**Supplementary Materials A: Search Terms and Codes for SPR Study Analysis**

List of 79 coded features

**Publication information**

1. *Authors*
2. *Year of publication*
3. *Title*
4. *Journal*
5. *Corresponding author*
6. *E-mail*

**SPR Task Details**

1. *presentation* (κ = 1, 100% agreement) - how were words presented to participants in SPR task? (1 = word-by-word, 2 = segment-by-segment, 3 = sentence-by-sentence, 4 = by word, by chunk, by segment, and by whole text, 4 = word-by-word (center of screen), 6 = clause-by-clause, 7 = *bunsetsu* [content word and function word in Japanese], 8 = line-by-line, 9 = region-by-region, 10 = phrase-by-phrase)
2. *source* (κ = 1, 100% agreement) - which software or platform was used to create the SPR task? (0 = Unspecified, 1 = DMDX, 2 = E-Prime, 3 = Linger, 4 = SuperLab, 5 = Paradigm, 6 = Psychopy, 7 = Ibex Farm, 9 = Presentation, 10 = NESU, 11 = Micro Experimental Laboratory (MEL), 12 = DMASTR, 13 = PsyScope, 14 = PsyScript, 15 = PXLAB, 16 = Hot Soup processor

**Outlier and data treatment**

1. *acc(%)* (κ = 1, 100% agreement) - what was the minimum score on comprehension questions for participant to be included?
2. *sd\_bound* (κ = .878, 90.91% agreement) - what value SD boundary was utilized, if any?
3. *action* (κ = .771, 90.91% agreement) - what action was taken with values that fell outside of the SD boundary? (0 = Unclear, 1 = Excluded, 2 = Replaced by mean + SD value, 3 = Replaced with mean value)
4. *used* (κ = 1, 100% agreement) - which mean value was the SD calculated from? (0 = unclear, 1 = participant/item mean, 2 = group mean, 3 = Overall mean)
5. *time\_low(ms)* (κ = 1, 100% agreement) - which lower time boundary was implemented?
6. *time\_upp(ms)* (κ = 1, 100% agreement) - which upper time boundary was implemented?
7. *win* (κ = 1, 100% agreement) - was winsorizing utilized? (0 = no, 1 = yes)
8. *trim* (κ = .820, 90.91% agreement) - was trimming utilized? (0 = no, 1 = yes)
9. *win\_trim* (90.91% agreement, too few observations to determine κ) - was a combination or winsorizing and trimming utilized? (0 = no, 1 = yes)
10. *mean\_rep* (κ = 1, 100% agreement) - was outlying data replaced with a mean? (0 = no, 1 = yes)
11. *kurt\_disc* (κ = 1, 100% agreement) - was a kurtosis discordancy test utilized? (0 = no, 1 = yes)
12. *unadd* (κ = 1, 100% agreement) - were outliers unaddressed in the study? (0 = no, 1 = yes)
13. *log* (κ = 1, 100% agreement) - was log transformation implemented on outliers? (0 = no, 1 = yes)
14. *log\_val* (κ = 1, 100% agreement) - was log transformation implemented on outliers? (1 = unspecified, 2 = log 10, 3 = natural log)
15. *res\_rt* (κ = 1, 100% agreement) - were residual RTs calculated? (0 = no, 1 = yes)
16. *centered* (κ = 1, 100% agreement) - were RTs centered? (0 = no, 1 = yes)
17. *z\_score* (κ = 1, 100% agreement) - were RTs converted to *z*-scores? (0 = no, 1 = yes)
18. *inverse* (κ = 1, 100% agreement) - was inverse transformation utilized? (0 = no, 1 = yes)
19. *norm\_add* (κ = 1, 100% agreement) - was the normality assumption addressed? (0 = no, 1 = yes)
20. *norm\_met* (κ = 1, 100% agreement) - was the normality assumption met? (0 = not mentioned, 1 = met, 2 = mentioned, but not specifically mentioned whether met or not, 3 = not met and used non-parametrics for all analyses, 4 = non-parametrics used for sections of data where assumption was not met, 5 = specifically mentions that data transformations were used to normalize distributions, 6 = mentions that data was transformed to reduce skew [but does not specifically mention normal distribution])
21. *norm\_plots* (κ = 1, 100% agreement) - were plots used to assess normality?
22. *norm\_test* (κ = 1, 100% agreement) - which normality test, if any, was utilized? (1 = Shapiro-Wilk, 2 = Kolomogorov-Smirnov)
23. *t\_test* (κ = .560, 81.82% agreement) - was a *t-*test utilized? (0 = no, 1 = yes)
24. *welch\_t* (κ = 1, 100% agreement) - was Welsch’s test utilized (0 = no, 1 = yes)
25. *anova* (κ = 1, 100% agreement) - was ANOVA of any kind utilized? (0 = no, 1 = yes)
26. *1\_way\_anova* (κ = 1, 100% agreement) - was one-way ANOVA utilized? (0 = no, 1 = yes)
27. *fac\_anova* (κ = .814, 90.91% agreement) - was factorial ANOVA utilized? (0 = no, 1 = yes)
