



DATA TRENDS: #6

Summaries of research on mental health services for children and adolescents and their families



Dose-Effect Relationship in Children's Mental Health Services

Source: Foster, E.M. (in press). Is more better than less? An analysis of children's mental health services. *Health Services Research*.

Saltzer, M.S., Bickman, L., and Lambert, E.W. (1999). Dose-effect relationship in children's psychotherapy services. *Journal of Consulting and Clinical Psychology*, 67, 228-238.

Is more psychotherapy better than less? Does the amount, or dose, of mental health services affect children's outcomes? The problem in answering these questions lies in the difficulty of conducting a true experiment. While the ethical and methodological problems that exist in randomly assigning participants to treatment dose are numerous, the alternative quasi-experimental approach is confounded by the individualized nature of mental health treatment. For instance, individuals receiving more treatment may have entered treatment at an earlier age, or may be functioning at a lower level. Because of this confounding, a correlational study examining the *raw level* of functioning after treatment may show that children who receive a higher dosage of treatment function at a lower level than children who receive a smaller dosage of treatment. This may lead some to leap to the conclusion that increased dosage has no relation to mental health outcomes. Examining the *rate* of change over time may produce an opposite, but just as erroneous, conclusion: less severe consumers receive a lower dosage, but they are less likely to make a "clinically significant" improvement. More severe consumers, who receive a higher dosage of treatment, would show greater change over time. It is obvious these designs have serious limitations; to compensate for the use of a quasi-experimental design, researchers have used a variety of statistical techniques.

Salzer, Bickman, and Lambert (1999) used data from the Fort Bragg Evaluation Project to examine the dose-effect relationship. Their analysis included a wide assortment of statistical and methodological techniques. They also explored 17 possible moderators of dose-effect. No statistically significant dose-effect was found in any of these analyses; according to Salzer and his colleagues, this study showed that increasing the dosage of mental health treatment did not improve functioning.

However, using the same data as above, E. Michael Foster (in press) performed an alternative analysis. Known as instrumental variables estimation (IVE), this analysis estimates the unmeasured differences among individuals which would otherwise be confounded with treatment dose. For example, if a father is working two jobs, he may be less available to bring his child into services (affecting treatment dose), and may be more stressed (affecting his child's mental health). IVE statistically estimates and controls for these types of unmeasured differences. In this analysis, increased outpatient therapy was shown to significantly improve functioning (as measured by the Child and Adolescent Functional Assessment Scale), but not symptomatology (as measured by the Child Behavior Checklist). By using IVE, the author shows that increasing outpatient dose from 6 to 27 visits corresponded with a 59% increased rate of improvement in functioning. This finding indicates that the conventional estimates of dose-response, as shown above, may be misleading because of the unmeasured determinants of treatment outcome. This has significant implications for the statistical techniques that are used when measuring dose-effect. The authors argue that it is too difficult to conduct a true experiment, in which treatment dose is randomly assigned and completed by the participants. According to Foster, "while analyses of non-experimental data offer challenges of their own, they seem likely to produce the best measure of dose-response."

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