

2015

equate: Observed-Score Linking and Equating in R

Anthony D. Albano

University of Nebraska-Lincoln, albano@unl.edu

Follow this and additional works at: <http://digitalcommons.unl.edu/edpsychpapers>

 Part of the [Applied Statistics Commons](#), [Child Psychology Commons](#), [Cognitive Psychology Commons](#), [Developmental Psychology Commons](#), and the [School Psychology Commons](#)

Albano, Anthony D., "*equate*: Observed-Score Linking and Equating in R" (2015). *Educational Psychology Papers and Publications*. 198.
<http://digitalcommons.unl.edu/edpsychpapers/198>

This Article is brought to you for free and open access by the Educational Psychology, Department of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Educational Psychology Papers and Publications by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

***equate*: Observed-Score Linking and Equating in R**

Anthony D. Albano

University of Nebraska–Lincoln, 114 Teachers College Hall, Lincoln, NE 68588-0345, USA;
email albano@unl.edu

Linking and equating are statistical procedures used to convert scores from one measurement scale to another. These procedures are most often used in testing programs that involve multiple test forms, where adjustments are made for form difficulty differences when creating a measurement scale that is common across forms. Linking and equating methods are traditionally distinguished by the type of scores they are applied to, whether observed scores or scores from an item response theory model. Methods are also distinguished by the study design under which measurements are taken. The R package *equate* (Albano, 2014) is free, open-source software for conducting observed-score linking and equating under single-group, equivalent-groups, and nonequivalent-groups designs with one or more anchor tests.

The *equate* package estimates identity, mean, linear, and equipercenile equating functions (Kolen & Brennan, 2014); general linear functions (Albano, 2015); circle-arc functions (Livingston & Kim, 2009); and composites of these. Equating methods include nominal-weights (Babcock, Albano, & Raymond, 2012), Tucker, Levine observed-score, Levine truescore, Braun/Holland, frequency estimation, and chained equating. Plotting and summary methods are also provided, along with methods for multivariate loglinear presmoothing and for (parametric) bootstrap error estimation.

The *equate* package is available for Linux, Mac, and Windows within the statistical environment R (R Core Team, 2015). Source and binary versions of the package and user manual are distributed free via the comprehensive R archival network, online at <https://cran.r-project.org/>.

The latest development version of the package can be obtained online at <https://github.com/talbano/equate> or by emailing the author at albano@unl.edu.

The author received no financial support for the research, authorship, and publication of this article and declared no potential conflicts of interest with respect to its research, authorship, or publication.

References

Albano, A. D. (2014). *equate*: Observed-score linking and equating (R package version 2.0-3) [Computer software manual]. Retrieved from <http://cran.r-project.org/package=equate>

- Albano, A. D. (2015). A general linear method for equating with small samples. *Journal of Educational Measurement*, *52*, 55-69.
- Babcock, B., Albano, A. D., & Raymond, M. (2012). Nominal weights mean equating: A method for very small samples. *Educational and Psychological Measurement*, *72*, 608-628.
- Kolen, M. J., & Brennan, R. L. (2014). *Test equating, scaling, and linking*. New York, NY: Springer.
- Livingston, S. A., & Kim, S. (2009). The circle-arc method for equating in small samples. *Journal of Educational Measurement*, *46*, 330-343.
- R Core Team. (2015). R: A language and environment for statistical computing [Computer software manual]. Vienna, Austria: R Foundation for Statistical Computing. Available from <http://www.r-project.org/>