28. *rm\_anova* (κ = .607, 81.82% agreement) - was repeated-measures ANOVA utilized? (and specifically referred to as RM-ANOVA)? (0 = no, 1 = yes)
29. *f1\_f2\_anova* (κ = 1, 100% agreement) - were participant- and item-based ANOVA utilized? (0 = no, 1 = yes)
30. *ancova* (90.91% agreement, too few observations to determine κ) - was ANCOVA utilized?
31. *manova* (κ = 1, 100% agreement) - was MANOVA utilized? (0 = no, 1 = yes)
32. *mancova* (κ = 1, 100% agreement) - was MANCOVA utilized? (0 = no, 1 = yes)
33. *bootstrap* (κ = 1, 100% agreement) - was bootstrapping utilized? (0 = no, 1 = yes)
34. *corr* (κ = 1, 100% agreement) - was correlation of any kind utilized? (0 = no, 1 = yes)
35. *pearson\_r* (κ = 1, 100% agreement) - was Pearson’s *r* utilized? (0 = no, 1 = yes)
36. *spearman\_r* (κ = 1, 100% agreement) - was Spearman’s *ρ* utilized? (0 = no, 1 = yes)
37. *kend\_tau* (κ = 1, 100% agreement) - was *Kendall’s τ utilized*? (0 = no, 1 = yes)
38. *biserial* (κ = 1, 100% agreement) - was biserial correlation utilized? (0 = no, 1 = yes)
39. *reg* (κ = .744, 90.91% agreement) - was regression of any kind utilized [specifically including the term “regression”, not any GLM method]? (0 = no, 1 = yes)
40. *lin\_reg* (κ = .744, 90.91% agreement) - was linear regression utilized? (0 = no, 1 = yes)
41. *hier\_reg* (κ = 1, 100% agreement) - was hierarchical regression utilized? (0 = no, 1 = yes)
42. *log\_reg* (κ = 1, 100% agreement) - was logistic regression utilized? (0 = no, 1 = yes)
43. *poiss\_reg* (κ = 1, 100% agreement) - was Poisson loglinear regression utilized? (0 = no, 1 = yes)
44. *bayes\_hier\_reg* (κ = 1, 100% agreement) - was Bayesian hierarchical regression utilized? (0 = no, 1 = yes)
45. *lmem* (κ = 1, 100% agreement) - was LMEM utilized? (0 = no, 1 = yes)
46. *lme4* (κ = 1, 100% agreement) - was *lme4* utilized for analysis? (0 = no, 1 = yes)
47. *logistic\_lmem* (κ = 1, 100% agreement) - was logistic LMEM utilized? (0 = no, 1 = yes)
48. *lmem\_logit* (κ = 1, 100% agreement) - was a logit LMEM utilized? (0 = no, 1 = yes)
49. *lmem\_wald\_z* (κ = 1, 100% agreement) - was Wald’s *z* utilized to interpret LMEM coefficients? (0 = no, 1 = yes)
50. *lmem\_chi\_sq* (κ = 1, 100% agreement) - was *χ2* utilized to interpret LMEM coefficients? (0 = no, 1 = yes)
51. *glmm* (κ = 1, 100% agreement) - was GLMM utilized? (0 = no, 1 = yes)
52. *cfa* (κ = 1, 100% agreement) - was confirmatory factor analysis utilized? (0 = no, 1 = yes)
53. *bayes\_fa* (κ = 1, 100% agreement) - was Bayesian factor anlysis utilized? (0 = no, 1 = yes)
54. *cluster* (κ = 1, 100% agreement) - was cluster anlysis utilized? (0 = no, 1 = yes)
55. *non\_para* (κ = 1, 100% agreement) - was nonparametric analysis utilized? (0 = no, 1 = yes)
56. *wilcoxon\_rank* (κ = 1, 100% agreement) - was Wilcoxon signed-ranks test utilized? (0 = no, 1 = yes)
57. *k\_w* (κ = 1, 100% agreement) - was Kruskal-Wallis’ test utilized? (0 = no, 1 = yes)
58. *friedman* (κ = 1, 100% agreement) - was Friedman’s test utilized? (0 = no, 1 = yes)
59. *ph\_unspec* (κ = 1, 100% agreement) - was an unspecified post hoc test utilized? (0 = no, 1 = yes)
60. *ph\_tukey\_hsd* (κ = 1, 100% agreement) - was post hoc Tukey HSD utilized? (0 = no, 1 = yes)
61. *ph\_bonf* (κ = 1, 100% agreement) - was post hoc Bonferroni test utilized? (0 = no, 1 = yes)
62. *ph\_scheffe* (κ = 1, 100% agreement) - was post hoc Scheffe test utilized? (0 = no, 1 = yes)
63. *ph\_t\_test* (κ = 1, 100% agreement) - was post hoc *t*-test utilized? (0 = no, 1 = yes)
64. *fu\_custom* (κ = .621, 90.91% agreement) - were follow-up custom contrasts utilized? (0 = no, 1 = yes)
65. *fu\_wilcoxon\_rank* (κ = 1, 100% agreement) - was follow-up Wilcoxon signed rank test utilized? (0 = no, 1 = yes)
66. *fu\_anova* (κ = 1, 100% agreement) - was follow-up ANOVA? (0 = no, 1 = yes)
67. *fu\_ancova* (κ = 1, 100% agreement) - was follow-up ANCOVA utilized? (0 = no, 1 = yes)
68. *fu\_duncan* (κ = 1, 100% agreement) - was follow-up custom contrasts utilized? (0 = no, 1 = yes)
69. *fu\_friedman* (κ = 1, 100% agreement) - was follow-up Duncan’s test utilized? (0 = no, 1 = yes)
70. *fu\_reg* (κ = 1, 100% agreement) - was follow-up linear regression utilized? (0 = no, 1 = yes)
71. *fu\_lmem* (κ = 1, 100% agreement) - was follow-up LMEM contrasts utilized? (0 = no, 1 = yes)

