate measure of association to help interpret your findings.

## **Part V – Summary**

Now let’s put all of this together.  Discuss what you learned about the relationship between ATTEND1 and PORNLAW.  Was it spurious due to sex?  How do you know?  If a relationship is not spurious due to one variable, can we conclude that it is not spurious at all?  Be sure to make it clear that you understand what spurious means.

In Exercise 3 we'll consider Christian Fundamentalism, develop a measure of this concept, and explore its relationship to how respondents feel about various social issues.

# Exercise 3 – Exploring Conceptualization, Measurement, and Relationships Among Variables with a Focus on Fundamentalism

## **Goals of Exercise**

The goal of this exercise is to develop a typology to classify Christians as fundamentalist or non-fundamentalist.  Once we have developed the typology, we’ll explore its relationship with other variables.  This exercise also gives you practice in using several SPSS commands – SELECT CASES to select particular cases for analysis, COMPUTE and IF to create the typology, FREQUENCIES, and CROSSTABS to explore the relationships between variables.

## **Part I—Recoding**

We’re going to use the General Social Survey (GSS) for this exercise.  The GSS is a national probability sample of adults in the United States conducted by the National Opinion Research Center.  For this exercise we’re going to use a subset of the 2018 GSS survey. Your instructor will show you how to access this data set which is called GSS18REL.SAV. You can also download it by clicking on this [link](http://ssric.org/node/476).

There are various ways to classify individuals in terms of their religious beliefs.  We can classify people according to their religious preference and the strength of their attachment to this preference.  Christians are often described as being fundamentalist or non-fundamentalist.  Tom Smith, the director of the General Social Survey, has written about the development of fundamentalism in the United States and the core beliefs associated with fundamentalism (“[GSS Methodological Report No. 43](http://gss.norc.org/Documents/reports/methodological-reports/MR043.pdf)”, 1987).  He views fundamentalism as a continuum from fundamentalism on one end to liberalism on the other end.  This is an excerpt from Smith’s article.

At one end we find the Fundamentalists, a movement of conservative or traditionalist Protestant denominations that grew largely out of the Holiness and Pentecostal movements (and later denominations) of the nineteenth century. The movement was formed in the early 20th century as a reaction to what was seen as the secularization and modernization of religious beliefs and practices within many mainstream and established Protestant denominations. Its keys beliefs were first articulated in a series of pamphlets called The Fundamentals (1909). In addition to their opposition to the growth of secular influence in society, the Fundamentalists are distinguished by belief in 1) the inerrancy of the Bible (or more technically in the verbal, plenary inspiration of the Bible), 2) personal salvation by accepting Christ as their savior in what is often called the born-again experience, 3) the personal, pre-millennial imminent return of Christ, 4) an evangelical or revivalist desire to reach out to save and convert others, and 5) acceptance of most  traditional Protestant beliefs such as in Trinity, the Virgin birth, and the existence of angels and devils.

In this exercise we’re going to focus on the first two of the key beliefs identified by Smith – the inerrancy of the Bible and the born-again experience.

One of the variables in the data set is BIBLE.  Respondents are asked “Which of these statements comes closest to describing your feelings about the Bible?

a)     The Bible is the actual word of God and is to be taken literally, word for word.
b)     The Bible is the inspired word of God but not everything in it should be taken literally, word for word.
c)      The Bible is an ancient book of fables, legends, history, and moral precepts recorded by men.”
d) There is also a category (value 4) for respondents who volunteered other answers.

Those who say the Bible is to be taken literally and is therefore inerrant are expressing a fundamentalist position while the others are not.

Another variable is REBORN which asks respondents “Would you say you have been "born again" or have had a "born again" experience -- that is, a turning point in your life when you committed yourself to Christ?”

We can classify Christians as “literalists” (i.e., those who believe the Bible is the literal word of God) and as “born again” (i.e., those who say they had a born-again experience).  We’re going to need to recode BIBLE to get it into the form we want.

Let’s recode BIBLE into a new variable and call it BIBLE1.  (See Chapter 3, Recoding into Different Variables in the online [SPSS tutorial](http://ssric.org/node/696) for a review of recoding.)  Those who said the Bible was the literal word of God are fundamentalists and those who didn’t take this position are not.  So we need to recode 1 as 1 and then recode 2, 3, and 4 as 2.  When you use RECODE in SPSS, you can recode in two different ways—into the same variable or into different variables.  If you recode into the same variable, be careful.  It’s easier, but if you make a mistake, you will not be able to go back and recode it again.  You will have to close SPSS without saving the data set and then reopen the data set to get a fresh, clean copy of the data. So for this exercise recode into different variables.

