

Talking Talons Project, Site ID#: 531

2009 Strategies for Success Program Findings Sheet – Middle School

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 previously has 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. This was the first year for the SFS revised instrument and some decisions about which sections to utilize in the future will need to be made for upcoming years.

2009 Demographics for Middle School SFS and Comparison Group Participants

Mean Age for Middle School SFS Program Participants: $\mu=12.5$ $sd=.6$
 Mean Age for Middle School Comparison Group Participants: $\mu=11.6$ $sd=.7$

Table 1: Demographics for Middle School SFS (n= 106) and Comparison Group Participants (n= 46)

Demographic	% SFS Program Participants	% Comparison Group Participants
Grade		
5 th grade		30
6 th grade	19	70
7 th grade	80	
8 th grade		
Biological Sex		
Male	59	54
Female	40	46
Race/Ethnicity		
White	69	50
Hispanic	38	41
Native American	3	13
Other	8.5	2.2
Language Other than English Spoken Most Often^a	21	30

^a Dichotomous variable (yes or no) capturing the percentage of youth living in homes where English is not the primary language.

2009 Past 30-day Substance Use Rates for Middle School SFS and Comparison Group Participants

Tables 2 and 3 capture the percentage of middle school youth self-reporting past 30-day substance use, along with tests of significance, by group membership (SFS Program Participants or Comparison Group Participants).

Table 2: Past 30-day ATOD Use^a Differences from Pre-test to Post-test for Middle School SFS and Comparison Group Participants

Substance	% Pre-test	% Post-test	Chi-Square
Cigarettes			
SFS Program Participants (n= 104) not min	1.0	2.9	16.15**
Comparison Group Participants (n= 46) not min	4.4	2.2	14.65**
Chewing Tobacco			
SFS Program Participants (n= 104)	1.0	0.0	None
Comparison Group Participants (n=46)	2.2	0	None
Alcohol			
SFS Program Participants (n= 105) not min	4.4	6.7	21.050**
Comparison Group Participants (n= 45) not min	9.5	6.7	29.300**
Marijuana			
SFS Program Participants (n= 106) not min	2.8	10.4	10.5**
Comparison Group Participants (n= 46) not min	2.2	0.0	none
Binge Drinking			
SFS Program Participants (n= 105) not min	1.9	1.9	46.00**
Comparison Group Participants (n= 46) not min	2.2	2.2	25.20**
Any Prescription Medication Not Prescribed			
SFS Program Participants (n= 106) not min	1.0	0.0	none
Comparison Group Participants (n= 46) not min	2.2	2.2	.023

a Dichotomous substance use variable (yes or no).

Note: *p≤.05, **p≤.01, ***p≤.001.

Not min= minimum cell count not met

Table 3: Past 30-day Prescription Drug Use, Differences from Pre-test to Post-test for Middle School SFS Program and Comparison Group Participants

Substance	% Pre-test	% Post-test	Chi- Square
Any prescription medication not prescribed			
SFS Program Participants (n=106) not min	1.0	0.0	none
Comparison Group Participants (n=46) not min	2.2	2.2	.023
Any cough medication not prescribed			
SFS Program Participants (n= 101) not min	7.9	9.9	7.4**
Comparison Group Participants (n=46) not min	8.7	13.0	5.2*
Any prescription pain pills not prescribed			
SFS Program Participants (n= 101) not min	5.0	4.0	17.9**
Comparison Group Participants (n=46)	00.0	00.0	none
Any Ritalin, Adderal, or Prozac not prescribed			
SFS Program Participants (n= 97) not min	2.0	2.0	23.7**
Comparison Group Participants (n=40)	00.0	00.0	none
Any prescription sleep aids or tranquilizers not prescribed			
SFS Program Participants (n= 96) not min	2.1	2.1	22.9**
Comparison Group Participants (n=42)	2.4	0.0	none
Any other medications not prescribed			
SFS Program Participants (n= 93) not min	4.3	2.2	.092
Comparison Group Participants (n=39) not min	7.7	2.6	.086

a Dichotomous substance use variable (yes or no).

Note: *p<.05, **p<.01, ***p<.001.

2009 Behavioral Outcomes, Scale Scores at Pre-test and Post-test

Scale scores and tests of significance by group (SFS Program Participants and Comparison Group Participants) are provided below for the behavioral outcomes of interest.

Table 4: Mean Scale Scores, Reliability Statistics and Significance Tests for Total Middle School Sample

Sub-Scale	Range	Pre-test Mean	Cronbach's α	Post-test Mean	Cronbach's α	t-value	Desired Outcome
Perceived Risk of Harm of ATOD Use							
SFS Program Participants (n=101)	5-20	16.74	.81	16.38	.83	.894	1
Comparison Group Participants (n= 42)	5-20	15.7	.91	15.69	.88	.029	1
Intentions to Smoke							
SFS Program Participants (n=91)	2-10	2.35	.82	2.62	.74	-2.28	4
Comparison Group Participants (n=42)	2-10	2.15	.65	2.28	.74	-1.15	4

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 5: Attitudes toward Alcohol Use, ^a Middle School SFS Program and Comparison Group Participants

Outcome	Pre-test Mean	Post-test Mean	t-value	Desired Outcome
Parental Attitudes Toward Alcohol Use				
SFS Program Participants (n=101)	3.78	3.72	.241	1
Comparison Group Participants (n= 44)	3.66	3.75	-.66	1
Respondent Attitudes Toward Alcohol Use				
SFS Program Participants (n=101)	3.75	3.49	3.53*	1
Comparison Group Participants (n= 45)	3.71	3.64	.443	1

^a Measures are one item only; 1=not wrong at all, 4=very wrong.

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

2009 Regression Analysis on Measures

Comparisons were initially done using linear regression techniques to get measures of effect size. The β for the pre-test substance use measure essentially reflects the effect size of time with respect to use. Next, comparisons between SFS Program Participants and Comparison Group Participants were conducted using regression techniques that allow one to control for differences in groups by age, race/ethnicity, and sex and examine whether SFS Program Participants and Comparison Group Participants differ on the basis of the prevention programs being conducted.