**Supplementary Materials B: Studies Coded**

|  |  |
| --- | --- |
| Authors | Year |
| Amato & MacDonald | 2010 |
| Bordag & Rogahn | 2019 |
| Bordag, Kirschenbaum, Opitz, Rogahn, & Tschirner | 2016 |
| Bordag, Kirschenbaum, Rogahn, Opitz, & Tschirner | 2019 |
| Bordag, Kirschenbaum, Tcshirner, & Opitz | 2015 |
| Bultena, Dijkstra, & Van Hell | 2014 |
| Bultena, Dijkstra, & Van Hell | 2015 |
| Conklin & Schmitt | 2008 |
| Conroy & Cupples | 2010 |
| Cook | 2018 |
| Coughlin & Tremblay | 2013 |
| Crossley & McNamara | 2016 |
| Cui | 2013 |
| Dekydtspotter & Outcalt | 2005 |
| Dekydtspotter & Seo | 2017 |
| Deng, Shi, Bi, Dunlap, & Chen | 2017 |
| Dong, Wen, Zeng, & Ji | 2015 |
| Dussias & Cramer Scaltz | 2008 |
| Dussias & Piñar | 2010 |
| Felser, Roberts, Marinis, & Gross | 2003 |
| Frank, Trompenaars, & Vasishth | 2016 |
| Gerth, Otto, Felser, & Nam | 2017 |
| Granena & Yilmaz | 2018 |
| Havik, Roberts, van Hoult, Schreuder, & Haverkort | 2009 |
| Hopp | 2006 |
| Hopp | 2009 |
| Hopp | 2010 |
| Hopp | 2016 |
| Hsieh | 2017 |
| Ibáñez, Macizo, & Bajo | 2010 |
| Jackson | 2008 |
| Jackson | 2008 |
| Jackson & Bobb | 2009 |
| Jackson & Dussias | 2009 |
| Jackson & Roberts | 2010 |
| Jackson & Van Hell | 2011 |
| Jegerski | 2012 |
| Jegerski | 2016 |
| Jegerski | 2018 |
| Jegerski | 2018 |
| Jegerski, Keating, & VanPatten | 2016 |
| Jiang | 2004 |
| Jiang | 2007 |
| Jiang, Novokshanova, Masuda, & Wang | 2011 |
| Johnson, Fiorentino, & Gabriele | 2016 |
| Juffs | 1998 |
| Juffs | 2005 |
| Juffs & Harrington | 1995 |
| Juffs & Harrington | 1996 |
| Kato | 2009 |
| Keating, Jegerski, & VanPatten | 2016 |
| Kim | 2018 |
| Kim & Christianson | 2017 |
| Kim & Kim | 2012 |
| Kim, Crossley, & Skalicky | 2018 |
| Lago, Garcia, & Felser | 2019 |
| Lazarte & Barry | 2008 |
| Leal, Slabakova, & Farmer | 2017 |
| Lee & Fraundorf | 2019 |
| Lee, Lu, & Garnsey | 2013 |
| Lim & Christianson | 2013 |
| Litkofsky & Van Hell | 2017 |
| Macizo & Bajo | 2006 |
| Marinis, Roberts, Felser, & Clahsen | 2005 |
| McManus | 2019 |
| McManus & Marsden | 2017 |
| Mifka-Profozic | 2017 |
| Millar | 2011 |
| Mueller& Jiang | 2013 |
| Nowbakht | 2018 |
| Omaki & Schulz | 2011 |
| Pan, Schimke, & Felser | 2015 |
| Pliatsikas & Marinis | 2013 |
| Pliatsikas & Marinis | 2013 |
| Popadopoulou & Clahsen | 2003 |
| Prior, Degani, Awawdy, Yassin, & Korem | 2017 |
| Qian, Lee, Lu, & Garnsey | 2018 |
| Qiang, Xiaoyu, Yiru, & Mueller | 2016 |
| Rah & Adone | 2010 |
| Renaud | 2014 |
| Roberts & Felser | 2011 |
| Roberts & Liszka | 2013 |
| Rossi, Diaz, Kroll, & Dussias | 2017 |
| Sagarra & Herschensohn | 2010 |
| Sagarra & Herschensohn | 2011 |
| Sagarra & Herschensohn | 2013 |
| Shantz | 2017 |
| Shimanskaya & Slabakova | 2015 |
| Shoji | 2017 |
| Song | 2015 |
| Speyer & Schleef | 2018 |
| Spinner & Jung | 2018 |
| Tamura, Fukuta, Nishimura, Harada, Hara, & Kato | 2018 |
| Tokowicz & Warren | 2010 |
| Vafaee, Suzuki, & Kachisnke | 2017 |
| VanPatten & Smith | 2019 |
| VanPatten, Keating, & Leeser | 2012 |
| Wei, Bolland, Brennan, Yuan, Wang, & Zhang | 2018 |
| Wei, Bolland, Cai, Yuan, & Wang | 2018 |
| Williams, Möbius, & Kim | 2001 |
| Xu | 2014 |
| Yang & Shih | 2013 |
| Yao & Chen | 2017 |
| Yuan | 2017 |

**Supplementary Materials C: Template for Data Request Email**

Dear {{Name}},

My name is Christopher Nicklin and I am a doctoral student on the Applied Linguistics program at Temple University, Japan Campus. As part of the program, I am embarking on a research apprenticeship under Luke Plonsky (Northern Arizona University). Dr Plonsky will be supervising me on a project investigating the treatment of outliers in second-language (L2) self-paced reading (SPR) tasks. The project involves obtaining datasets from published studies that used L2 SPR tasks, and re-analyzing them using several outlier treatments (e.g., standard deviation trimming, logarithmic transformation). The aim of the research is to investigate whether or not one particular outlier treatment method is more suited to L2 SPR research than the others. By doing so, we hope to provide empirically-informed guidance to future analyses of SPR data.

