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A [CLEAR](#) Announcement

Free and open to **ALL** UNT faculty, graduate teaching fellows and assistants! Lunch is provided!

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Spring Break Hours

By [Claudia Lynch](#), *Benchmarks Online* Editor

Spring Break is here! If you're not leaving town for the entire week, the hours for various areas noted in this article could come in handy.

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Today's Cartoon

Click on the link above for an information age laugh.

By the Numbers

General Access Computer Lab statistics from the Checkin system (2/1/10 - 2/1/11)

In 2010, UNT students spent the equivalent of 78 years on UNT General Access Lab Computers and Kiosks! For more information on the labs, see [www.gacl.unt.edu](#)

- Total Lab Visits: 950.045
- Total Kiosk Visits: 44,044
- Overall Total Visits: 994,089

- Average Lab Visit (minutes): 42
- Average Kiosk Visit (minutes): 25
- Overall Average Visit (minutes): 41

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2011 University Forum on Teaching & Learning

A CLEAR Announcement

Free and open to **ALL** UNT faculty, graduate teaching fellows and assistants! Lunch is provided!

2011 University Forum on Teaching & Learning

April 29, 2011

9:00 a.m. – 3:30 p.m.

Silver Eagle Suite, University Union third level

Register Today!

UNT's University Forum on Teaching & Learning (UFTL) is a one-day annual event that enables faculty, graduate teaching fellows, and staff involved in supporting teaching and learning to share ideas and practices that focus on instructional strategies designed to motivate and engage learners, promote critical thinking skills, and better prepare students for life and work in the 21st century.
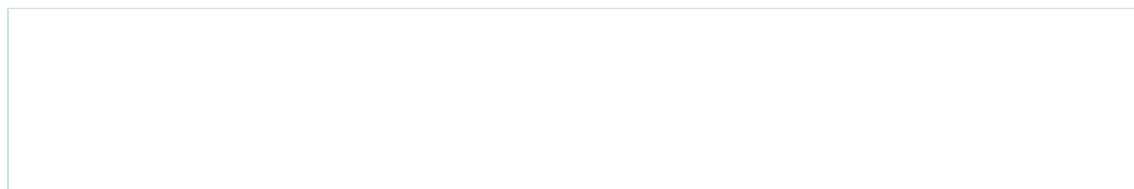
This year's guest speaker is Curtis J. Bonk, Professor of Instructional Systems Technology at Indiana University and author of the *Handbook of Blended Learning: Global Perspectives, Local Designs* (2006) and *The World is Open: How Web Technology is Revoluti*onizing Education (2009). Dr. Bonk will deliver both the keynote address and a master class scheduled for the afternoon. In his keynote address "The Flat World has Swung Open: How Web Technology is Revolutionizing Education" Dr. Bonk will focus on ten technology trends that are "educational openers," opening possibilities for sharing course materials, resources, and teaching ideas.

Dr. Bonk's master class "Stretching the Edges of Technology-Enhanced Teaching: From Tinkering to Tottering to Totally Extreme Learning" was designed to showcase a variety of ways instructors can effectively blend technology into their instruction. Whether you simply want to dip your toes in the water or dive in, this workshop will have something for you!

For more information and to register, visit:

http://clear.unt.edu/go/uftl2011

The University Forum on Teaching & Learning is sponsored by the Center for Learning Enhancement, Assessment, and Redesign (CLEAR) and is part of the Teaching Excellence Speaker Series (TESS).

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Spring Break Hours

By Claudia Lynch, *Benchmarks Online* Editor

Spring Break is here! If you're not leaving town for the entire week, the hours for various areas noted in this article could come in handy.

Daylight Saving Time begins March 13

The Helpdesk will maintain normal hours through most of the break. The exception is that staff will be answering the phones and email from 8 a.m. - Midnight on **Monday, March 14** but **the lobby will be closed to walk-in traffic**. The University is **officially closed** Monday, March 14. The University will be open Tuesday through Friday, but NO CLASSES will be held. Some areas will also have abreviated hours during the week of Spring Break.

- **Data Management Services** will be **closed** over Spring Break.

- The **ACS General Access/Adaptive Lab** (ISB 104) will keep their normal hours all week.

Hours for Other Campus Facilities

Check out the UNT Shuttle Spring Break Schedule here: http://www.unt.edu/transit/routes_sched.html

Campus Construction projects over the break are discussed here: http://inhouse.unt.edu/crews-will-be-busy-sprucing-campus-during-break

See also: http://inhouse.unt.edu/monthly-report-identifies-construction-may-block-your-usual-path

General Access Labs

- WILLIS:

    Friday, March 11, Close at 11:50 p.m.
    Saturday, March 12 - Monday, March 14: **Closed**
    Tuesday, March 15 - Friday, March 18 **Open:** 8 a.m.-7:50 p.m.
    Saturday, March 19: **Open:** 9 a.m.-5:50 p.m.
    Sunday, March 20, **Open**: 1 p.m.; resume 24hr schedule

- College of Information General Access Computer Lab (CI-GACLab) (B205):

    Saturday, March 12 - Monday, March 14: **Closed**
    Tuesday, March 15 - Friday, March 18: 10:10 a.m. - 6 p.m.
    Saturday, March 19: **Closed**
    Sunday, March 20; resume normal hours

- MUSIC:

Closed: Monday, March 14 - Saturday, March 19
Reopen: Sunday, March 20 at 1 p.m.; resume normal hours

- PACS Computing Center (College of Public Affairs and Community Service, Chilton Hall):

  Close: 6 p.m. Friday, March 11
  Reopen: Monday, March 21 at 7 a.m.; resume normal hours

