

State of New Mexico K-6 ATOD Prevention Programs

**Talking Talons Project, Site ID#: 81**

**K-6 Program Findings Sheet - 2009**

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**Project Goal and Objectives**

Improve risk and protective factors, science attitudes and knowledge.

## **Description of Target Community**

Semi rural New Mexico public school students.

## **Evaluation Design and Sample Description**

The Talking Talons program was been evaluated using a pretest and posttest quasi- experimental design with control and treatment groups. As the program is offered by classroom, true random assignment is not feasible. However, the control groups are selected from the same school using teachers who are not currently receiving the program. Although ideally a Solomon design would be used, the effort and expense involved in collecting four sets of data points is prohibitive.

The use of a control group is imperative. Without control groups any changes cannot be attributed to the program. Factors such as maturation, the effect of testing and other outside factors cannot be eliminated as agents of change without the use of a control group. Improvements seen in the treatment group therefore cannot be ascribed to the program unless a control group is utilized. This year, because we were unable to obtain a new control group due to class sizes and distributions. However, the control group from last year is from the same schools and provided a match for the treatment group. Therefore, the control group listed below is from last years data. The sample size for K6 is larger than that provided to OSAP, because we gave the K6 instrument to another group as well in order to improve the sample size. Also, the data for this year was added to the chart from last year to allow comparisons across years and to utilize the control group for comparisons. The urrent year data is presented in color.

Repeated measures GLM comparing pre and posttest scores group were run to examine possible differences across group and gender and to compare the results to those obtained from the t-tests.

## Findings Summary Table

Total Sample -

| Sub-Scale                                   | Range |     | Baseline Mean Score | Post-Test Mean Score | Paired T-Test | SIG.   | Desired Outcome | Cronbach Alpha |
|---|-------|-----|---------------------|----------------------|---------------|--------|-----------------|----------------|
|   | Min   | Max |                     |                      |               |        |                 |                |
| SCHOOL                                      |       |     |                     |                      |               |        |                 |                |
| School Performance 09 (Grade) n=52          |       |     | 4.84                | 4.53                 | 1.62          | .107   |                 |                |
| School Performance 08 (Grade) n=61          | 0-6   |     | 4.33                | 4.51                 | t =-.99       | .33    | 🕒 Is better     | α =one item    |
| Control n=31                                |       |     | 4.71                | 4.84                 | t =-.61       | .56    |                 | One item       |
| School Attendance 09 n=55                   |       |     | 2.94                | 2.63                 | 3.45          | .001** |                 |                |
| School Attendance 08 n=69                   | 1-4   |     | 2.78                | 2.82                 | t =-.41       | .67    | 🕒 Is better     | α =one item    |
| Control n=31                                |       |     | 2.87                | 2.77                 | t =1.0        | .325   |                 | One item       |
| Disruptive School Behaviors (Youth) 09 n=56 |       |     | 1.08                | 1.46                 | -1.39         | .169   |                 | .29            |
| Disruptive School Behaviors (Youth) 08n=70  | 0-12  |     | 1.06                | 1.88                 | t =-4.89      | .00**  | 🕒 Is better     | α =84          |
| Control n=31                                |       |     | 1.03                | 1.45                 | t =-1.23      | .23    |                 | .31            |
|   |       |     |                     |                      |               |        |                 |                |
| School Protective Factors (Youth) 09 n=56   |       |     | 37.7                | 36.46                | 1.62          | .110   |                 | .81            |
| School Protective Factors (Youth) 08 n=76   | 11-44 |     | 38.75               | 38.08                | t =1.20       | .23    | 🕒 Is better     | α =.80         |
| Control n=31                                |       |     | 40.48               | 36.22                | t =3.48       | .002** |                 | .79            |
| FAMILY                                      |       |     |                     |                      |               |        |                 |                |

|  |        |      |      |         |       |             |                |
|--|--------|------|------|---------|-------|-------------|----------------|
| Parent Communication (Youth) 09 n=56       |        | 6.82 | 6.26 | 1.66    | .102  |             | .31            |
| Parent Communication (Youth) 08 n=68       | 0-12   | 6.58 | 5.85 | t =2.27 | .026* | ☺ Is better | $\alpha = .40$ |
| Control n=30                               |        | 6.57 | 5.87 | t =1.15 | .256  |             | .43            |
| Family Bonding (Youth) n=56                |        | 4.61 | 4.66 | -.62    | .536  |             | .03            |
| Family Bonding (Youth) n=68                | 0-5    | 4.64 | 4.48 | t =1.49 | .14   | ☺ Is better | $\alpha = .25$ |
| Control n=30                               |        | 4.70 | 4.70 | t =0    | 1     |             | .25            |
| Family Cohesion & Adaptability (Parent) 09 |        | na   | na   | na      | na    |             |                |
| Family Cohesion & Adaptability (Parent) 08 | 20-100 | na   | na   | na      | na    | ☺ Is better | $\alpha =$     |
|  |        | na   | na   | na      | na    | na          | na             |

\*significant at  $p < .05$

| Sub-Scale                  | Range |     | Baseline Mean Score | Post-Test Mean Score | Paired T-Test | SIG. | Desired Outcome | Cronbach Alpha  |
|----------------------------|-------|-----|---------------------|----------------------|---------------|------|-----------------|-----------------|
|                            | Min   | Max |                     |                      |               |      |                 |                 |
| YOUTH ATOD                 |       |     |                     |                      |               |      |                 |                 |
| 30-Day Tobacco Use 09 n=56 |       |     | 0                   | 0                    |               |      |                 | 0 variance      |
| 30-Day Tobacco Use 08 n=69 | 0-2   |     | .00                 | .435                 | t =-1.35      | .18  | ☹ Is better     | $\alpha =$      |
| Control n=30               |       |     | .00                 | .00                  | t =           |      |                 | 0               |
| 30-Day Alcohol Use 09 n=56 |       |     | 0                   | 0                    |               |      |                 |                 |
| 30-Day Alcohol Use n=68    | 0-1   |     | .044                | .088                 | t =-1.75      | .083 | ☹ Is better     | N/A Single Item |

|  |      |       |       |          |      |             |                       |
|--|------|-------|-------|----------|------|-------------|-----------------------|
| Control n=30   |      | .00   | .070  | t =-1.43 | .161 |             | N/A<br>Single<br>Item |
| 30-Day Marijuana Use<br>09 n=54                              |      | 0     | 0     |          |      |             |                       |
| 30-Day Marijuana Use<br>n=67                                 | 0-1  | .000  | .03   | -1.42    | .159 | ☐ Is better | N/A<br>Single<br>Item |
| Control n=31   |      | .00   | .03   | -1.0     | .325 |             | N/A<br>Single<br>Item |
| 30-Day Illicit Drug Use<br>(Marijuana & Inhalant)<br>09 n=55 |      | .127  | .054  | 1.42     | .15  |             | -.04                  |
| 30-Day Illicit Drug Use<br>(Marijuana & Inhalant)<br>08 n=68 | 0-2  | .00   | .088  | t =-1.93 | .06  | ☐ Is better | $\alpha = 0$          |
| Control n=31   |      | .065  | .097  | t =-.571 | .572 |             | 0                     |
| Attitude Toward Use<br>(How wrong) 09 n=56                   |      | 34.35 | 35.21 | -1.74    | .087 |             | .61                   |
| Attitude Toward Use<br>(How wrong) 08 n=69                   | 9-36 | 34.81 | 33.57 | t =2.21  | .03* | ☐ Is better | $\alpha = .85$        |
| Control n=31   |      | 35.64 | 33.97 | t =2.71  | .01* |             | .51                   |
| Perceived Availability<br>(How easy to get) 09<br>n=54       |      | 4.07  | 4.44  | -1.51    | .135 |             | .47                   |
| Perceived Availability<br>08 (How easy to get)<br>n=67       | 3-12 | 4.16  | 5.40  | t =-3.83 | .00* | ☐ Is better | $\alpha = .74$        |
| Control n=31   |      | 4.13  | 4.80  | t =-1.88 | .07  |             | .71                   |
| Perceived Harm 09<br>n=52                                    |      | 7.88  | 8.21  | -1.16    | .25  |             | .45                   |
| Perceived Harm 08<br>n=56                                    | 0-9  | 7.77  | 7.30  | t =-1.39 | .168 | ☐ Is better | $\alpha = .78$        |
| Control n=27   |      | 7.70  | 7.96  | t =-.69  | .496 |             | .06                   |

\*significant at p<.05

N values given in first column for control and treatment

Findings Summary Table

By Gender - Males

| Sub-Scale                                   | Range |     | Baseline Mean Score | Post-Test Mean Score | Paired T-Test | SIG.   | Desired Outcome | Cronbach Alpha |
|---|-------|-----|---------------------|----------------------|---------------|--------|-----------------|----------------|
|   | Min   | Max |                     |                      |               |        |                 |                |
| <b>SCHOOL</b>                               |       |     |                     |                      |               |        |                 |                |
| School Performance (Grade) 09 n=23          |       |     | 4.73                | 4.78                 | -.153         | .88    |                 |                |
| School Performance (Grade) 08 n=37          | 0-6   |     | 4.21                | 4.19                 | t =-.102      | .919   | ☺ Is better     | α =one item    |
| Control n=16                                |       |     | 4.44                | 4.38                 | t =.199       | .85    |                 | One item       |
| School Attendance 09 n=26                   |       |     | 2.96                | 2.69                 | 2.57          | .016** |                 |                |
| School Attendance 08 n=39                   | 1-4   |     | 2.77                | 2.87                 | t =-.94       | .352   | ☺ Is better     | α =one item    |
| Control n=16                                |       |     | 3.00                | 2.81                 | t =1.06       | .083   |                 | One item       |
| Disruptive School Behaviors (Youth) 09 n=26 |       |     | 1.31                | 2.11                 | -1.72         | .081   |                 | .37            |
| Disruptive School Behaviors (Youth) 08 n=40 | 0-12  |     | 1.63                | 2.70                 | t =4.45       | .00**  | ☹ Is better     | α =.85         |
| Control n=16                                |       |     | .687                | 2.0                  | t =-2.89      | .011*  |                 | .57            |
| School Protective Factors (Youth) 09 n=26   |       |     | 36.34               | 35.34                | .897          | .378   |                 | .86            |
| School Protective Factors (Youth) 08 n=40   | 11-44 |     | 37.87               | 37.27                | t =-.77       | .465   | ☺ Is better     | .81            |
| Control n=16                                |       |     | 40.38               | 35.88                | 2.09          | .053   |                 | α =.82         |
| <b>FAMILY</b>                               |       |     |                     |                      |               |        |                 |                |
| Parent Communication (Youth) 09 n=26        |       |     | 6.50                | 5.96                 | 1.26          | .219   |                 | .27            |

|                                      |      |      |      |          |       |             |               |
|--------------------------------------|------|------|------|----------|-------|-------------|---------------|
| Parent Communication (Youth) 08 n=39 | 0-12 | 6.49 | 5.33 | t =2.64  | .012* | ☺ Is better | .51           |
| Control n=15                         |      | 6.60 | 5.53 | t =1.03  | .318  |             | .03           |
| Family Bonding (Youth) 09 n=26       |      | 4.53 | 4.57 | -.254    | .802  |             | 0             |
| Family Bonding (Youth) 08 n=39       | 0-5  | 4.64 | 4.28 | t =2.34  | .025* | ☺ Is better | .31           |
| Control n=15                         |      | 4.60 | 4.73 | t =-.807 | .433  |             | $\alpha =.30$ |