I am writing to request your assistance with this project. In {{Year}}, you published a paper in {{Journal}} using SPR. I was wondering if it would be possible for you to share the SPR data from this paper with me? If you agree to share your data with me, your work will be treated with the upmost respect and will not be identified in the final paper. I would like to make it clear that I would most certainly not be attempting to expose flaws in your work, merely re-analyzing it with various outlier treatments and comparing the outcomes with the same treatments on other datasets. The APA explicitly endorses and requires the sharing of data for the purpose of re-analysis.

If you have any questions or concerns with regard to this research, or have any further conditions that you would like fulfilled before considering sharing your data with me, please do not hesitate to ask.

Regards,  
Christopher Nicklin

**Supplementary Materials D: Descriptive Statistics**

Table 1

*Descriptive Statistics Representing the Effects of Data Transformations on Distribution Statistics*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Transformation | *n* | Min | Max | Median | *IQR* | Skew (*z*) | Kurt (*z*) |
| RT Skew (z) | None | 190 | 0.88 | 20.89 | 5.87 | 3.14 | 7.95 | 15.38 |
|  | Log | 190 | -2.24 | 6.34 | 1.53 | 1.30 | -1.25 | 3.82 |
|  | Inverse | 95 | -20.91 | 1.71 | -1.80 | 1.55 | -15.95 | 51.16 |
|  | Sq. Root | 190 | 0.01 | 10.14 | 3.41 | 1.95 | 2.61 | 5.36 |
| RT Kurt (z) | None | 190 | -0.72 | 116.56 | 7.27 | 9.11 | 25.06 | 73.93 |
|  | Log | 190 | -1.51 | 9.56 | 0.37 | 1.39 | 13.69 | 30.74 |
|  | Inverse | 95 | -1.60 | 89.78 | 0.77 | 1.45 | 32.47 | 141.84 |
|  | Sq. Root | 190 | -1.02 | 27.55 | 2.13 | 3.58 | 18.35 | 44.99 |
| Res Skew (z) | None | 160 | -0.42 | 22.13 | 4.52 | 3.01 | 6.67 | 13.88 |
|  | Log | 160 | -1.18 | 5.31 | 1.30 | 2.27 | 1.15 | -1.50 |
|  | Inverse | 75 | -6.57 | 1.88 | -0.28 | 1.27 | -5.16 | 4.64 |
|  | Sq. Root | 160 | -0.50 | 10.01 | 2.62 | 2.29 | 2.45 | 2.41 |
| Res Kurt (z) | None | 160 | -1.63 | 140.15 | 6.67 | 8.53 | 27.19 | 101.65 |
|  | Log | 160 | -1.51 | 9.09 | 0.87 | 2.01 | 6.98 | 10.63 |
|  | Inverse | 75 | -1.35 | 11.57 | 0.90 | 1.26 | 6.86 | 6.95 |
|  | Sq. Root | 160 | -1.57 | 35.95 | 3.03 | 3.60 | 17.29 | 48.08 |