Table 6: Examining the Effect of the Pre-test Risk of Harm Measure on Post-test Scores Controlling for Demographic Characteristics (n=146)

Variables		B	95% CI	
Age		-.08	-.222	-.063
Biological Sex	Male	<i>Referent</i>		
	Female	.021	-.217	.258
Other Language (Yes)		-.199	-.475	.076
Risk of Harm Score at Pre-test		.271	.108	.434
Adjusted R-Squared: .078				

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 7: Examining the Effect of the Prevention Program on the Risk of Harm Measure at Post-test Controlling for the Effect the Risk of Harm Measure at Pre-test and Demographic Characteristics, SFS (n=102) and Comparison Group (n=44) Participants

Variables		β	95% CI		Desired Outcome
Group	Comparison	<i>Referent</i>			
	Treatment	.199	-.110	.508	Ⓢ
Age		-.147	-.323	.030	
Biological Sex	Male	<i>Referent</i>			
	Female	.009	.229	.247	
Other Language (Yes)		-.169	.448	.110	
Risk of Harm Score at Pre-test		.27	.108	.433	
Adjusted R-Squared: .082					

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 8: Examining the Effect of the Pre-test Intentions to Smoke Measure on Post-test Scores Controlling for Demographic Characteristics (n=148)

Variables		B	95% CI	
Age		.152	.056	– .248
Biological Sex	Male	<i>Referent</i>		
	Female	-.032	-.190	– .127
Other Language (Yes)		.128	-.056	.313
Intentions to Smoke Score at Pre-test		-.129	-.238	– -.020
Adjusted R-Squared: .086				

Note: *p ≤ .05, **p ≤ .01, ***p ≤ .001.

Table 9: Examining the Effect of the Prevention Program on the Intentions to Smoke Measure at Post-test Controlling for the Effect of the Intentions to Smoke Measure at Pre-test and Demographic Characteristics, SFS (n= 106) and Comparison Group (n=46) Participants

Variables		β	95% CI		Desired Outcome
Group	Comparison	<i>Referent</i>			
	Treatment	.011	-.196	– .217	U
Age		.149	.030	– .268	
Biological Sex	Male	<i>Referent</i>			
	Female	-.032	-.191	– .127	
Other Language (Yes)		.130	-.058	.318	
Intentions to Smoke Score at Pre-test		-.129	-.239	– -.02	
Adjusted R-Squared: .080					

Note: *p ≤ .05, **p ≤ .01, ***p ≤ .001.

Table 10: Examining the Effect of Pre-test Cigarette Use on Post-test Cigarette Use Controlling for Demographic Characteristics

Variables		β	95% CI	
Age		.001	-.033	-.034
Biological Sex	Male	<i>Referent</i>		
	Female	-.033	-.088	.023
Other Language (Yes)		.000	-.065	.064
Cigarette Use at Pre-test		-.012	-.050	.026
Adjusted R-Squared: - .012				

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 11: Examining the Effect of the Prevention Program on Cigarette Use at Post-test Controlling for Cigarette Use at Pre-test and Demographic Characteristics, SFS (n= 94) and Comparison Group (n=41) Participants

Variables		β	95% CI		Desired Outcome
Group	Comparison	<i>Referent</i>			
	Treatment	.018	-.055	.090	⬇
Age		-.00-	-.047	.036	
Biological Sex	Male	<i>Referent</i>			
	Female	-.033	-.089	.022	
Other Language (Yes)		.002	-.064	.068	
Cigarette Use at Pre-test		-.012	-.050	.026	
Adjusted R-Squared: -.018					

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 12: Examining the Effect of Pre-test Chewing Tobacco Use on Post-test Chewing Tobacco Use Controlling for Demographic Characteristics

Variables		β	95% CI	
Age		.000	.000	– .000
Biological Sex				
	Male	<i>Referent</i>		
	Female	.000	.000	– .000
Race/Ethnicity				
	Non-Hispanic White	<i>Referent</i>		
	Hispanic	.000	.000	– .000
	Native American	.000	.000	– .000
	Other	.000	.000	– .000
Other Language (Yes)		.000	.000	.000
Chewing Tobacco Use at Pre-test		.000	.000	– .000
Adjusted R-Squared: .000				

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

SAMPLE SIZE OF USERS TOO SMALL FOR CHEWING TOBACCO

Table 15: Examining the Effect of the Prevention Program on Alcohol Use at Post-test Controlling for Alcohol Use at Pre-test and Demographic Characteristics, SFS (n= 106) and Comparison Group (n= 45) Participants

Variables		β	95% CI		Desired Outcome
Group					
	Comparison	<i>Referent</i>			
	Treatment	.037	-.216	- .291	U
Age		-.020	-.166	- .126	
Biological Sex					
	Male	<i>Referent</i>			
	Female	-.123	-.318	- .073	
Other Language (Yes)		.188	-.043	.148	
Alcohol Use at Pre-test		-.097	-.232	- .038	
Adjusted R-Squared: .022					

Note: *p ≤ .05, **p ≤ .01, ***p ≤ .001.

Too small data only 3 report binge drinking

Table 16: Examining the Effect of Binge Drinking at Post-test Controlling for Demographic Characteristics

Variables		β	95% CI	
Age		.000	.000	– .000
Biological Sex				
	Male	<i>Referent</i>		
	Female	.000	.000	– .000
Race/Ethnicity				
	Non-Hispanic White	<i>Referent</i>		
	Hispanic	.000	.000	– .000
	Native American	.000	.000	– .000
	Other	.000	.000	– .000
Other Language (Yes)		.000	.000	.000
Binge Drinking at Pre-test		.000	.000	– .000
Adjusted R-Squared: .000				

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 17: Examining the Effect of the Prevention Program on Binge Drinking at Post-test Controlling for Binge Drinking at Pre-test and Demographic Characteristics, SFS (n=105) and Comparison Group (n=46) Participants

Variables		β	95% CI		Desired Outcome
Group					
	Comparison	<i>Referent</i>			
	Treatment	.000	.000	– .000	U
Age		.000	.000	– .000	
Biological Sex					
	Male	<i>Referent</i>			
	Female	.000	.000	– .000	
Race/Ethnicity					
	Non-Hispanic White	<i>Referent</i>			
	Hispanic	.000	.000	– .000	
	Native American	.000	.000	– .000	
	Other	.000	.000	– .000	
Other Language (Yes)		.000	.000	.000	
Binge Drinking at Pre-test		.000	.000	– .000	
Adjusted R-Squared: .000					

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 18: Examining the Effect of Marijuana Use at Post-test Controlling for Demographic Characteristics

Variables		β	95% CI		
Age		.123	.029	-	.217
Biological Sex					
	Male	<i>Referent</i>			
	Female	.174	.019	-	.330
Other Language (Yes)		.232	.051		.143
Marijuana Use at Pre-test		-.031	-.138	-	.076
Adjusted R-Squared: .086					

Note: *p ≤ .05, **p ≤ .01, ***p ≤ .001.

Table 19: Examining the Effect of the Prevention Program on Marijuana Use at Post-test Controlling for Marijuana Use at Pre-test and Demographic Characteristics, SFS (n=106) and Comparison Group (n=46) Participants

Variables		β	95% CI			Desired Outcome
Group						
	Comparison	<i>Referent</i>				
	Treatment	.119	-.082	-	.321	U
Age		.082	-.034	-	.199	
Biological Sex						
	Male	<i>Referent</i>				
	Female	.169	.013	-	.324	
Other Language (Yes)		.249	.066		.432	
Marijuana Use at Pre-test		-.032	-.139	-	.075	
Adjusted R-Squared: .088						

Note: *p ≤ .05, **p ≤ .01, ***p ≤ .001.