\*significant at p<.05

| Sub-Scale                    | Range |     | Baseline Mean Score | Post-Test Mean Score | Paired T-Test | SIG. | Desired Outcome |                 |
|------------------------------|-------|-----|---------------------|----------------------|---------------|------|-----------------|-----------------|
|                              | Min   | Max |                     |                      |               |      |                 |                 |
| YOUTH ATOD                   |       |     |                     |                      |               |      |                 |                 |
| 30-Day Tobacco Use 09 n=26   |       |     | 0                   | 0                    |               |      |                 |                 |
| 30-Day Tobacco Use 08 n=39   | 0-2   |     | .00                 | .77                  | t =-1.35      | .183 | ☹ Is better     | $\alpha =0$     |
| Control n=16                 |       |     | .00                 | .00                  | t =           |      |                 | 0               |
| 30-Day Alcohol Use 09 n=26   |       |     | 0                   | 0                    |               |      |                 |                 |
| 30-Day Alcohol Use 08 n=38   | 0-1   |     | .79                 | .158                 | t =-1.78      | .083 | ☹ Is better     | N/A Single Item |
| Control n=16                 |       |     | .00                 | .625                 | t =-1.00      | .33  |                 | N/A Single Item |
| 30-Day Marijuana Use 08 n=26 |       |     | 0                   | 0                    |               |      |                 |                 |
| 30-Day Marijuana Use 08      | 0-1   |     | .00                 | .53                  | t =-1.43      | .16  | ☹ Is better     | N/A Single Item |

|  |      |       |       |          |         |             |                       |
|--|------|-------|-------|----------|---------|-------------|-----------------------|
| n=38   |      |       |       |          |         |             |                       |
| Control n=16   |      | .00   | .63   | t =-1.0  | .33     |             | N/A<br>Single<br>Item |
| 30-Day Illicit Drug Use<br>(Marijuana & Inhalant)<br>09 n=25 |      | .12   | .04   | 1        | .32     |             |                       |
| 30-Day Illicit Drug Use<br>(Marijuana & Inhalant)<br>08 n=39 | 0-2  | .00   | .128  | t =-1.71 | .096    | ☐ Is better | $\alpha =0$           |
| Control n=16   |      | .13   | .19   | t =-.56  | .58     |             | 0                     |
| Attitude Toward Use<br>(How wrong)09 n=26                    |      | 33.96 | 35.07 | -1.46    | .154    |             | 0                     |
| Attitude Toward Use<br>(How wrong)08 n=39                    | 9-36 | 34.82 | 33.05 | t =2.89  | ..007** | ☐ Is better | $\alpha =.85$         |
| Control n=16   |      | 35.5  | 34.6  | t =1.06  | .303    |             | .68                   |
| Perceived Availability<br>(How easy to get) 09<br>n=26       |      | 4.46  | 4.23  | .664     | .513    |             | .53                   |
| Perceived Availability<br>(How easy to get) 08<br>n=37       | 3-12 | 4.24  | 6.13  | t =-3.99 | .00**   | ☐ Is better | $\alpha =.71$         |
| Control n=16   |      | 3.94  | 4.25  | t =-.735 | .474    |             | .86                   |
| Perceived Harm 09<br>n=26                                    |      | 7.42  | 8.26  | -2.27    | .033**  |             | .59                   |
| Perceived Harm 08<br>n=31                                    | 0-9  | 7.64  | 6.61  | t 2.04   | .05*    | ☐ Is better | $\alpha =.75$         |
| Control n=14   |      | 7.29  | 8.29  | -2.55    | .024    |             | -.19                  |

\*significant at  $p < .05$

By Gender - Females

| Sub-Scale                                | Range |     | Baseline Mean Score (n=__) | Post-Test Mean Score (n=__) | Paired T-Test | SIG.   | Desired Outcome | Cronbach Alpha |
|--|-------|-----|----------------------------|-----------------------------|---------------|--------|-----------------|----------------|
|  | Min   | Max |                            |                             |               |        |                 |                |
| <b>SCHOOL</b>                            |       |     |                            |                             |               |        |                 |                |
| School Performance Grade 09) n=29        |       |     | 4.93                       | 4.35                        | 2.44          | .021** |                 |                |
| School Performance08Grade) n=24          | 0-6   |     | 4.50                       | 5.00                        | t =-2.39      | .025*  | 👉 Is better     | α =one item    |
| Control n=15                             |       |     | 5.00                       | 5.33                        | t =-1.23      | .24    |                 | One item       |
| School Attendance n=29                   |       |     | 2.93                       | 2.59                        | 2.41          | .023** |                 |                |
| School Attendance n=29                   | 1-4   |     | 2.79                       | 2.72                        | t =.812       | .42    | 👉 Is better     | α =one item    |
| Control n=15                             |       |     | 2.73                       | 2.73                        | t =0          | 1      |                 | One item       |
| Disruptive School Behaviors (Youth) n=30 |       |     | .9                         | .9                          | 0             | 1      |                 | .10            |
| Disruptive School Behaviors (Youth) n=29 | 0-12  |     | .207                       | .655                        | t =-1.99      | .056   | 👉 Is better     | α =.80         |
| Control n=15                             |       |     | 1.40                       | .866                        | t =1.37       | .19    |                 | .25            |
| School Protective Factors (Youth) n=30   |       |     | 38.93                      | 37.43                       | 1.35          | .187   |                 | .73            |
| School Protective Factors (Youth) n=29   | 11-44 |     | 40.03                      | 39.55                       | t =.68        | .502   | 👉 Is better     | .78            |
| Control n=15                             |       |     | 40.60                      | 36.60                       | t =3.46       | .004** |                 | α .78          |
| <b>FAMILY</b>                            |       |     |                            |                             |               |        |                 |                |
| Parent Communication (Youth) n=30        |       |     | 7.10                       | 6.53                        | 1.12          | .27    |                 | .34            |

|  |        |      |      |          |      |             |               |
|--|--------|------|------|----------|------|-------------|---------------|
| Parent Communication (Youth) n=28            | 0-12   | 6.71 | 6.50 | t =.443  | .661 | ➡ Is better | .27           |
| Control n=15                                 |        | 6.53 | 6.20 | t =.505  | .621 |             | $\alpha =.74$ |
| Family Bonding (Youth) N=30                  |        | 4.67 | 4.73 | -.70     | .489 |             | .08           |
| Family Bonding (Youth) N=28                  | 0-5    | 4.65 | 4.82 | t =-1.54 | .134 | ➡ Is better | .14           |
| Control n=15                                 |        | 4.80 | 4.67 | t =.807  | .433 |             | $\alpha =0$   |
| Family Cohesion & Adaptability (Parent) n=30 |        | na   | na   | na       |      |             |               |
| Family Cohesion & Adaptability (Parent) n=25 | 20-100 | na   | na   | na       |      | ➡ Is better |               |

\*significant at  $p < .05$

| Sub-Scale                 | Range |     | Baseline Mean Score | Post-Test Mean Score | Paired T-Test | SIG. | Desired Outcome |                 |
|---------------------------|-------|-----|---------------------|----------------------|---------------|------|-----------------|-----------------|
|                           | Min   | Max |                     |                      |               |      |                 |                 |
| YOUTH ATOD                |       |     |                     |                      |               |      |                 |                 |
| 30-Day Tobacco Use n=30   |       |     | 0                   | 0                    |               |      |                 |                 |
| 30-Day Tobacco Use n=29   | 0-2   |     | .00                 | .00                  | t =-1.0       | .33  | ➡ Is better     | $\alpha =0$     |
| Control n=14              |       |     | .00                 | .00                  | na            | na   |                 | 0               |
| 30-Day Alcohol Use n=30   |       |     | 0                   | 0                    |               |      |                 |                 |
| 30-Day Alcohol Use n=29   | 0-1   |     | .00                 | .00                  | t =-1.0       | .33  | ➡ Is better     | N/A Single Item |
| Control n=14              |       |     | .00                 | .714                 | t =-1.0       | .33  |                 | N/A Single Item |
| 30-Day Marijuana Use n=29 |       |     | 0                   | 0                    |               |      |                 |                 |

|   |      |       |       |          |        |             |                       |
|---|------|-------|-------|----------|--------|-------------|-----------------------|
| 30-Day Marijuana Use<br>n=28                              | 0-1  | .00   | .00   | na       |        | ☺ Is better | N/A<br>Single<br>Item |
| Control n=15  |      | .00   | .00   | na       | na     |             | N/A<br>Single<br>Item |
| 30-Day Illicit Drug Use<br>(Marijuana & Inhalant)<br>n=30 |      | .13   | .07   | 1        | 0      |             | -.07                  |
| 30-Day Illicit Drug Use<br>(Marijuana & Inhalant)<br>n=28 | 0-2  | .00   | .00   | t =-1.0  | .33    | ☺ Is better | $\alpha =0$           |
| Control n=15  |      | .00   | .00   | t =1.00  | .33    |             | 0                     |
| Attitude Toward Use<br>(How wrong) n=28                   |      | 34.7  | 35.3  | -.97     | .39    |             | .48                   |
| Attitude Toward Use<br>(How wrong) n=29                   | 9-36 | 34.76 | 34.24 | t =.503  | .619   | ☺ Is better | $\alpha =.85$         |
| Control n=15  |      | 35.80 | 33.27 | t =2.77  | .015*  |             | .44                   |
| Perceived Availability<br>(How easy to get) n=29          |      | 3.71  | 4.64  | -2.97    | .006** |             | .35                   |
| Perceived Availability<br>(How easy to get) n=29          | 3-12 | 4.00  | 4.44  | t =-1.13 | .267   | ☺ Is better | $\alpha =.82$         |
| Control n=15  |      | 4.33  | 5.40  | t =-1.81 | .092   |             | .27                   |
| Perceived Harm n=26                                       |      | 8.34  | 5.15  | .481     | .635   |             | .31                   |
| Perceived Harm n=24                                       | 0-9  | 7.91  | 8.17  | t =-.655 | .519   | ☺ Is better | $\alpha =.80$         |
| Control n=13  |      | 8.15  | 7.61  | t =.905  | .383   |             | .39                   |

\*significant at  $p < .05$

## Demographics

Table 1 Gender 09

| Male or Female? |        | Frequency | Percent | Valid<br>Percent | Cumulative<br>Percent |
|-----------------|--------|-----------|---------|------------------|-----------------------|
| Valid           | Male   | 43.00     | 43.88   | 43.88            | 43.88                 |
|                 | Female | 55.00     | 56.12   | 56.12            | 100.00                |

|  |       |       |        |        |  |
|--|-------|-------|--------|--------|--|
|  | Total | 98.00 | 100.00 | 100.00 |  |
|--|-------|-------|--------|--------|--|

**Table 2 Age, number of people and years in country for 09**

|                                    | N     | Minimum | Maximum | Mean  | Std. Deviation |
|------------------------------------|-------|---------|---------|-------|----------------|
| How old are you?                   | 98.00 | 10.00   | 12.00   | 10.38 | 0.51           |
| Number of people live at home      | 97.00 | 2.00    | 13.00   | 4.51  | 1.52           |
| If no, years been in this country? | 1.00  | 18.00   | 18.00   | 18.00 | .              |

## Discussion of Findings

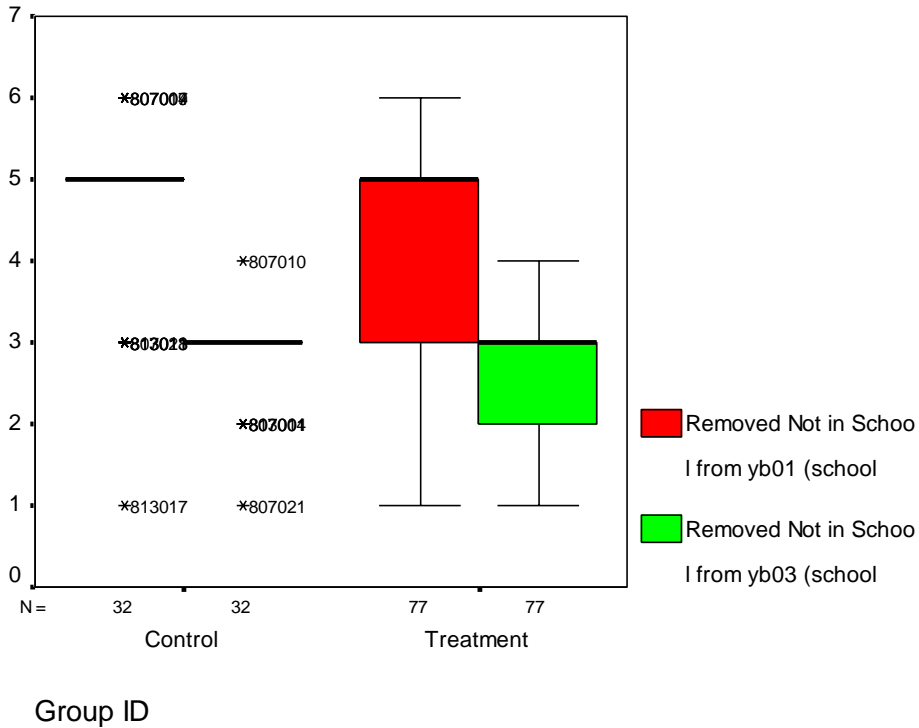
Examining the boxplots of scores is a good place to start to understand the behavior of the data. In many of these cases, a few outliers are impacting the data. As can be seen easily in the boxplots, a handful of students (often the same handful), consistently answer the question in a manner much different than their peers. Perusing the boxplot will yield a vast amount of information about actual possible changes.

A summary of the GLM is also reported for each scale. Full information is available from the evaluator if desired. This information examines the three way interaction between time, gender and group (control or treatment).

### **School attendance 08**

School did not change significantly for either group utilizing the t-test. GLM identified a significant change over time for both groups in both years. This is logical, as at the end of the year the students will have missed more days of school than at the beginning of the year.

