

RISK AND PROTECTIVE FACTORS FOR PAST YEAR DRUGS USE IN ADOLESCENTS:
Main results from logistic regression models
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Not all children exposed to known risk factors go on to drug use and abuse and delinquency during adolescence.

However, while some research has been done on protective factors that increase resistance to those risk factors, additional studies are needed.

Dr. Thornberry

The researchers identified a number of **educational, family, and peer factors** during the 8th and 9th grades that contributed to the short-term positive outcomes for the resilient youths.

Among educational factors, being committed to their education, having an attachment to teachers, and high reading and mathematics achievement levels consistently distinguished resilient from nonresilient youth.

Dr. Thornberry and colleagues

Among **FAMILY FACTORS**, closer parental supervision and a strong parent-child attachment were protective.

Among **PEER RELATIONSHIPS**, peers having conventional values and parents' positive evaluation of peers were strongly related to resilience.

Dr. Thornberry and colleagues

Some protective factors that have been identified in the general literature on resilient youth, such as **SELF-ESTEEM**.

Dr. Thornberry and colleagues

In more than 15 years of drug abuses research in Colombia, we had identified important principles for prevention programs, in the family, individual and peer, using descriptive statistics and simple odds ratio.

Identifying these protective factors may suggest possible new approaches to prevention interventions.

Objectives

This study addresses the following:

- Relative importance of each risk and protective factor in predicting past year drug use.
- Importance of gender variable combined with the full set of risk and protective factors in explaining the variation in past year substance use.
- The usefulness of modeling techniques using Logistic Regression Models in explaining the variation in past year drug use.

Methods

This report presents the main findings about the *strength of the relations* between risk and protective factors and past year drug use.

Methods

Sample 3927 students aged 12 to 19 years

Using data from the 2004 Metropolitan Medellín Area High School Survey on Drug Use.

Using **multiple logistic regression models** for determines the importance of individual predictor variables.

By testing whether these factors account for statistically significant amount of variation in dependent variable **after controlling for other predictor variables** included in the model.

MODEL INFORMATION

The regression analysis were performed using the **LOGISTIC** procedure in **SAS** program.

MODEL INFORMATION

- a) Response Levels: 2
- b) Model: binary logit
- c) Optimization Technique: Newton-Raphson and Step by step *Backward Elimination Procedure*.

The study included **25 risk and protective factors** that had been associated to the results in the bivariate analysis.

- Some of these factors were measured using multiple-items scales.
- The others using simple items.

When more than one item was used to measure a factor, the responses from all the items were **combined into a single score**.

Higher scores for **risk factors** indicated that a respondent scored high on variables that had a **higher risk for substance use**.

Higher scores for **protective factors** indicated that a respondent scored high on variables that had a **lower risk for substance use**.

The multivariate model was constructed in **separated form for legal and illegal substances.**

In each case under the hypothesis of **different behavior the risk and protective factors, by gender.**

The results of these models are presented in Tables for each model

- The regression coefficient
- OR (Odds ratio) and
- 95% CI (confident intervals)
- Significance test for each predictor *p value*

RESULTS

Logistic Regression Model Predicting Past Year CIGARETTES AND ALCOHOL USE and Risk and Protective Factors.

For the model of legal substances entered **22 factors.**

↓

Without differentiating by gender, gives as significant variable in the explanation of the consumption

12 factors

↙ ↘

7 risk **5 protective**

Results of Logistic Regression Model Predicting Past Year Cigarettes and Alcohol Use and Risk Factors

Factor	β	OR	95% CI		<i>p</i> value
			Lower	Higher	
Violent behavior scale	0.7729	2.17	1.837	2.554	<.0001
Academic problems scale	0.5037	1.66	1.367	2.003	<.0001
Verbal violence against woman	0.3110	1.37	1.141	1.632	0.0007
Mistreated verbally against Children	0.2519	1.29	1.088	1.521	0.0032
Irritability scale	0.2261	1.25	1.090	1.442	0.0016
Gender - males vs. female	0.2125	1.24	1.078	1.419	0.0024
Physical punish	0.1881	1.21	1.004	1.452	0.0457

The OR is easier to understand than the regression coefficient, both are measures that describe the strength and direction of the relationship between the predictors and past year substance use.

For example
 The OR 1,36 for males indicates that the odds of past year legal substance use were 1.36 times higher for males than for females, after controlling for other variables.
 The *p* value for this is less than 0.05, indicating that gender is a significant variable in Model.

Results of Logistic Regression Model Predicting Past Year Cigarettes and Alcohol Use and Protective Factors

Factor	β	OR	95% CI		<i>p</i> value
			Lower	Higher	
Self-esteem scale	-0.7979	0.45	0.346	0.585	<.0001
Healthy lifestyle	-0.4471	0.64	0.479	0.853	0.0024
Good communication with the Teacher	-0.2680	0.76	0.659	0.887	0.0004
To practice exercise	-0.2438	0.78	0.670	0.916	0.0022
Social support scale	-0.0568	0.95	0.929	0.960	<.0001



Results of Logistic Regression Model Predicting Past Year Cigarettes and Alcohol Use and Risk Factors Among Males

Factor	β	OR	95% CI		<i>p</i> value
			Lower	Higher	
Intercept: SUB. LEGAL=1	0.2387				0.3358
Violent behavior scale	0.5848	1.79	1.457	2.210	<.0001
Academic problems scale	0.5624	1.75	1.329	2.317	<.0001
Verbal violence against woman	0.3428	1.41	1.108	1.792	0.0052
Physical punish	0.2680	1.31	1.008	1.695	0.0433
Mistreated verbally against Children	0.2526	1.29	1.017	1.630	0.0357
Irritability scale	0.1987	1.22	1.006	1.480	0.0437

