**TOLERANCE1T: Exercise Using SPSS to Explore Measurement, Reliability and Relationships Between Variables**

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**Note to the Instructor:** The data set used in this exercise is gss14\_subset\_for\_classes\_TOLERANCE.sav which is a subset of the 2014 General Social Survey. 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.  This exercise uses COMPUTE in SPSS to create new variables, FREQUENCIES to see how respondents answered the questions, and CROSSTABS to explore the relationships between variables.  Cronbach’s Alpha is used to estimate the internal consistency of the composite measures that we’re going to create.  There is an excellent YouTube video in two parts on Cronbach’s Alpha — ([**Part 1**](https://www.youtube.com/watch?v=2gHvHm2SE5s) and [**Part 2**](https://www.youtube.com/watch?v=9rS49o1rdnk)). A good reference on using SPSS is *SPSS for Windows Version 23.0 A Basic Tutorial* by Linda Fiddler, John Korey, Edward Nelson (Editor), and Elizabeth Nelson.  The online version of the book is on the [**Social Science Research and Instructional Council's Website**](http://ssric.org/node/582).  You have permission to use this exercise and to revise it to fit your needs.  Please send a copy of any revision to the author. Included with this exercise (as separate files) are more detailed notes to the instructors, the SPSS syntax necessary to carry out the exercise (SPSS syntax file), and the SPSS output for the exercise (SPSS output file).  Please contact the author for additional information.

I’m attaching the following files.

* [**Data subset**](http://ssric.org/files/gss14_subset_for_classes_TOLERANCE.sav) (.sav format).
* [**Extended notes for instructors**](http://ssric.org/files/Extended_Notes_for_Instructors_for_TOLERANCE1T.docx). MS Word (.docx) format.
* [**SPSS syntax file**](http://ssric.org/files/SPSS_Syntax_for_TOLERANCE1T.sps) (.sps format).
* [**SPSS output file**](http://ssric.org/files/SPSS_Output_for_TOLERANCE1T.spv) (.spv format).
* [**This page**](http://ssric.org/files/TOLERANCE1T.docx) in MS Word (,docx) format.

**Goals of Exercise**

The goal of this exercise is to create a measure of tolerance where tolerance refers to the willingness to allow people to express opinions that might be very different from their own.  In other words, the willingness to allow people basic civil liberties (i.e., speak in public, teach in college, have books in public libraries) regardless of their own personal opinions.  In subsequent exercises we will focus on discovering which individuals are more or less tolerant and to consider other opinions and behaviors that might be correlated with tolerance.  However, the focus of this exercise will be on creating the tolerance measure.  The exercise also gives you practice in using several SPSS commands – COMPUTE to create new variables, FREQUENCIES to explore how respondents answered the tolerance questions, and CROSSTABS to explore relationships between variables.  You will also be using Cronbach’s Alpha to estimate the internal consistency or reliability of the variables that make up the tolerance measure.

**Part I—Questions Used to Measure Tolerance**

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.  The GSS started in 1972 and has been an annual or biannual survey ever since.  For this exercise we’re going to use a subset of the 2014 GSS. Your instructor will tell you how to access this data set which is called gss14\_subset\_for\_classes\_TOLERANCE.sav.

Tolerance refers to the willingness of individuals to allow others to express opinions which might be very different from their own and to exercise their basic civil liberties in the expression of these opinions.  The GSS has a series of 18 variables that we can use to measure tolerance.  These 18 variables are divided into three sets of six variables each.

One set of variables deals with the willingness of respondents to allow those who might hold these very different opinions to teach in a college.  The questions on which these variables are based start with a general statement that “there are always some people whose ideas are considered bad or dangerous by other people. For instance, somebody who is against all churches and religion.”  This statement is followed by a question – “Should such a person be allowed to teach in a college or university, or not?”  There are six scenarios presented:

* “somebody who is against all churches and religion,”
* “a man who admits he is a communist,”
* “a man who admits he is a homosexual,”
* “a person who advocates doing away with elections and letting the military run the country,”
* “a Muslim clergyman who preaches hatred of the United States,” and
* “a person who believes that Blacks are inferior.”