**Figure 1 Boxplot of School Attendance by Group**



**Table 3 GLM Time by Group by Gender for School Attendance**

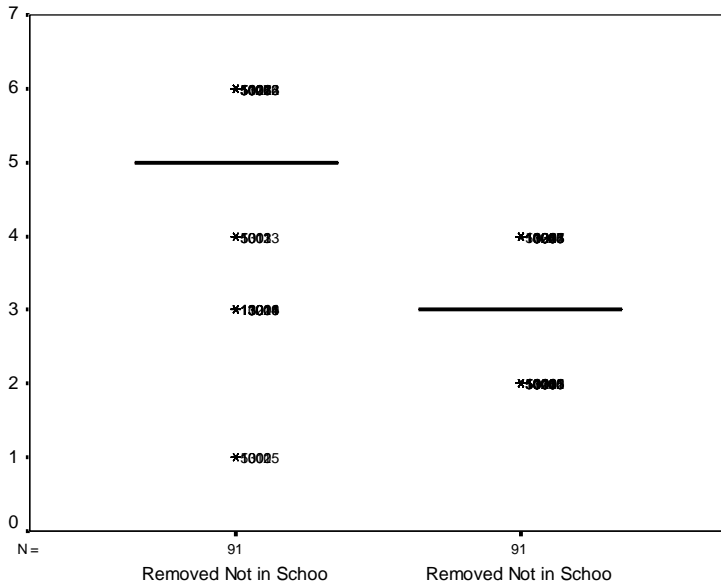
| Source                 | Type III Sum of Squares | df     | Mean Square | F      | Sig. |
|------------------------|-------------------------|--------|-------------|--------|------|
| TIME                   | 115.91                  | 1.00   | 115.91      | 115.76 | 0.00 |
| TIME * AIDGRP          | 2.38                    | 1.00   | 2.38        | 2.38   | 0.13 |
| TIME * GENDER          | 2.53                    | 1.00   | 2.53        | 2.53   | 0.11 |
| TIME * AIDGRP * GENDER | 1.26                    | 1.00   | 1.26        | 1.26   | 0.26 |
| Error(TIME)            | 104.13                  | 104.00 | 1.00        |        |      |

Sphericity Assumed

### **School attendance 09**

School attendance changed sufficiently for the overall group and for male and female separately. This is to be expected as the number of absences at the end of the year will be greater than those at the beginning of the year.

**Figure 2 School Attendance Boxplot 09**



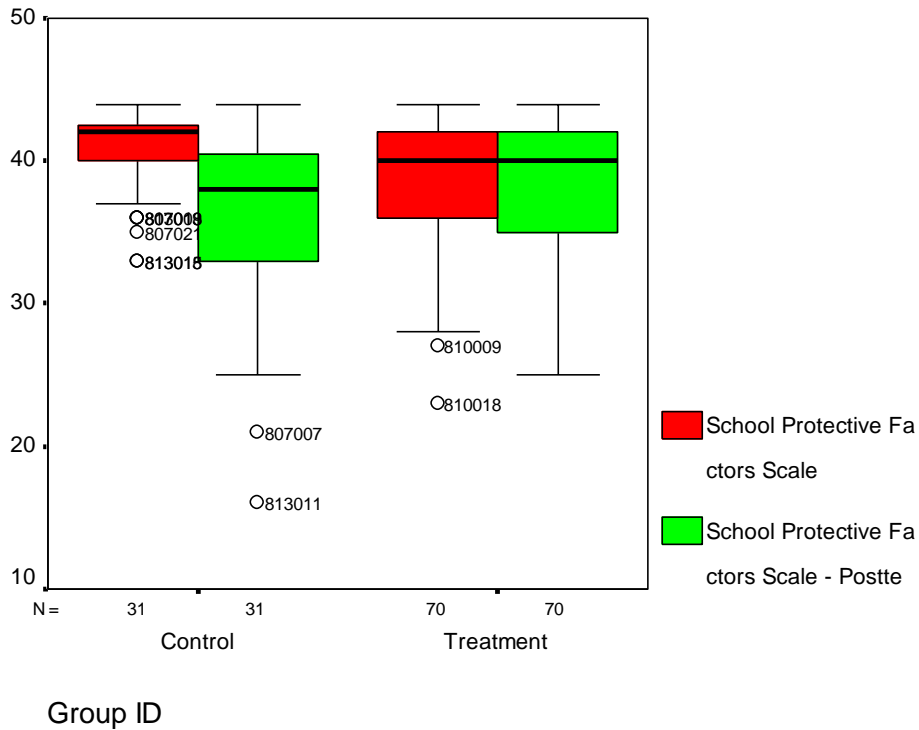
**Figure 3 School Attendance GLM 09**

| Source        | Type III Sum of Squares | df    | Mean Square | F      | Sig. |
|---------------|-------------------------|-------|-------------|--------|------|
| TIME          | 140.56                  | 1.00  | 140.56      | 218.65 | 0.00 |
| TIME * GENDER | 1.30                    | 1.00  | 1.30        | 2.03   | 0.16 |
| Error(TIME)   | 57.21                   | 89.00 | 0.64        |        |      |

**School Protective Factors 08**

School protective factors did not change significantly for either group utilizing the t-test. GLM identified a significant change over time and for time X group. The control group’s school protective factors decreased while the treatment group’s school protective factors remained the same. The reliability for this subscale is reasonable.

**Figure 4 Boxplot of School Protective Factors by Group**



**Table 4 GLM Time by Group by Gender for School Protective Factors**

| Source                 | Type III Sum of Squares | df    | Mean Square | F     | Sig. |
|------------------------|-------------------------|-------|-------------|-------|------|
| TIME                   | 243.39                  | 1.00  | 243.39      | 16.55 | 0.00 |
| TIME * AIDGRP          | 145.81                  | 1.00  | 145.81      | 9.92  | 0.00 |
| TIME * GENDER          | 1.01                    | 1.00  | 1.01        | 0.07  | 0.79 |
| TIME * AIDGRP * GENDER | 0.39                    | 1.00  | 0.39        | 0.03  | 0.87 |
| Error(TIME)            | 1411.42                 | 96.00 | 14.70       |       |      |

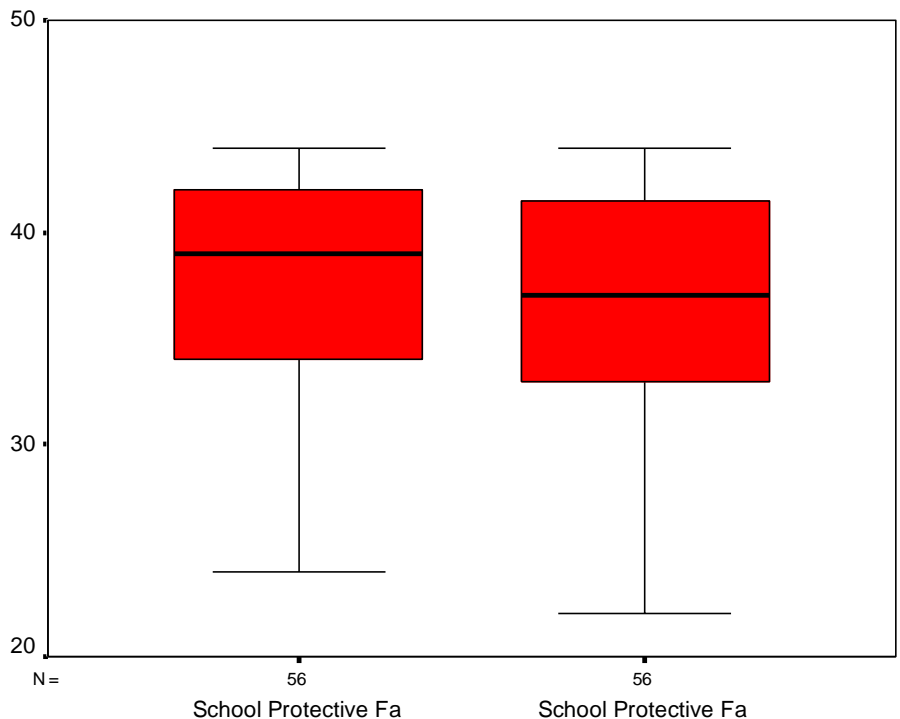
Sphericity Assumed

School Protective Factors 09

### **School Protective Factors 09**

No significant differences found.

**Figure 5 School Protective Factors Boxplot 09**



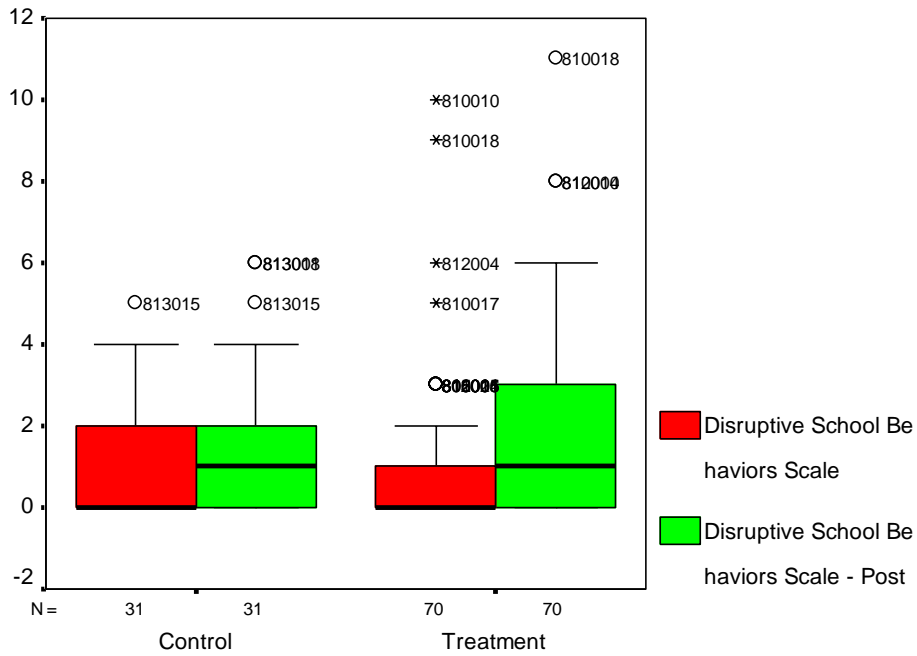
**Table 5 School Protective Factors GLM 09**

| Source        | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|---------------|-------------------------|-------|-------------|------|------|
| TIME          | 42.20                   | 1.00  | 42.20       | 2.50 | 0.12 |
| TIME * GENDER | 2.02                    | 1.00  | 2.02        | 0.12 | 0.73 |
| Error(TIME)   | 910.23                  | 54.00 | 16.86       |      |      |

**Disruptive School Behaviors 08**

The t-tests indicate a significant difference across the treatment group as a whole and for the males in the treatment group. However GLM results indicate an increase over time for both treatment and control groups. GLM also indicates a significant gender difference (boys disruptive school behaviors increasing whereas girls did not) and an almost significant three way interaction between group X gender X time. Obviously this relationship is more complex than multiple t tests would indicate.

Figure 6 Boxplot of Disruptive School Behaviors by Group



Group ID

**Table 6 GLM Time by Group by Gender for School Disruptive Factors**

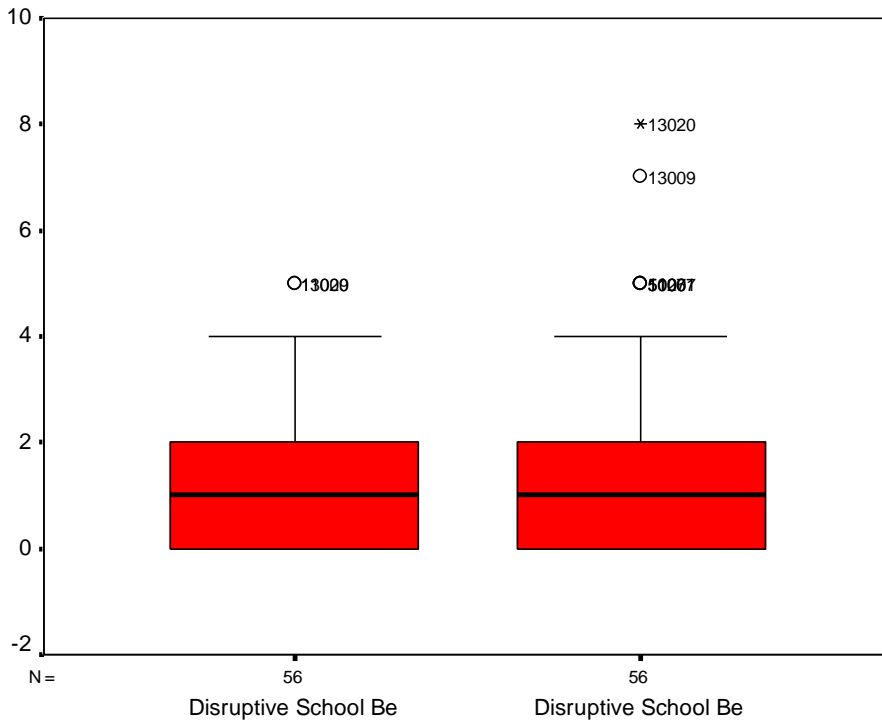
| Effect                 | Value | F     | Hypothesis df | Error df | Sig. |
|------------------------|-------|-------|---------------|----------|------|
| TIME                   | 0.12  | 12.66 | 1.00          | 96.00    | 0.00 |
| TIME * AIDGRP          | 0.01  | 1.32  | 1.00          | 96.00    | 0.25 |
| TIME * GENDER          | 0.13  | 14.60 | 1.00          | 96.00    | 0.00 |
| TIME * AIDGRP * GENDER | 0.04  | 3.55  | 1.00          | 96.00    | 0.06 |

Sphericity Assumed  
Exact statistic

### **Disruptive School Behaviors 09**

No significant differences found.

