

# [Analysis of variance results](https://assignbuster.com/analysis-of-variance-results/)

[Science](https://assignbuster.com/essay-subjects/science/), [Statistics](https://assignbuster.com/essay-subjects/science/statistics/)

﻿Analysis of Variance Results
Table 4.
Analysis of Variance for ADD-like Behavior among Participants in the Remedial, General and College Preparatory English Levels.

SS
df
MS
F
d
Sig.
Between Groups
3476. 35
2
1738. 17
18. 5
. 72
< . 001
Within Groups
20012. 14
213
93. 95

Total
23488. 48
215

The research wanted to answer the question: “ Is there a difference in the ADD-like symptoms among participants in the remedial, general, and college preparatory English levels?” In order to answer this question, the following research hypotheses were constructed:
H0: µremedial = µgeneral = µcollegeprep
H1: The means are not all equal.
When considering the results for an Analysis of Variance, certain assumptions have to be met. First, the normality of the data set must be established. However, the ANOVA provides great leeway when this assumption is violated as long as such a violation is not too serious. Second, equality of variances must be assumed. In cases where variances of the groups are unequal, adjustments are made on the critical values of F and the degrees of freedom in order to accommodate the inequality. The third assumption is that the expected values of the errors are zero and, lastly, the errors must be independent.
Table 4 shows that the ANOVA results were statistically significant, F(2, 213) = 18. 5, p < . 001. This indicates that the null hypothesis is to be rejected in favor of the alternative hypothesis, and that it may be concluded that there are differences in ADD-like symptoms among the three groups.
The strength of the relationship between English level and ADD-like behavior, as indexed by d was strong, with English level accounting for 72% of the variance in ADD-like behavior scores. A follow up Tukey test was performed to examine pair-wise differences because equal variances can be assumed. Findings indicate that those from the college preparatory group (M = 43. 07, SD = 7. 8) reported a significantly lower level of ADD like behavior compared with those from the general group (M = 53. 81, SD = 9. 5) and the remedial group (M = 56. 97, SD = 11. 7). There was no significant difference in the ADD-like behavior scores between the general group and the remedial group. Therefore, results from the ANOVA test found that participants enrolled in the college preparatory English level differed significantly on ADD-like behavior scores compared to both general English level and remedial English level participants, and that the difference between the groups was large, with college preparatory participants reporting lower ADD-like tendencies than the two other groups.

Oneway
Notes
Output Created
05-Nov-2011 13: 56: 58
Comments

Input
Data
C: UsersUserDocumentsAROct30 ADHD t testHowell\_dataset\_cleaned. sav

Active Dataset
DataSet1

Filter
Weight
Split File
N of Rows in Working Data File
216
Missing Value Handling
Definition of Missing
User-defined missing values are treated as missing.

Cases Used
Statistics for each analysis are based on cases with no missing data for any variable in the analysis.
Syntax
ONEWAY ADDSC BY ENGL
/MISSING ANALYSIS
/POSTHOC= TUKEY ALPHA(0. 05).

Resources
Processor Time
00: 00: 00. 078

Elapsed Time
00: 00: 00. 214

[DataSet1] C: UsersUserDocumentsAROct30 ADHD t testHowell\_dataset\_cleaned. sav

ANOVA
ADD-like behavior score (mean of 3)

Sum of Squares
df
Mean Square
F
Sig.
Between Groups
3476. 346
2
1738. 173
18. 500
. 000
Within Groups
20012. 136
213
93. 954

Total
23488. 481
215

Post Hoc Tests

Multiple Comparisons
ADD-like behavior score (mean of 3)
Tukey HSD
(I) 9th Grade English Level
(J) 9th Grade English Level
Mean Difference (I-J)
Std. Error
Sig.
dimension2
College Prep
dimension3
General
-10. 73623\*
1. 96211
. 000

Remedial
-13. 90578\*
2. 46716
. 000

General
dimension3
College Prep
10. 73623\*
1. 96211
. 000

Remedial
-3. 16955
1. 85935
. 206

Remedial
dimension3
College Prep
13. 90578\*
2. 46716
. 000

General
3. 16955
1. 85935
. 206
\*. The mean difference is significant at the 0. 05 level.

Multiple Comparisons
ADD-like behavior score (mean of 3)
Tukey HSD
(I) 9th Grade English Level
(J) 9th Grade English Level
95% Confidence Interval

Lower Bound
Upper Bound
dimension2
College Prep
dimension3
General
-15. 3672
-6. 1052

Remedial
-19. 7288
-8. 0828

General
dimension3
College Prep
6. 1052
15. 3672

Remedial
-7. 5580
1. 2189

Remedial
dimension3
College Prep
8. 0828
19. 7288

General
-1. 2189
7. 5580

Homogeneous Subsets

ADD-like behavior score (mean of 3)
Tukey HSDa, b
9th Grade English Level
N
Subset for alpha = 0. 05

1
2
dimension1
College Prep
29
43. 0690

General
154

53. 8052

Remedial
33

56. 9747

Sig.

1. 000
. 293
Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 42. 088.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.