ONLY one reported user for Prescription Drug Use

2009 GLM Analysis on Measures

The interaction of time by group and time alone was not significant.

Table 22: Examining the Effect of the Pre-test Measure Mean Scores on the Post-test Measure Mean Scores Controlling for Demographic Characteristics

Sub-Scale	Range		Baseline Mean Score	Post-Test Mean Score	F-test & sig. (indicated by asterisk[s])	effect size ^a	Desired Outcome	Cronbach's Alpha
	Min	Max						
Risk and Protective Factor Scales:								
Risk of Harm	1-5		0.00	0.00	00.000	.000	☹	.000
SFS Program Participants (n= 99)			3.33	3.28	.49	.00		
Comparison Group Participants (n=44)			3.18	3.13	.094	.002		
Intentions to Smoke	0-3		0.00	0.00	00.000	.000	☹	.000
SFS Program Participants (n= 99)			.878	.987	.11	.00		
Comparison Group Participants (n= 44)			.853	.871	9.56**	.009		

^a partial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.
 Note: *p<.05, **p<.01, ***p<.001.

Table 23: Examining the Effect of Pre-test Substance Use on the Post-test Substance Use Controlling for Demographic Characteristics

Substance	Baseline Mean	Post-Test Mean	F-test & sig. (indicated by asterisk[s])	effect size ^a	Desired Outcome
Cigarettes					⓪
SFS Program Participants (n= 99)	.02	.03	.33	.00	
Comparison Group Participants (n= 44)	.07	.02	2.05	.00	
Chewing Tobacco					⓪
SFS Program Participants (n=99)	.01	0	1	.09	
Comparison Group Participants (n= 44)	.02	0	1	.01	
Alcohol					⓪
SFS Program Participants (n=99)	.02	.03	.11	.00	
Comparison Group Participants (n=44)	.02	.02	1	.02	
Marijuana					⓪
SFS Program Participants (n=99)	.03	.09	4.67*	.05	
Comparison Group Participants (n=44)	.02	.06	.32	.02	
Binge Drinking					⓪
SFS Program Participants (n=99)	.02	.03	0	.00	
Comparison Group Participants (n=44)	.02	.02			
Any Prescription Medication Not Prescribed					⓪
SFS Program Participants (n= 99)	na	na	na	na	
Comparison Group Participants (n=44)	na	na	na	na	

^a partial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.
 Note. *p≤.05, **p≤.01, ***p≤.001

Discussion of Findings

Note any observed trends in demographics that might contribute to your results. Are there differences between program participants and comparison group participants?

The sample size for the control group is much smaller. Since there are very few users in the overall group this impacts the results by changing the level at which significance is achieved and because the randomness of inclusion of the small number of users in the sample set.

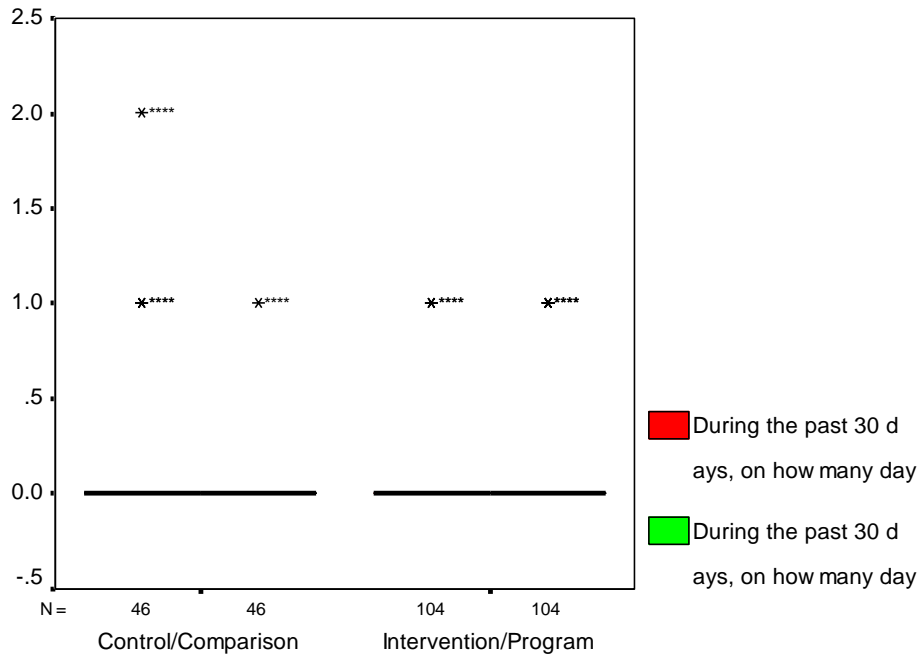
How did *Past 30-day ATOD Use at Pre-test* compare to *Past 30-day ATOD use at Post-test* for each substance based on group membership? Note whether it increased, decreased, or stayed the same and whether the results captured by the Chi-Square statistic are statistically significant.

The Chi-Square Statistic here does not really measure the changes. Several problems are evident with using chi square in this situation. First of all, the cell size is not large enough, no cell should ever be below one and there should not be multiple cells where the frequency is below 5. Secondly it is important in Chi square NOT to use it in a repeated measures design (take a look at Andy Fields book for a good explanation). Also, what exactly the expected frequencies would be is a questionable interpretation.

Describe the *Frequency of ATOD Use* at pre-test and post-test and note whether frequency increased, decreased, or stayed the same for each substance based on group membership and whether the results captured by the t-value statistic are statistically significant.

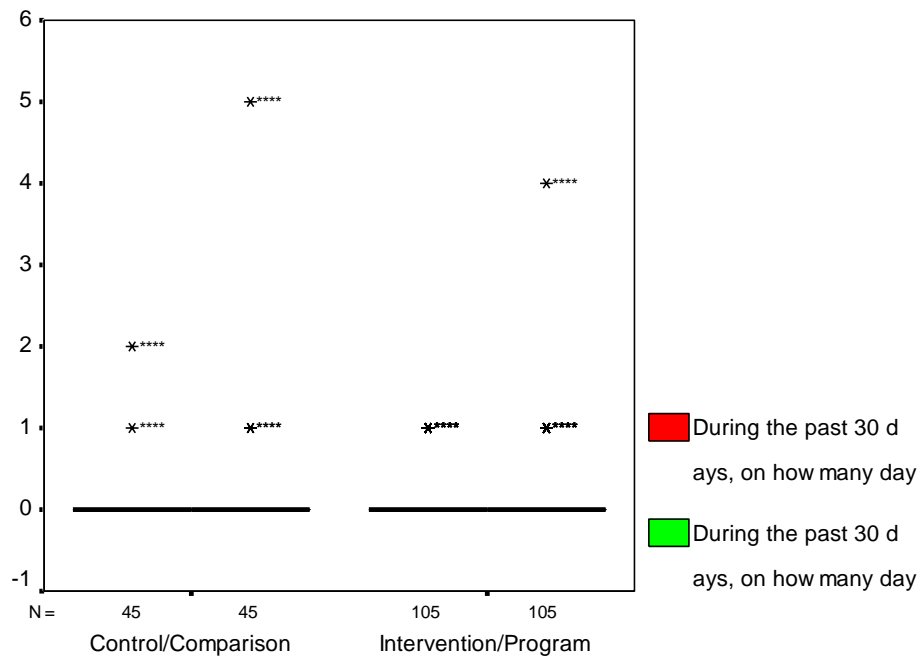
Below are the box and whiskers plots for pre and posttest use by group for the 30 day use subscales.