You’ll have to give your recoded variable a new name which for this variable will be BIBLE1.  Add value labels using 1 for fundamentalists and 2 for non-fundamentalists.

Let’s check to make sure we recoded BIBLE correctly.  Run a frequency distribution for BIBLE and BIBLE1 to check on this.

We don’t need to recode REBORN.  It’s already in the form we want.  The value 1 refers to those who said they have had a born-again experience and the value 2 to those who didn’t.

## **Part II.  Developing our Typology**

We want to classify respondents into four categories.

1. reborn literalists – assign a value of 1 to this group (i.e., they are 1 on REBORN and 1 on BIBLE1)
2. non-reborn literalists – assign a value of 2 to this group (i.e., they are 2 on REBORN and 1 on BIBLE1)
3. reborn non-literalists – assign a value of 3 to this group (i.e., they are 1 on REBORN and 2 on BIBLE1)
4. non-reborn non-literalists – assign a value of 4 to this group (i.e., they are 2 on REBORN and 2 on BIBLE1)

These names are a little clunky.  So when we assign value labels to these four groups let’s make them a little easier to remember.

1. We’ll call those in the group 1 the “fundamentalists.”
2. Those in group 4 are the “non-fundamentalists.”
3. Those in groups 2 and 3 have one of the characteristics of fundamentalists but not both characteristics.  So let’s call those in group 2 the “fundamental literalists” and those in group 3 the “reborn fundamentalists.”

Here’s the way we will create this typology.  We’ll call this variable FUND\_TYPOLOGY since it is a typology that classifies respondents as fundamentalist or non-fundamentalist.

1. Start by using a COMPUTE statement to assign a value of 9 to everyone.
2. Then write four IF statements to assign the values of 1 to 4 to respondents in each of these four groups.  (See Chapter 3, Creating New Variables using Compute and If in the online SPSS book.)
3. Add value labels using the names we developed above.  The value 9 will be for cases with missing information so call them “missing.”
4. Define the value 9 to be your missing value.
5. Run a frequency distribution for FUND\_TYPOLOGY.

Your instructor will show you how to write these statements.

How do we know if we did this correctly?  Run a crosstabulation for REBORN and BIBLE1.   (See Chapter 5, Crosstabulation in the online SPSS book.)  You don’t need to get percents or any other statistics since we only need to know how many cases are in each group. Then compare the frequency distribution you ran for FUND\_TYPOLOGY with the counts in your crosstabulation to see if you created FUND\_TYPOLOGY correctly.

## **Part III.  Analysis**

Now that we have created our typology, we want to see how it is related to other variables. Let’s look in the data set for some measures of the respondent’s opinion on social issues.  You can click on UTILITIES in the menu bar of SPSS and then on VARIABLES in the UTILITIES menu to see a list of the variables in the data set.[[3]](#footnote-3)  There are questions on the legalization of marijuana (GRASS), homosexual relations (HOMOSEX), suicide (SUICIDE1), allowing incurable patients to die (LETDIE1), pornography laws (PORNLAW), sex before marriage (PREMARSX), and others.

Christian fundamentalism, as Smith observed, is a concept that applies to Christians.  Therefore, before we carry out our analysis, we need to select out those respondents who are Christian.  We can use RELIG to select out Christians.  (See Chapter 3, Using Select Cases in the online SPSS book.)  To do this, click on DATA on the menu bar.  Then click on SELECT CASES.  What you want to do is to select only those cases which are 1 (Protestant), 2 (Catholic), or 5 (Other Christians) on the variable RELIG.  This will select out Christians for further analysis.  Your instructor will show you how to do this.

Choose two of the variables listed above for your analysis.  Select two variables on which you think these four groups will disagree.

1. Write two hypotheses stating how you expect these four groups to differ.
2. Write a paragraph that indicates why you think these four groups will differ.  In other words, write an argument to support your hypotheses.
3. Use SPSS to run the crosstabulations of FUND\_TYPOLOGY and your two variables.  Think about which is the independent and which is the dependent variable.  Remember to get the correct percentages.  Use Chi Square and an appropriate measure of the strength of the relationship.
4. Write a paragraph interpreting the tables that SPSS gave you and indicate whether the data support your hypotheses.  Use the percents, Chi Square, and an appropriate measure of association to help you interpret the table.

