

Supplemental methodology information for, “Strain Among Caregivers of Youth Designated as Seriously Emotionally Disturbed: Do Place of Residence and Race Matter?” Annette Grape, Ph.D., L.C.S.W.; Kathleen C. Plum, Ph.D., R.N.; Stephen L. Fielding, Ph.D. *Journal of Applied Social Science*, forthcoming Spring 2015

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Caregivers were interviewed in their home, or other location of their choosing, every six months (within ± 42 days from the target date that was based on six month intervals from their baseline interview date) up to 3 years. They were encouraged to remain in the evaluation whether or not they continued to receive SOC services. Caregivers received a \$35 retail gift card per interview to compensate them for their time.

We adjusted the current caregiver strain analysis for the fixed effects of time and place of residence at service start. We also adjusted for several random effects (i.e., those randomly distributed characteristics across families) on the basis of the prior literature. We included the adjusted overall strength score from the Behavioral and Emotional Ratings Scale, 2nd ed. (BERS-2) as a proxy for youth functioning. To determine the strongest random effects from the family-level variables generated from the Federal Center for Mental Health Services’ (CMHS) Caregiver Information and the Family Living Questionnaires we conducted a factor analysis to identify distinct family dimensions. The dimensions of: family depression history, family size and solidarity, and caregiver’s need for external support emerged. We then selected the strongest dimensional variables and calculated their correlations with each of the three caregiver strain measures to determine the best adjustments for each the three caregiver strain models. The questions or statements that generated these variables are shown, below:

- *Subjective-internalizing* caregiver strain
 - Anyone in youth's biological family ever been diagnosed or indicated depression?
 - Total # of children under 19 in youth's current household
 - How often does caregiver have time to spend with friends?
- *Subjective-externalizing* caregiver strain
 - Total # of children under 19 in youth's current household
 - Our family members rely on each other when problems arise
- *Objective* caregiver strain
 - Total # of children under 19 in youth's current household
 - Opportunities to spend time with friends.

Regarding how *internalized* caregiver strain changes over time in terms of bias, our overall retention rates of families in the evaluation were low: 66% at 6 months, 53% at 12 months, 50% at 18 months, and 41% at 24 months. We tested for longitudinal response bias by comparing the baseline data on gender, race, ethnicity, age category, Medicaid status, referral agency, and satisfaction with overall services with the 18 month follow-ups.¹ We found no statistically significant response differences, suggesting minimal response bias over time.

Final statistical models

Although we included the fixed effects of race and the several random effects, described above, for our preliminary models, we excluded race from the final models because it had no direct or interactive effects when place of residence was included. With respect to the random

¹ However, the 6 month follow-up was the first data collection for the satisfaction questions, so we compared that timeframe with the 18 months follow-up data.

effects, the statistical model with *internalizing* strain as the outcome would not report a positive definite Hessian Matrix. This simply means that the statistical model could not be calculated due to little or no variation in one or more of the random effects variables. In this case we removed “total household children” from both *subjective* strain models. The same was true with *objective* strain until we removed “times spent with friends.” Lastly, only the *internalized* caregiver strain measure model would run with the BERS-2 overall strength score, so we excluded it from the *externalizing* and *objective* caregiver strain measures. The lack of variation among these random effects is supported by the similar baseline means across place of residence, shown in Tables 4 to 6.

Analyses

We used descriptive statistics for Tables 1 to 3, and mixed models with repeated measures for the multi-variate analyses in Tables 4 to 6. The latter is superior to general linear models for unbalanced designs, particularly those with a large proportion of missing data. Mixed models produces estimated marginal means to adjust for biases due to missing data (Brown and Prescott 1999: 210). We set the Alpha-level at 0.10 at the evaluation’s outset since the consequences of committing a Type I error (i.e., a false positive) is not as critical as it would be in a clinical trial, and to provide a greater opportunity for stakeholders to note potentially important differences despite small sample size. This simply means that we have a 1 in 10 chance of falsely concluding that there are real differences between groups. We used SPSS V19 to conduct the analyses.

Brown, Helen and Robin Prescott. 1999: 210. *Applied mixed models in medicine*. Chichester; New York: J. Wiley & Sons.