During the past 30 days, on how many days did you smoke cigarettes



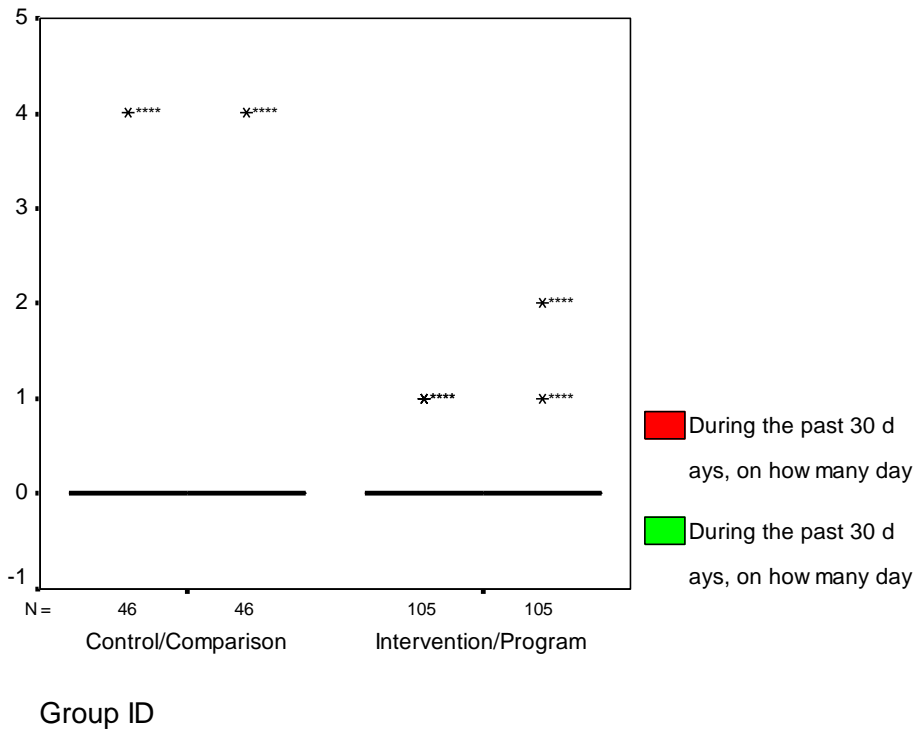
Group ID

During the past 30 days, on how many days did you have at least one drink of alcohol?.

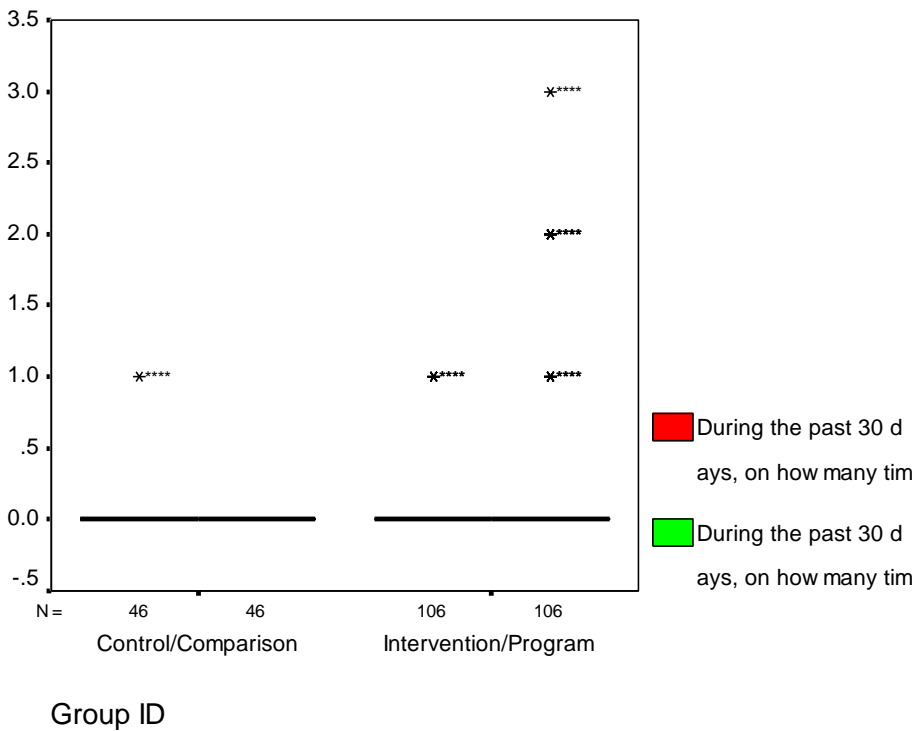


Group ID

During the past 30 days, on how many days did you have 5 or more drinks of alcohol?.



