



1. Null Hypothesis (H_0) : There is no difference between Adderall dosage and how long a child can stay in his/her chair without fidgeting.
2. Alternative Hypothesis (H_1) : There is a difference between Adderall dosage and how long a child can stay in his/her chair without fidgeting.
3. Independent Variable: Amount of Adderall received. The four levels of the Independent Variable: None, 5mg, 10mg, or 15mg
4. Dependent Variable: Number of minutes each participant can stay in a chair without fidgeting after taking the specified dosage of Adderall for 30 days. The data ranged from .5 minutes to 13.3 minutes. The mean time among the 26 participants was 6.18 minutes.
5. I will perform a One-Way ANOVA to analysis my data. I chose this analysis because there is only one factor (Adderall), and there are four levels of the factor (none, 5mg, 10mg, and 15mg). A One-Way ANOVA would give me between treatments variance and within treatment variance of the dosage of Adderall and time.

6.

	 TIME	 DOSE	var	va
1	1.20	None		
2	4.00	5mg		
3	5.20	10mg		
4	6.90	15mg		
5	3.50	None		
6	2.20	5mg		
7	4.80	10mg		
8	13.00	15mg		
9	.50	None		
10	5.80	5mg		
11	5.80	10mg		
12	9.40	15mg		
13	2.20	None		
14	4.80	5mg		
15	11.50	10mg		
16	13.00	15mg		
17	6.00	None		
18	4.10	5mg		
19	8.90	10mg		
20	12.00	15mg		
21	.80	None		
22	1.20	5mg		
23	5.60	10mg		
24	11.80	15mg		
25	9.00	10mg		
26	13.30	15mg		

7.

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ONEWAY TIME BY DOSE
  /STATISTICS DESCRIPTIVES
  /PLOT MEANS
  /MISSING ANALYSIS
  /POSTHOC=TUKEY ALPHA(0.05) .

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→ Oneway

[DataSet0]

Descriptives

TIME

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
None	6	2.3667	2.08870	.85271	.1747	4.5586	.50	6.00
5mg	6	3.6833	1.69519	.69206	1.9043	5.4623	1.20	5.80
10mg	7	7.2571	2.54549	.96211	4.9030	9.6113	4.80	11.50
15mg	7	11.3429	2.36210	.89279	9.1583	13.5274	6.90	13.30
Total	26	6.4038	4.13081	.81012	4.7354	8.0723	.50	13.30

ANOVA

TIME

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	318.054	3	106.018	21.490	.000
Within Groups	108.536	22	4.933		
Total	426.590	25			

8.

Post Hoc Tests

Multiple Comparisons						
Dependent Variable: TIME						
Tukey HSD						
(I) DOSE	(J) DOSE	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
None	5mg	-1.31667	1.28237	.736	-4.8776	2.2443
	10mg	-4.89048*	1.23573	.003	-8.3219	-1.4591
	15mg	-8.97619*	1.23573	.000	-12.4076	-5.5448
5mg	None	1.31667	1.28237	.736	-2.2443	4.8776
	10mg	-3.57381*	1.23573	.039	-7.0052	-.1424
	15mg	-7.65952*	1.23573	.000	-11.0909	-4.2281
10mg	None	4.89048*	1.23573	.003	1.4591	8.3219
	5mg	3.57381*	1.23573	.039	.1424	7.0052
	15mg	-4.08571*	1.18725	.012	-7.3825	-.7889
15mg	None	8.97619*	1.23573	.000	5.5448	12.4076
	5mg	7.65952*	1.23573	.000	4.2281	11.0909
	10mg	4.08571*	1.18725	.012	.7889	7.3825

*, The mean difference is significant at the 0.05 level.

Homogeneous Subsets

TIME				
Tukey HSD ^{a,b}				
DOSE	N	Subset for alpha = 0.05		
		1	2	3
None	6	2.3667		
5mg	6	3.6833		
10mg	7		7.2571	
15mg	7			11.3429
Sig.		.713	1.000	1.000

Means for groups in homogeneous subsets are displayed.