- CVAD (formerly SOVA):

  Close: Friday, March 11 at 6 p.m.
  Reopen: Saturday, March 19 at ; resume normal hours

- COE:

  Close: Friday, March 11 at 5 p.m.
  Reopen: Monday, March 21 at 7 a.m.; resume normal hours

- COBA:

  Close: Friday, March 11 at 7:50 p.m.
  Reopen: Sunday, March 20 at Noon; resume normal hours

- CAS:

  GAB 330

  Close: Friday, March 11 at 5 p.m.
  Reopen: Sunday, March 20 at Noon; resume normal hours

  GAB 550

  Close: Friday, March 11 at 5 p.m.
  Reopen: Monday, March 21 at 8 a.m.; resume normal hours

  Terrill 220

  Close: Friday, March 11 at 5 p.m.
  Reopen: Monday, March 21 at 8 a.m.; resume normal hours

  Wooten 120

  Close: Friday, March 11 at 5 p.m.
  Reopen: Monday, March 21 at 8 a.m.; resume normal hours

- **UNT Dallas Campus - 155A**

  Open: Monday, March 14 - Friday, March 18: 7 a.m. - 6 p.m.
  Open: Saturday, March 19: 8 a.m. - 5 p.m.
  Closed: Sunday, March 20; resuming normal hours

- **Engineering General Access Lab (CENGAL, englab@unt.edu, Discovery Park, B129, 891-6733)**

  Close: Friday, March 11 at 5 p.m.
  Reopen: Monday, March 21 at 9 a.m.; resume normal hours

Remember:

Get your alerts fast in case of inclement weather

Visit the Emergency Management **website**

City of Denton Residents, sign up for the CodeRED Emergency Notification System

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From "Today's Cartoon by Randy Glasbergen", posted with special permission.
For many more cartoons, please visit www.glasbergen.com.

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By Dr. Philip Baczewski, Director of Academic Computing and User Services

...Those who Can't...

The world seems to be getting dumber and it won't be long until someone blames technology. I recently read an article in Campus Technology magazine that argued that the research paper is an outdated mode of student assessment for online courses, and instead, students should utilize "Web 2.0 tools and new media" to demonstrate their acquired knowledge. The author suggests professional work projects (such as annotated resource lists, or interview questions), interviews, media projects (audio, video, or visual), and the usual suspects, blogs and wikis, as particularly suited to online assessment. All of these things may be useful activities, but what are the motivations for replacing the traditional research paper?

The author states, "Students often dread writing papers and respond enthusiastically to alternatives that demonstrate what they know and understand. Faculty, too, often secretly--or not so secretly--cringe at the thought of reading endless numbers of papers. Faculty are searching for less burdensome assessment modalities . . . ." I'm not sure that scholarship was meant to be burdenless, and it seems to me that the whole point of a research paper, and in my opinion a major foundation of a "higher" education, is to be able to research, reference, synthesize, and communicate within an extended written format. You don't get any better at this task without doing it. Since there is no reason a research "paper" has to actually be printed on real paper any more, it would seem to be as suited to online instruction as to instruction in a traditional classroom.*

Media? Content?

In our relationship to the digital world, there seems to be constant confusion between the media and the content. A recent NPR story highlights the history of the audio CD and states that "2010 was another lousy year for the music industry" because CD sales dropped 20%. Sony and Phillips probably thought they would drive more music sales by improving the audio quality, and for a while, the CD did just that (plus, the recording industry was able to keep CD prices artificially high.) The fact is that once music was stored in a digital format, it was just a matter of time before it was freed from its media. If Sony and Phillips had been smarter, we would be still buying all our music on cassette tapes and having to replace our favorite "albums" frequently because the tape wore out, stretched, and stopped delivering suitable audio quality. Instead, the record industry's strategy has been to sue their customers.

It won't be long before the publishing industry goes the way of the recording industry, but at least they seem to be trying to make a graceful transition. Newspapers and magazines have been forced to embrace the online medium and are surviving with one foot in the physical and another in the virtual for now. Trade books and text books are the next domino in line to fall into the digital world. With the launch of a Google ebookstore, the end of the paper-based book seems to be getting closer. Of course, there will always be a market for some specialized volumes, since a pile of bits just doesn't look too attractive on your coffee table. Google has already dabbled in developing an online library of digitized versions of as many "real" books it could find in some "real" libraries. Entrance of Google into the ebook market won't necessarily throw Amazon out of the ebooks lead, but it does show a movement toward the ebook's domination in the marketplace.

Is a research paper written and stored on the Internet still a research paper?

The medium doesn't have to change the experience. Reading an ebook can be just as enthralling as reading a paperback. Listening to music is just as engaging whether the digital file is being rendered off of a CD or a hard disk. And, writing a research paper can be an important exercise, whether the associate course is online or in a classroom. Our online world now makes it much easier for us to acquire e-books and music tracks, and to turn in those research papers without killing any trees. It seems we are still learning to use the Internet that Vint Cerf and Al Gore gave us.

----

*For a timely, humorous, look at this situation click here.