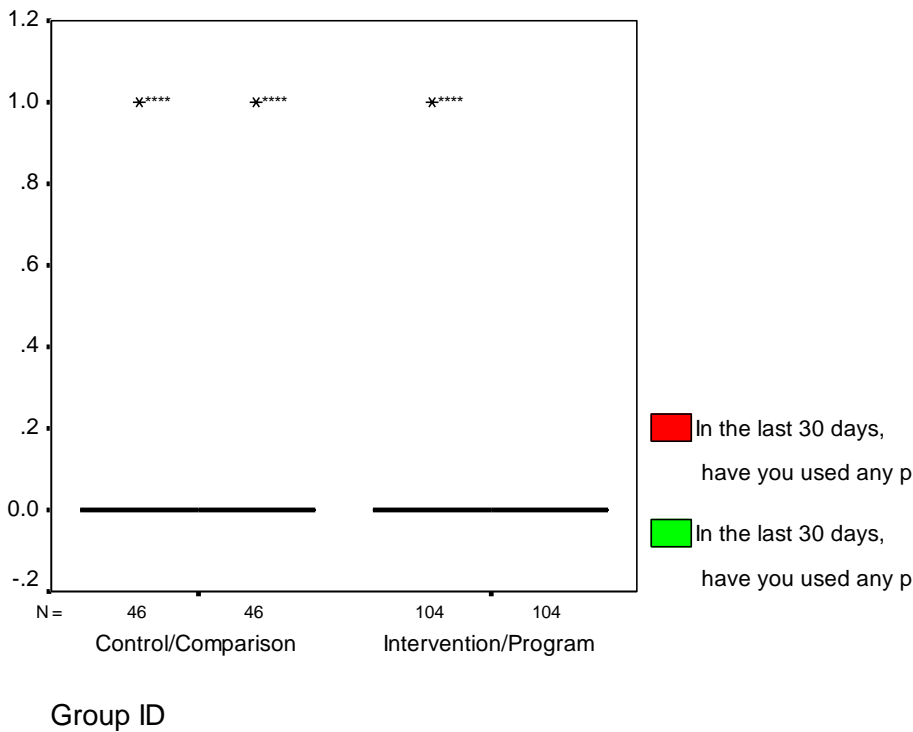
During the past 30 days, on how many times did you use marijuana?.



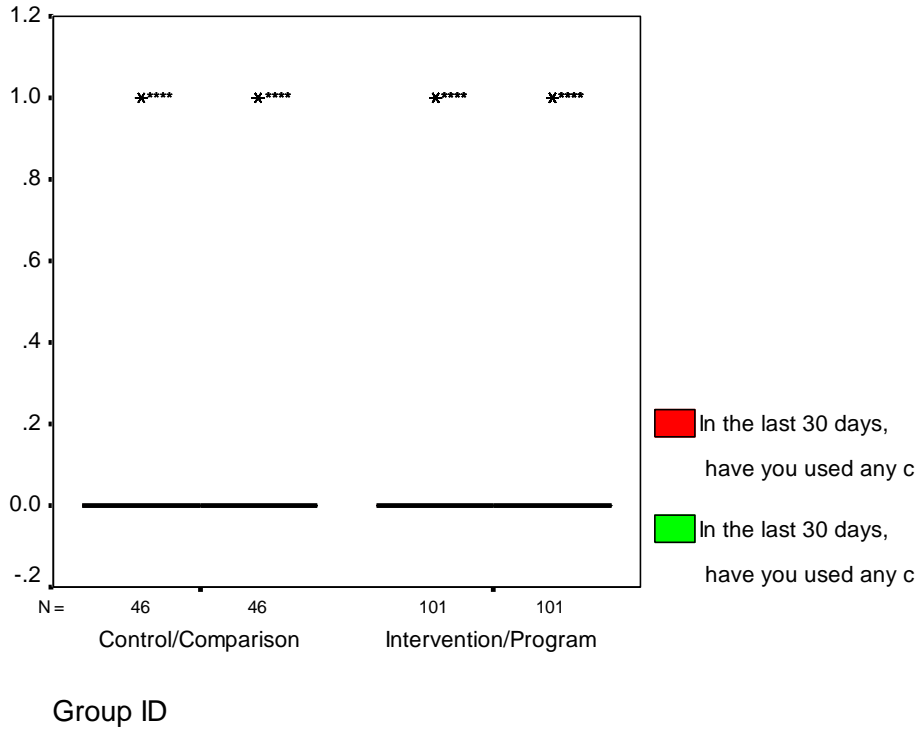
As can be seen from these boxplots those who admit to use are outliers. In fact, there are a total of 3 participants in the treatment group and two in the control group who are claiming use of the majority of the substances.

How did *Past 30-day Prescription Drug Use at Pre-test* compare to *Past 30-day Prescription Drug Use at Post-test* for each substance by group membership? Note whether it increased, decreased, or stayed the same and whether the results captured by the Chi-Square statistic are statistically significant.

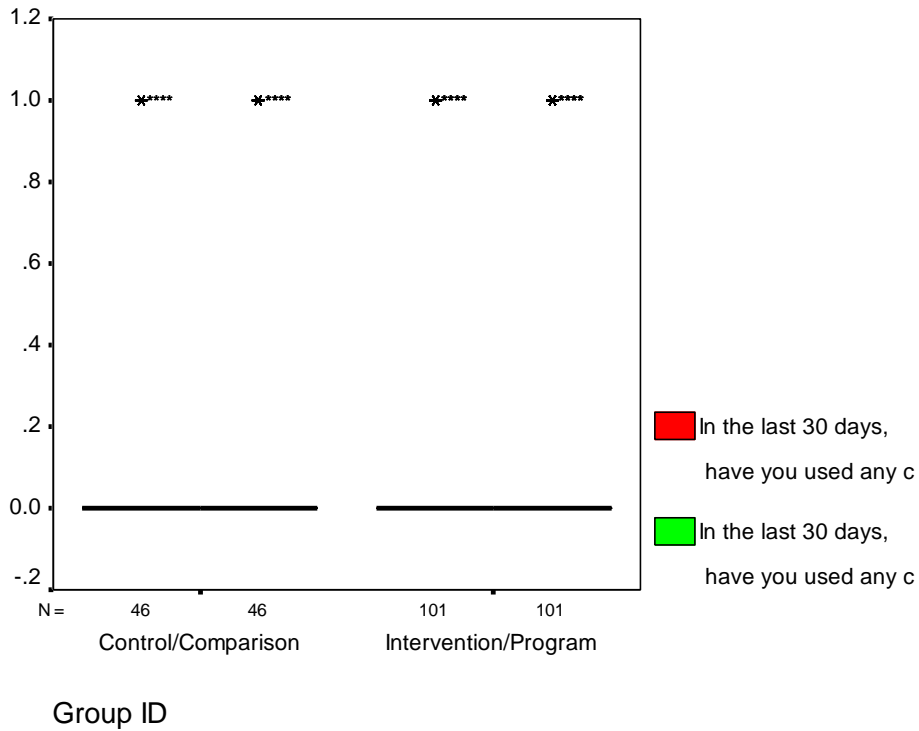
In the last 30 days, have you used any prescription medication not prescribed to you?.