**Figure 7 School Disruptive Boxplot 09**



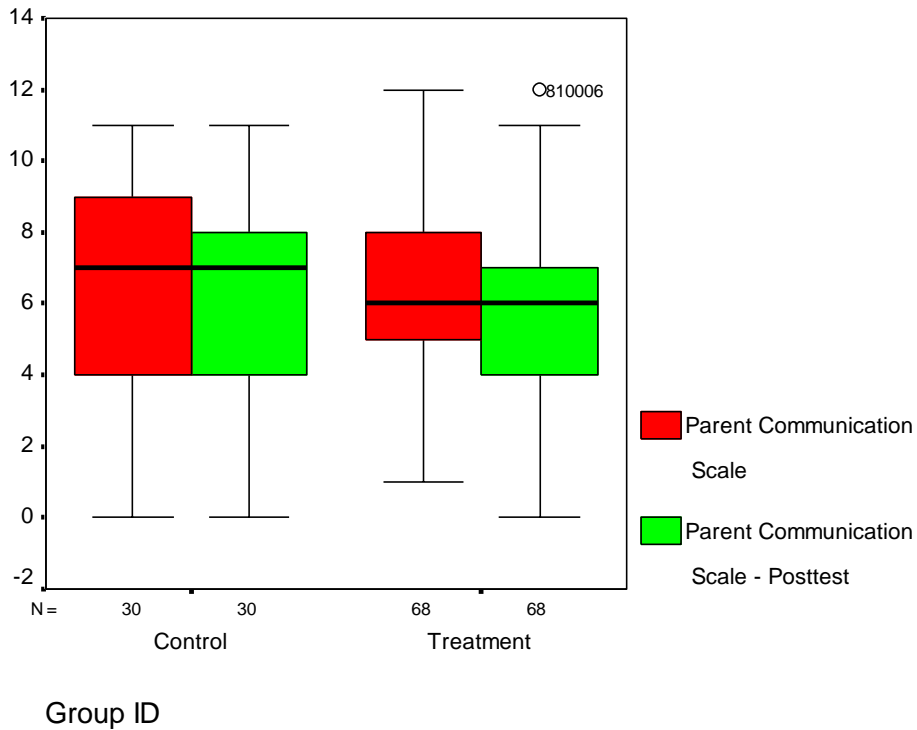
**Table 7 Disruptive School Behavior GLM 09**

| Source        | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|---------------|-------------------------|-------|-------------|------|------|
| TIME          | 4.54                    | 1.00  | 4.54        | 2.29 | 0.14 |
| TIME * GENDER | 4.54                    | 1.00  | 4.54        | 2.29 | 0.14 |
| Error(TIME)   | 107.02                  | 54.00 | 1.98        |      |      |

### **Parent Communication Scale 08**

The t-tests indicate a significant difference across the treatment group as a whole and for the males in the treatment group. However, reliability is abysmal; therefore no interpretation should be made.

Figure 8 Boxplot of Parent Communication Scale by Group



**Table 8 GLM Time by Group by Gender for Parent Communication Scale**

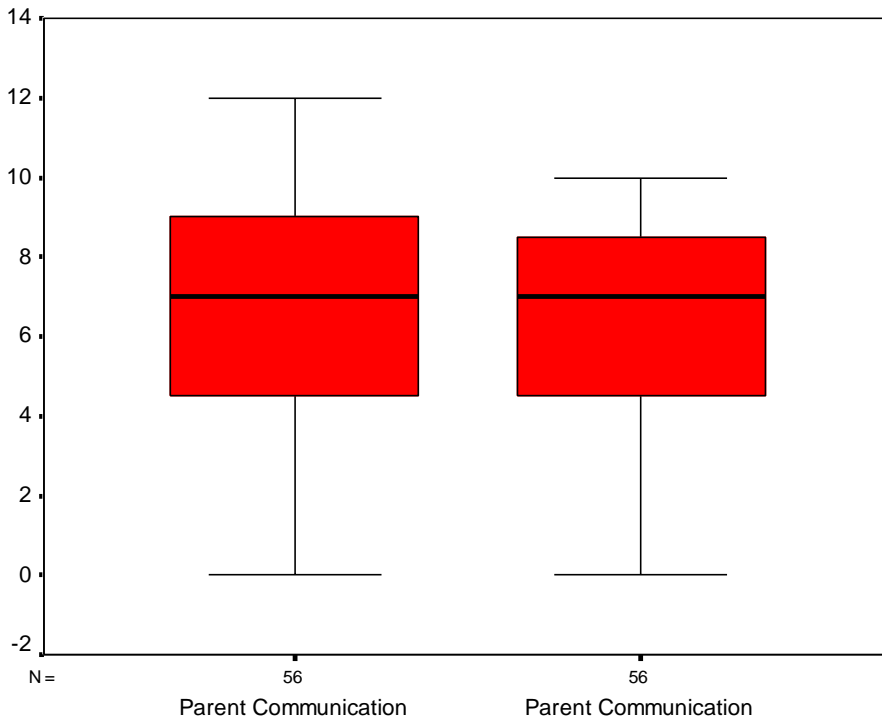
| Source                 | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|------------------------|-------------------------|-------|-------------|------|------|
| TIME                   | 19.68                   | 1.00  | 19.68       | 4.74 | 0.03 |
| TIME * AIDGRP          | 0.00                    | 1.00  | 0.00        | 0.00 | 0.98 |
| TIME * GENDER          | 7.19                    | 1.00  | 7.19        | 1.73 | 0.19 |
| TIME * AIDGRP * GENDER | 0.11                    | 1.00  | 0.11        | 0.03 | 0.87 |
| Error(TIME)            | 386.03                  | 93.00 | 4.15        |      |      |

Sphericity Assumed

**Parent Communication Scale 09**

No significant difference in parent communication.

**Figure 9 Parent Communication Boxplot 09**



**Table 9 Parent Communication GLM 09**

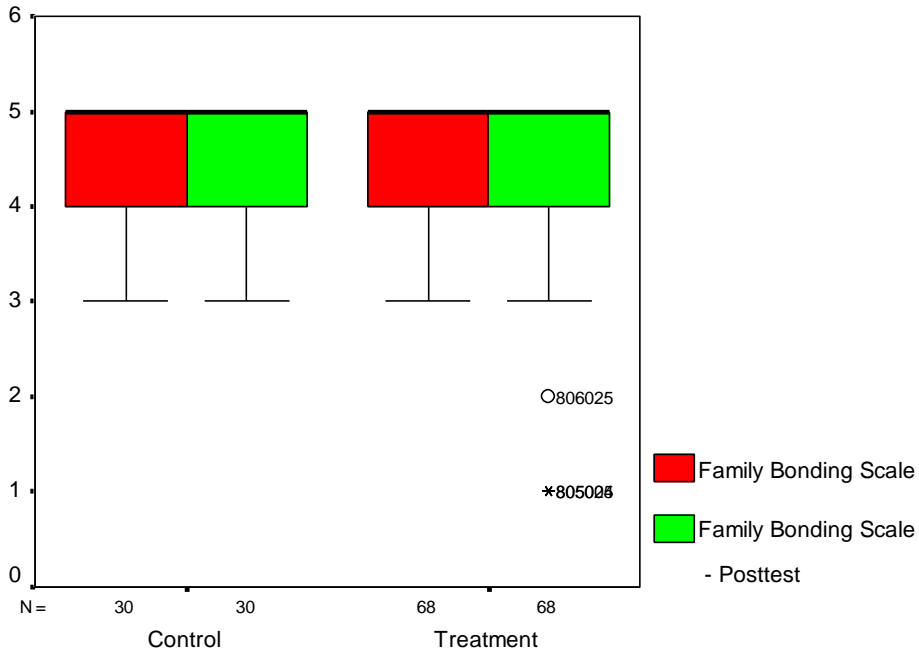
| Source        | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|---------------|-------------------------|-------|-------------|------|------|
| TIME          | 8.51                    | 1.00  | 8.51        | 2.69 | 0.11 |
| TIME * GENDER | 0.01                    | 1.00  | 0.01        | 0.00 | 0.97 |
| Error(TIME)   | 170.91                  | 54.00 | 3.17        |      |      |

**Family Bonding Scale 08**

The t tests indicated that for family bonding factors the treatment males had a statistically negative change.

However, reliability is abysmal; therefore no interpretation should be made.

**Figure 10 Boxplot of Family Bonding Scale by Group**



Group ID

**Table 10 GLM Time by Group by Gender for Family Bonding Scale**

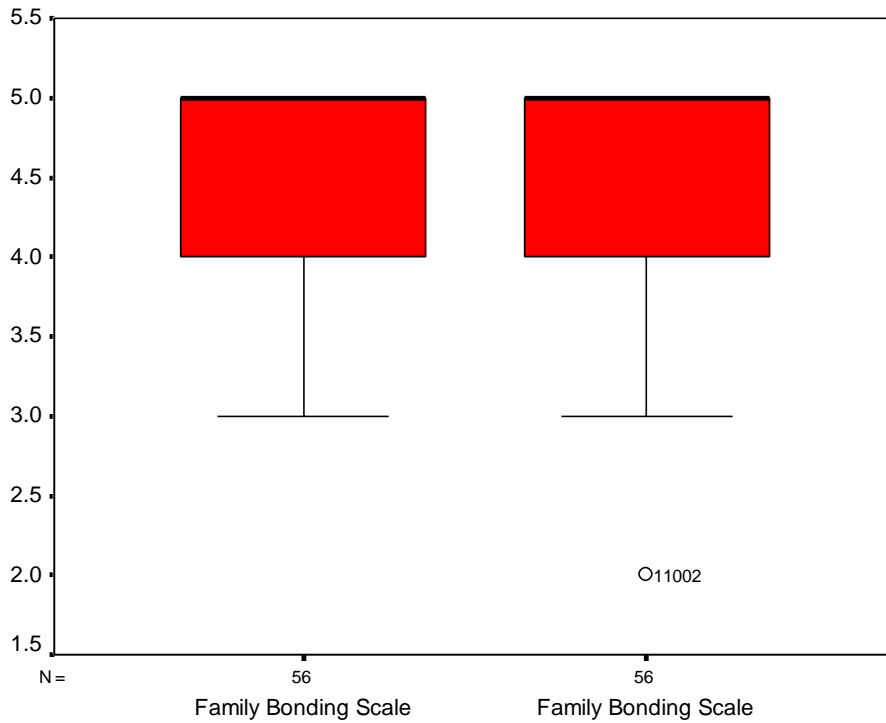
| Source                 | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|------------------------|-------------------------|-------|-------------|------|------|
| TIME                   | 0.08                    | 1.00  | 0.08        | 0.27 | 0.60 |
| TIME * AIDGRP          | 0.08                    | 1.00  | 0.08        | 0.27 | 0.60 |
| TIME * GENDER          | 0.19                    | 1.00  | 0.19        | 0.62 | 0.43 |
| TIME * AIDGRP * GENDER | 1.66                    | 1.00  | 1.66        | 5.46 | 0.02 |
| Error(TIME)            | 28.27                   | 93.00 | 0.30        |      |      |

Sphericity Assumed

**Family Bonding Scale 09**

No significant difference in family bonding.