Table 2

*Descriptive Statistics Representing the Effects of Outlier Treatments on the Skewness of RT Distributions (SD boundary Treatment by Transformation)*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Trans | Boundary | *n* | Min | Max | Median | *IQR* | Skew (*z*) | Kurt (*z*) | *M* | *SD* |
| None | None | 19 | 1.36 | 20.89 | 9.55 | 5.66 | 0.97 | -0.67 | 9.61 | 5.64 |
|  | -1.5 to 1.5 | 19 | 0.93 | 6.39 | 4.49 | 1.67 | -0.99 | -0.77 | 4.09 | 1.60 |
|  | -2 to 2 | 19 | 1.08 | 7.49 | 5.37 | 2.15 | -1.07 | -0.73 | 4.89 | 1.92 |
|  | -2.5 to 2.5 | 19 | 0.88 | 8.55 | 5.75 | 2.73 | -1.01 | -0.65 | 5.55 | 2.24 |
|  | -3 to 3 | 19 | 0.92 | 9.73 | 6.48 | 3.35 | -0.97 | -0.69 | 6.17 | 2.54 |
|  | -1.5 to 2 | 19 | 1.10 | 7.49 | 5.18 | 2.15 | -0.99 | -0.72 | 4.89 | 1.89 |
|  | -1.5 to 2.5 | 19 | 0.89 | 8.57 | 5.75 | 2.73 | -1.01 | -0.64 | 5.57 | 2.23 |
|  | -1.5 to 3 | 19 | 0.91 | 9.75 | 6.48 | 3.35 | -0.95 | -0.67 | 6.19 | 2.53 |
|  | -2 to 2.5 | 19 | 0.88 | 8.55 | 5.75 | 2.73 | -1.01 | -0.66 | 5.55 | 2.24 |
|  | -2 to 3 | 19 | 0.92 | 9.73 | 6.51 | 3.35 | -0.97 | -0.69 | 6.18 | 2.54 |
| Log | None | 19 | -2.24 | 6.34 | 2.06 | 1.68 | 0.02 | -0.05 | 1.88 | 2.02 |
|  | -1.5 to 1.5 | 19 | -1.58 | 2.81 | 0.95 | 0.75 | -1.18 | 1.29 | 0.95 | 0.92 |
|  | -2 to 2 | 19 | -1.62 | 2.97 | 1.38 | 0.99 | -1.72 | 1.03 | 1.22 | 1.02 |
|  | -2.5 to 2.5 | 19 | -1.64 | 3.76 | 1.76 | 1.16 | -1.13 | 0.34 | 1.49 | 1.23 |
|  | -3 to 3 | 19 | -1.52 | 4.40 | 1.99 | 1.43 | -0.57 | -0.25 | 1.68 | 1.42 |
|  | -1.5 to 2 | 19 | -1.62 | 3.08 | 1.48 | 0.98 | -2.16 | 1.87 | 1.39 | 1.01 |
|  | -1.5 to 2.5 | 19 | -1.73 | 3.87 | 1.82 | 1.17 | -1.64 | 1.30 | 1.71 | 1.22 |
|  | -1.5 to 3 | 19 | -1.60 | 4.51 | 2.04 | 1.38 | -0.95 | 0.58 | 1.94 | 1.37 |
|  | -2 to 2.5 | 19 | -1.73 | 3.77 | 1.78 | 1.23 | -1.37 | 0.75 | 1.54 | 1.22 |
|  | -2 to 3 | 19 | -1.60 | 4.42 | 2.00 | 1.54 | -0.78 | 0.23 | 1.77 | 1.37 |
| Inverse | None | 19 | -20.91 | 1.69 | -2.35 | 1.72 | -5.31 | 7.90 | -3.26 | 4.66 |
|  | -1.5 to 1.5 | 19 | -3.82 | 0.85 | -1.45 | 2.00 | 0.15 | -1.06 | -1.42 | 1.33 |
|  | -2 to 2 | 19 | -4.76 | 1.21 | -1.66 | 1.61 | -0.36 | -0.56 | -1.69 | 1.54 |
|  | -2.5 to 2.5 | 19 | -6.43 | 1.56 | -1.83 | 1.37 | -1.13 | 0.37 | -1.98 | 1.87 |
|  | -3 to 3 | 19 | -8.14 | 1.71 | -1.97 | 1.14 | -1.85 | 1.17 | -2.24 | 2.21 |
| Sq. Root | None | 19 | 0.24 | 10.14 | 4.67 | 3.02 | 0.67 | -0.75 | 4.67 | 2.89 |
|  | -1.5 to 1.5 | 19 | 0.37 | 3.75 | 2.41 | 1.02 | -0.92 | -0.71 | 2.30 | 0.94 |
|  | -2 to 2 | 19 | 0.16 | 4.55 | 2.99 | 1.25 | -1.30 | -0.36 | 2.85 | 1.22 |
|  | -2.5 to 2.5 | 19 | 0.08 | 5.48 | 3.55 | 1.42 | -1.22 | -0.36 | 3.27 | 1.44 |
|  | -3 to 3 | 19 | 0.01 | 6.30 | 3.86 | 1.96 | -1.03 | -0.46 | 3.63 | 1.66 |
|  | -1.5 to 2 | 19 | 0.16 | 4.55 | 3.02 | 1.05 | -1.47 | -0.12 | 2.90 | 1.18 |
|  | -1.5 to 2.5 | 19 | 0.08 | 5.48 | 3.58 | 1.57 | -1.41 | -0.10 | 3.39 | 1.40 |
|  | -1.5 to 3 | 19 | 0.01 | 6.30 | 3.89 | 1.74 | -1.24 | -0.19 | 3.77 | 1.62 |
|  | -2 to 2.5 | 19 | 0.08 | 5.48 | 3.55 | 1.42 | -1.32 | -0.23 | 3.32 | 1.42 |
|  | -2 to 3 | 19 | 0.01 | 6.30 | 3.86 | 1.88 | -1.16 | -0.29 | 3.71 | 1.63 |

