# An Evaluation of Trends in GSS Items--Changes Due to the 1980 GSS

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We will describe four ways of exploring change in trends due to the inclusion of 1980 GSS data: the type of model best characterizing the relationship between the year of the survey and the change in responses, the constant or average pooled proportion and, calculated through regression analysis, the slope and the amount of explained variation. Attempting to summarize change, however, is hampered by two major considerations: the type of items and the number of data points available. All but a few items can be viewed as either Attitudinal, Demographic, Behavioral, or as Personal Evaluations. We will limit our analysis to only items with at least three data points (The 1980 GSS plus two other data points is the minimum) so that initial model estimates can be made. While our items are all included in two or more GSS's, we also include here data points from other national surveys which have asked the same questions. Items and statistics are listed in the 1980 Compendium of Trends on General Social Survey Questions. An ad-

ditional consideration is that the number of available data points varies widely from one question to another and by type of item as well. We will attempt to control for this factor, especially when dealing with differences due to item type.

There are a total of 236 items which meet our criteria (Three of these items have sufficient data points but could not be classified within our four item types and were thus dropped from further analysis). The largest category is Attitudinal with 46.6% of the items followed by Demographic with 27.1%, Behavioral with 19.5%, and finally Personal Evaluations with 5.5%. The number of data points available averages 7.95. This includes a maximum of 8 GSS's plus, whenever possible, data points (d.p.'s) from other national surveys (However, for Demographics only GSS d.p's are listed in the Compendium.). There are twenty items with more than 12 data points and 7 with 20 or more points. Two variables show 30+ points: Happy (33) and USWAR (32). These figures, however, often include more than one point per year. The average number of d.p.'s per item is highest for Personal Evaluations (9.5), followed by Attitudes (8.4), Demographics (7.7), and finally Behaviors (6.9). Only 8 of the items show the minimum of three data points: 4 Attitudes, 3 Behaviors, and 1 Demographic. Our reporting of trends and changes for all items cumulatively and by item type will be influenced by differences in the number of data points. We can expect, for example, that items with fewer data points will show less stability in model and that the 1980 GSS will have a greater impact on the amount of explained variance, the slope, and the constant.

Table 1 shows the number of models of each of the five forms with and without 1980 GSS data included. The possible models tested for are Constant (C), Significant linear Trend Fits (SLTF), Significant linear Component (SLC), Nonconstant, Nonlinear (NCNL), and also (when none of these forms fits) an indefinite model type is assigned: Can't Decide Model (CDM). Only one item has been assigned this amorphous form when the 1980 GSS data was included, while there were two such models prior to 1980.

The table illustrates the number of models which have not changed on the diagonal; all other cells represent model changes. Before 1980 29.7% of the models were Constant and this figure now drops to 23.3%. In other words, adding the 1980 data point has allowed for an additional 6.4% of the items to show significant fluctuation over time (to become linear or NCNL). Actually, these figures include 19 models which before 1980 were considered Constant but are now of another type, and 4 models which were not Constant before 1980 but are Constant now. 15 of the 19 new model

changes have become linear models (SLTF or SLC) and 4 are now Nonconstant, Nonlinear (NCNL). A total of 58.9% of the models before 1980 were linear, and this now rises slightly to 63.1%. The largest model type had been Significant Linear Component (36%); including 1980 data increases this category to 41.1%.

Table 2 shows a breakdown of 1980 models by the type of item. It can be seen that Demographics and Personal Evaluations are much more likely to show Constant models than are Attitudes or Behaviors. Attitudes, on the other hand, are more likely than Demographics to show SLC models (58.2% vs. 14.1%).

Model changes are analyzed by type of item in Tables 3-6. Table 3 shows the 110 Attitudinal items. 20.9% of these models change their forms due to the addition of 1980 data. There are now 17.3% Constant models, down from 22.7% previously. This includes 7 formerly Constant models which are now linear, while 1 previously Nonconstant, Nonlinear model is now Constant. The largest category of changed models, making up 23% of the changes, moves from Nonconstant, Nonlinear to Significant Linear Trend. 70% of the Attitudinal models are now linear (SLC or SLTF), a rise from 62.7% formerly.