Results of Logistic Regression Model Predicting Past Year Cigarettes and Alcohol Use and Protective Factors Among Males

Factor	β	OR	95% CI		<i>p</i> value
			Lower	Higher	
Healthy lifestyle	-0.8153	0.44	0.297	0.660	<.0001
Self-esteem scale	-0.6220	0.54	0.360	0.802	0.0024
To practice exercise	-0.2787	0.76	0.623	0.919	0.0050
Social support scale	-0.0837	0.92	0.899	0.941	<.0001



Results of Logistic Regression Model Predicting Past Year Cigarettes and Alcohol Use and Risk Factors Among Females

Factor	β	OR	95% CI		p value
			Lower	Higher	
Intercept: SUB. LEGAL=1	-1.1499				<.0001
Violent behavior scale	1.1076	3.03	2.292	3.998	<.0001
Academic problems scale	0.4622	1.59	1.218	2.069	0.0006
Sexual abuse against the woman	0.4869	1.63	1.060	2.498	0.0259
Mistreat verbally against woman	0.3422	1.41	1.065	1.861	0.0163
Irritability scale	0.2621	1.30	1.058	1.596	0.0124
Mistreat verbally against Children	0.2438	1.28	1.004	1.621	0.0459

Results of Logistic Regression Model Predicting Past Year Cigarettes and Alcohol Use and Protective Factors Among Females

Factor	β	OR	95% CI		p value
			Lower	Higher	
Self-esteem scale	-0.8935	0.41	0.289	0.580	<.0001
Good communication with the Teacher	-0.4177	0.66	0.531	0.817	0.0001
Social Support scale	-0.0273	0.97	0.950	0.997	0.0276

Logistic Regression Model Predicting Past Year MARIJUANA AND OTHERS ILLEGAL SUBSTANCES USE and Risk and Protective Factors.

For the analysis the ILLEGAL SUBSTANCES additionally were included as risk factors, the alcohol and cigarette use.

In the model resultant for the total of the population left 7 factors, 5 of risk and 2 of protection

Results of Logistic Regression Model Predicting Past Year MARIJUANA AND OTHERS ILLEGAL SUBSTANCES USE and Risk/Protective Factors

Factor	β	OR	95% CI		p value
			Lower	Higher	
Intercept: SUB ILLEG=1	-4.4885				<.0001
Past year cigarettes use	1.8055	6.08	4.407	8.396	<.0001
Violent behavior scale	1.4170	4.12	2.065	8.237	<.0001
Past year alcohol consumption until getting drunk	1.3829	3.99	2.930	5.424	<.0001
Mistreat verbally against Children	0.4687	1.60	1.201	2.125	0.0013
Academic problems scale	0.4411	1.55	1.145	2.109	0.0046
Belief in God	-0.8473	0.43	0.272	0.675	0.0003
Healthy lifestyle	-0.4241	0.65	0.433	0.988	0.0439

Males

Results of Logistic Regression Model Predicting Past Year MARIJUANA AND OTHERS ILLEGAL SUBSTANCES USE and Risk/Protective Factors

Factor	β	OR	95% CI		p value
			Lower	Higher	
Intercept: SUBS ILLEG=1	-5.4011				<.0001
Past year cigarettes use	2.3323	10.301	6.047	17.550	<.0001
Violent behavior scale	1.2104	3.355	1.408	7.996	0.0063
Past year alcohol consumption until getting drunk	1.0644	2.899	1.796	4.680	<.0001
Academic problems scale	0.7452	2.107	1.299	3.417	0.0025
Mistreat psychological	0.6446	1.905	1.145	3.170	0.0131
To practice exercise	-0.7555	0.470	0.298	0.740	0.0011

Females

Results of Logistic Regression Model Predicting Past Year MARIJUANA AND OTHERS ILLEGAL SUBSTANCES USE and Risk/Protective Factors

Factor	β	OR	95% CI		p value
			Lower	Higher	
Intercept: SUBS ILLEG=1	-4.8831				<.0001
Past year alcohol consumption until getting drunk	1.5708	4.81	3.197	7.238	<.0001
Violent behavior scale	1.5680	4.80	1.471	15.645	0.0093
Past year use of cigarettes	1.4146	4.11	2.734	6.192	<.0001
Mistreat verbally against Children	0.5931	1.81	1.257	2.605	0.0014
Irritability scale	0.3964	1.49	1.026	2.153	0.0359
Belief in God	-0.8765	0.42	0.243	0.712	0.0014

Conclusions

Using Logistic Regression Models in explaining the variation in legal substances past year use is different from the model for the use of illegal substances, being the more important factors for the *legal substances use*:

The more important *risk factors* for the *legal substances* use:

- Violent behavior (OR 2.17)
- Academic problems (OR 1.66)
- Verbal violence against woman (OR 1.37)
- Mistreated verbally against children (OR 1.29)
- Irritability (OR 1.25),
- Gender - males vs. female (OR 1.24).

As protective factors:

- Self-esteem (OR 0.45)
- Healthy lifestyle (OR 0.64)
- Good communication with the teacher (OR 0.76)
- To practice exercise (OR 0.78)
- Social support (OR 0.95).

Using Logistic Regression Models in explaining the variation in *illegal substances* past year use, being the more important factors:

Risk factors

- Cigarettes use (OR 6.08)
- Violent behavior (4.12)
- Alcohol consumption until getting drunk (OR 3.99)
- Mistreat verbally against children (1.60)
- Academic problems (OR 1.55).

As protective factors:

- Belief in God (OR 0.43)
- Healthy lifestyle (OR 0.65)

The study's findings suggest possible areas for interventions