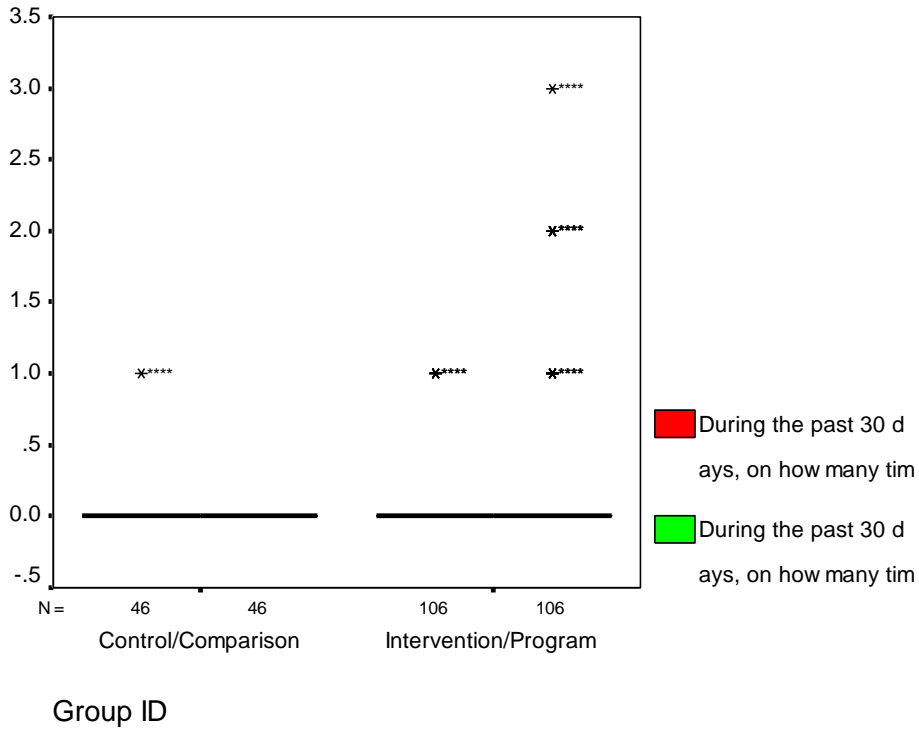
In the last 30 days, have you used any cough medication not prescribed to you?.



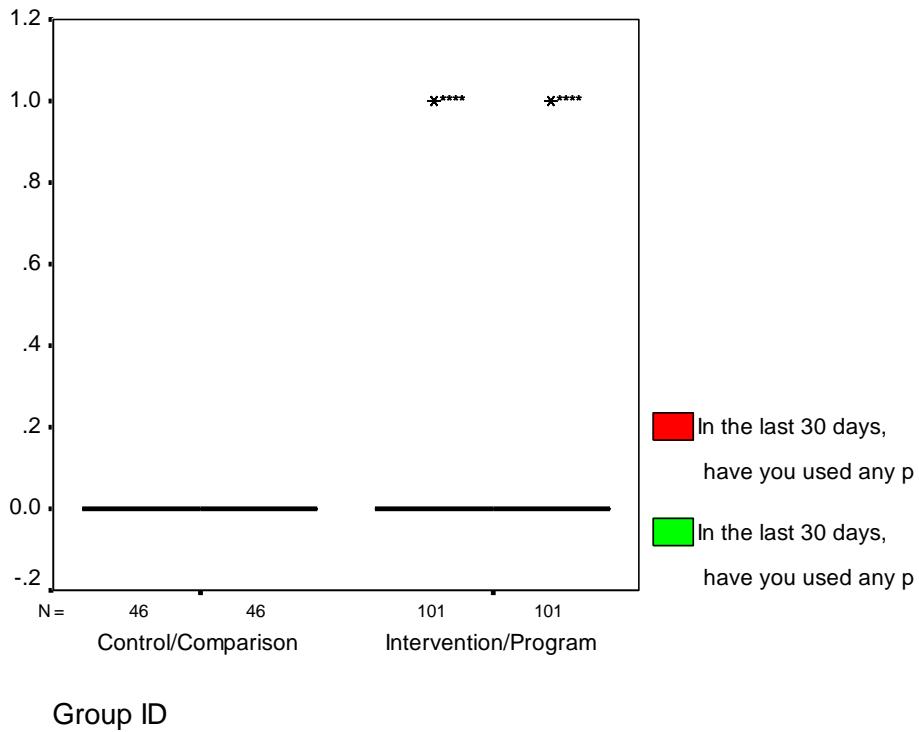
*In the last 30 days, have you used any prescription pain pills not prescribed to you?.



*In the last 30 days, have you used any ritalin, adderal, prozac not prescribed to you?.



In the last 30 days, have you used any prescription sleep aids or tranquilizers not prescribed to you?.



As can be seen from these boxplots those who admit to use are outliers. In fact, there are a total of 3 participants in the treatment group and two in the control group who are claiming use of the majority of the substances. Interpreting the t test will not be meaningful, since the sample size of users is so small.

Compare the pre-test and post-test mean scale scores for the *Perceived Risk of Harm* and *Intentions to Smoke* measures by group membership and describe whether there is movement and in what direction. Does the t-statistic capture change at a statistically significant level? Based on the Cronbach's alpha for each measure, are the findings likely to be reliable?

There was no significant difference in the perceived risk of harm for either the control or the treatment group. The subscale has good reliability.

There was a significant increase in intentions to smoke in the treatment group. Upon examination of the data, this is due to a small number of participants. In the control group a small number of participants also indicated an increase willingness to smoke, however, due to the smaller sample size this effect was not significant. The subscale has reasonable reliability. This effect is probably due to maturation, as it has been evident in past years as well.

Describe whether *Attitudes Toward Alcohol Use* increased, decreased or stayed the same between pre-test and post-test by group membership and whether change was at a statistically significant level.

There was no significant difference in the Parental Attitudes toward Use either the control or the treatment group. The subscale has only one item, thus no reliability.

There was a significant increase in attitudes toward use in the treatment group. Upon examination of the data, this is due to a small number of participants. In the control group a small number of participants also indicated an increased in attitude toward use, however, due to the smaller sample size this effect was not significant. Because the scale has only one item, reliability can not be calculated. However, this effect is probably due to maturation, as it has been evident in past years as well.

Provide a summary of the key results from the 2009 Regression Analysis on Measures. Refer to the Manual for guidance as necessary. Provide a summary of the key results from the 2009 GLM Analysis on Measures. Refer to the Manual for guidance as necessary.

The regressions and the GLM indicate extremely small effect sizes, even for the small number of scales that are significant. The critical issue here is that the program is designed for prevention. The entire purpose of the program is to reach the participants BEFORE they become highly involved in the use of drugs. It is evident from the data that the participants are in this category. Most indicate little drug use at this point. A few indicate that they are using multiple drugs. One point interesting in the data is that the question about cough syrup elicited a higher positive response rate with 8% (pretest) and 11% (posttest) indicating use. The participants that indicated cough syrup use did not fit the profile of the other drug users. This bears investigation, into whether cough syrup is being abused or participants are responding about the use of over the counter cough syrups for actual coughs (which would not be prescribed).

Because the program is designed to intercept drug use and change attitudes, investigation of the attitudes about drug use and their interaction with other factors is a more reasonable approach to investigating the program. The following sections will outline the results from these risk and resiliency factors.