When you are done, remember to click on DATA on the menu bar and then on SELECT CASES and select ALL CASES and click on OK.  This will remove the selection of Christians and allow you to continue further analysis with all the cases.

## **Part IV.  Summary**

What did you learn about fundamentalism in this exercise?  Be sure to discuss the concept of fundamentalism and how it was related to the two variables you chose in Part III.

In Exercise 4 we'll consider an alternative measure of Christian fundamentalism and explore its relationship to other variables.

# Exercise 4 – Exploring Conceptualization, Measurement, and Relationships Among Variables with an Alternative Focus on Fundamentalism

## **Goals of Exercise**

The goal of this exercise is to think about a concept typically called Christian fundamentalism and to consider an alternative measure of this concept.  Once we have decided on a measure, then we will explore the relationship between this variable and various forms of religious behavior and opinions on various social issues.  The exercise also provides practice in using several SPSS commands --  RECODE to combine categories in existing variables, SELECT CASES to select out a subset of cases, FREQUENCIES to see how respondents answered the questions, and CROSSTABS to explore relationships among variables.

## **Part I—Finding a Measure of Fundamentalism**

You have probably heard some religions and individuals described as Christian fundamentalists.  Have you ever wondered what that meant?  Keith Roberts and David Yamane in their book Religion in Sociological Perspective (Wadsworth, 1995, page 370) says that fundamentalists insist “on the inerrancy of scripture and on a literal interpretation of the Bible.” The project directors for the General Social Survey created a variable called FUND.  This variable classifies religions as fundamentalist, moderate, or liberal.  All the members of a particular religious group are placed in the same category of FUND.  That doesn’t mean that all Baptists or all Lutherans are placed in the same category.  Baptists and Lutherans are made up of different religious groupings.  For example, Lutherans may belong to the Evangelical Lutheran Church in America (ELCA), the Lutheran Church Missouri Synod, the Wisconsin Evangelical Lutheran Synod, or some other Lutheran group.  Baptists may belong to the Southern Baptist Convention, the American Baptist Church in the USA, or some other Baptist group.  The GSS classified Missouri Lutheran and Wisconsin Lutheran churches as fundamentalist and ELCA churches as moderate.   Southern Baptists are classified as fundamentalist and American Baptists as moderate.

We’re going to use the General Social Survey (GSS) for this exercise.  The GSS is a national probability sample of adults in the United States conducted by the National Opinion Research Center.  For this exercise we’re going to use a subset of the 2018 GSS.  Your instructor will show you how to access this data set which is called GSS18REL.SAV. You can also download it by clicking on this [link](http://ssric.org/node/476).

In order to see this for yourself, run a crosstab for DENOM and FUND.  (See Chapter 5, Crosstabulation in the online [SPSS tutorial](http://www.ssric.org/node/696).)  There are a lot of categories for the variable DENOM so let’s put DENOM in the row and FUND in the column and get the row percents.  That will show us what percent of each denomination (or religious grouping) are classified as fundamentalist, moderate, and liberal.  You don’t need to get any additional statistics for this table.  All you need is the row percents.  Pay particular attention to the way the value of FUND is assigned to each religious group.  Notice that all the members of a religious group receive the same classification (i.e., fundamentalist, moderate or liberal).

However, there is a problem with this classification scheme.  There is actually a lot of variation among people who belong to the same religious group.  Some members of a particular religious group might be fundamentalist and others might be moderate or liberal.  In other words, there is variation within a particular religious group.  What we need to do is to find a variable that takes this variation into account.

One of the other variables in the General Social Survey (BIBLE) asks respondents which of the following statements is closest to their feelings about the Bible.

1. "The Bible is the actual word of God and is to be taken literally word for word.”
2. “The Bible is the inspired word of God but not everything in it should be taken literally, word for word.”
3. “The Bible is an ancient book of fables, legends, history, and moral precepts recorded by men.”
4. There is also a category for respondents who volunteer other answers.