The second set of questions focus on these same six scenarios but ask whether a book that such a person wrote “should be taken out of your public library.”  The third set asks whether such a person should “be allowed to make a speech in your (city/town/community).”

These questions were originally developed by Samuel Stouffer in his book on *Communism, Conformity, and Civil Liberties* (Doubleday, 1955). He asked about teaching in a college or university, having a book in a public library, and making a public speech for three groups:

* Communists,
* socialists, and
* those against all churches and religions.

These nine questions were included in the first three General Social Surveys in 1972, 1973, and 1974.  The question about socialists was dropped in 1975 and a question about homosexuals was added in 1973, those advocating military control of the country and those who are racists in 1976, and Muslim clergyman who preach hatred of the United States in 2008.  (See Tom W. Smith, “A Review of the Stouffer Civil Liberties Items on the General Social Survey,” GSS Topical Report No. 42, 2009)  The wording of the questions was not changed over time to ensure the comparability of the questions.  While we might prefer to bring the wording of the questions more in line with the way we would ask them today, it’s more important to maintain continuity over time.

So we’re working with 18 variables which are listed below:

* six questions focusing on teaching in a college or university – variable names are T1\_COLATH, T2\_COLCOM, T3\_COLHOMO, T4\_COLMIL, T5\_COLMSLM, T6\_COLRAC;
* six questions focusing on having books in a public library – variable names are T7\_LIBATH, T8\_LIBCOM, T9\_LIBHOMO, T10\_LIBMIL, T11\_LIBMSLM, T12\_LIBRAC; and
* six questions focusing on making a public speech in their community – variable names are T13\_SPKATH, T14\_SPKCOM, T15\_SPKHOMO, T16\_SPKMIL, T17\_SPKMSLM, T18\_SPKRAC.

Let’s start by running FREQUENCIES in SPSS for each of these three groups of six variables.  (See Chapter 4, Frequencies in the online SPSS book cited on page 1 of this exercise.)  The best way to organize your tables is to first request the three tolerance variables for those opposed to religion, then the three tolerance variables for Communists, and so on.  Write several paragraphs describing how respondents in 2014 answered these questions.  Organize your answer by discussing whether more or less tolerance is shown towards some of these six groups.  Think carefully how you are going to present the data to illustrate the patterns you see.

**Part II—Internal Consistency or Reliability of the Variables**

We don’t want to deal with each of these 18 variables separately.  Rather we want to develop composite measures that combine these variables.  Let’s start by developing six composite measures – one for each of the six groups (i.e., those opposed to religion, Communists, homosexuals, militarists, anti-American Muslim clergymen, racists).

Each group has three variables.  We need to determine if these three variables are internally consistent.  This is basically a question of reliability.  Are they consistent in the sense that a person who agrees that someone who is against religion should be allowed to teach in a college also thinks that such a person should also be allowed to make a public speech and have his or her books in public libraries?

A commonly used measure of internal consistency is Cronbach’s Alpha.  This statistic varies from 0 to 1.  Low values indicate low consistency and high values indicate high consistency.  Alpha increases as the number of items increases and as the correlation between items increases.  One rule of thumb that is often used is that an Alpha of .70 or higher is necessary to indicate reliability although some feel that a higher value is required.

Let’s have SPSS compute Cronbach’s Alpha for the three questions about those who are opposed to religion.  Those are T1\_COLATH, T7\_LIBATH, T13\_SPKATH.  Open the data set in SPSS and click on “Analyze” in the menu.  Then point your mouse at “Scale” and click on “Reliability Analysis”.  Click on each of the three variables in the box on the left and move them over to the “Item” box on the right until you have selected all three variables.  Click on the “Statistics” button in the upper right.  This will open the Statistics box. Then click on “Scale if item deleted” in the upper left and “Correlations” in the upper right.  Click on “Continue” and this will take you back to the original box where you selected the variables.  Finally click on “OK” and SPSS will carry out the calculations you requested.  There is an excellent YouTube video in two parts on Cronbach’s Alpha — ([**Part 1**](https://www.youtube.com/watch?v=2gHvHm2SE5s) and [**Part 2**](https://www.youtube.com/watch?v=9rS49o1rdnk)). My instructions only ask for some of the calculations suggested in this video.