Summary of SEM model of Talking Talons Factors, Risk and Resiliency and Drug Attitude Outcomes

In the interest of time and space the information below is for the final model and outlines the general results. A complete report containing the full SEM, all permutation and data is available by contacting Dr. Carmen Sorge, sorgec@gmail.com.

Purpose of the Study

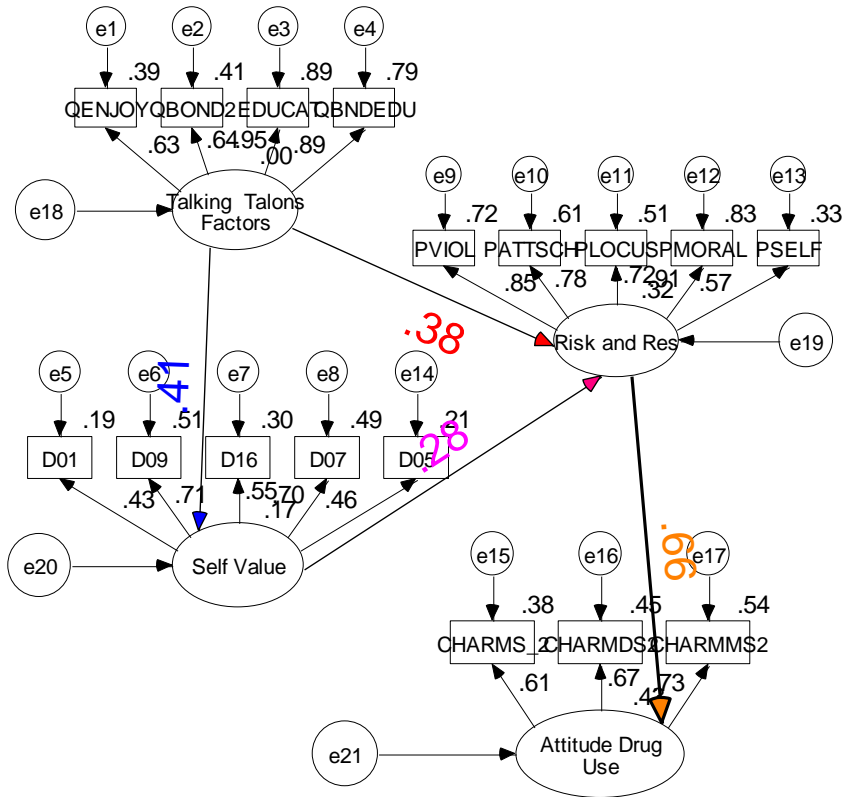
The purpose of this study was to examine possible causal relationships between the Talking Talons Factors with the outcome variables of Self Value (as taken from Module D of the new SFS) Student Risk and Resiliency Outcomes and Student Attitude (Disapproval) of Drug use. All scales are designed so that a higher number is a more positive score. The models of these relationships were drawn from theoretical constructs primarily related to Expectancy Value theories.

Research Questions

1. Which model better describes the empirical relationships between the Talking Talons Factors with the outcome variables of Self Value (as taken from Module D of the new SFS) Student Risk and Resiliency Outcomes and Student Attitude (Disapproval) of Drug use.?
2. Does the better model adequately describe the empirical relationships between the Talking Talons Factors (from the Talking Talons Composite and Quizzes) with the outcome variables of Self Value (as taken from Module D of the new SFS) Student Risk and Resiliency Outcomes (from the Talking Talons Composite and Quizzes) and Student Attitude (Disapproval) of Drug use (taken from the New SFS).?

The model below is the final pruned model.

Figure 1 Pruned Model Standardized Estimates



The regression weights for the relationships between the latent variables and their observed indicators as well as the direct relationships between the latents are presented in Table 10. All of the regression weights were statistically significant since the insignificant paths were

eliminated from the Pruned model. Squared multiple correlations for the Pruned Model are presented in Table 10.

Table 1: Unstandardized Regression Weights for Pruned Model**

			Estimate	S.E.	C.R.	P
Self Value	<---	Talking Talons_Factors	0.22	0.074	2.964	0.003
Risk and Res	<---	Talking Talons_Factors	0.569	0.131	4.355	***
Risk and Res	<---	Self Value	0.778	0.348	2.235	0.025
Attitude Drug_Use	<---	Risk and Res	0.366	0.07	5.198	***

**Amos output estimated values. The critical ratio (CR) is equal to the path value divided by its standard error. A value greater than 1.96 indicates statistical significance at $p < .05$.

***Amos output estimated values. $p < .001$

Table 2: Squared Multiple Correlations for Pruned Model

	Estimate
Talking Talons_Factors	0
Self Value	0.171
Risk and Res	0.315
Attitude Drug_Use	0.429

Table 3: Direct and Indirect Effects for Pruned Model

	Effect On	Self Value	Risk and Resiliency	Attitude toward Drug Use

Talking Talons Factors	Direct	.413	.385	0
	Indirect	0	.116	.328
	Total	.413	.50	.328
Self Value	Direct	0	.28	0
	Indirect	0	0	.183
	Total	0	.28	.183
Risk and Resiliency	Direct	0	0	.655
	Indirect	0	0	0
	Total	0	0	.655

The fit indices for the Pruned Model for both years are presented in Table 13. These fit indices indicate a good level of fit of the Model to the data. (see full SEM report for explanation of fit indices).

Table 4: Fit Indices for Pruned Model

Model	χ^2	<u>df</u>	p	χ^2/df	TLI	CFI	PRATIO
Pruned Model	251.21	115	.000	2.184	.886	.914	.75

Comparison of Model Fit

Table 14 presents the fit indices for the three Models from this research plus that of the Null Model. The Null Model represents a model in which all of the observed variables are uncorrelated and as such represent a “baseline” lower limit for the fit of the model to the data.

Table 5: Comparison of the Fit of the Models

Model	χ^2	df	p	χ^2/df	TLI	CFI	PRATIO
Null Model	321.23	118	.00	2.72	.83	.87	.77
Measurement Model	249.97	113	.00	2.212	.883	.91	.74
Saturated Model	249.97	113	.00	2.21	.88	.91	.74
Pruned Model	251.21	115	.000	2.184	.886	.914	.75

Table 15 below compares the $\Delta\chi^2$ and the Δdf for the models used in this research. A statistically significant $\Delta\chi^2$ for the Δdf (as indicated by $p < .05$) indicates that the fit of the two models were significantly different from each other. As can be seen in Table 15, the Measurement, the Saturated and the Pruned Models all fit the data significantly better than the Null Model. There is no statistically significant difference in fit between the Saturated Model and the Pruned Model. Because there is no difference in fit and the Pruned Model is simpler than the Saturated Model, it is selected as the best fitting model.