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EMDS

Enterprise Messaging & Directory Services

UNT Enterprise Messaging and Directory Services (EMDS)

The Enterprise Messaging and Directory Services Group is a division within the Computing and Information Technology Center that is responsible for keeping all sorts of systems and services running smoothly so that the UNT System can continue to run smoothly. As their website - http://emds.unt.edu/ - states:

We maintain and manage these communication systems for the UNT System (UNT Denton, Health Science Center, UNT Dallas):
- Microsoft Exchange 2007
- Microsoft Office Communications Server 2007 R2 (OCS)
- Microsoft Live Meeting 2007 (LM)
- Blackberry Enterprise Services (BES)
- Listserv / Mailhost / Ironport, spam.unt.edu
- Eagleconnect (Outlook Live)

We maintain and manage these directory services for the UNT System (UNT Denton, Health Science Center, UNT Dallas):
- Active Directory
- LDAP / Account Management Systems
- Microsoft Premiere Support
- Live@Edu student/alumni cloud computing services

There is also a helpful area with "Emergency Instructions" on the EMDS website for things like "Lost/Stolen Blackberry," "Recover deleted mail," etc.

Make sure and check out their Facebook page:

facebook

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Helpdesk FYI

By Jonathan "Mac" Edwards, CITC Helpdesk Manager

EUID   Passwords*

EUID "Enterprise" passwords expire after 120 days. You can receive an email notification prior to your password expiring by logging into the Account Management System (AMS) at http://ams.unt.edu and enabling the "Password Expiration Notice" option.

There are two ways to reset your password:

1. The first method is the Password Reset process linked on the AMS http://ams.unt.edu site. The Password Reset process does not require you to provide your existing password but it does require you to verify your identity by providing some biographical information and answering your "secret question".

2. The second -- and easiest -- way to reset your password is by logging in to AMS and selecting "Change Password". The Change Password process does not require you to go through the identity verification steps that the Reset Password process does because you have to successfully login to initiate the Change Password process.

It is suggested that you go through the Change Password process prior to your password expiring to avoid having to go through the more lengthy Reset Password process.

Having trouble coming up with a new Password?

Try the following suggestion from ACUS staff member Yonathan Khoe: Try shifting your fingers one key to the right on the keyboard to make a unique easy to remember password.

----

*This is information that is re-published periodically.

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IRC News

Minutes provided by Christine Valenzuela Recording Secretary*

The IRC -- unofficially now known as the INFORMATION TECHNOLOGY COUNCIL (ITC) -- is currently undergoing a reorganization, see the May 20, 2008 minutes for more information.>

No IRC/ITC minutes were available for publication this month.

*For a list of IRC Regular and Ex-officio Members click here (last updated 12/12/08). Warren Burggren is now the Chair.

**DCSMT Minutes can be found here.

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RSS Matters

Research and Statistical Support
University of North Texas

Bayes Factors for *t* tests and one way Analysis of Variance; in **R**

*Link to the last RSS article here: Sharpening Occam's Razor: Using Bayesian Model Averaging in **R** to Separate the Wheat from the Chaff -- Ed.*

By **Dr. Jon Starkweather**, Research and Statistical Support Consultant

It may seem like *small potatoes*, but the Bayesian approach offers advantages even when the analysis to be run is not complex. For instance, a traditional frequentist approach to a *t* test or one way Analysis of Variance (ANOVA; two or more group design with one outcome variable) would result in a *p* value which would be interpreted as the probability of the data (result) assuming the null hypothesis is true. Often, the *p* value's interpretation is abbreviated and it is interpreted as indicating empirical support for or against a null hypothesis. Of course, an effect size measure such as Cohen's *d* (Cohen, 1988) would also be computed to offer insight as to the magnitude of the effect. Wetzels, Matzke, Lee, Rouder, Iverson, and Wagenmakers (submitted) have advocated use of the Bayesian perspective for simple two or more group designs with the use of Bayes Factors. The advantage being that Bayes Factors "incorporate inferences about both the presence of effects, as well as their magnitude…" (Wetzels, et al., p. 1). Kass and Raftery (1995) define the Bayes factor as "a summary of the evidence provided by the data in favor of one scientific theory, represented by a statistical model, as opposed to another" (p. 777). Simply stated, the Bayes factor is a number, a ratio of one model's odds over the odds of another model. Another way of thinking about the meaning of a Bayes factor is that it is the resultant odds from dividing the likelihood of one model (e.g. the null hypothesis) by the likelihood of another model (e.g. the alternative hypothesis). At the risk of figuratively beating a dead horse; the Bayes factor can be thought of as the result of a *simple* fraction or division, in which the probability of one model (null) is divided by the probability of a second model (alternative). Therefore, its interpretation is very straightforward. For instance, a Bayes factor of 1.00 represents equal odds for either model (the null and alternative hypotheses), a Bayes factor greater than 1.00 represents evidence for the one model (e.g. the null hypothesis), and a Bayes factor less than 1.00 represents evidence for another model (e.g. the alternative hypothesis). The interpretation of magnitude for a Bayes factor, like traditional effect size estimates, involves some flexible categories (suggested by Jeffreys, 1961). For instance, a Bayes factor between (*roughly*) 1.00 and 3.00 (or between 1 and 0.30) represents scarce evidence, a Bayes factor between (roughly) 3.00 and 10.00 (or between 0.30 and 0.10) represents substantial evidence, a Bayes factor between (roughly) 10.00 and 30.00 (or between 0.10 and 0.03) represents strong evidence, and a Bayes factor between (roughly) 30.00 and 100.00 (or between 0.03 and 0.01) represents very strong evidence (Jeffreys). It is important to note; theoretically, there is no limit to the magnitude of a Bayes factor, Jeffreys suggested that a Bayes factor greater than 100.00 (or less than 0.01) would represent decisive evidence. So, the benefits of taking a Bayesian perspective (beyond the general reasons for choosing a Bayesian perspective over a frequentist perspective) are that in these simple situations, a Bayes factor is one number which is easily interpreted for both identifying an effect and measuring the magnitude of the effect. By contrast, the frequentist *p* value is easily confused, controversial, and would involve another statistic to express the magnitude of effect (i.e. effect size; e.g. Cohen's *d*).