**Figure 11 Family Bonding Boxplot 09**



**Table 11 Family Bonding Scale GLM O9**

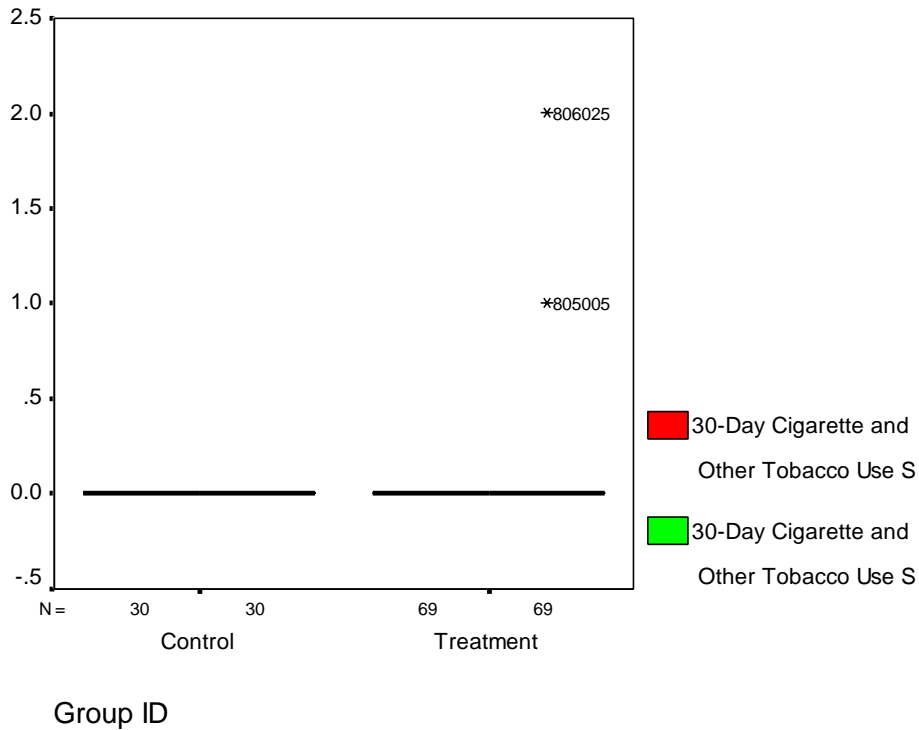
| Source        | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|---------------|-------------------------|-------|-------------|------|------|
| TIME          | 0.08                    | 1.00  | 0.08        | 0.36 | 0.55 |
| TIME * GENDER | 0.01                    | 1.00  | 0.01        | 0.03 | 0.87 |
| Error(TIME)   | 11.41                   | 54.00 | 0.21        |      |      |

**30 day Tobacco use 08**

No significant change in 30 day tobacco use was found for either group with the t tests or GLM.

Examination of boxplots indicates narrow distribution with a few outliers.

**Figure 12 Boxplot of 30 day Tobacco use by Group**



**Table 12 GLM Time by Group by Gender for 30 day Tobacco Use**

| Source                 | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|------------------------|-------------------------|-------|-------------|------|------|
| TIME                   | 0.02                    | 1.00  | 0.02        | 0.60 | 0.44 |
| TIME * AIDGRP          | 0.02                    | 1.00  | 0.02        | 0.60 | 0.44 |
| TIME * GENDER          | 0.02                    | 1.00  | 0.02        | 0.60 | 0.44 |
| TIME * AIDGRP * GENDER | 0.02                    | 1.00  | 0.02        | 0.60 | 0.44 |
| Error(TIME)            | 2.38                    | 94.00 | 0.03        |      |      |

Sphericity Assumed

**30 day Tobacco 09**

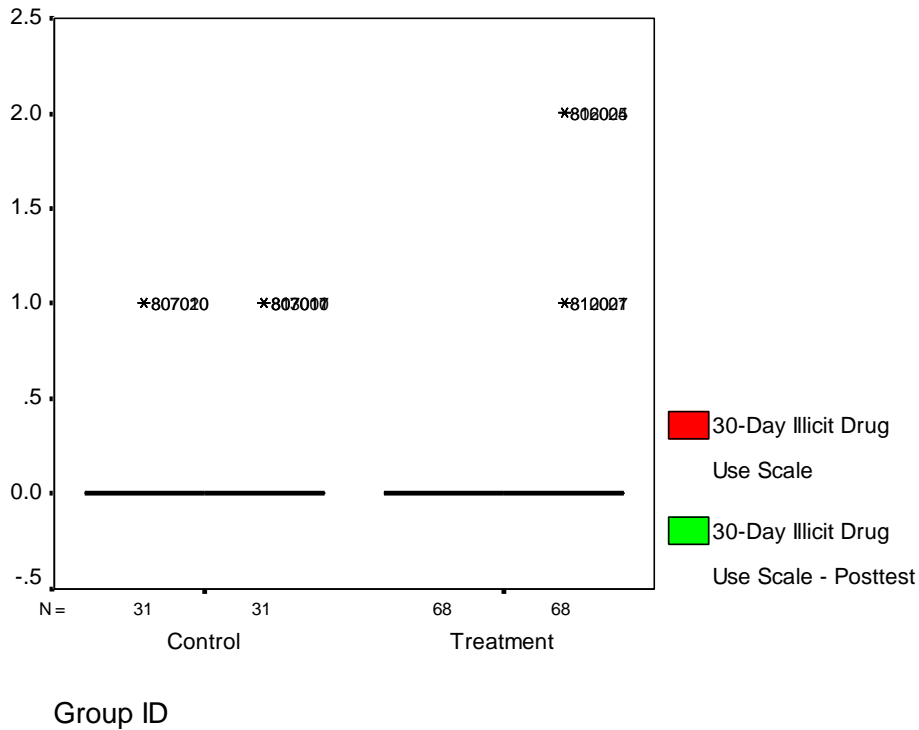
Variable is constant.

**30 day Illicit Drug use 08**

No significant change in 30 day illicit drug use was found for either group with the t tests or GLM.

Examination of boxplots indicates narrow distribution with a few outliers.

**Figure 13 Boxplot of 30 day Illicit Drug use by Group**



**Table 13 GLM Time by Group by Gender for 30 day illicit drug use**

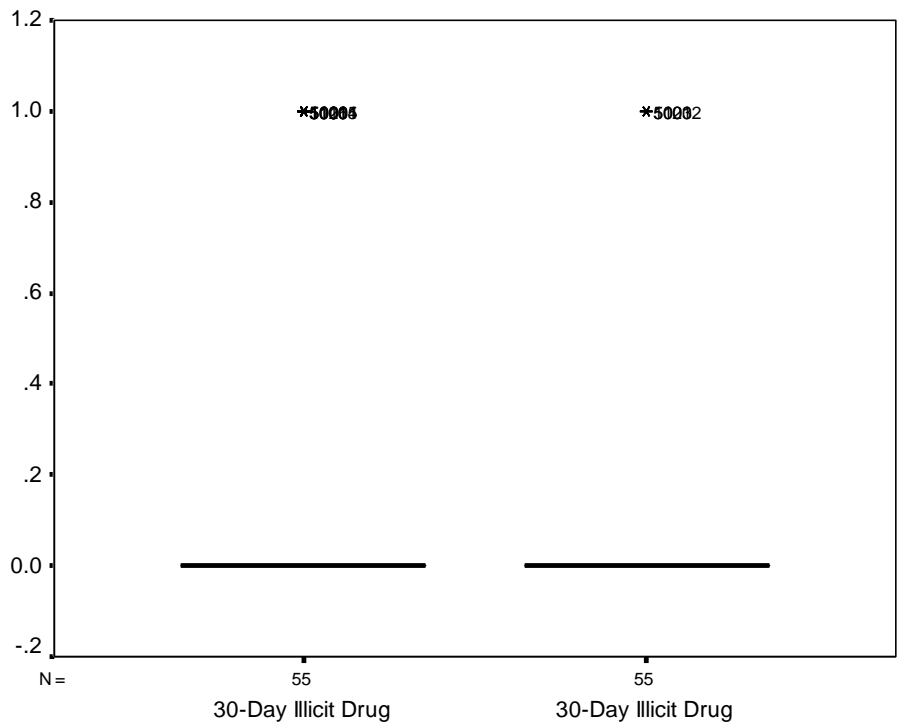
| Source                 | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|------------------------|-------------------------|-------|-------------|------|------|
| TIME                   | 0.10                    | 1.00  | 0.10        | 1.59 | 0.21 |
| TIME * AIDGRP          | 0.01                    | 1.00  | 0.01        | 0.19 | 0.67 |
| TIME * GENDER          | 0.10                    | 1.00  | 0.10        | 1.59 | 0.21 |
| TIME * AIDGRP * GENDER | 0.01                    | 1.00  | 0.01        | 0.19 | 0.67 |
| Error(TIME)            | 5.65                    | 94.00 | 0.06        |      |      |

Sphericity Assumed

**30 day Illicit Drug use 08**

No significant differences were found.

**Figure 14 Illicit Drug Use Box Plot 09**



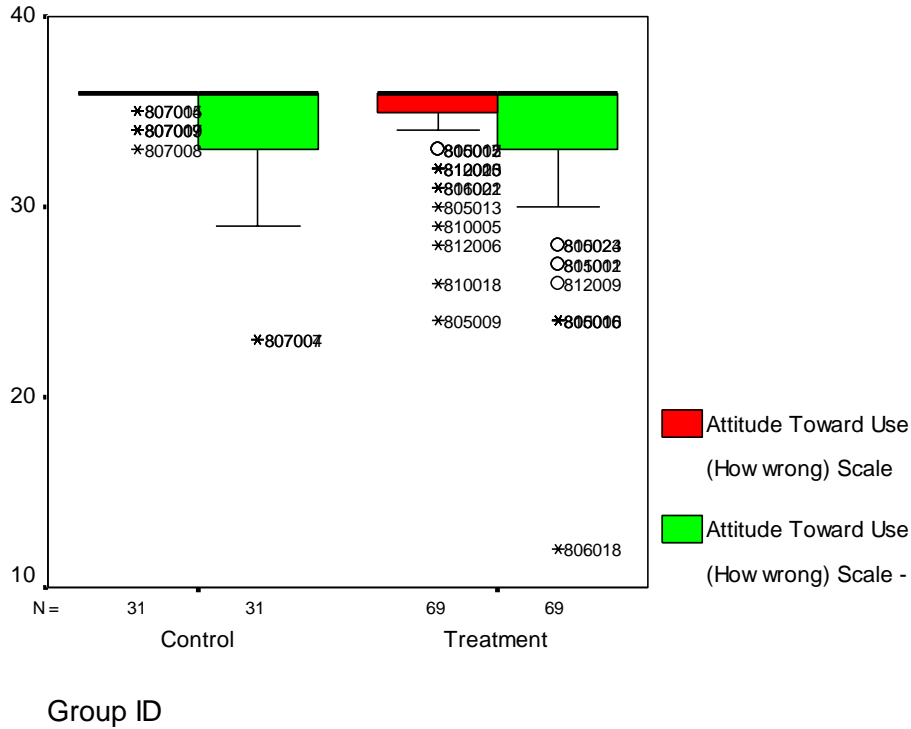
**Table 14 30 Day Illicit Drug GLM 09**

| Source        | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|---------------|-------------------------|-------|-------------|------|------|
| TIME          | 0.15                    | 1.00  | 0.15        | 2.02 | 0.16 |
| TIME * GENDER | 0.00                    | 1.00  | 0.00        | 0.02 | 0.90 |
| Error(TIME)   | 3.85                    | 53.00 | 0.07        |      |      |

**Attitude toward Use**

The t tests indicated that the overall treatment group had a significant decrease due to the significant decrease for males. The t tests indicate that the control group girls had a significant decrease while the treatment groups did not change their attitudes toward use. However, GLM indicates an overall decrease across both groups with no significant differences by group or gender. The reliability of this subscale is variable, which brings some questions to its interpretation.