Table 4 shows the 64 Demographic models. 26.6% of these have changed model types, slightly more than for Attitudes. Before 1980 data there were a total of 43.8% Constant models and this is now down very slightly to 39.1%. 25% of the pre-1980 Constant models are no longer Constant (half have become linear and half Nonconstant, Nonlinear). 49.9% of the Demographic models were linear and there is virtually no change in this amount (now 48.5%).

Table 5 shows the Behavioral models. 17.4% of these are changed models, a larger percentage than for other item types. There is also a drop in the number of models remaining Constant, from 19.6% previously to 10.9% now. There were no models which changed from a Nonconstant, Nonlinear to a Constant form.

The last item type to be analyzed for model changes is Personal Evaluations in Table 6. 23.1% of these items show model changes. Once more there is a drop in the number of Constant models: from 61.5% to 38.5% . However, this is much less impressive using actual numbers of items--the drop is from 8 to 5. Again, none of the non-constant models prior to 1980 are Constant now. Also, as with our other item types, the number of linear models rises from 38.5% to 59.6%. We summarize these findings in Table 7. For all four item types, the number of models becoming Constant is down: ranging from -23% for Personal Evaluations, to

-4.7% for Demographics. On the other hand, the number of linear models (SLC or SLTF) is up by an overall total of +4.8%.

We have already mentioned the problem in our analysis due to variation in the number of data points available, and that this varies by item type. We have tried to control for this in a crude fashion by dividing items into two categories: those with 3-7 data points and those with more than 8 data points. Table 8 shows our results. Overall, when there are less data points there are more model changes (30.9% vs. 18.1%). Also, when there are less data points there are more Constant models (46.7% vs. 3.2%). These trends are fairly consistent across all item types. Variation due to differences in the number of data points may be an important factor in analyzing change and, as Table 8 shows, there is a large difference in items within the two data point categories based on item type. While our split of 3-7 vs. 8+ data points divides the items fairly evenly, there is a large difference for certain item types, especially for Demographics (73% have 8 d.p.'s--having been included in all GSS's) and Behaviors (85% have 3-7 d.p.'s). (The number of changed models, when already broken down by no. of d.p.'s and by item type, becomes too small to allow for further analysis by the form of model change).

A second way to evaluate trends and change is to look at the average or constant and see what change was made when 1980 data is included (This actually is calculated by dividing the proportions by the inverse of their variances and then pooling). We will look at change across all items, disregarding model differences. We proceed with our analysis aware that much of the change we will find in the constant will be due to non-Constant models, and that regression analysis would give us a better description of our data for these models. Few of the items showed large constant changes. 8 items or 3.4% changed by more than .016, a change of 1.6 percentage points in the overall average. Let us remember, however, that this is not a change in the proportion from the previous survey to the 1980 GSS, but (roughly speaking) the change from the overall constant due to the inclusion of only one new data point (on the average, an addition of about 12% more cases than were included before). Even a fairly large difference in the 1980 data would thus not produce a very noticeable change in the overall average for those items with many data points.

Since change is so small, we have simply dichotomized results into categories of greater or equal to .007 and less than .007(.7%). 29% of the items changed their constants by .007 or more. This can be broken down by item types: Personal Evaluations and Attitudes were the most likely to change this much (38% and 37%

respectively), followed by Behaviors (22%), and finally Demographics (17%). We found, as expected, that more change occurs when we have fewer data points as this gives more weight to the 1980 survey. The slight trend, however, does not hold across all four item types and, in fact, is truly due only to the Demographics. For Demographics, there are a larger number of 8 data point items and these showed smaller constant changes.