Implementing the use of Bayes factors is very easy to do when working in R. The package 'BayesFactorPCL' (Morey &

Rouder, 2010) provides functions for the computation of Bayes factors for one sample or two sample *t* tests, as well as for one way ANOVA. The package is relatively new and is still being developed, so it is only available (for now) from R-Forge. However the functions for *t* tests and one way ANOVA are stable. The package authors are working on implementing a function for applying Bayes factors to regression and that is likely why the package has not yet been released to CRAN.

To explore some examples of Bayes factors analysis using the functions in the 'BayesFactorPCL' package, begin by importing some data from the web naming it 'example.1'. In R, load the 'foreign' library (necessary to import SPSS.sav files; which this example uses), then import the data, and then get a summary of the data if desired.

```
> library(foreign)
> example.1 <- read.spss("http://www.unt.edu/rss/class/Jon/R_SC/Module3/ExampleData1.sav",
+    use.value.labels=TRUE, max.value.labels=Inf, to.data.frame=TRUE)
> summary(example.1)
       ID             Sex            Age                 Ethnicity
 Min.   : 1.00   Female:40   Min.   :18.00   European American:33
 1st Qu.:14.25   Male  :14   1st Qu.:20.00   African American : 8
 Median :27.50               Median :21.00   Asian American   : 4
 Mean   :27.50               Mean   :21.04   Native American  : 3
 3rd Qu.:40.75               3rd Qu.:22.00   Canadian American: 4
 Max.   :54.00               Max.   :28.00   Other            : 2

      Cl_St            Fam_Income          Candy              Stimuli
 Freshman : 2    55,001 to 65,000:29   Skittles:27   Printed           :18
 Sophomore: 6    45,001 to 55,000:15   None    :27   Spoken            :18
 Junior   :34    65,001 to 75,000: 5                 Printed and Spoken:18
 Senior   :12    35,001 to 45,000: 2
 Graduate : 0    75,001 to 85,000: 2
                 85,001 to 95,000: 1
                 (Other)         : 0
            Distraction      Recall1          Recall2          Skittles
 No Distraction     :18   Min.   : 4.00   Min.   : 3.68   Min.   :0.0
 Cell Phone Ring    :18   1st Qu.: 9.00   1st Qu.: 8.28   1st Qu.:0.0
 Light Bulb Failure:18   Median :13.00   Median :11.96   Median :0.5
                         Mean   :13.35   Mean   :12.08   Mean   :0.5
                         3rd Qu.:17.00   3rd Qu.:14.70   3rd Qu.:1.0
                         Max.   :25.00   Max.   :23.00   Max.   :1.0

     Printed          Spoken           CellPhone         LightBulb
 Min.   :0.0000   Min.   :0.0000   Min.   :0.0000   Min.   :0.0000
 1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.:0.0000
 Median :0.0000   Median :0.0000   Median :0.0000   Median :0.0000
 Mean   :0.3333   Mean   :0.3333   Mean   :0.3333   Mean   :0.3333
 3rd Qu.:1.0000   3rd Qu.:1.0000   3rd Qu.:1.0000   3rd Qu.:1.0000
 Max.   :1.0000   Max.   :1.0000   Max.   :1.0000   Max.   :1.0000

> |
```

Next, load the 'Rcmdr' and 'abind' packages using: library(Rcmdr) and library(abind) in the console. We will need these packages for the 'numSummary' functions (used below) which display descriptive statistics information in a cross-tabs manner.

```
> library(Rcmdr)
Loading required package: tcltk
Loading Tcl/Tk interface ... done
Loading required package: car
Loading required package: MASS
Loading required package: nnet
Loading required package: survival
Loading required package: splines

Rcmdr Version 1.6-4


Attaching package: 'Rcmdr'

The following object(s) are masked from 'package:tcltk':

    tclvalue

> library(abind)
> |
```
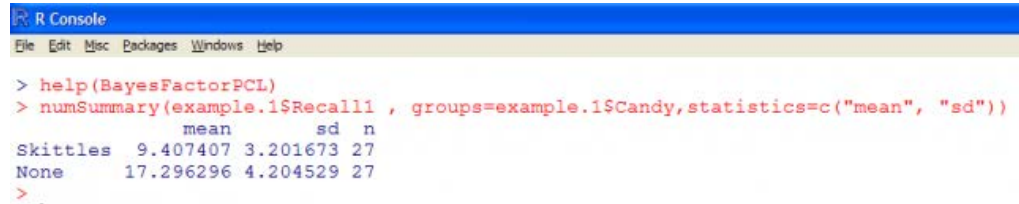
Finally, we can load the 'BayesFactorPCL' library.

```
> library(BayesFactorPCL)
Loading required package: coda
Loading required package: lattice
Loading required package: mvtnorm
>
```

If you would like more information about the 'BayesFactorPCL' library, simply consult the help documentation, by typing: help(BayesFactorPCL) in the console.
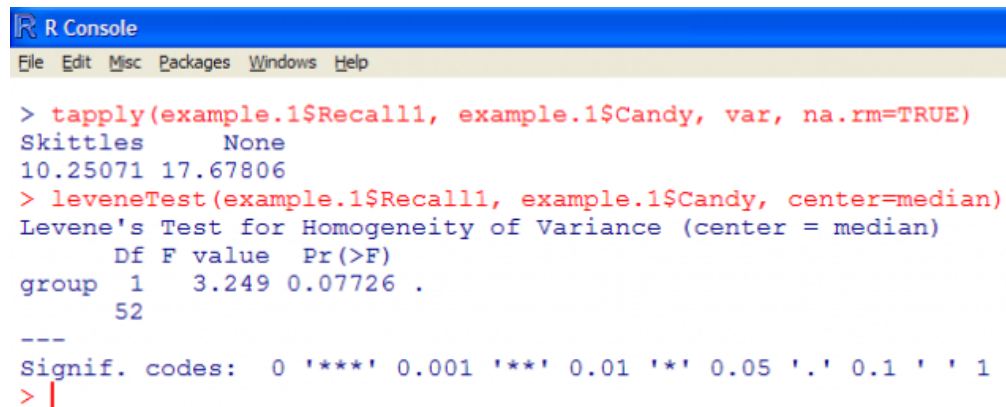
t test example.