Table 3

*Descriptive Statistics Representing the Effects of Outlier Treatments on the Kurtosis of RT Distributions (SD boundary Treatment by Transformation)*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Trans | Boundary | *n* | Min | Max | Median | *IQR* | Skew (*z*) | Kurt (*z*) | *M* | *SD* |
| None | None | 19 | -0.19 | 116.56 | 27.87 | 32.79 | 2.18 | 0.41 | 31.95 | 32.08 |
|  | -1.5 to 1.5 | 19 | -0.72 | 11.00 | 3.51 | 4.39 | 1.53 | -0.15 | 3.34 | 3.36 |
|  | -2 to 2 | 19 | -0.43 | 15.87 | 5.55 | 5.34 | 1.32 | -0.32 | 5.42 | 4.56 |
|  | -2.5 to 2.5 | 19 | -0.44 | 19.28 | 7.56 | 6.66 | 1.07 | -0.61 | 7.49 | 5.78 |
|  | -3 to 3 | 19 | -0.48 | 24.14 | 9.45 | 8.62 | 0.90 | -0.76 | 9.81 | 7.28 |
|  | -1.5 to 2 | 19 | -0.42 | 15.88 | 5.55 | 5.34 | 1.37 | -0.25 | 5.38 | 4.54 |
|  | -1.5 to 2.5 | 19 | -0.41 | 19.28 | 7.56 | 6.66 | 1.07 | -0.61 | 7.49 | 5.78 |
|  | -1.5 to 3 | 19 | -0.45 | 24.15 | 9.46 | 8.62 | 0.90 | -0.76 | 9.82 | 7.29 |
|  | -2 to 2.5 | 19 | -0.44 | 19.28 | 7.56 | 6.66 | 1.07 | -0.61 | 7.48 | 5.78 |
|  | -2 to 3 | 19 | -0.48 | 24.14 | 9.45 | 8.62 | 0.90 | -0.76 | 9.81 | 7.29 |
| Log | None | 19 | -0.56 | 9.56 | 1.43 | 2.72 | 2.35 | 0.67 | 2.12 | 2.71 |
|  | -1.5 to 1.5 | 19 | -1.51 | 2.67 | -0.63 | 0.65 | 3.40 | 3.11 | -0.42 | 0.96 |
|  | -2 to 2 | 19 | -0.88 | 1.29 | -0.10 | 0.61 | 1.01 | -0.74 | 0.04 | 0.60 |
|  | -2.5 to 2.5 | 19 | -0.57 | 1.93 | 0.43 | 1.13 | 0.34 | -1.15 | 0.55 | 0.76 |
|  | -3 to 3 | 19 | -0.49 | 3.21 | 0.95 | 1.94 | 0.52 | -1.12 | 1.00 | 1.09 |
|  | -1.5 to 2 | 19 | -0.95 | 1.31 | -0.09 | 0.88 | 0.88 | -0.91 | -0.03 | 0.66 |
|  | -1.5 to 2.5 | 19 | -0.95 | 1.92 | 0.41 | 1.10 | 0.15 | -1.18 | 0.46 | 0.85 |
|  | -1.5 to 3 | 19 | -0.95 | 3.23 | 0.83 | 1.79 | 0.44 | -1.04 | 0.89 | 1.17 |
|  | -2 to 2.5 | 19 | -0.63 | 1.92 | 0.39 | 1.16 | 0.44 | -1.20 | 0.51 | 0.78 |
|  | -2 to 3 | 19 | -0.63 | 3.21 | 0.80 | 1.78 | 0.71 | -1.01 | 0.92 | 1.10 |
| Inverse | None | 19 | -0.41 | 89.78 | 1.53 | 3.20 | 6.79 | 11.44 | 7.26 | 20.22 |
|  | -1.5 to 1.5 | 19 | -1.60 | 4.67 | 0.26 | 2.04 | 1.85 | 0.67 | 0.30 | 1.59 |
|  | -2 to 2 | 19 | -1.01 | 6.72 | 0.41 | 1.48 | 2.82 | 1.07 | 0.95 | 2.11 |
|  | -2.5 to 2.5 | 19 | -0.55 | 12.07 | 0.60 | 0.99 | 4.03 | 3.47 | 1.69 | 3.21 |
|  | -3 to 3 | 19 | -0.41 | 18.30 | 0.80 | 0.76 | 4.69 | 5.14 | 2.42 | 4.58 |
| Sq. Root | None | 19 | -0.59 | 27.55 | 7.45 | 8.24 | 1.91 | -0.13 | 8.69 | 8.60 |
|  | -1.5 to 1.5 | 19 | -1.02 | 3.67 | 0.28 | 1.75 | 1.49 | -0.25 | 0.52 | 1.29 |
|  | -2 to 2 | 19 | -0.66 | 5.48 | 1.61 | 2.02 | 1.15 | -0.62 | 1.55 | 1.72 |
|  | -2.5 to 2.5 | 19 | -0.65 | 6.92 | 2.84 | 2.83 | 0.57 | -0.89 | 2.55 | 2.16 |
|  | -3 to 3 | 19 | -0.68 | 8.37 | 3.42 | 3.63 | 0.19 | -1.07 | 3.53 | 2.68 |
|  | -1.5 to 2 | 19 | -0.69 | 5.49 | 1.60 | 2.03 | 1.16 | -0.35 | 1.48 | 1.65 |
|  | -1.5 to 2.5 | 19 | -0.65 | 6.94 | 2.75 | 3.00 | 0.48 | -0.89 | 2.48 | 2.12 |
|  | -1.5 to 3 | 19 | -0.68 | 8.38 | 3.44 | 3.85 | 0.08 | -1.11 | 3.45 | 2.63 |
|  | -2 to 2.5 | 19 | -0.65 | 6.92 | 2.76 | 2.97 | 0.52 | -0.91 | 2.50 | 2.13 |
|  | -2 to 3 | 19 | -0.68 | 8.37 | 3.42 | 3.87 | 0.11 | -1.12 | 3.47 | 2.65 |