Another way we could have analyzed this information was to look at the total amount of change over all items and within item types. When this was done, our figures were not appreciably altered. The average constant change over all 236 items was approximately .004(.4%). The largest change in any item was the 4.7% change for EQWLTH which measures the degree to which respondents feel government should concern itself with income differentials. Respondents were less apt to answer positively to this question than previously. However, there were only three data points for this item so the amount of change in 1980 would be expected to have a greater effect on this constant than for most other items. We list here the other items with much larger than average constant changes. While we did not attempt a very scientific selection process, we did take into consideration the fact that more change in the 1980 proportion would be necessary to produce the same change in the overall item constant when more data points already existed. We also report the direction of change here though, of course, this only becomes meaningful in relation to the manner in which the proportions have been calculated (e.g. yes as a percentage of no and don't know or vice versa--see the Compendium of Trends). EQWLTH (-.047 with 3 d.p.'s); ANOMIA5 (-.019 with 5 d.p.'s); ANOMIA7 (-.019 with 5 d.p.'s); RINCOME (-.020 with 6 d.p.'s); AGED (-.018 with 6 d.p.'s); COLATH (+.015 with 7 d.p.'); RACSEG (+.016 with 8 d.p.'s); NATARMS (+.020 with 10 d.p.'s); RACMAR(+.018 with 10 d.p.'s); RACSCHOL (+.020 with 15 d.p.'s).

Our next measure of change is the slope, calculated by performing a regression analysis with the proportion used as the dependent variable and the survey year as the independent variable. This procedure attempts to fit a linear model, so that the lack of a significant slope should not be taken as indicative of the absence of other types of patterns within the data. Looking at the slope makes most sense when we are dealing with linear models, though we can also report the lack of a significant slope and its size when models are Constant or Nonconstant, Nonlinear. We will begin this analysis by examining only those models which are linear or which were linear before 1980 data. In other words, at this point we are eliminating the 51 models which were constant before and after 1980 data was considered, the 16 models which were Nonconstant, Non-

linear at both time points, the 4 models which changed from Constant to Nonconstant, Nonlinear, and the 2 models which changed in the opposite direction. We are thus left with a total of 160 items or models to explore. We will add the eliminated models into our calculations of slope and slope change as a second step, reporting these figures separately.

Table 10 shows the average slopes taking into consideration all data points inclusive of the 1980 survey. This table, it should be noted, does not deal with change in slope--those figures will follow below. The average slope over all 160 items is .0093 or a directional trend in proportion of .93% per annum. This seems to vary by item type, with Demographics and Attitudes having larger slopes than Behaviors or Personal Evaluations. In other words, there seems to be a greater linear trend over time for Attitudes and Demographics (However, it must be recognized that several of the stronger slopes for Demographic variables are due solely to cohort effects). We do not seem to find consistent significant differences in slopes due to differences in number of data points. When we look at all models, including those which are not linear, we naturally find that the average slope is much smaller. For all models combined, the average linear change in slope per annum is .65%, or only about 2/3 as great as when just linear models were considered.

There are 10 items (4.3% of the total or 6.3% of the linear models) which have slopes of greater than . 02 or 2% per annum. Three of these are measures of income and thus slope change is mostly or entirely due to inflation. The large slope for COHORT simply indicates that as time goes by there are, naturally, less respondents included from the earlier cohort divisions. Also the large slope for VOTE76 is due to the inclusion of greater numbers of respondents who were too young to have voted in 1976. Other items with comparatively large average slopes are listed below: ABNOMORE (.0204 with 10 d.p.'s); ABPOOR (.0245 with 12 d.p.'s); EQWLTH (.0216 with 3 d.p.'s); RACMAR(.0205 with 10 d.p.'s); PORNOUT (.0261 with 6 d.p.'s).

We will now look at absolute change in slope due to the inclusion of 1980 GSS survey data. We have reported these figures in Table 11, first for only the 160 linear models (including models which had been linear but are now Constant), and then for all models combined. The overall average slope change does not much differ whether we look at only the 160 linear models or at all 233 models. For the first group, the average slope change is .0036 (.36% per annum) and for the total group of items the average slope change is .0032 (.32% per annum). This amount does depend on the

number of data points: change is greater when there are fewer data points involved (.0043 for the 3-7 data point linear models as compared to .0027 for the 8+ group). This relationship thus biases our comparisons of slope change by item types.

Looking at the total for the item types, Attitudes show greater proportional slope change due to 1980 data than do the other types (.0045 for Attitudes compared to .0022 for other item types). However, much of the larger figure for Attitudes-- as compared to Demographics in particular--could be due to the fewer Demographics with less than 8 data points. For this category, linear model Demographics show an average slope change of .0087, higher than for any other item type. However, even in this category Attitudes have the second highest slope change (.0047), while Personal Evaluations are not far behind at .0039. These figures change somewhat when all items are included in the analysis, though the basic orderings of item types and by data points remain similar.