In order to see what we are using as an example, we can use the 'numSummary' function from the Rcmdr and abind packages. Our dependent variable is number of words recalled (Recall1) and our independent variable is type of candy given to participants (Candy) where some participants were given Skittles (Skittles) and some participants were given no candy (none).

```
R R Console
File  Edit  Misc  Packages  Windows  Help

> help(BayesFactorPCL)
> numSummary(example.1$Recall1 , groups=example.1$Candy,statistics=c("mean", "sd"))
              mean       sd  n
Skittles   9.407407 3.201673 27
None      17.296296 4.204529 27
>
```
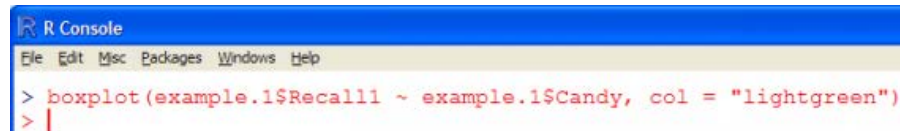
Next, we can use the 'tapply' function to calculate the variances (var) of each group and use the 'leveneTest' function to test the assumption of homogeneity of variances.

```
R R Console
File  Edit  Misc  Packages  Windows  Help

> tapply(example.1$Recall1, example.1$Candy, var, na.rm=TRUE)
Skittles      None
10.25071 17.67806
> leveneTest(example.1$Recall1, example.1$Candy, center=median)
Levene's Test for Homogeneity of Variance (center = median)
      Df F value  Pr(>F)
group  1   3.249 0.07726 .
      52
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
>
```
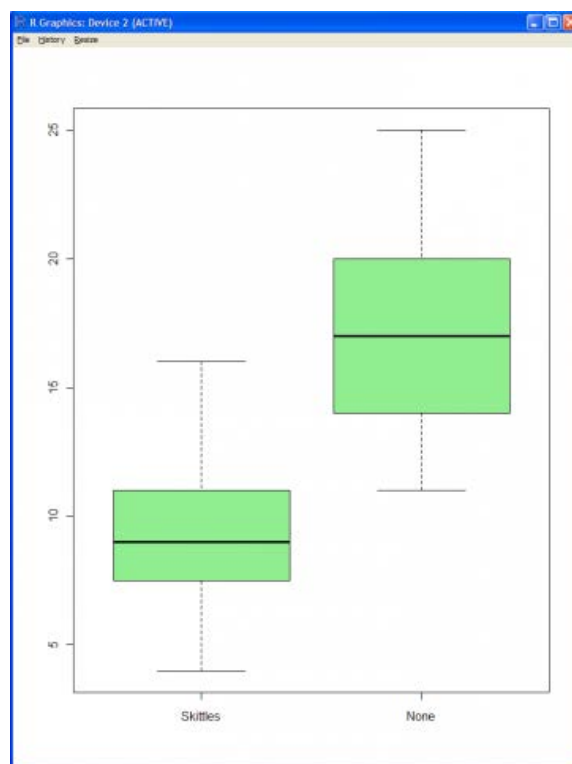
The output (above) shows that the variances (Skittles = 10.25, None = 17.68) are not significantly different (p = 0.077). Below a box and whisker plot displays fairly clearly how the groups differ.

```
R R Console
File  Edit  Misc  Packages  Windows  Help

> boxplot(example.1$Recall1 ~ example.1$Candy, col = "lightgreen")
>
```

Next, we can conduct a traditional *t* test for comparison with the Bayes factor; and in R we need the actual *t* value to calculate the Bayes factor later.

Here, we see that participants in the Skittles group (*M* = 9.41, *SD* = 3.20) recalled significantly fewer words than participants in the group which received no candy (*M* = 17.30, *SD* = 4.20), $t(52)$ = -7.7566, *p* < .001. Of course, we would want to take a look at the effect size, Cohen's *d* (1988), also called the Standardized Measure of Difference (SMD). To calculate the SMD in R, we need to first split the two groups' scores of the dependent variable.

Next, load the 'MBESS' library which contains the 'smd' function. Then we can apply that function to our groups. Here (below) we see a substantially large effect size (*d* = -2.11).

```
R Console
File  Edit  Misc  Packages  Windows  Help

> library(MBESS)
> smd(x1$Skittles, x1$None)
[1] -2.111081
>
```

Next, we can conduct a Bayesian version of the Levene's test for homogeneity of variances; using the 'BayesFactorPCL' library function 'eqVariance.Gibbs'; which requires a matrix of data with each group as a column and each row a case.

```
R Console
File  Edit  Misc  Packages  Windows  Help

> x2 <- cbind(x1$Skittles, x1$None)
> is.matrix(x2)
[1] TRUE
>
```