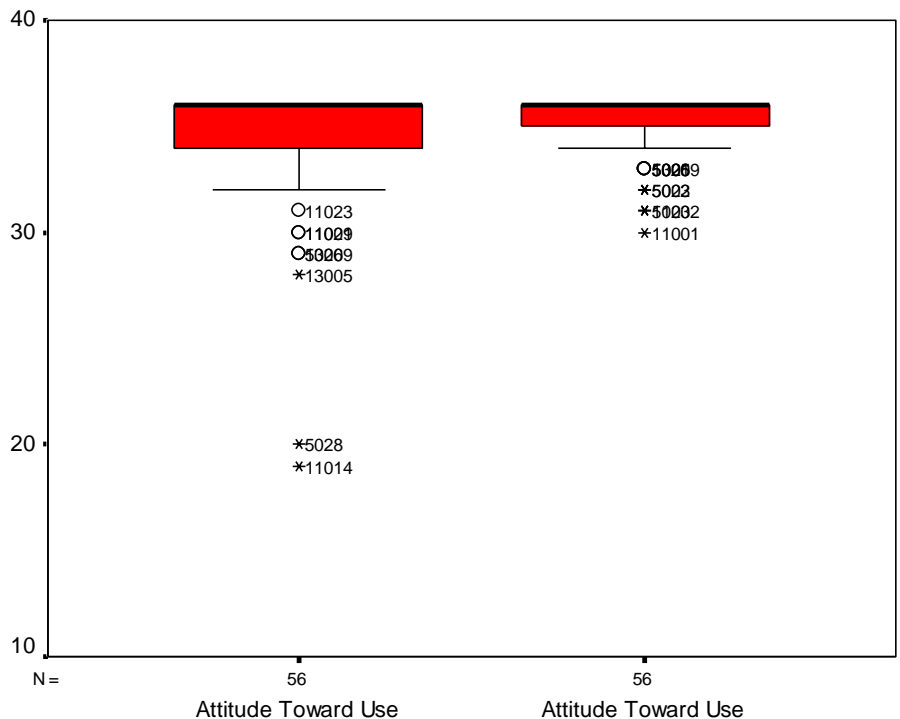
**Figure 15 Boxplot of Attitude toward Use by Group**



**Table 15 GLM Time by Group by Gender for Attitude toward Use**

| Source                 | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|------------------------|-------------------------|-------|-------------|------|------|
| TIME                   | 85.66                   | 1.00  | 85.66       | 9.21 | 0.00 |
| TIME * AIDGRP          | 3.32                    | 1.00  | 3.32        | 0.36 | 0.55 |
| TIME * GENDER          | 0.44                    | 1.00  | 0.44        | 0.05 | 0.83 |
| TIME * AIDGRP * GENDER | 22.37                   | 1.00  | 22.37       | 2.40 | 0.12 |
| Error(TIME)            | 883.82                  | 95.00 | 9.30        |      |      |

Sphericity Assumed



**Table 16 Attitude Toward Use GLM 09**

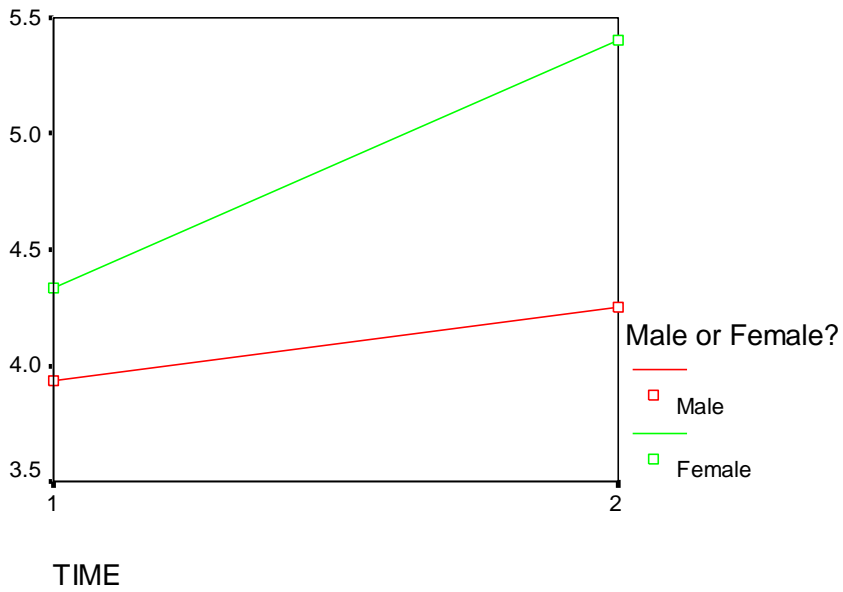
| Source      | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|-------------|-------------------------|-------|-------------|------|------|
| TIME        | 21.30                   | 1.00  | 21.30       | 3.09 | 0.08 |
| TIME * YA01 | 1.62                    | 1.00  | 1.62        | 0.24 | 0.63 |
| Error(TIME) | 371.81                  | 54.00 | 6.89        |      |      |

**Perceived Availability 08**

The t tests indicated that the overall treatment group had a significant increase due to the significant increase for males. However, GLM indicates a significant three way interaction for time x group x gender. In the control group the females had higher scores at posttest than the males and a larger change over time. The reverse was true for the treatment group. Sample sizes are fairly small and reliability variable so interpretation should be done with care.

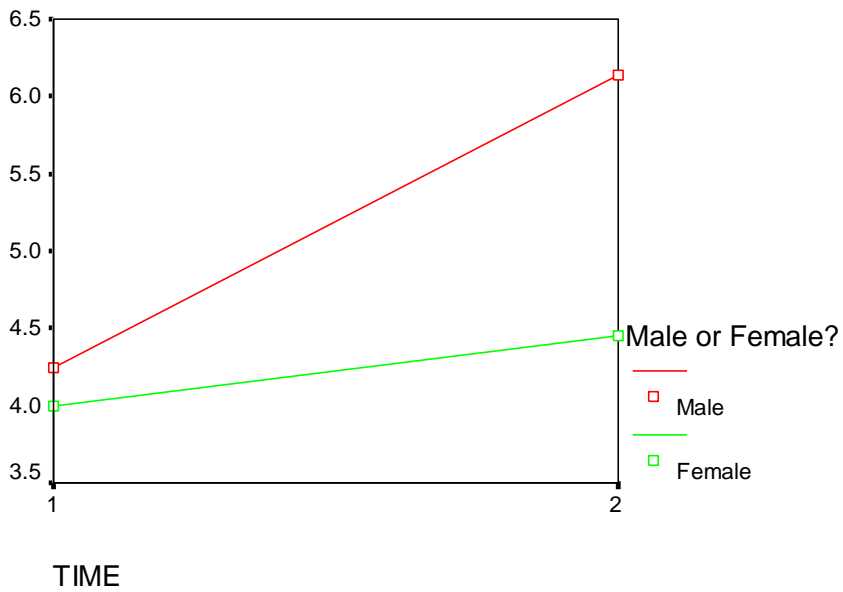
## Estimated Marginal Means of MEASURE\_1

At Group ID = Control

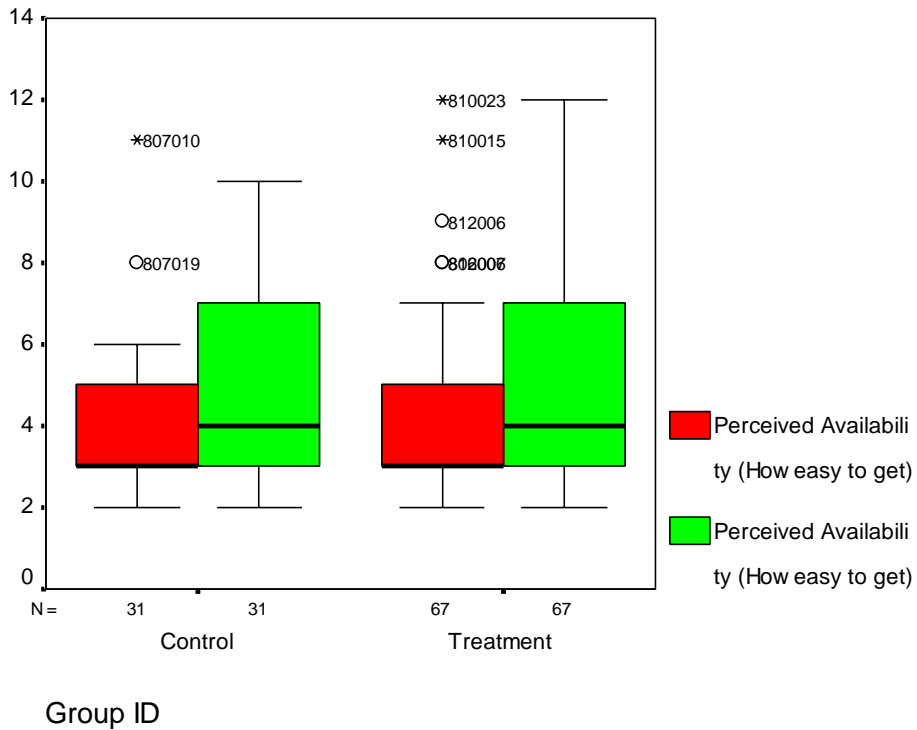


## Estimated Marginal Means of MEASURE\_1

At Group ID = Treatment



**Figure 16** Boxplot of Perceived Availability by Group



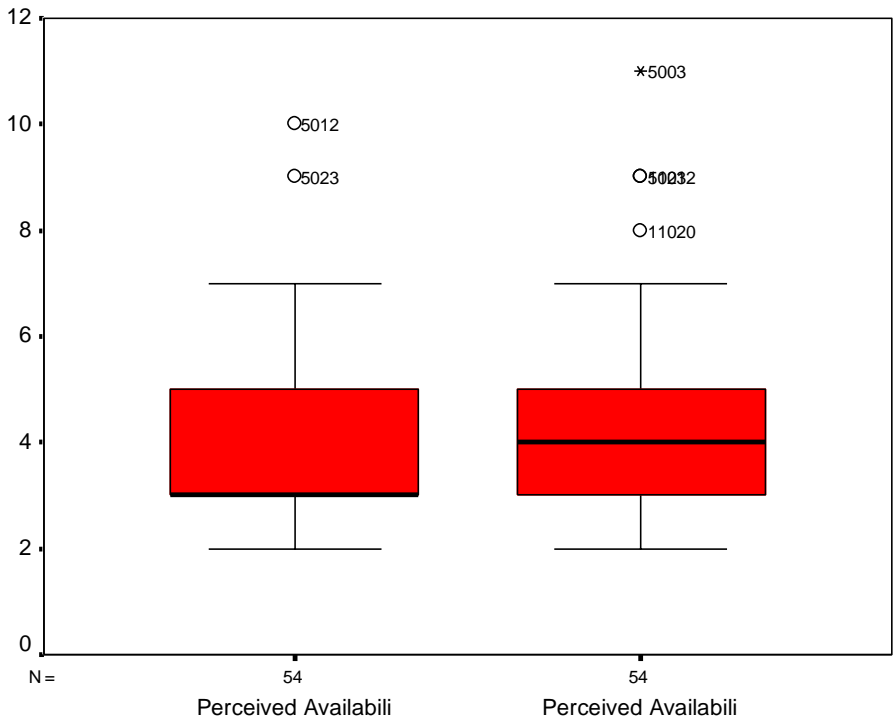
**Table 17 GLM Time by Group by Gender for Perceived Availability**

| Source                 | Type III Sum of Squares | df    | Mean Square | F     | Sig. |
|------------------------|-------------------------|-------|-------------|-------|------|
| TIME                   | 36.27                   | 1.00  | 36.27       | 12.42 | 0.00 |
| TIME * AIDGRP          | 2.42                    | 1.00  | 2.42        | 0.83  | 0.36 |
| TIME * GENDER          | 1.25                    | 1.00  | 1.25        | 0.43  | 0.52 |
| TIME * AIDGRP * GENDER | 12.67                   | 1.00  | 12.67       | 4.34  | 0.04 |
| Error(TIME)            | 271.56                  | 93.00 | 2.92        |       |      |

Sphericity Assumed

**Perceived Availability 09**

Perceived availability increased for females. However reliability is so poor no interpretation can be made of these results.



**Table 18 Perceived Availability GLM 09**

| Source      | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|-------------|-------------------------|-------|-------------|------|------|
| TIME        | 3.28                    | 1.00  | 3.28        | 2.24 | 0.14 |
| TIME * YA01 | 9.06                    | 1.00  | 9.06        | 6.18 | 0.02 |
| Error(TIME) | 76.24                   | 52.00 | 1.47        |      |      |

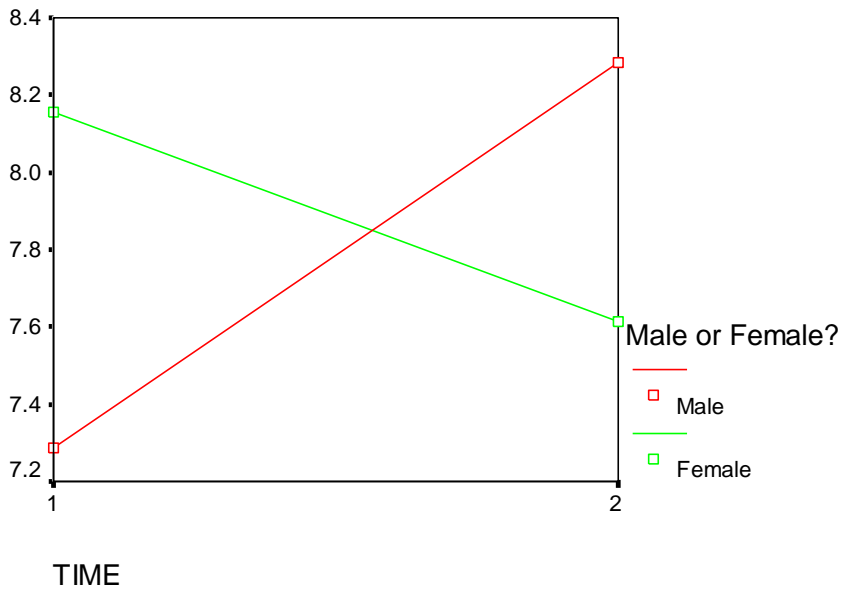
**Perceived Harm 08**

No significant change in perceived harm was found for either group or gender by the t tests.