Table 4

*Descriptive Statistics Representing the Effects of Outlier Treatments on the Skewness of Residual Distributions (SD boundary Treatment by Transformation)*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Trans | Boundary | *n* | Min | Max | Median | *IQR* | Skew (*z*) | Kurt (*z*) | *M* | *SD* |
| None | None | 16 | -0.36 | 22.13 | 6.78 | 9.83 | 1.15 | -0.40 | 7.18 | 6.32 |
|  | -1.5 to 1.5 | 16 | -0.42 | 5.09 | 3.00 | 2.34 | -0.71 | -1.10 | 2.69 | 1.75 |
|  | -2 to 2 | 16 | -0.38 | 6.62 | 3.85 | 2.52 | -0.78 | -0.93 | 3.45 | 2.13 |
|  | -2.5 to 2.5 | 16 | -0.37 | 7.90 | 4.69 | 2.67 | -0.83 | -0.82 | 4.11 | 2.49 |
|  | -3 to 3 | 16 | -0.36 | 9.41 | 5.19 | 2.74 | -0.67 | -0.80 | 4.70 | 2.87 |
|  | -1.5 to 2 | 16 | -0.40 | 6.63 | 3.85 | 2.52 | -0.78 | -0.92 | 3.44 | 2.13 |
|  | -1.5 to 2.5 | 16 | -0.38 | 7.91 | 4.68 | 2.67 | -0.83 | -0.82 | 4.11 | 2.49 |
|  | -1.5 to 3 | 16 | -0.38 | 9.42 | 5.19 | 2.75 | -0.69 | -0.80 | 4.70 | 2.87 |
|  | -2 to 2.5 | 16 | -0.37 | 7.90 | 4.69 | 2.67 | -0.83 | -0.82 | 4.11 | 2.49 |
|  | -2 to 3 | 16 | -0.36 | 9.41 | 5.20 | 2.74 | -0.69 | -0.80 | 4.70 | 2.87 |
| Log | None | 16 | -0.56 | 5.31 | 1.58 | 2.66 | 0.71 | -1.10 | 1.86 | 1.82 |
|  | -1.5 to 1.5 | 16 | -1.18 | 2.55 | 0.63 | 1.43 | -0.07 | -0.83 | 0.73 | 1.00 |
|  | -2 to 2 | 16 | -0.96 | 2.71 | 1.02 | 1.70 | -0.35 | -1.13 | 1.00 | 1.07 |
|  | -2.5 to 2.5 | 16 | -0.74 | 3.34 | 1.27 | 2.18 | -0.23 | -1.27 | 1.30 | 1.26 |
|  | -3 to 3 | 16 | -0.65 | 3.87 | 1.40 | 2.48 | -0.07 | -1.32 | 1.52 | 1.44 |
|  | -1.5 to 2 | 16 | -0.96 | 2.76 | 1.11 | 1.52 | -0.59 | -1.01 | 1.11 | 1.08 |
|  | -1.5 to 2.5 | 16 | -0.74 | 3.40 | 1.37 | 1.71 | -0.39 | -1.15 | 1.43 | 1.27 |
|  | -1.5 to 3 | 16 | -0.65 | 3.93 | 1.50 | 2.01 | -0.18 | -1.23 | 1.66 | 1.45 |
|  | -2 to 2.5 | 16 | -0.74 | 3.34 | 1.28 | 2.16 | -0.25 | -1.26 | 1.32 | 1.26 |
|  | -2 to 3 | 16 | -0.66 | 3.87 | 1.41 | 2.46 | -0.09 | -1.31 | 1.54 | 1.45 |
| Inverse | None | 15 | -6.57 | 1.87 | -0.41 | 1.63 | -2.48 | 2.07 | -0.83 | 1.96 |
|  | -1.5 to 1.5 | 15 | -3.22 | 1.06 | 0.00 | 1.07 | -1.59 | -0.36 | -0.41 | 1.25 |
|  | -2 to 2 | 15 | -3.62 | 1.44 | -0.17 | 1.20 | -1.41 | -0.38 | -0.52 | 1.45 |
|  | -2.5 to 2.5 | 15 | -5.11 | 1.76 | -0.24 | 1.24 | -1.88 | 0.57 | -0.65 | 1.73 |
|  | -3 to 3 | 15 | -6.14 | 1.88 | -0.41 | 1.30 | -2.26 | 1.37 | -0.76 | 1.93 |
| Sq. Root | None | 16 | -0.45 | 10.01 | 3.25 | 4.60 | 0.76 | -1.07 | 3.67 | 3.15 |
|  | -1.5 to 1.5 | 16 | -0.50 | 2.84 | 1.55 | 2.02 | -0.53 | -1.54 | 1.46 | 1.13 |
|  | -2 to 2 | 16 | -0.48 | 3.79 | 2.22 | 2.07 | -0.76 | -1.26 | 2.02 | 1.37 |
|  | -2.5 to 2.5 | 16 | -0.46 | 4.70 | 2.76 | 1.74 | -0.80 | -1.08 | 2.47 | 1.59 |
|  | -3 to 3 | 16 | -0.45 | 5.63 | 3.11 | 1.98 | -0.63 | -1.06 | 2.83 | 1.83 |
|  | -1.5 to 2 | 16 | -0.49 | 3.80 | 2.32 | 2.01 | -0.82 | -1.23 | 2.04 | 1.37 |
|  | -1.5 to 2.5 | 16 | -0.48 | 4.71 | 2.95 | 1.77 | -0.88 | -1.07 | 2.51 | 1.61 |
|  | -1.5 to 3 | 16 | -0.47 | 5.65 | 3.35 | 2.06 | -0.73 | -1.06 | 2.88 | 1.85 |
|  | -2 to 2.5 | 16 | -0.47 | 4.70 | 2.85 | 1.76 | -0.84 | -1.07 | 2.48 | 1.60 |
|  | -2 to 3 | 16 | -0.47 | 5.63 | 3.27 | 2.03 | -0.71 | -1.06 | 2.86 | 1.84 |