- a. Uses Harmonic Mean Sample Size = 6.462.
 b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

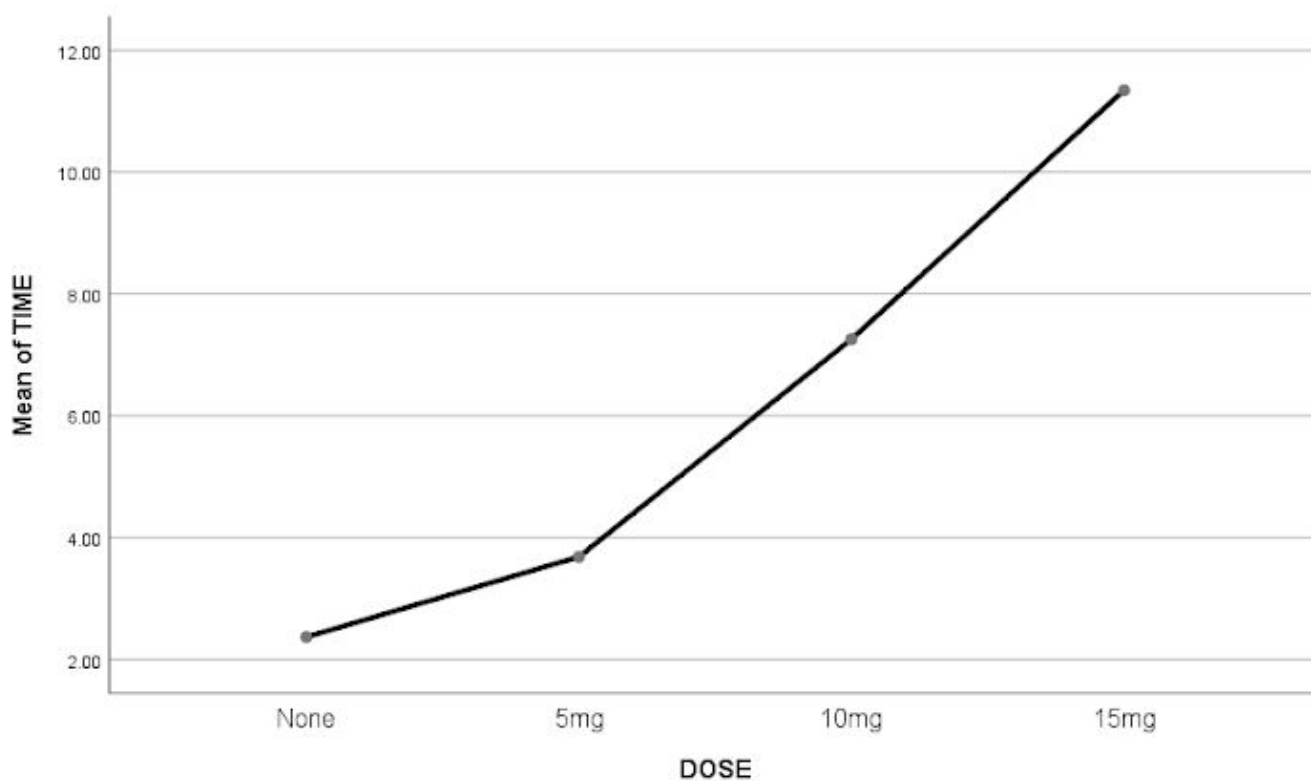
TIME				
Tukey HSD ^{a,b}				
		Subset for alpha = 0.05		
DOSE	N	1	2	3
None	6	2.3667		
5mg	6	3.6833		
10mg	7		7.2571	
15mg	7			11.3429
Sig		.713	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.462.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Means Plots



```
DATA SET ACTIVATE DataSet0.  
ONEWAY TIME BY DOSE  
  /STATISTICS DESCRIPTIVES  
  /PLOT MEANS  
  /MISSING ANALYSIS  
  /POSTHOC= TUKEY ALPHA(0.05).
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9. I will reject the null hypothesis because the significance level is less than .05, meaning that Adderall dosage has a statistically significant effect on how many minutes a child can stay in his/her chair without fidgeting.

Also, I will reject the null hypothesis because the Tukey HSD post hoc test indicated that a dose of Adderall is more significant than no Adderall when determining how many minutes a child can stay in his/her chair without fidgeting.

Results