However, GLM indicates a significant three way interaction for time x group x gender. In the control group the male had an increase in perception of perceived harm while females decreased. In the treatment group males decreased while females increased perceived harm. However, reliability in the control group was poor, this may explain these results.

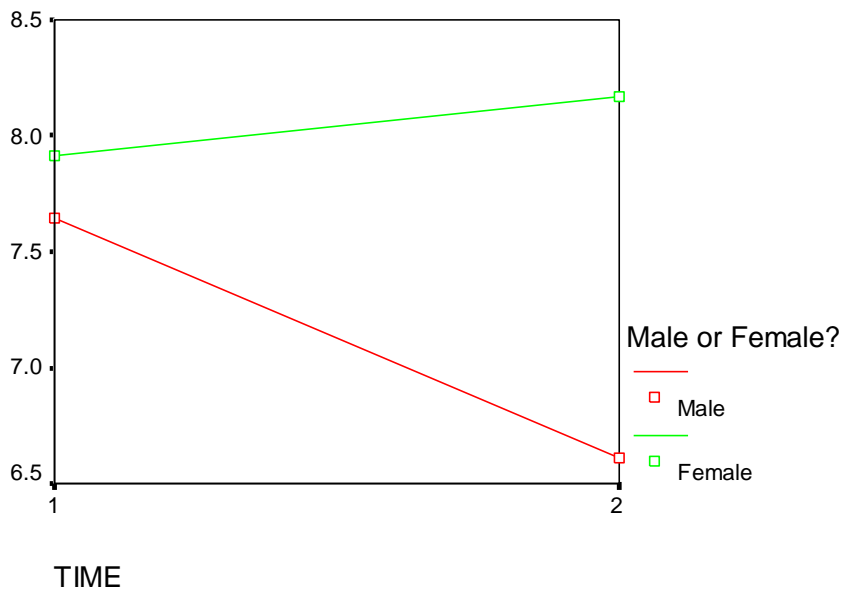
## Estimated Marginal Means of MEASURE\_1

At Group ID = Control

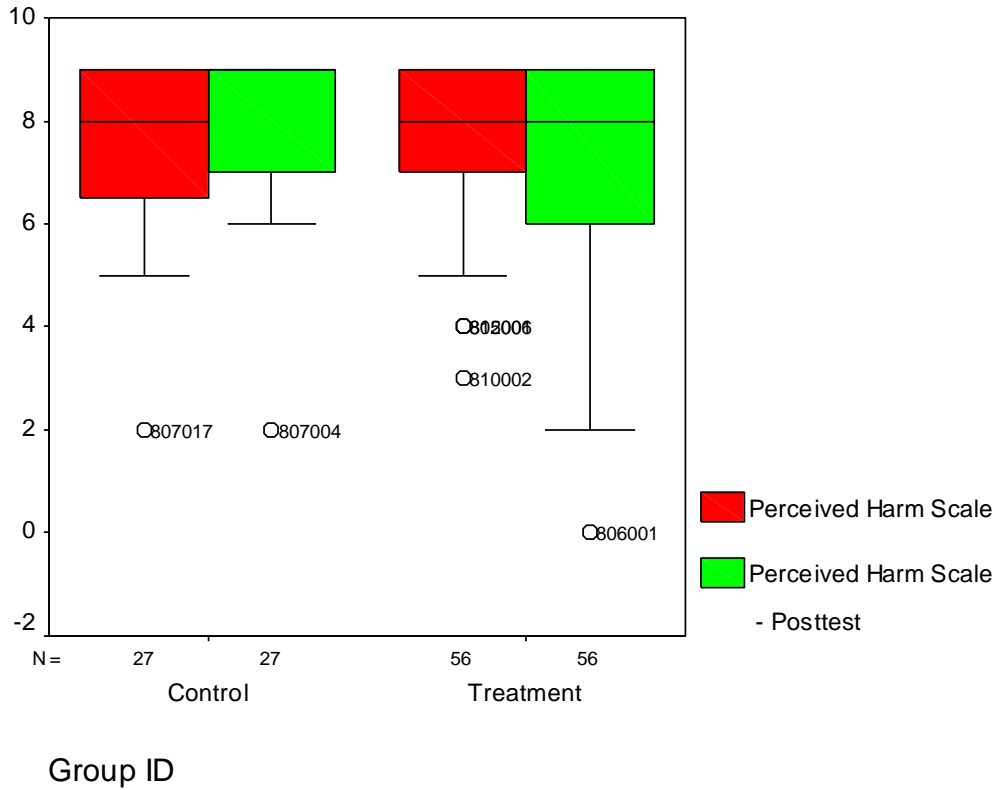


## Estimated Marginal Means of MEASURE\_1

At Group ID = Treatment



**Figure 17 Boxplot of Perceived Harm by Group**



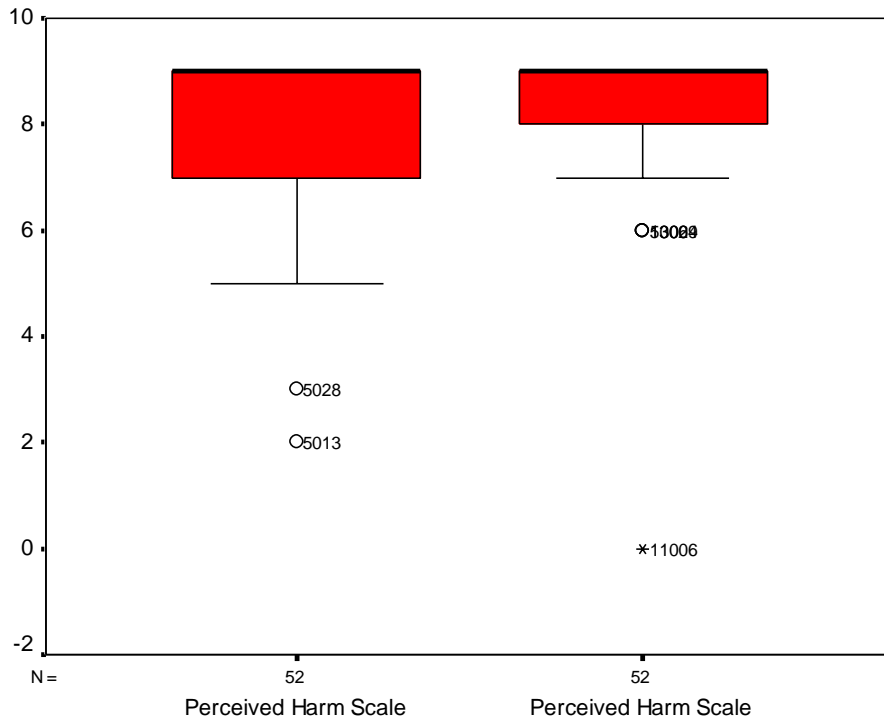
**Table 19 GLM Time by Group by Gender for Perceived Harm**

| Source                 | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|------------------------|-------------------------|-------|-------------|------|------|
| TIME                   | 0.23                    | 1.00  | 0.23        | 0.09 | 0.76 |
| TIME * AIDGRP          | 3.48                    | 1.00  | 3.48        | 1.35 | 0.25 |
| TIME * GENDER          | 0.15                    | 1.00  | 0.15        | 0.06 | 0.81 |
| TIME * AIDGRP * GENDER | 17.90                   | 1.00  | 17.90       | 6.97 | 0.01 |
| Error(TIME)            | 200.35                  | 78.00 | 2.57        |      |      |

**Perceived Harm 09**

Perceived Harm increased for males. Reliability was low. Note that the mean did

Not change, but the standard deviation decreased.



**Table 20 Perceived Harm Scale GLM 09**

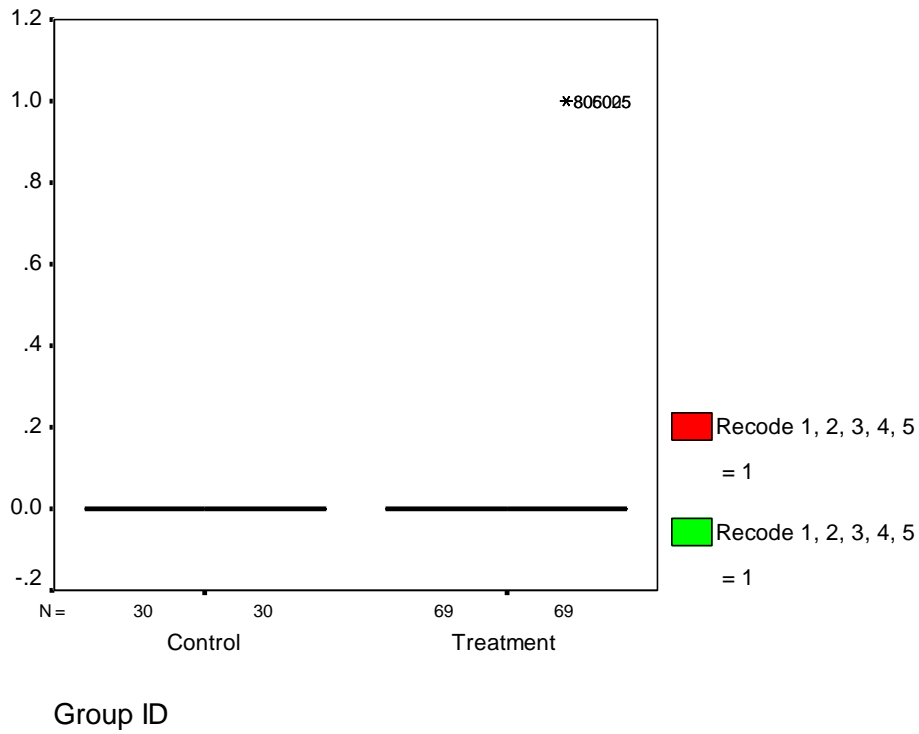
| Source      | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|-------------|-------------------------|-------|-------------|------|------|
| TIME        | 2.78                    | 1.00  | 2.78        | 1.42 | 0.24 |
| TIME * YA01 | 7.01                    | 1.00  | 7.01        | 3.59 | 0.06 |
| Error(TIME) | 97.71                   | 50.00 | 1.95        |      |      |

**30 day Tobacco Use 08**

No significant change in 30 day tobacco use was found for either group with the t tests or GLM.

Examination of boxplots indicates narrow distribution with a few outliers.

**Figure 18 Boxplot of 30 day Tobacco Use by Group**



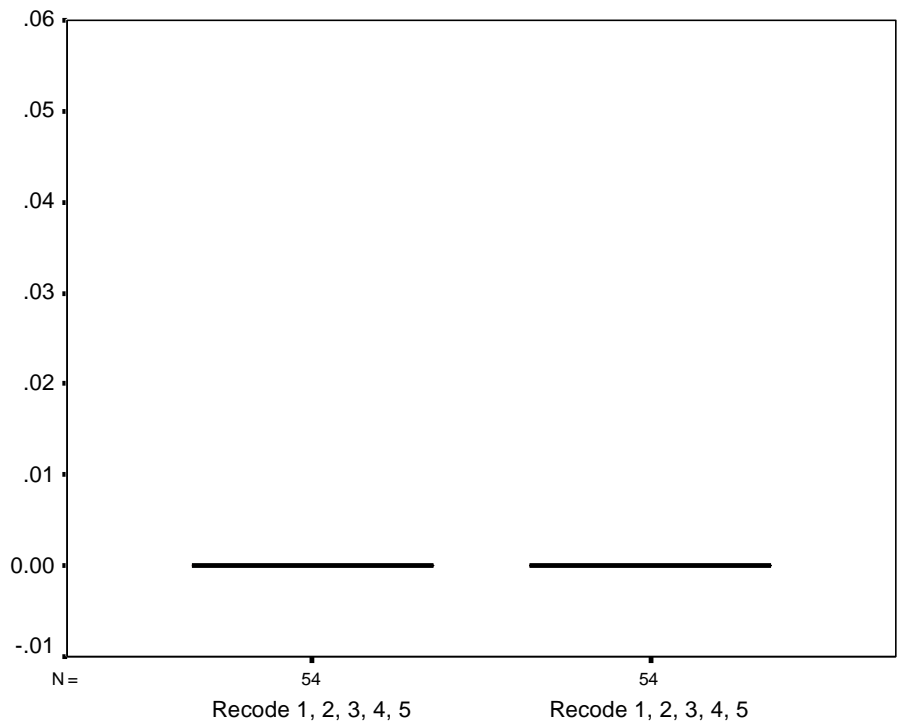
**Table 21 GLM Time by Group by Gender for 30 Day Tobacco Use**

| Source                 | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|------------------------|-------------------------|-------|-------------|------|------|
| TIME                   | 0.01                    | 1.00  | 0.01        | 0.67 | 0.41 |
| TIME * AIDGRP          | 0.01                    | 1.00  | 0.01        | 0.67 | 0.41 |
| TIME * GENDER          | 0.01                    | 1.00  | 0.01        | 0.67 | 0.41 |
| TIME * AIDGRP * GENDER | 0.01                    | 1.00  | 0.01        | 0.67 | 0.41 |
| Error(TIME)            | 0.95                    | 94.00 | 0.01        |      |      |