The items with the largest slope changes (giving consideration to differences due to data points--a larger slope change was necessary for inclusion here when there were fewer d.p.'s available) include: ABANY (+.0299 with 3 d.p.'s); ANOMIA5 (-.0118 with 5 d.p.'s); COLMIL (+.0211 with 3 d.p.'s); CONMEDIC (+.0102 with 17 d.p.'s); LIBRAC (-.032 with 4 d.p.'s); NATARMS (-.0065 with 10 d.p.'s); NATFARE (+.0071 with 9 d.p.'s); RACDIN (-.0092 with 10 d.p.'s); TICKET (+.0129 with 5 d.p.'s).

It is also interesting to look at real slope change (taking direction into account) in order to evaluate whether trends are becoming more or less pronounced. We have accomplished this by analyzing the difference between the slopes in 1978 and 1980. If the 1980 slope is larger (ignoring the signs) then the slope change will be considered to be positive and vice versa. Table 12 displays our results. The most outstanding feature of the table is the large number of slopes becoming smaller (negative). For all models, 76% of items with less than 8 d.p.'s and 67% of items with 8 or more d.p.'s have negative real slope changes. This does not differ noticeably when we consider only linear models. The predominance of negative slope change occurs for all of the item types except Personal Evaluations, and there are much fewer items of this type. The table also gives us the magnitude of these real slope changes. It can be seen that the changes tend to be slightly larger when there are fewer data points (-.0032 for less than 8 d.p.'s vs. -.0012 for greater than 8 d.p.'s). These figures seem to indicate that the rate of change over time, as measured by our data, may be slowing; and secondly, since the average slope for combined models is now .0065, the real slope change, especially for

linear models, is relatively quite significant.

Our final method of looking at change and trends will be to examine the R' averages (the average amount of explained variance in items due to the survey year) by the number of data points and by the type of items. We have again looked separately at only linear models for which the R-squared is a more appropriate measure of explained variance , but we also report the R-squared and also the R-squared change for all models. First we see that the R-squared for linear models (.61) is, as expected, larger than when combined models are considered (.47). These numbers can be interpreted to mean that for all models 47% of variance is explainable by the year of the survey in a linear fashion. There is only minor overall variation in this amount by number of data points. Also, there is little difference in these figures by item type except for a lower average R-squared for Personal Evaluations. Looking at linear models only, the average R-squared for the other three item types is .65 while for Personal Evaluations it is .39. around .65, for Personal Evaluations it is .39 (for linear models only). These figures are comparatively lower for combined models. Among the other three item types--looking still at only linear models-- Behaviors show a slightly higher R-squared (.70 vs. .65 for Demographics and .60 for Attitudes. In sum, it seems that the year of the survey is highly related to change in proportions for these items. This remains true for all item types even after more survey data points for different time periods are added.

We list below the items with the largest R-squared values chosen only from those items with more than 9 data points. (It was found that there were a multitude of items with very large R-squared's and fewer than 9 data point. We thus report only those items where more data points were available such that the ability of the linear trend to explain variance becomes more meaningful (We arbitrarily chose 9 d.p.'s as the minimum for inclusion in order to limit the size of the list): ATTEND (.83 with 9 d.p.'s); NATSPAC (.81 with 9 d.p.'s); RACDIN (.86 with 10 d.p.'s); ABPOOR (.81 with 12 d.p.'s); PISTOL (.88 with 12 d.p.'s); ABDEFECT (.84 with 13 d.p.'s); COURTS (.84 with 13 d.p.'s).

Table 14 looks at change in R-squared due to the inclusion of 1980 survey data. Besides looking at the figures as we did for the average R-squared, we will also examine the direction of the change. Unlike most other measures in this study, the direction of values becomes meaningful in the aggregate as well as for the individual items. Absolute change and real change is thus reported separately. Tables 14 and 15 also break down the R-squared changes by item type and by the number of data points. Again we will look at

linear models only and then at all models combined.