The output for the 'eqVariance.Gibbs' function is quite long, but the key feature is the "$BF" is the Bayes Factor, which if greater than one indicates the groups' variances are equal.

```
R Console
File  Edit  Misc  Packages  Windows  Help

> eqVariance.Gibbs(x2, iterations = 1000, whichModel = 2, M2.metrop.scale = 2)
|=============================================================================================
Acceptance rates:
 decorr: 0.31 , g: 0.277 0.28
$chains
Markov Chain Monte Carlo (MCMC) output:
Start = 1
End = 1000
Thinning interval = 1
           mu1       mu2           g1            g2          IWMDE      sig2        sig2g decorr.acc g.acc1 g.acc2
  [1,]  8.772807  16.76373  -0.235543489  0.0000000000  7.546769e-03  19.287131  0.018904262          0      1      0
  [2,]  7.768447  16.03884  -0.235543489  0.0000000000  2.149459e+00  17.499977  0.039331409          0      0      0
  [3,]  9.479601  16.45494  -0.235543489  0.0000000000  1.248658e+00  13.809910  0.039288162          0      0      0
```

Long section of output omitted to save space.

```
 [997,]  10.969939  16.93024  -0.070694771  -0.150973/2321  2.334944e+00  20.740952  0.045645236          0      0      0
 [998,]  10.384451  17.66298  -0.125614376  -0.1363191001  7.440975e-01  15.741199  0.012870191          0      1      1
 [999,]   9.917560  17.85115  -0.125614376  -0.1363191001  2.522682e+00  10.941717  0.021798796          0      0      0
[1000,]  10.353809  17.75046  -0.125614376  -0.1363191001  1.893171e+00  14.297340  0.035625100          0      0      0

$BF
[1] 1.145594

$acc.rates
  decorr g.g.acc1 g.g.acc2
   0.310    0.277    0.280

>
```

Now, we can take the information from the traditional *t* test and conduct the Bayes factor analysis using the 'ttest.Quad' function from the 'BayesFactorPCL' library.

```
R Console
File  Edit  Misc  Packages  Windows  Help

> t.b1 <- ttest.Quad(t = -7.7566, n1 = 27, n2 = 27, rscale = 1, prior.cauchy = TRUE)
> t.b1
[1] 3.427793e-08
>
```

Notice the script above specifies the default for the prior; Cauchy, which is preferred (Rouder, Speckman, Sun, & Morey, 2009). When that argument is specified as FALSE, a normal prior distribution is applied. The normal prior applied to this (example) data changes the result very little (see below).

```
R Console
File  Edit  Misc  Packages  Windows  Help

> t.b2 <- ttest.Quad(t = -7.7566, n1 = 27, n2 = 27, rscale = 1, prior.cauchy = FALSE)
> t.b2
[1] 4.140999e-08
>
```

Use of either type of prior results in a very, very small Bayes factor, indicating decisive evidence for the alternative hypothesis (i.e. there is a difference between the groups in the number of words recalled and the magnitude of effect is 'decisive'). For more information on the 'ttest.Quad' function, simply type help(ttest.Quad) in the R console to bring up the function documentation.

```
R R Console
File Edit Misc Packages Windows Help

> help(ttest.Quad)
> |
```

```
R R Help on 'ttest.Quad'                                    _ □ X
File Edit View

ttest.Quad            package:BayesFactorPCL            R Documentation

A function to compute the Bayes factors for one- or two-sample designs

Description:

     This function computes the Bayes factor corresponding to a
     one-sample or two-sample t~test, using Gaussian quadrature
     integration.  See details about priors in the details.

Usage:

     ttest.Quad(t, n1, n2 = 0, rscale = 1, prior.cauchy = TRUE)

Arguments:

       t: The t value obtained from the corresponding t~test

      n1: Sample size for first group

      n2: Sample size for second group. If a one-sample test is
          desired, 'n1' should be 0.

   rscale: The prior scale (see Details below)
```

One way ANOVA example.

First, take a look at the variables of interest, here we are testing the number of words recalled (Recall1) of three distraction groups (No Distraction, Cell Phone Ring, & Light Bulb Failure).
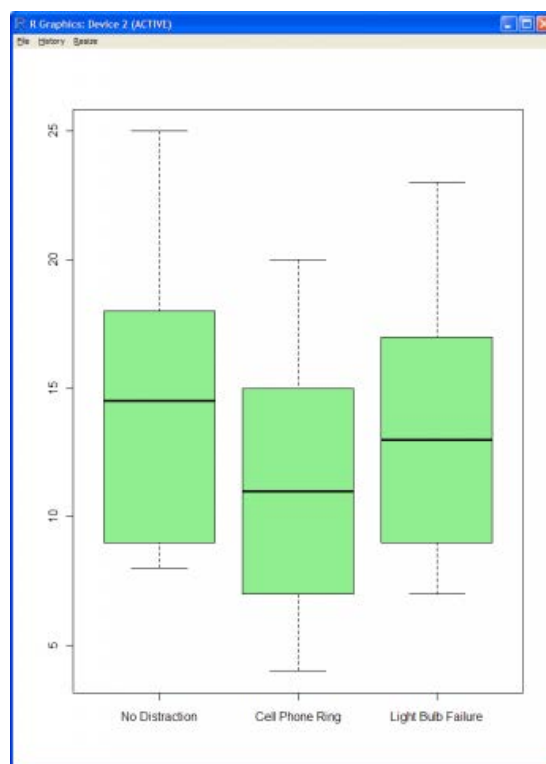
```
R R Console
File Edit Misc Packages Windows Help

> numSummary(example.1$Recall1 , groups=example.1$Distraction,statistics=c("mean", "sd"))
                        mean       sd  n
No Distraction      15.00000 5.656854 18
Cell Phone Ring     11.38889 5.192063 18
Light Bulb Failure  13.66667 5.110543 18
>
> |
```