This question seems to capture what Roberts and Yamane say is one of the core beliefs of fundamentalists.  Those who say the Bible is the actual word of God and is to be taken literally word for word are clearly expressing a fundamentalist position while those who say that the Bible is inspired by God but should not be taken literally disagree with this position.  This provides us with another measure of fundamentalism.

Let’s recode BIBLE by combining the other category (4) with those who say the Bible is an ancient book of fables (3).  (See Chapter 3, Recoding into New Variables in the online [SPSS tutorial](http://ssric.org/node/696).)  There aren’t many who volunteer another answer and this would reduce the number of categories and make our analysis simpler without losing any critical information.  Do this by recoding into a different variable.  You could call this new variable BIBLE2[[4]](#footnote-4) and recode 1 as 1, 2 as 2, 3 as 3, and 4 as 3. This would keep the first two categories the same and combine categories three and four.  Do the recoding and then run a frequency distribution for both BIBLE and BIBLE2 to make sure that you have done it correctly.  If you recoded it correctly, you will want to assign value labels for the new variable, BIBLE2.

If you recoded incorrectly, you’ll have to do it again.  If you recoded into the same variable, you will need to exit SPSS (or close your file) being sure **NOT** to save it.  Then get back into SPSS and open GSS18REL again.  The reason for this is that you have altered the coding of this variable and will have to get another copy of the data file to start over.  If you saved the data file, then you would have written over the original copy.  So be careful.  That’s why we said to recode into different variables in this exercise.

## **Part II—More Recoding**

Now that we have found a measure of fundamentalism in our data set, let’s see if there are any differences in religious behavior between fundamentalists and non-fundamentalists. First, let’s look for variables that measure religious behavior.  One of the questions asks respondents to estimate the strength of their religious affiliation.  This variable is called RELITEN.  Respondents were also asked how often they attend religious services (ATTEND) and how often they pray (PRAY).

Before you start, run FREQUENCIES in SPSS for these three variables (RELITEN, ATTEND, PRAY).  Let’s recode all three of these variables as different variables.

The variable RELITEN records the respondent’s self-reported strength of affiliation.  The possible categories are strong (1), somewhat strong (2), not very strong (3), and no religion (4).  Let’s combine somewhat strong, not very strong, and no religion into one category and give that category a value of 2.  We’ll recode this into a new variable and call it RELITEN1.  Now we have two categories--strong (1) and not strong (2).  Be sure to recode into a different variable and not into the same variable.  Add the value labels for this variable to make it easier to read the output.

Now let’s recode ATTEND into a new variable we’ll call ATTEND1.  Let’s combine every week (7) and more than once a week (8) into one category and give this category a value of 1.  Combine once a month (4), two to three times a month (5), and nearly every week (6) into another category and give this a value of 2.  Finally, combine never (0), less than once a year (1), once a year (2), and several times a year (3) into another category and give this a value of 3.  Now we have three categories--often (1), sometimes (2), and infrequently (3).  Add the value labels for this variable to make it easier to read the output.

Finally, let’s recode PRAY into a new variable called PRAY1.  Combine several times a day (1) and once a day (2) into one category and give that a value of 1.  Combine several times a week (3) and once a week (4) into another category and give that a value of 2.  Combine less than once a week (5) and never (6) into another category and give that a value of 3.  Now we have three categories--often (1), sometimes (2), and infrequently (3).  Add the value labels for this variable to make it easier to read the output.

Now that you have recoded these variables, run FREQUENCIES in SPSS to get a frequency distribution for each of these three recoded variables.  Compare these distributions to the distributions you ran before you recoded to see if you made any mistakes.  If you made a mistake, you’ll need to do it over.

## **Part III-- Differences in Religious Behavior between Fundamentalists and Non-Fundamentalists**

Christian Fundamentalism, as measured by BIBLE2, is a concept that applies only to Christians. Therefore, before we carry out our analysis, we need to select out those respondents who are Christian.  We can use RELIG to select out the Christians.  (See Chapter 3, Using Select Cases in the online SPSS book.)  To do this, click on DATA on the menu bar.  Then click on SELECT CASES.  What you want to do is to select only those cases which are 1 (Protestant), 2 (Catholic), or 5 (Other Christians) on the variable RELIG.  This will select out Christians for further analysis.  Your instructor will show you how to do this.

To check to make sure you selected the correct cases run a frequency distribution for RELIG.  You should only see Protestants, Roman Catholics, and other Christians in the distribution.