We begin the analysis by describing absolute change. The overall absolute R-squared change for all models averages .16, and this hardly varies when we consider only linear models. There is some variation due to the number of data points: when there are fewer data points, the absolute change in R-squared due to the 1980 data is, of course, greater. Thus, when we look at all models with less than 8 data points, the average absolute change is .22 while for those models with greater than 7 data points the change is only .09. Combining all models the highest average absolute change in R-squared is found for Personal Evaluations (.20) and the lowest amount for Demographics (.14). The other item types fall about half way between these figures. These amounts do not noticeably change when we consider only linear models. When we look only at linear models with 3-7 d.p.'s, Demographics have the largest R-squared (.31) with Attitudes the lowest (.24). For greater than 8 d.p. models, however, this ordering changes, though there is now virtually no difference between the absolute R-squared's of Attitudes and Demographics--Behaviors and Personal Evaluations remain lower (.03).

Looking next at real R-squared change (taking direction of change into consideration), the average for all models is -.03 and not very different (-.01) when only linear models are examined. There is not much variation in this finding either by number of data points or by types of items. When we look only at less than 8 d.p. models there has been a slight loss of explained variance (-.07) while for greater than 7 d.p. items the real change in explained variance averaging over all models is approximately zero. These figures vary only slightly for different item types, with differences mostly falling in categories where few models are represented (as with less than 8 d.p.'s for Demographics, and for Personal Evaluations).

The list below shows items with the largest R-squared changes after taking into consideration the number of data points available. (We list here only one item with 3 data points since all such items showed very large R-squared change: (This is because with two data points R-squareds equal 1.00 and thus 3 points is really the minimum necessary to set up a meaningful regression line --one which not only shows direction, but can allow for error.) ANOMIA5 (+.54 with 5 d.p.'s); AMICABLE (-.69 with 5 d.p.'s); BURGLR (-.76 with 5 d.p.'s); GETAHEAD (-.58 with 5 d.p.'s); HAPMAR (-.61 with 7 d.p.'s); SATJOB (-.50 with 7 d.p.'s); SPKHOMO (+.54 with 5 d.p.'s); WKSUBS (-.96 with 6 d.p.'s); WRKSLF (-.86 with 3 d.p.'s).

It is impossible to sum this analysis into a simple statement

describing the amount of change we have found due to 1980 GSS data. Before we form conclusions emphasizing new directions and trends, it first must be fully understood that some change is expected. For example, for a model to be accepted through the statistical procedures we employ, it must be significant at the .05 level. In other words, approximately 12 model changes (5% of 233) should appear by chance alone. A certain amount of bounce in the constant, slope, and amount of explained variance should also be expected. We can certainly see, however, that the amount of change we have reported (for all four methods of evaluation) is greater than that which could be understood through chance occurrences alone. 21% of models have changed their forms and only 29% of models have shown a lack of directional component (that is to say they are Constant) both in 1978 and 1980. Thus, the number of model changes we have found is far greater than chance alone would explain. Also, if we consider the number of non-Constant models as an indication of change (or in this case perhaps trends is the preferable nomenclature) then the (1980) GSS continues to show that annual or bi-annual surveys, for even as short a period as covered by most items here, are capable of uncovering interesting patterns of social change.

It is rather arbitrary whether we consider the changes in the pooled constants to be large or small, but 29% of the items have constant changes of over .007. The average absolute slope change, however, is relatively large: equal to nearly 1/2 the average 1980 average slope. In fact, the real slope change shows a rather systematic and directional pattern of change: 73% of the items show negative slope changes (becoming smaller). The average change in the amount of absolute explained variance is also rather large: equal to about 1/4 of the average R-squared. However, there does not seem to be any clear direction to average R-squared changes--they are as likely to become larger as smaller.

Finally, we have attempted to find differences or similarities in change among item types. Our original four methods of evaluating change have actually become six now: We have analyzed model change, constant change, real and absolute slope change, and real and absolute R-squared change. Ignoring the almost complete lack of change due to real R-squared, and controlling for the number of data points, we are able to rank item types on their relative degree of change for the five other methods. Personal Evaluations are the most likely to show change while Demographics and Behaviors are the least likely. When the four item types are ranked on amount of change for the five possible methods we have of evaluation, we find that Attitudes rank no lower than second on any of the methods and this pattern is only broken by a fourth ranking on slope change;

Personal Evaluations rank first or second except for a lower ranking for slope change; Demographics rank last or second last on all methods but for a first ranking on the number of model changes; and Behaviors rank last or second last on all four methods of evaluating change.