Sphericity Assumed

**30 day Tobacco Use 09**

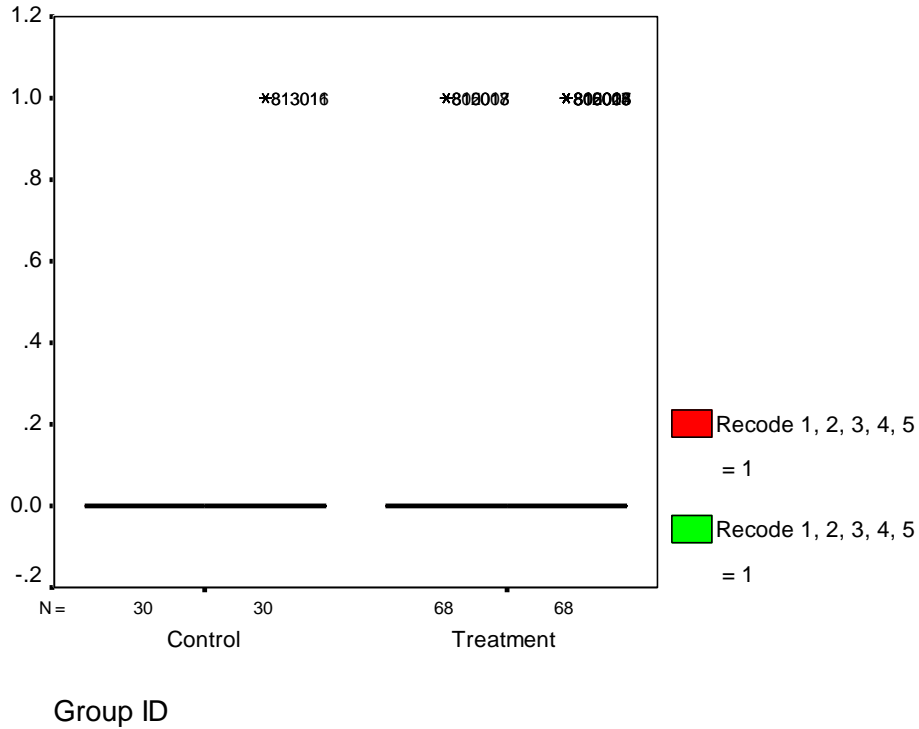
Tobacco use is flat over pre and posttesting.



### **30 day Alcohol Use 08**

No significant change in 30 day use was found utilizing t tests. With GLM a significant difference over time was found. However, it is evident from the boxplot that this result is due to outliers.

**Figure 19 Boxplot of 30 day Alcohol Use by Group**



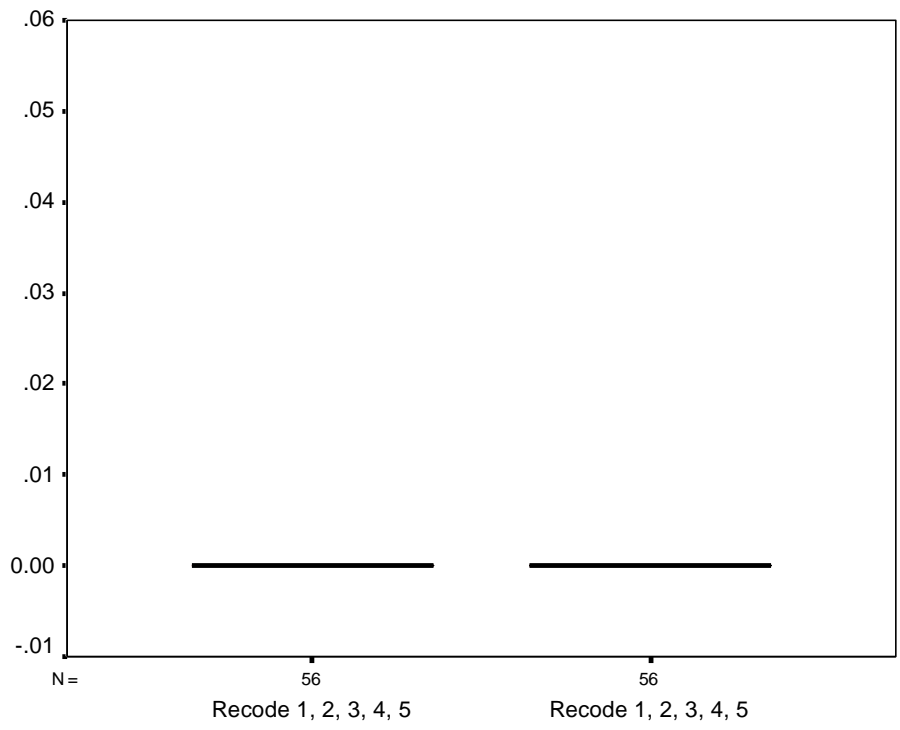
**Table 22 GLM Time by Group by Gender for 30 day Alcohol Use**

| Source                 | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|------------------------|-------------------------|-------|-------------|------|------|
| TIME                   | 0.12                    | 1.00  | 0.12        | 4.68 | 0.03 |
| TIME * AIDGRP          | 0.01                    | 1.00  | 0.01        | 0.31 | 0.58 |
| TIME * GENDER          | 0.01                    | 1.00  | 0.01        | 0.51 | 0.48 |
| TIME * AIDGRP * GENDER | 0.02                    | 1.00  | 0.02        | 0.80 | 0.37 |
| Error(TIME)            | 2.31                    | 93.00 | 0.02        |      |      |

Sphericity Assumed

**30 day Alcohol Use 09**

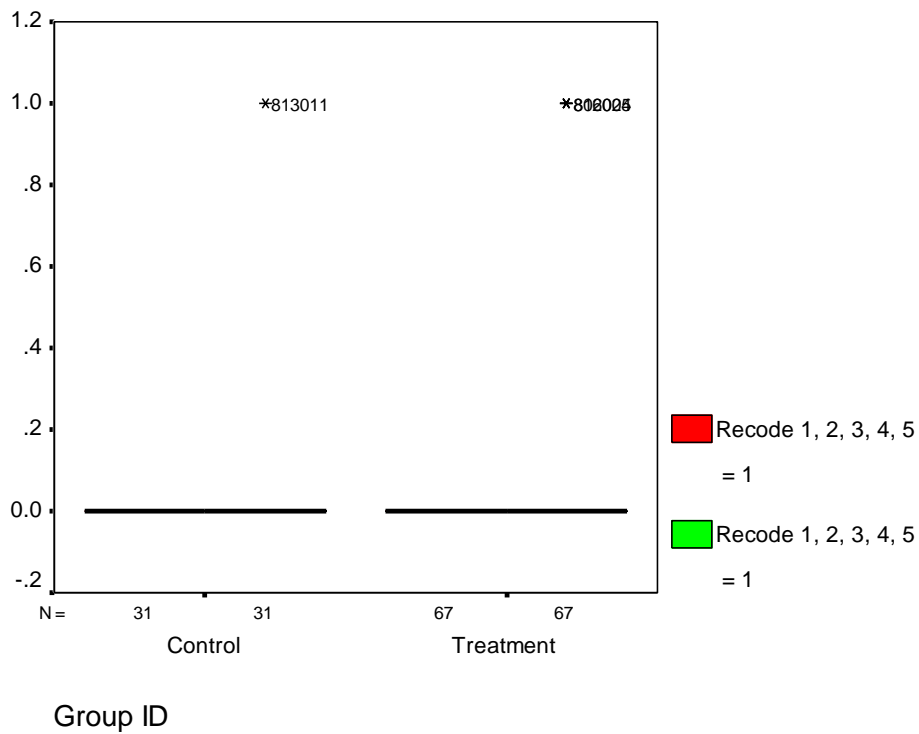
30 day alcohol use was flat from pretesting to posttesting.



**30 day Marijuana Use 08**

No significant change in 30 day Marijuana use was found for either group with t test or GLM.

**Figure 20 Boxplot 30 day Marijuana Use by Group**



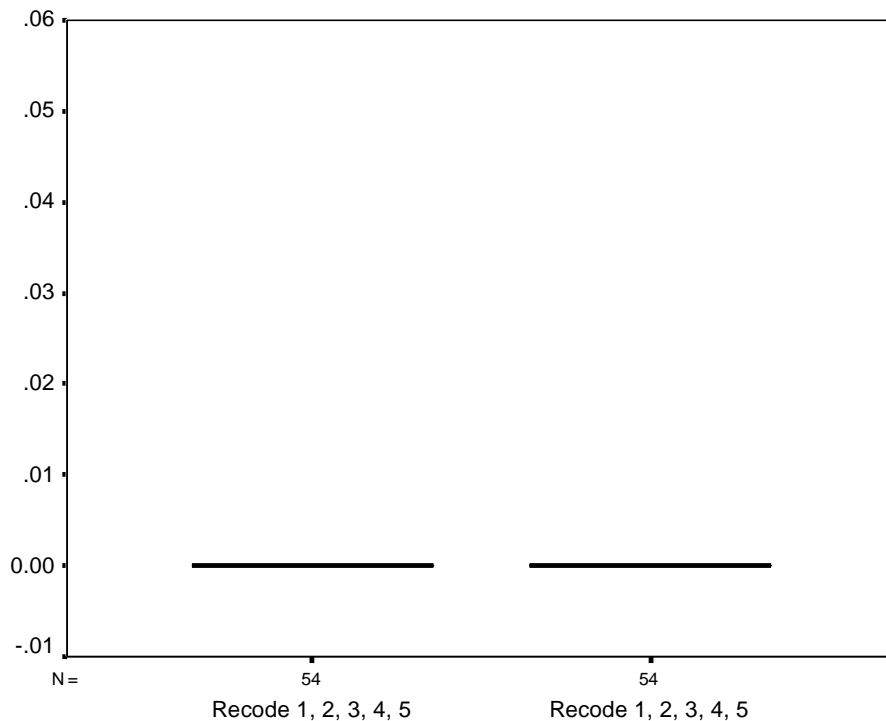
**Table 23 GLM Time by Group by Gender for 30 Day Marijuana Use**

| Source                 | Type III Sum of Squares | df    | Mean Square | F    | Sig. |
|------------------------|-------------------------|-------|-------------|------|------|
| TIME                   | 0.03                    | 1.00  | 0.03        | 2.28 | 0.13 |
| TIME * AIDGRP          | 0.00                    | 1.00  | 0.00        | 0.02 | 0.90 |
| TIME * GENDER          | 0.03                    | 1.00  | 0.03        | 2.28 | 0.13 |
| TIME * AIDGRP * GENDER | 0.00                    | 1.00  | 0.00        | 0.02 | 0.90 |
| Error(TIME)            | 1.42                    | 93.00 | 0.02        |      |      |

\*Sphericity Assumed

**30 day Marijuana Use 09**

Marijuana Use was flat from pretesting to posttesting.



## Summary

The t tests failed to properly identify actual changes in the results. Type 1 and Type 2 errors were both in evidence. Furthermore some of the scales have poor reliability and this should be taken into account when interpreting results.

If only t tests had been run, or no control groups were utilized, false conclusions as to the changes in scores would have been made. Examination of the GLM repeated measures revealed that the t-tests were invalid. Multiple t tests have many problems (I would say, multiple). The alpha was not adjusted as it should be if one insists on multiple t tests. Also, more complex interactions are missed by this method of analysis.

For some of the subscales a General Linear Model Repeated measures utilizing SPSS 11.5 was run. The GLM repeated measures improves on the multivariate regression model by allowing for linear transformations or linear combinations of multiple variables. This expansion means that the GLM has important advantages over the multiple and the purported multivariate regression models which are inherently univariate methods. The first advantage is that multivariate test of significance may be use if the responses on multiple dependent

variables are correlated. This is helpful as separate univariate tests of significance for correlated dependent variables (such as used in multiple t tests) are not independent and may not be appropriate. Multivariate tests of significance of independent linear combinations of multiple dependent variables may also yield information about which response variables are, and are not, actually related to the predictor variables. A second advantage is the ability to analyze effects of repeated measure factors. Linear combinations of responses reflecting a repeated measure effect can be constructed and tested for significance using either the univariate or multivariate approach to analyzing repeated measures in the general linear model. In this research, with pretest and posttest measurements of control and treatment groups the GLM repeated measures is the most appropriate test. Boxplots of the data distribution are also provided, for help in interpretation of the results.

Because of the problems with the K6 instrument, which have been evident for many years, next year we will be using the new SFS for Middle school which has more promising reliability.