In your output there are three important pieces of information:

* the value of Cronbach’s Alpha,
* the inter-item correlation matrix showing the correlations between each pair of variables, and
* the value of Cronbach’s Alpha if an item (i.e., variable) is deleted.

You want to get a Cronbach’s Alpha of .70 or higher.  The correlations between variables should be consistently high.  Generally the higher the inter-item correlations, the higher the value of Alpha.  It’s also helpful to look at the effect of deleting a variable on Alpha. This will tell you if you ought to consider deleting that variable.

Follow these instructions to compute Alpha for each of the six groups – those who are opposed to religion, Communists, homosexuals, militarists, anti-American Muslim clergyman, and racists.  Based on your analysis, do you think that each of these composite measures is internally consistent or reliable?  Explain why.

**Part III—Constructing the Six Composite Variables**

Construct six composite variables – one for each of the six groups.  Use COMPUTE in SPSS to create the composite measures.  (See Chapter 3, Creating New Variables Using Compute in the online SPSS book.)  If any cases have missing information for any of the three variables, that composite measure will automatically be given a system missing value.  Give your measures the following variable names – TOLATH, TOLCOM, TOLHOMO, TOLMIL, TOLMSLM, TOLRAC.  Remember that 1 is always the more tolerant response and 2 is the less tolerant response.  So for your composite measure low values will indicate more tolerance and high values will indicate less tolerance.  Assign value labels to make the output more readable.

It’s easy to make a mistake so I have created six variables that show you what the frequency distributions for your variables ought to look like.  The variables I created are named TOLATHR, TOLCOMR, TOLHOMOR, TOLMILR, TOLMSLMR, TOLRACR.  Notice the R at the end of each variable name.  That distinguishes your variables from my variables.  Run FREQUENCIES for your six variables and the six variables I created.  Your variables and my variables ought to have identical frequency distributions.  If they don’t, you made a mistake and you’ll need to redo your work in SPSS.

**Part IV—Constructing One Overall Composite Variable**

Now let’s construct one composite variable that will use all 18 variables.  Start by running the Cronbach’s Alpha analysis for all 18 variables.  Look at the Alpha value and the inter-item correlation matrix.  Is your value of Alpha higher or lower than in Part III?  The more items in the measure, the higher the value of Alpha (assuming similar inter-item correlations).  What did you find?

Once you have convinced yourself that the variables are internally consistent or reliable, use COMPUTE to create the 18-variable composite measure.  Name your variable TOL.  Add value labels to make it easier to read your output.  Run FREQUENCIES for your variable and for the variable I created which is named TOLR.  Compare the two frequency distributions.  They should be identical.  If they aren’t, you made a mistake and will have to redo your work in SPSS.

**Part V—Analysis**

How are our six composite measures – TOLATH, TOLCOM, TOLHOMO, TOLMIL, TOLMSLM, TOLRAC – related to each other?  To answer this question would require running 15 tables in CROSSTABS.  (See Chapter 5, Crosstabulations in the online SPSS book.)  That’s a lot of tables.  So let’s focus on how TOLRAC is related to each of the other variables.  Use CROSSTABS in SPSS to see how TOLRAC is related to TOLATH, TOLCOM, TOLHOMO, TOLMIL, and TOLMSLM.  That means you will need to run five tables in CROSSTABS. Put TOLRAC in the column and ask for the column percents.  Be sure to also get Chi Square and an appropriate measure of association.  Write a paragraph describing how TOLRAC is related to each of the other variables.

**Coming Attractions**

In other exercises we’re going to use the tolerance measure you created (TOL) to discover which individuals are more or less tolerant and to see if our tolerance measure is correlated with other opinions or behaviors.