Table 1: Model Types for All Items--1978 and 1980 Models*

| 1978 Models | 1980 Models | | | | |
|---|---|---|---|---|---|
| | C** | SLC | SLTF | NCNL | CDM | TOT |
| C | 51 | 6 | 9 | 4 | -- | 70(29.7%) |
| SLC | 0 | 78 | 2 | 5 | -- | 85(36.0%) |
| SLTF | 2 | 7 | 41 | 4 | -- | 54(22.9%) |
| NCNL | 2 | 6 | -- | 16 | 1 | 25(10.6%) |
| CDM | -- | -- | -- | 2 | -- | 2(00.9%) |
| TOT | 55 | 97 | 52 | 31 | 1 | 236 |
| | 23.3% | 41.1% | 22.0% | 13.1% | 0.4% | 100.0% |

* Both 1978 and 1980 models are cumulative, including that year and all data points before that year as listed in the 1980 Compendium of Trends on General Social Survey Questions.

** C=Constant; SLC=Significant Linear Component; SLTF=Significant Linear Trend Fits; CDM=Can't Decide Model

TABLE 2: 1980 MODELS BY ITEM TYPES

| | ATT* | BEH | DEM | PER | TOT |
|---|---|---|---|---|---|
| C | 19 | 5 | 25 | 5 | 54 |
| | 17.3% | 10.9% | 39.1% | 38.5% | 23.5% |

| | | | | | |
|---|---|---|---|---|---|
| SLC | 64 | 20 | 9 | 6 | 99 |
| | 58. 2% | 43.55% | 14.1% | 46.2% | 41.5% |
| SLTF | 13 | 14 | 22 | 2 | 41 |
| | 11.8% | 30.4% | 34.4% | 15.4% | 22.2% |
| NCNL | 14 | 7 | 7 | -- | 28 |
| | 12.7% | 15.2% | 10.9% | --- | 13.3% |
| CDM | -- | -- | 1 | -- | 1 |
| | | | 1.6% | | 0.4% |
| TOT | 110 | 46 | 64 | 13 | 233 |
| | 100% | 100% | 100% | 100% | 100% |

* ATT=Attitudes; BEH=Behaviors; DEM=Demographics; PER=Personal Evaluations

TABLE 3: MODELS FOR ATTITUDINAL ITEMS--1978 AND 1980

| 1978 MODELS | | | | 1980 MODELS | | |
|---|---|---|---|---|---|---|
| | C | SLC | SLTF | NCNL | CDM | TOT |
| C | 18 | 3 | 4 | -- | -- | 25(22.7%) |
| SLC | -- | 52 | 1 | 3 | -- | 56(50.9%) |
| SLTF | 1 | 3 | 8 | 1 | -- | 13(11.8%) |
| NCNL | -- | 6 | -- | 9 | -- | 15(13.6%) |
| CDM | -- | -- | -- | 1 | -- | 1(00.9%) |
| TOT | 19 | 64 | 13 | 14 | -- | 110 |
| | 17.3% | 58.2% | 11.8% | 12.7% | -- | 100% |

Table 4:Models for Demographic Items--1978 and 1980

| 1978 Models | | | | 1980 Models | |
|---|---|---|---|---|---|
| | C | SLC | SLTF | NCNL | CDM | TOT |

| | | | | | | |
|---|---|---|---|---|---|---|
| C | 21 | 1 | 3 | 3 | -- | 28(43.8%) |
| SLC | 1 | 7 | 1 | 1 | -- | 10(15.5%) |
| SLTF | 1 | 1 | 18 | 2 | -- | 22(34.4%) |
| NCNL | 2 | -- | -- | 1 | 1 | 4(6.3%) |
| CDM | -- | -- | -- | -- | -- | --- |
| TOT | 25 | 9 | 22 | 7 | 1 | 69 |
| | 39.1% | 14.1% | 34.4% | 10.9% | 1.6% | 100% |

