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COMN 2110

t-test and ANOVA Write-up

H: Teenagers who are friends with their parent(s) on FaceBook have less friends on the social media platform than those who are not friends with their parent(s) on Facebook.

The hypothesis predicted that teenagers who are friends with their parent(s) on FaceBook have less friends on the social media platform than those who are not friends with their parent(s) on Facebook. A one-tailed independent-samples *t*-test was used to test the hypothesis. The *t*-test was insignificant (t[551] = -1.06, p[one-tailed] = .85, η^2 = .00). There was no difference between teenagers who are friends with their parent(s) on FaceBook (M = 138.37, SD = 398.27, n = 466) and teenagers who are not friends with their parent(s) on Facebook (M = 188.83, SD = 452.08, n = 87*)* in terms of how many FaceBook friends they have. The hypothesis was not supported.

H: Teenagers whose parents have checked their profile(s) on a social networking site have less friends on Facebook than teenagers whose parents have not checked their profile(s) on a social networking site.

The hypothesis predicted that teenagers whose parents have checked their profile(s) on a social networking site have less friends on Facebook than teenagers whose parents have not checked their profile(s) on a social networking site. A one-way ANOVA was used to test the hypothesis. The ANOVA was non-significant (F[2, 831] = .09, p = .91, η^2 = .00). There was no difference between teenagers whose parents have checked their profile(s) on a social network site (M = 68.01, SD = 143.88, n = 472, p = .99), teenagers whose parents have not checked their profile(s) on a social network site (M = 67.53, SD = 286.01, n = 358, p = .90), and teenagers

whose parents said this did not apply to them ($M = 21.25$, $SD = 21.36$, $n = 4$, $p = .90$) in terms of

how many FaceBook friends they had. The hypothesis was not supported.

t-test data:

```
> data_child$FBFriends <- as.factor(data_child$P8)
> describeBy(data_child$KFB1A, data_child$FBFriends, skew = FALSE, ranges = FALSE)

 Descriptive statistics by group
group: 1
  vars  n  mean    sd    se
X1    1 466 138.37 398.27 18.45
----------------------------------------------------------------------
group: 2
  vars n  mean    sd    se
X1    1 87 188.83 452.08 48.47

> leveneTest(data_child$KFB1A ~ data_child$FBFriends)
Levene's Test for Homogeneity of Variance (center = median)
     Df F value Pr(>F)
group   1  1.5603 0.2121
    551

> t.test(data_child$KFB1A ~ data_child$FBFriends, var.equal = TRUE, alternative = "greater")

        Two Sample t-test

data:  data_child$KFB1A by data_child$FBFriends
t = -1.0612, df = 551, p-value = 0.8555
alternative hypothesis: true difference in means between group 1 and group 2 is greater than 0
95 percent confidence interval:
 -128.8045      Inf
sample estimates:
mean in group 1 mean in group 2
     138.3670      188.8276

> t <- t.test(data_child$KFB1A ~ data_child$FBFriends, var.equal = TRUE)$statistic
> df <- t.test(data_child$KFB1A ~ data_child$FBFriends, var.equal = TRUE)$parameter
> eta_sq <- t*t/(t*t + df)
> eta_sq
      t
0.002039731
```

ANOVA data:
> describeBy(data_child$K4, data_child$P14_H, skew = FALSE, ranges = FALSE)

 Descriptive statistics by group
group: 1
   vars n mean   sd   se
X1   1 472 68.01 143.88 6.62
----
group: 2
   vars n mean   sd   se
X1   1 358 67.53 286.01 15.12
----
group: 3
   vars n mean   sd   se
X1   1 4 21.25 21.36 10.68

> data_child$P14_H <- as.factor(data_child$P14_H)
> aov_out <-aov(K4 ~ P14_H, data = data_child)
> summary(aov_out)
         Df   Sum Sq Mean Sq F value Pr(>F)
P14_H   2   8673   4337 0.093 0.912
Residuals   831 38953914 46876
222 observations deleted due to missingness

> etaSquared(aov_out)
        eta.sq eta.sq.part
P14_H 0.0002226059 0.0002226059
> TukeyHSD(aov_out)
  Tukey multiple comparisons of means
   95% family-wise confidence level

Fit: aov(formula = K4 ~ P14_H, data = data_child)

$P14_H
      diff   lwr   upr   p adj
2-1 -0.474955 -36.10234 35.15243 0.9994600
3-1 -46.758475 -302.00505 208.48810 0.9030819
3-2 -46.283520 -301.87137 209.30433 0.9051848