A One-Way ANOVA revealed that the dosage of Adderall significantly increased the amount of minutes each child could stay in her/his chair without fidgeting, [$F(3,22) = 21.490$, $p < .05$, $\eta^2 = 2.93$]. The Tukey HSD post hoc analysis indicated that the no Adderall dosage ($M = 2.37$, $SD = 2.09$), the 5mg dosage of Adderall ($M = 3.68$, $SD = 1.69$), the 10mg dosage of Adderall ($M = 7.26$, $SD = 2.55$), and the 15mg dosage of Adderall ($M = 11.34$, $SD = 2.36$) resulted in significantly more time the child could stay in his/her chair without fidgeting. The pairwise comparison indicated that 5mg dosage of Adderall is not much more statistically significant than no Adderall. The Tukey HSD post hoc analysis also indicated that 15mg of Adderall was more statistically significant than no Adderall and 5mg of Adderall, but not much more significant than 10mg of Adderall when measuring how many minutes each child can stay in his/her chair without fidgeting.

Figure 1.

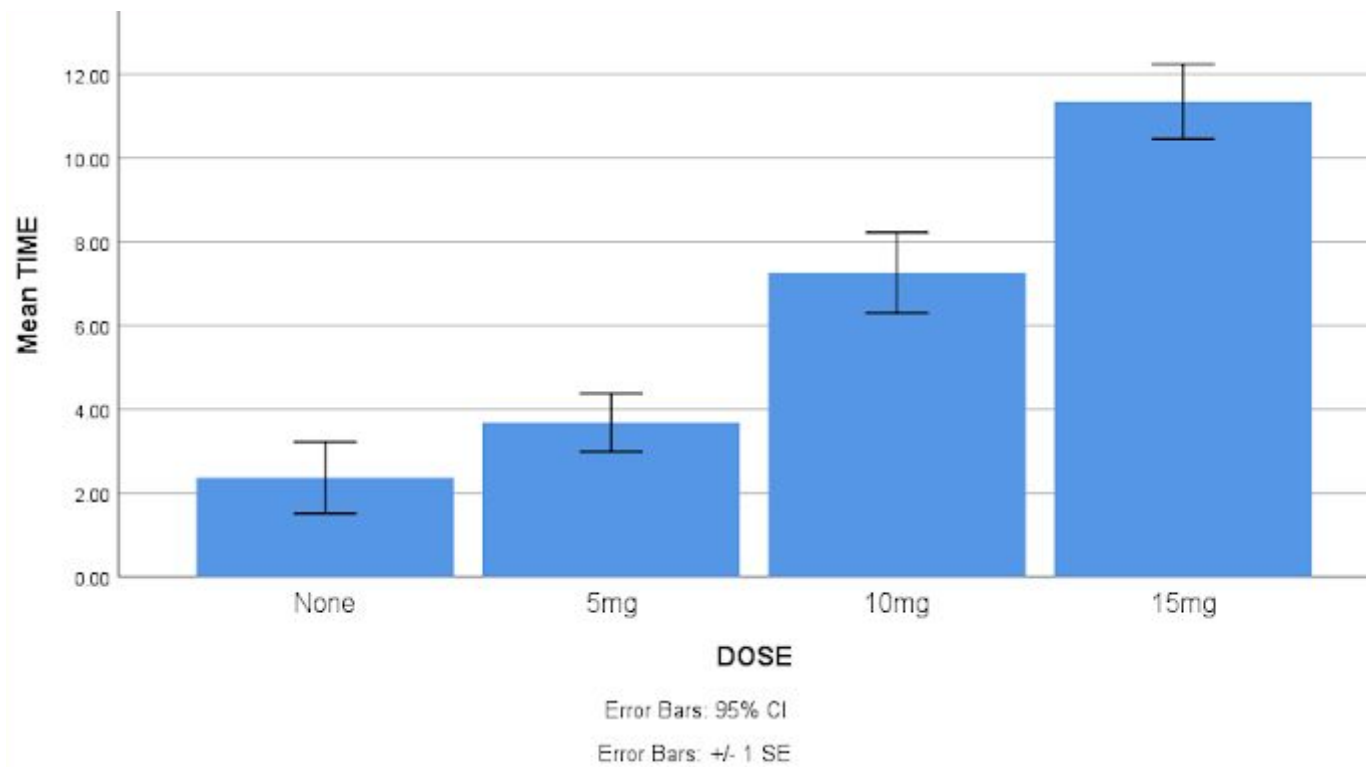


Figure 1: The mean time (in minutes) of how long a each child could stay in in his/her chair without fidgeting, in each of the levels of the dosages of Adderall.