Table 5: Models for Behavioral Items--1978 and 1980

| 1978 Models | 1980 Models | | | | |
|---|---|---|---|---|---|
| | C | SLC | SLTF | NCNL | CDM | TOT |
| C | 5 | 1 | 2 | 1 | -- | 9(19.6%) |
| SLC | -- | 14 | -- | -- | -- | 14(34.8%) |
| SLTF | -- | 3 | 13 | -- | -- | 16( 3.1%) |
| NCNL | -- | 1 | -- | 6 | -- | 7(15.2%) |
| CDM | -- | -- | -- | -- | -- | --- |
| TOT | 5 | 19 | 15 | 7 | -- | 46 |
| | 10.9% | 41.3% | 32.6% | 15.2% | -- | 100% |

Table 6: Models for Personal Evaluations--1978 and 1980

| 1978 Models | 1980 Models | | | | |
|---|---|---|---|---|---|
| | C | SLC | SLTF | NCNL | CDM | TOT |
| C | 5 | 2 | 1 | -- | -- | 8(61.5%) |
| SLC | -- | 4 | -- | -- | -- | 4(30.8%) |
| SLTF | -- | -- | 1 | -- | -- | 1(7.7%) |

| | | | | | | |
|---|---|---|---|---|---|---|
| CDM | -- | -- | -- | -- | -- | --------- |
| TOT | 5 | 6 | 2 | -- | -- | 13 |
| | 38.5% | 46.2% | 15.4% | -- | -- | 100% |

Table 7: Model Changes by Item Type

| | N | ATT | BEH | DEM | PER | TOT |
|---|---|---|---|---|---|---|
| changed models* | (50) | 20.9% | 17.4% | 26.6% | 23.1% | 21.2% |
| change in C's** | (23) | -5.4% | -9.3% | -4.7% | -23.0% | -6.2% |
| change in linears*** | (22) | +7.3% | -8.7% | -1.5% | +23.8% | +4.8% |

* Models which changed from 1978 to 1980
** Change in the number of Constant models from 1978 to 1980
*** Change in the number of linear models (SLC and SLTF) from 1978 to 1980

Table 8: Model Changes by Item Type and by No. of Data Points (Percentages given)

| | ATT | | BEH | | DEM | | PER | | TOT | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 3-7* | 8+* | 3-7 | 8+ | 3-7 | 8+ | 3-7 | 8+ | 3-7 | 8+ |
| changed models | 26.7% | 12.2 | 18.0 | 14.3 | 46.7 | 19.6 | 37.5 | --- | 30.9 | 18.1 |
| Models now C** | 31.7% | 2.0 | 15.4 | --- | 40.0 | 4.9 | 62.5 | --- | 46.7 | 3.2 |
| Models C-C*** | 30.0% | 2.3 | 12.8 | --- | 40.0 | 2.0 | 100.0 | --- | 28.6 | 1.8 |
| Tot N | 61 | 49 | 39 | 7 | 15 | 49 | 9 | 4 | 124 | 109 |

* 3-7=items with 3-7 data points; 8+=items with 8 or more d.p.'s
** models now Constant

*** models Constant in 1978 and 1980

Table 9: Change in Constant--Items Changing more than .007 by Item Type

| | ATT | BEH | DEM | PER | TOT |
|---|---|---|---|---|---|
| 3-7 | 22 | 8 | 5 | 3 | 38 |
| | 36% | 21% | 33% | 33% | 31% |
| 8+ | 20 | 2 | 6 | 2 | 33 |
| | 40% | 29% | 12% | 50% | 30% |
| TOT | 42 | 10 | 11 | 5 | 71 |
| | 38% | 26% | 17% | 38% | 26% |

Table 10: Ave. Slopes for Linear Models only and for All Models Combined by Item Type and Data Points

| d.p.'s:models | ATT | BEH | DEM | PER | TOT |
|---|---|---|---|---|---|
| 3-7:linear mod. | .0101 | .0064 | .0134 | .0066 | .0091 |
| all models | .0066 | .0060 | .0097 | .0039 | .0060 |
| 8+:linear mod. | .0105 | .0089 | .0100 | .0051 | .0100 |
| all models | .0080 | .0064 | .0066 | .0057 | .0072 |
| TOT:linear mod. | .0103 | .0069 | .0109 | .0057 | .0093 |
| all models | .0072 | .0061 | .0073 | .0046 | .0065 |