Table 5

*Descriptive Statistics Representing the Effects of Outlier Treatments on the Kurtosis of Residual Distributions (SD boundary Treatment by Transformation)*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Trans | Boundary | *n* | Min | Max | Median | *IQR* | Skew (*z*) | Kurt (*z*) | *M* | *SD* |
| None | None | 16 | -1.63 | 140.15 | 16.75 | 40.18 | 2.84 | 2.02 | 29.70 | 36.98 |
|  | -1.5 to 1.5 | 16 | -1.62 | 13.01 | 4.14 | 4.10 | 1.28 | 0.18 | 3.62 | 3.74 |
|  | -2 to 2 | 16 | -1.62 | 18.36 | 5.94 | 4.47 | 1.33 | 0.26 | 5.52 | 5.09 |
|  | -2.5 to 2.5 | 16 | -1.62 | 23.25 | 7.58 | 5.50 | 1.17 | -0.08 | 7.68 | 6.53 |
|  | -3 to 3 | 16 | -1.62 | 30.70 | 9.21 | 7.68 | 1.35 | 0.10 | 10.06 | 8.42 |
|  | -1.5 to 2 | 16 | -1.63 | 18.38 | 6.07 | 4.58 | 1.31 | 0.25 | 5.55 | 5.09 |
|  | -1.5 to 2.5 | 16 | -1.62 | 23.27 | 7.65 | 5.51 | 1.17 | -0.08 | 7.70 | 6.53 |
|  | -1.5 to 3 | 16 | -1.62 | 30.72 | 9.22 | 7.68 | 1.35 | 0.10 | 10.07 | 8.42 |
|  | -2 to 2.5 | 16 | -1.62 | 23.25 | 7.58 | 5.50 | 1.17 | -0.08 | 7.68 | 6.53 |
|  | -2 to 3 | 16 | -1.62 | 30.70 | 9.21 | 7.68 | 1.35 | 0.10 | 10.07 | 8.42 |
| Log | None | 16 | -1.49 | 9.09 | 2.17 | 2.57 | 1.51 | -0.45 | 2.57 | 3.10 |
|  | -1.5 to 1.5 | 16 | -1.51 | 2.79 | 0.00 | 0.97 | 1.45 | 0.16 | 0.22 | 1.08 |
|  | -2 to 2 | 16 | -1.49 | 2.33 | 0.38 | 1.03 | -0.27 | -0.25 | 0.64 | 0.94 |
|  | -2.5 to 2.5 | 16 | -1.48 | 3.00 | 0.93 | 1.63 | -0.43 | -0.70 | 1.15 | 1.23 |
|  | -3 to 3 | 16 | -1.48 | 4.48 | 1.47 | 1.92 | 0.09 | -0.72 | 1.62 | 1.57 |
|  | -1.5 to 2 | 16 | -1.50 | 2.40 | 0.42 | 1.03 | -0.25 | -0.50 | 0.59 | 1.00 |
|  | -1.5 to 2.5 | 16 | -1.50 | 3.06 | 0.95 | 1.62 | -0.44 | -0.93 | 1.10 | 1.34 |
|  | -1.5 to 3 | 16 | -1.50 | 4.56 | 1.49 | 1.93 | 0.02 | -0.90 | 1.58 | 1.70 |
|  | -2 to 2.5 | 16 | -1.49 | 3.01 | 0.93 | 1.62 | -0.43 | -0.81 | 1.12 | 1.26 |
|  | -2 to 3 | 16 | -1.49 | 4.48 | 1.47 | 1.92 | 0.09 | -0.82 | 1.59 | 1.61 |
| Inverse | None | 15 | -1.28 | 11.57 | 1.26 | 3.59 | 2.02 | 0.05 | 2.85 | 3.82 |
|  | -1.5 to 1.5 | 15 | -1.35 | 4.82 | 0.45 | 1.23 | 2.28 | 0.58 | 0.70 | 1.80 |
|  | -2 to 2 | 15 | -1.30 | 4.60 | 0.87 | 1.12 | 1.40 | -0.54 | 1.13 | 1.77 |
|  | -2.5 to 2.5 | 15 | -1.27 | 7.42 | 0.92 | 1.07 | 2.19 | 0.79 | 1.58 | 2.20 |
|  | -3 to 3 | 15 | -1.27 | 10.15 | 1.14 | 1.24 | 3.05 | 2.57 | 1.86 | 2.73 |
| Sq. Root | None | 16 | -1.56 | 35.95 | 5.50 | 10.63 | 2.06 | 0.55 | 8.85 | 10.21 |
|  | -1.5 to 1.5 | 16 | -1.57 | 4.16 | 1.09 | 1.73 | 0.28 | -0.46 | 1.03 | 1.45 |
|  | -2 to 2 | 16 | -1.57 | 6.57 | 2.19 | 2.20 | 0.39 | -0.09 | 1.97 | 1.98 |
|  | -2.5 to 2.5 | 16 | -1.56 | 8.99 | 3.38 | 2.24 | 0.35 | -0.07 | 3.02 | 2.58 |
|  | -3 to 3 | 16 | -1.56 | 12.16 | 4.07 | 2.91 | 0.64 | 0.11 | 4.08 | 3.36 |
|  | -1.5 to 2 | 16 | -1.57 | 6.60 | 2.20 | 2.18 | 0.39 | -0.11 | 1.97 | 1.99 |
|  | -1.5 to 2.5 | 16 | -1.57 | 9.03 | 3.34 | 2.46 | 0.34 | -0.09 | 3.03 | 2.59 |
|  | -1.5 to 3 | 16 | -1.57 | 12.21 | 4.21 | 2.92 | 0.64 | 0.15 | 4.09 | 3.35 |
|  | -2 to 2.5 | 16 | -1.56 | 8.99 | 3.33 | 2.26 | 0.35 | -0.06 | 3.01 | 2.58 |
|  | -2 to 3 | 16 | -1.56 | 12.17 | 4.07 | 2.91 | 0.66 | 0.15 | 4.07 | 3.34 |