

## Summary Report for Group C, Day 1, Delaware Project

Group C was charged with the discussion of efficacy research, both within the laboratory and in “real-world” clinical settings. Our discussion was initially directed by the stimulus questions, especially the first two questions in the core set. However, it was much more broad ranging, and we considered many issues about the nature of the training of clinical scientists in the present and the future.

1. Most important to our group was the establishment of a learning set; that is, it is very important for our students to learn how to learn, as the knowledge base from which they will work will be ever evolving and changing. Learning to learn is an essential springboard for further learning.
2. Students need to acquire skills necessary to formulate research questions at the most sophisticated levels – first synthesizing the relevant research literature, second identifying the gaps in knowledge that are represented there, third asking questions in a way that leads to a productive search for answers, fourth developing high levels of skills in causal inference, and fifth learning to approach the question of efficacy/effectiveness with an eye toward the conditions that may maximize effect (moderators) or the mechanisms through which effect is established (mediators).
3. In the world of team science, it is increasingly important that students be provided with experiences that will cultivate collaborative fluency. This is vital in working with colleagues from other disciplines (e.g., medicine, psychiatry, dentistry, public health, other areas within psychology) as well as with members of the communities in which we may wish to test our treatments and ultimately for whom the treatments are intended. Exposure to community stakeholders and the wisdom that they need to be involved in intervention generation, refinement, and testing are of the greatest importance.
4. The world of data analysis has become increasingly complex, and the training in multi-level modeling and the myriad of other relatively new statistical techniques is a priority. This includes exposure to the evolving literature on how to manage missing data and noncompliance. Students need to also understand when it is appropriate to use sophisticated statistical techniques and when the nature of the research question and/or the limitations of the dataset may suggest that this is not the best approach. Training of this nature involves at minimum familiarity with the assumptions underlying the varying techniques and the ability to collaborate with colleagues in biostatistics in a manner that works well to statistically address the research question in the best possible manner.
5. It is unquestionably important that sound clinical training be a significant part of the overall training of intervention scientists. Clinical experience in a general sense and with the population under study is believed to be essential to the proper training and supervision of caregivers in efficacy and effectiveness trials, as well as in the assessment and maintenance of intervention fidelity in all its forms.
6. Training in mentoring is an important part of the training of intervention scientists, as supervising, guiding, directing, and training others is such a large component of the conduct of treatment research.
7. It is recognized that not all clinical science programs will have large numbers of intervention scientists on their faculties. However, through a menu of activities, it is important that all intervention scientists in training gain exposure to all parts of the conduct of intervention research. This can certainly happen in the context of treatment studies, but because these studies are often large scale and long lasting, it is possible that any individual student will only be present for a portion of any study. Thus, critical reviews of the literature, development of research proposals, conduct of intervention studies in single-subject

design, and grant writing, among other activities, should be included in the graduate school experience of every clinical science student.

8. When the faculty of a particular clinical science program does not represent important topics to which students should be exposed, the group suggested development of distance learning programs such as have been successfully used by prevention researchers and the University of California system to allow clinical science programs to pool their resources. These might use video conferencing allowing students at remote sites to interact with the teaching faculty.