Table 11: Absolute Change in Slopes for Linear Models and for All Models Combined by Item Types and by Data Points

| d.p.'s:models | ATT | BEH | DEM | PER | TOT |
|---|---|---|---|---|---|
| 3-7:linear mod. | .0047 | .0018 | .0087 | .0039 | .0043 |

| | | | | | |
|---|---|---|---|---|---|
| all models | .0037 | .0023 | .0065 | .0026 | .0036 |
| 8+:linear mod. | .0044 | .0009 | .0015 | .0006 | .0027 |
| all models | .0041 | .0008 | .0018 | .0006 | .0027 |
| TOT:linear mod. | .0045 | .0016 | .0024 | .0015 | .0036 |
| all models | .0039 | .0020 | .0030 | .0018 | .0032 |

Table 12: Real Change in Slopes for Linear Models and for All Models Combined by Item Type and by No. of Data Points (% ave w/o 3 indicates % ave. after removing items with only 3 d.p.'s); slope averages are in .01's (e.g. .30=.0030)

| | ATT | | BEH | | DEM | | PER | | TOT | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 3-7 | 8+ | 3-7 | 8+ | 3-7 | 8+ | 3-7 | 8+ | 3-7 | 8+ |
| %neg. all models | 70% | 63% | 87% | 63% | 89% | 76% | 43% | 50% | 76% | 67% |
| %neg. linear mod. | 91% | 65% | 86% | 60% | 100% | 100% | 00% | 50% | 89% | 65% |
| ave slope: change all models | -.33 | -.16 | -.29 | -.03 | -.53 | -.09 | -.31 | -.07 | -.32 | -.12 |
| ave slope: change all mod. w/o 3 d.p. items | -.16 | -.16 | -.27 | -.03 | -.15 | -.09 | -.31 | -.07 | -.20 | -.12 |
| ave slope change linear mod. | -.22 | -.17 | -.08 | -.03 | -.55 | -.07 | -.01 | -.05 | -.20 | -.12 |

Table 13: R-squared Ave. for Linear Models and for All Models Combined by Item Type and No. of Data Points

| | ATT | BEH | DEM | PER | TOT |
|---|---|---|---|---|---|
| 3-7:linear mod. | .66 | .68 | .64 | .47 | .66 |
| all models | .50 | .56 | .31 | .29 | .48 |
| 8+:linear mod. | .49 | .74 | .66 | .29 | .59 |
| all models | .44 | .74 | .66 | .26 | .55 |

| | | | | | |
|---|---|---|---|---|---|
| TOT:linear mod. | .60 | .70 | .65 | .39 | .61 |
| all models | .47 | .60 | .53 | .28 | .47 |

Table 14: Absolute R-squared Change for Linear Models and for All Models by Item Type and by No. of data points

| | ATT | BEH | DEM | PER | TOT |
|---|---|---|---|---|---|
| 3-7:linear mod. | .24 | .12 | .31 | .26 | .19 |
| all models | .21 | .17 | .35 | .27 | .22 |
| 8+:linear mod. | .10 | .03 | .08 | .03 | .08 |
| all models | .10 | .08 | .09 | .03 | .09 |
| TOT:linear mod. | .17 | .10 | .13 | .19 | .15 |
| all models | .16 | .11 | .15 | .20 | .16 |

Table 15: R-squared Real Change (taking direction into consideration)
for Linear Models and for All Models by Item Types and by No. of Data points

| | ATT | BEH | DEM | PER | TOT |
|---|---|---|---|---|---|
| 3-7:Linear mod. | +.02 | -.02 | +.04 | +.08 | -.03 |
| all models | -.01 | -.07 | -.20 | -.13 | -.07 |
| 8+:Linear mod. | .00 | -.04 | +.03 | -.03 | +.01 |
| all models | .00 | +.03 | +.01 | -.02 | .00 |
| TOT:Linear mod. | .01 | -.02 | +.03 | .04 | -.01 |
| all models | .00 | -.05 | -.03 | -.09 | -.03 |