Next, as was done above, take a look at the variances of each group and evaluate the homogeneity of variance assumption.

```
R R Console
File Edit Misc Packages Windows Help

> tapply(example.1$Recall1, example.1$Distraction, var, na.rm=TRUE)
    No Distraction    Cell Phone Ring Light Bulb Failure
          32.00000           26.95752           26.11765
> leveneTest(example.1$Recall1, example.1$Distraction, center=median)
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  2  0.0916 0.9127
      51
> |
```

A box-and-whisker plot shows how the groups' number of words recalled were distributed.

```
R R Console
File Edit Misc Packages Windows Help

> boxplot(example.1$Recall1 ~ example.1$Distraction, col = "lightgreen")
>
> |
```

Next, we can conduct the traditional ANOVA. We see (below), there does not appear to be a significant difference in the number of words recalled among the groups.

Now, we can compute the Bayes factor using the 'oneWayAOV.Quad' function from the 'BayesFactorPCL' library. Notice the 'rscale = 1' argument which specifies a non-informative Jeffreys, standard multivariate prior; which is the default and recommended (Morey & Rouder, 2010; Rouder, Speckman, Sun, & Morey, 2009).
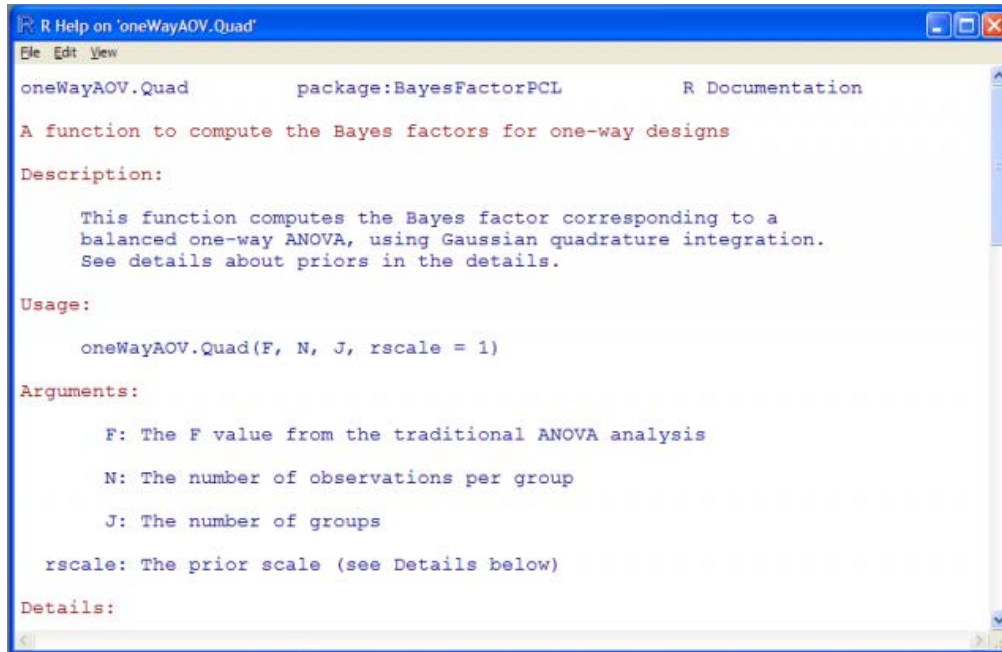

The 3.23 Bayes factor indicates there was 'substantial' evidence from this data, to support the null model or null hypothesis (i.e. consistent with the traditional approach results; there is no significant difference among the groups).

For more information on the 'oneWayAOV.Quad' function, simply type help(oneWayAOV.Quad) in the R console.

The 'LearnBayes' package, which is a companion for the book *Bayesian Computation with R*, both of which authored by Jim Albert (2010, 2007); also contains functions for computing Bayes Factors.

An Adobe.pdf version of this article can be found here.

Until next time, "*now all the criminals in their coats and their ties; are free to drink martinis and watch the sun rise…*" (Dylan & Levy, 1975)

References / Resources

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Short Courses

Instructor-led courses are still on hold. Please contact an RSS member or Claudia Lynch if you are interested in taking such a class or wish to have someone offer a class for your students. **SPSS and SAS courses; they are now offered _online_ only.** RSS staff will be still be available for consultation on those topics, however. Another class available online is **_Introduction to R_**.

Surf over to the Short Courses page to see instructions for accessing the SPSS and SAS online learning and other training that is available to you. You can also see the sorts of instructor led courses that have been offered in the past.

Special classes can always be arranged with the RSS staff. See "Customized Short Courses" below for further information. Also, you can **always** contact the RSS staff for one-on-one consultation. **Please read the FAQ before requesting an appointment though.**

Especially for Faculty and Staff Members

In addition to the ACS Short Courses, which are available to students, faculty and staff, staff and faculty members can take courses offered through the Human Resources Department (they have a new comprehensive training curriculum), and the Center for Learning Enhancement, Assessment, and Redesign. Additionally, the Center for Achievement and Lifelong Learning offers a variety of courses, usually for a small fee.

EIS training is available. Questions or comments relating to EIS training should be sent to EISTCA@unt.edu.

Microsoft E-Learning

Microsoft E-Learning courses are now available for **faculty and staff** via our UNT-Microsoft Campus Agreement. Please contact Claudia Lynch at lynch@unt.edu for instructions on accessing this training. If you haven't accessed the training since last year you will need to get a new access code.