Now that we have recoded the measures of religious behavior, let’s see if there are any differences between fundamentalists and non-fundamentalists in terms of these variables.

To do this we will have to run three crosstabulations with BIBLE2 as our independent variable and RELITEN1, ATTEND1, and PRAY1 as dependent variables.  Be sure to get the correct percents and ask for Chi Square and an appropriate measure of association.

Write several paragraphs describing the relationship of BIBLE2 to each of these measures of religious behavior.  How do fundamentalists differ from non-fundamentalists?  Use the percents to help you describe the relationship. What do Chi Square and your measure of association tell you?

## **Part IV-- Differences between Fundamentalists and Non-fundamentalists on Social Issues**

Let’s look in the data set for some measures of the respondent’s opinion on social issues.  You can click on UTILITIES in the menu bar of SPSS and then on VARIABLES in the UTILITIES menu to see a list of the variables in the data set.[[5]](#footnote-5)  There are questions on the legalization of marijuana (GRASS), homosexual relations (HOMOSEX), suicide (SUICIDE1), allowing incurable patients to die (LETDIE1), pornography laws (PORNLAW), sex before marriage (PREMARSX), and others.

Choose one of these variables for your analysis.  Select a variable on which you think fundamentalists and non-fundamentalists will differ.

1. Write a hypothesis stating how you expect fundamentalists and non-fundamentalists to differ.
2. Write a paragraph or two that indicates why you think fundamentalists and non-fundamentalists will differ.  In other words, write an argument to support your hypothesis.
3. Use SPSS to run the crosstabulation of BIBLE2 and your variable.  Think about which is the independent and which is the dependent variable.  Remember to get the correct percentages.  Use Chi Square and an appropriate measure of the strength of the relationship.
4. Write a paragraph interpreting the table that SPSS gave you and indicate whether the data support your hypothesis.  Use the percents, Chi Square, and the measure of association to help you interpret the table.

When you are done, remember to click on DATA on the menu bar and then on SELECT CASES and select ALL CASES and click on OK.  This will remove the selection of Christians and allow you to continue further analysis with all the cases.

## **Part V—Further Analysis of Fundamentalism**

Christian fundamentalism is a concept that applies only to Christians and primarily to Protestants.  Let’s focus on Protestants and Catholics and compare these two groups to see whether the relationship you observed in Part III is stronger for Protestants than for Catholics.  To do this, click on DATA on the menu bar.  Then click on SELECT CASES.  What you want to do is to select only those cases which are 1 (Protestant) or 2 (Catholic) on the variable RELIG.  This will select out the Protestants and Catholics for further analysis.  Your instructor will show you how to do this.

Run FREQUENCIES for RELIG to make sure you selected the right cases.  You should only see Protestants and Catholics in the frequency distribution.

Repeat the analysis you did in Part III but this time control for RELIG.  That means that you will get one table for Protestants and another table for Catholics.  Compare the tables for Protestants and Catholics and decide whether the relationship is stronger for Protestants than for Catholics.  How would you decide which relationship is stronger and how would you explain your finding?

When you are done, remember to click on DATA on the menu bar and then on SELECT CASES and select ALL CASES and click on OK.  This will remove the selection of Protestants and Catholics and allow you to continue further analysis with all the cases.

#

# **Appendix**

# **Codebook for the Subset of the 2018 General Social Survey**

The General Social Survey (GSS) is a large, national probability sample of adults in the United States. It began in 1972 and continued on an almost yearly basis until 1996. In 1996, the GSS became a biannual survey and the sample size increased. Many questions are asked on each survey, while other questions are rotated from survey to survey. This subset from the 2018 GSS includes all the cases (2,348) and 88 variables. This data set has already been weighted using the weight variable supplied by the GSS (WTSS). Some of the original GSS variables were recoded and a few new variables created. Some of the new variables have names similar to those in the original GSS data set. The data set was created to accompany these exercises and is named GSS18REL.SAV.

**Variable** **Description of Variable**

ABANY Abortion if woman wants for any reason

ABDEFECT Abortion if strong chance of serious defect

ABHLTH Abortion if woman's health seriously endangered

ABNOMORE Abortion if married and wants no more children

ABPOOR Abortion if low income and can't afford more children

ABRAPE Abortion if pregnant as result of rape

ABSINGLE Abortion if not married

AGE Age of respondent

AGED Should aged live with their children?