Table 6: Change in Model Fit

	$\Delta\chi$	Δdf	p
Measurement Model compared to the Null Model	71.26	5	.00
Saturated Model compared to the Null Model	71.26	5	.00
Pruned Model compared to the Null Model	70.02	3	.00
Saturated Model compared to Pruned Model	1.24	2	.54

Model fit for the Measurement Model was similar for all levels of inclusion for outliers. Results from the comparison of model fit indicated that the Measurement, the Saturated and the Pruned Models exhibited better fit than the Null Model. There was no significant difference in fit between the Saturated and the Pruned Models. Therefore the answer to first research question posed in this study is that the Pruned Model is the better fitting of the two models because it is simpler.

Saturated to Pruned Model Conclusions

It is of great interest that only the Risk and Resiliency Factors had a direct impact on the student attitude toward drug use in the pruned model. However, indirect effects were also seen. These results indicate that a simple investigation of the linear relationship between the indicator

variables and the outcome variables would miss the more subtle impact the program has on attitudes toward drug use.

Pruned Model Conclusions

This model is the result of examining over two dozen other possible permutations of models involving these variables. Each latent variable was hypothesized to be the exogenous variable in turn. The results are discussed in terms of change in standard deviations. The following section reviews the concept of standard deviation for those unfamiliar with statistics.

Direct and Indirect Effects

This section discusses the standardized estimates of the path coefficients for the Pruned Model. Standardized path coefficients estimate how much a downstream variable would change assuming a change of one standard deviation in the upstream variable. For example Risk and Resiliency in the Pruned Model had a direct impact on Student Attitudes toward Drug Use of .66. This value means that a change of one standard deviation in Risk and Resiliency would produce a change of .66 standard deviations in Student Attitudes toward Drug Use (controlling for the rest of the upstream latent variables). Self Value had an indirect effect on Student Disapproval of Drug use of .186 . This value means that a change of one standard deviation in Self Value of Talking Talons Educator would produce a change of .186 standard deviations in Student Disapproval of Drug through its impact on other latent variables that are upstream from Student Disapproval of Drug Use.

According to Kline (Kline, 1998); standardized path coefficients with values of less than .10 can be interpreted as small effects, values of around .30 can be interpreted as medium effects and values above .50 can be interpreted as large effects.

This best fitting model yielded other very interesting results. First, the Attitude toward drugs outcome variable was only influenced directly by another outcome variable (Risk and Resiliency). However, student attitudes were impacted by the other two variables ONLY through influencing the Risk and Resiliency outcomes

Summary of Outcomes

Talking Talons Factors

Every increase of one standard deviation in Talking Talons factors produced a Direct effect of .413 standard deviations in Self Value. Every increase of one standard deviation in Talking Talons factors produced a Direct effect of .385 standard deviations in Risk and Resiliency and an Indirect effect of .116 standard deviations for a total effect of .50 standard deviations. Every increase of one standard deviation in Talking Talons factors an Indirect effect of .33 standard deviations in Attitude toward Drug Use.

Students who had more positive viewpoints of the Talking Talons program had medium/ large statistically significant impact on Self Value. Students who had more positive viewpoints of the Talking Talons program had a medium direct effect and a small indirect effect on Risk and Resiliency for a total large statistically significant impact on Risk and Resiliency. Students who had more positive viewpoints of the Talking Talons program had a medium indirect effect Student Attitude toward drug use for a total medium effect size statistically significant impact on Student Attitude toward Drug Use.

The impact of the Talking Talons factors on the final outcome of Drug Use is an indirect effect. The Talking Talons factors impact Self Value and Risk and Resiliency. In turn Risk and Resiliency then impacts Student Attitude toward Drug use.

Self Value

Every increase of one standard deviation in Self Value factors produced a Direct effect of .413 standard deviations in Risk and Resiliency. Every increase of one standard deviation in Self Value factors produced a direct effect of .28 standard deviations in Risk and Resiliency. Every increase of one standard deviation in Self Value factors an indirect effect of .183 standard deviations in Attitude toward Drug Use.

Students who had more positive Self Value had medium/ large statistically significant impact on Risk and Resiliency. Students who had more positive Self Value had a small/medium indirect effect Student Attitude toward Drug use. The impact of Self on the final outcome of Drug Use is an indirect effect. The Self Value impacts Risk and Resiliency. In turn Risk and Resiliency then impacts Student Attitude toward Drug use.

Risk and Resiliency

Every increase of one standard deviation in Risk and Resiliency factors produced a Direct effect of .66 standard deviations in Student Attitude Toward Drug Use.

Students who had more positive Risk and Resiliency Factors had a large statistically significant impact on Student Attitude toward Drug Use.

Variance of the Latent Variables

The magnitude of the variance for a latent variable indicates how much of the latent variable's variance is accounted for by its upstream latent variables. The amount of variance for each of the endogenous latent variables accounted for by its upstream latent predictors was 17% for Self Value, 32% for Risk and Resiliency and 43% for Student Attitudes toward Drug Use.

Global Summary

A theoretical structural model (the Saturated Model) had a good fit to the data. The model fit for this SEM indicates a high level of confidence in the model. The sample size is smaller than previous years because a new SFS instrument was utilized this year. Therefore, the data from previous years cannot be incorporated into this model.

- A second and simpler model (the Pruned Model) that eliminated the non-significant paths in the Saturated Model also exhibited a close fit to the data
- **Talking Talons Factor had**
 - A medium to large direct effect on Self Value
 - A medium direct effect on Risk and Resiliency and a small indirect effect on Risk and Resiliency for a total large effect size on Risk and Resiliency use
 - A medium indirect effect size on Attitude toward Drug Use
- **Self Value**
 - A medium/ large positive direct effect on Risk and Resiliency

- Small positive indirect affect on Student disapproval of Drug use
- **Risk and Resiliency**
 - A large positive direct effect on Student Attitude toward Drug Use
- **Upstream variables in the Pruned Model predicted**
 - 17% for Self Value
 - 32% for Risk and Resiliency
 - 43% for Student attitude toward Drug Use

Global Summary

The data from this year indicates that the Talking Talons program does not have direct effect on Student Attitude toward drug use but does have an indirect effect.

This model yields very useful information about the impact the Talking Talons program in changing measured outcomes.

The Talking Talons programs impact is on attitude toward drug use is not a direct impact, it works through changes in the students attitude outcomes. Thus, direct measurements of such variables do not provide significant results whereas measuring the impact **through** the latent variable of Risk and Resiliency and Self Value indicates a medium effect size on Attitudes toward Drug Use. Because the Talking Talons program is designed to reach participants before they have become enmeshed in actual drug use the outcome of change attitudes about drug use is a more reasonable assessment of program outcomes than actual 30 day drug use. Because the impact is not direct and simplistic a more sophisticated evaluation approach needs to be utilized

in order to observe the effects of the program than a direct linear relationship between the variables.