Microsoft Outlook Tutorials and much more

The Enterprise Messaging and Directory Services Group has all sorts of useful information on their website, including tutorials and FAQs. The home page displays a list of their newest tutorials with tutorial topic pages displaying the most accessed pages. You can search the site for whatever you're interested via a Search Box on the left-hand side of the page.

Central Web Support

Consult Central Web Support for assistance in acquiring "Internet services and support." As described on their website:

CWS provides Internet services and support to UNT faculty, staff and students. Services include allocating and assisting departments, campus organizations and faculty with web space and associated applications. Additionally, CWS assists web developers with databases and associated web applications, troubleshooting problems, support and service.

CLEAR (was Center for Distributed Learning)

CLEAR offers courses especially for Faculty Members. A list of topics and further information can be found here.

The center also offers a "Brown Bag" series which meets for lunch one **Wednesday** a month (recently changed from the first Thursday of each month) at Noon in Chilton 245. The purpose of this group is to bring faculty members together to share their experiences with distributed learning. One demonstration will be made at each meeting by a faculty member with experience in distributed learning. More information on these activities can be found at the CLEAR Website. Scheduled meeting dates for the rest of the school year are:

- March 23
- April 20

UNT Mini-Courses

There are a variety of courses offered, for a fee, to UNT faculty, staff and students as well as the general public. For additional information surf over to http://www.unt.edu/minicourses/

Information Security Awareness

The UNT Information Security team has been offering Information Security Awareness courses to all UNT faculty and staff. Topics to be covered will include workstation security, sensitive data handling, copyright infringement issues, identity theft, email security, and more.

For more information, or if you would like to request a customized course to be taught for your department, contact Gabe Marshall at x4062, or at security@unt.edu.

Also, Information Security Training is now available through Blackboard Vista (formerly known as WebCT).

Alternate Forms of Training

Many of the General Access Labs around campus have tutorials installed on their computers. See http://www.gal.unt.edu/ for a list of labs and their locations. The Willis Library, for example, has a list of Tutorials and Software Support. The Library Instructional Unit also offers workshops and training, including "tech skills" training. Visit their websites for more information: http://www.library.unt.edu/library-instruction

The Training Website has all sorts of information about alternate forms of training. Computer Based Training (CBT) and Web-based training are some of the alternatives offered, although due to the rising costs of training, shrinking budgets and changing technology, computer-based training at UNT is in a state of transition. For up-to-date information on CBT at UNT, see the CBT website.

Gartner Research Services

Way back in 2006 we announced *Gartner Core Research Services Now Available to the UNT Community*. Our subscription for Gartner services has always included **all** UNT faculty, students, and staff. All you need to do to access the subscription is to **log into the UNT Gartner portal page** at https://gartner.unt.edu/. Once you have logged in, you can view upcoming webinars: http://www.gartner.com/webinars/ and listen to Gartner podcasts here: http://www.gartner.com/it/products/podcasting/asset_137461_2616.jsp.

State of Texas Department of Information Resources

Another possible source of training for staff and, perhaps, faculty members is the Texas Department of Information Resources. A look at their Education and Training website reveals some interesting possibilities.

New Horizons Computer Learning Centers

New Horizins is a DIR vendor, which means that state agencies, like UNT, get special pricing for their services negotiated at the State level (click here for more information about DIR vendors). New Horizons offers courses at their own facilities in Dallas and Fort Worth, but will arrange for onsite training as well.

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New Employees:

- **Sonal Manandhar**, CSS Tech, Classroom Support Services (part-time).

- **Wesley Gould**, CSS Tech, Classroom Support Services (part-time).

- **Yevgeny Armor**, IT Programmer Analyst, Financial Aid & Scholarships Systems (AIS).

No longer working in the Computing and Information Technology Center:

- **Lisa Coleman**, CITC Helpdesk Consultant (part-time).

- **Nicholas Ryan Harvey**, IT Specialist, UNT Administration Support. Transferred to another department on campus.

Changes, Awards, Recognition, Publications, etc.

Transfer within CITC

Seth Seaman is now an IT Programmer in EIS Application Infrastructure Management. He was previously working in UNT Administration Support.

RAVE in the News

CITC's Research and Visualization Environment (RAVE) is an important asset to the work of the Social Conflict in Africa Database (SCAD), and **Dr. Jesse Hamner**, RAVE Manager, is the Technical Director of the project. You can read more about Hamner in connection with the project here.

Service to UNT

Congratulations to **Katy Gallahan**, IT Manager, UNT Administration Support, and **Jonathan Piott**, IT Specialist, Business Services Support/Student Development, who were recently recognized by *InHouse* for her **5 years** of service to UNT.

Soaring Eagles

The following people were recognized as Soaring Eagles in the March/April 2011 issue of *HR Connections*, the Human Resources Newsletter.

Lisa Cloeman	*Jacob Flores*
Trent Geerdes	*Keith Wilson*

AIS celebrates group milestones

On Tuesday, March 1, 2011, the CITC division for Administrative Information Systems (AIS) held its first reception to honor service milestones for team members. The AIS Leadership Council which is comprised of the three AIS Directors hosted the event. Many employees had missed the annual service awards function that used to be held for the university. The Council decided to hold a quarterly gathering to recognize any AIS employees who had reached UNT Service Recognition milestones. John Hooper, UNT CIO, was also recognized as a 20-year awardee. The event was held at the CITC offices at the Research Park in the departmental lounge affectionately known as the "Legacy Lounge." Robert Jones, AIS Tools & User Services Director, served as master of ceremonies. Cookies, punch, and photos of awardees with their managers concluded the reception. Everyone thought it was a terrific event and are already looking forward to the next quarter.

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