ATTEND How often respondent attends religious services

BIBLE Feelings about the bible

CAPPUN Favor or oppose death penalty for murder

CHILDS Number of children

CLASS Subjective class identification

COLATH Allow anti‑religionist to teach

COLCOM Allow communist to teach

COLHOMO Allow homosexual to teach

COLMIL Allow militarist to teach

COLMSLM Allow anti-American Muslim Clergyman to teach in college

COLRAC Allow racist to teach

DEGREE Respondent's highest degree

DENOM Specific Protestant denomination

EDUC Highest year of school completed

ETHNICITY Respondent’s race/ethnicity[[6]](#footnote-6)

FAIR People fair or try to take advantage

FEAR Afraid to walk at night in neighborhood

FINRELA Opinion of family income

FUND Fundamentalism of respondent’s religion

GRASS Should marijuana be made legal?

GUNLAW Favor or oppose gun permits

HAPMAR Happiness of marriage

HAPPY General happiness

HEALTH Condition of health

HOMOSEX Homosexual relations wrong or not wrong

ID Respondent’s identification (id) number

INCOME16 Total family income (2017)

LETDIE1 Allow incurable patients to die

LIBATH Allow anti‑religious book in library

LIBCOM Allow communist's book in library

LIBHOMO Allow homosexual's book in library

LIBMIL Allow militarist's book in library

LIBMSLM Allow anti-American Muslim clergyman's book in library

LIBRAC Allow racist's book in library

MADEG Mother's highest degree

MAEDUC Highest year school completed, mother

MARITAL Marital status

PADEG Father's highest degree

PAEDUC Highest year school completed, father

PARTYID Political Party Affiliation

POLVIEWS Think of self as liberal or conservative

PORNLAW Feelings about pornography laws

POSTLIFE Belief in life after death

PRAY How often does respondent pray?

PRAYER Support Supreme Court Decision on prayer in public schools

PREMARSX Sex before marriage

PRES12 Vote for Romney or Obama in 2012

PRES16 Vote for Clinton or Trump in 2016

RACE Race of respondent

REBORN Ever had a "born again" religious experience

REGION Region of interview

RELIG Respondent's religious preference

RELIG1 More detailed breakdown of religious preference

RELIGOS Composite variable -- religiosity

RELITEN Strength of religious affiliation

RELPERSN Respondent considers self a religious person

SATFIN Satisfaction with financial situation

SEX Respondent's sex

SIZE Size of place respondent lives in thousands

SPDEG Spouse's highest degree

SPEDUC Highest year school completed, spouse

SPKATH Allow anti‑religionist to speak

SPKCOM Allow communist to speak

SPKHOMO Allow homosexual to speak

SPKMIL Allow militarist to speak

SPKMSLM Allow anti-American Muslim clergyman to speak

SPKRAC Allow racist to speak

SUICIDE1 Suicide if incurable disease

TRUST Can people be trusted?

WTSS Weight variable for GSS18 (data subset already weighted by the variable WTSS)

XMOVIE Seen X-rated movie in last year

YEAR Year of survey (2018 for all respondents)

ZODIAC Respondent's astrological sign

ZZATTEND1 Recoded attendance at religious services

ZZPRAY1 Recoded frequency of prayer

ZZRELITEN1 Recoded importance of religion

ZZBIBLE1 Recoded feelings about Bible

ZZBIBLE2 Alternative recoding of feelings about Bible

ZZFUND\_TYPOLOGY Composite variable – typology of fundamentalism

1. Recoding into the same variable doesn't work this way, but don't worry about that since we're recoding into a different variable. [↑](#footnote-ref-1)
2. A list of variables in the data set is also in the Appendix to these exercises. [↑](#footnote-ref-2)
3. A list of variables in the data set is also in the Appendix to these exercises. [↑](#footnote-ref-3)
4. We'll call this new variable BIBLE2 to distinguish it from BIBLE1 which we created in Exercise 3. [↑](#footnote-ref-4)
5. A list of variables in the data set is also in the Appendix to these exercises. [↑](#footnote-ref-5)
6. This variable was created by combining responses to a question asking the respondent’s race (coded as White, Black, and Other), and another question asking whether the respondent is Hispanic. Any respondent identifying as Hispanic was so classified, regardless of race. [↑](#footnote-ref-6)