Unpublished Supplementary Material

Jennifer L. Tackett[1]
Shirley B. Wang[2]
Alexander J. Shackman[3]

[1]Department of Psychology, Northwestern University, Evanston, IL 60208 USA; [2]Department of Psychology, Yale University, New Haven, CT 06520 USA; [3]Department of Psychology, Neuroscience and Cognitive Science Program, and Maryland Neuroimaging Center, University of Maryland, College Park, Maryland 20742 USA

Please address manuscript correspondence to:
shackman@umd.edu

Navigating Multidisciplinary Collaborations: Challenges and Solutions

Multidisciplinary research is challenging, a point emphasized by many contributors (Barch, *in press*; Collison et al., *in press*; Manczak et al., *in press*; Pokorny et al., *in press*; Robinaugh et al., *in press*). In this section, we highlight four of the main challenges and some recommendations for addressing them.

Preparing Trainees to Flourish in an Increasingly Multidisciplinary Field

Clinical psychological science has undergone a steady transformation over several decades. Spurred by funders, inspired by new technologies, and motivated to better understand, predict, prevent, and treat mental disorders, the field has increasingly come to rely on multidisciplinary collaborations, concepts, and tools, from brain imaging and molecular genetics to smartphone applications and artificial intelligence (Davidson, *in press*; Fairbairn & Bosch, *in press*; Gee et al., 2022). How should we prepare our trainees to flourish in this complex ecosystem?

Achieving mastery of clinical psychology *and* one or more 'other' disciplines is challenging and can create unrealistic training expectations, with adverse consequences for student health and wellbeing. As Barch notes in her essay, *"It can be overwhelming…to feel…[like clinical students] need to have as much expertise as someone trained only in another discipline"* (Barch, *in press*). While there are a number of potential solutions to this dilemma (Gee et al., 2022; Pokorny et al., *in press*; Robinaugh et al., *in press*), Barch, Bower and Segerstrom, and Pokorny and colleagues all make it clear that mastering multiple disciplines is *not* necessary for successful multidisciplinary collaboration; instead, the key to success is cultivating sufficient foundational knowledge to enable critical scientific thinking, clear communication (what Pokorny and colleagues term 'multidisciplinary fluency'), and productive collaboration with experts in other areas.

[Due to space constraints, the following section was cut from the published paper]

Barch also highlights the value of training programs that facilitate the development of student cohorts that encompass multiple laboratories and disciplines. This includes cross-cutting training fellowships, such as Wisconsin's long-running Training Program in Emotion Research (T32-MH018931; 1989-present) and the now defunct NIH/Kavli Summer Institute in Cognitive Neuroscience, widely known as 'Brain Camp' (R25-MH057541; 1997-2022). Formal curricular structures can play a similar role by providing trainees with support and concrete pathways to develop meaningful competence beyond their 'home' discipline. For example, I (SBW) benefited from Harvard's secondary field structure, which made it possible to pursue formal training in computational science and engineering alongside doctoral training in clinical psychology. In our experience (AJS)[1], physical infrastructure also plays a key role in encouraging—or discouraging, as the case may be—disciplinary mixing and scientific cross-pollination. Oftentimes, Psychology Departments are organized into siloes, with clinical psychologists segregated in one area of the building, and students and faculty from other areas housed in separate locations. Housing students and faculty from multiple areas in adjacent offices or intermixed co-working spaces provides one way to encourage serendipitous interaction and create community. Hubs anchored on espresso machines and other popular amenities create another. By their nature, amenity hubs are social 'collision' points that encourage faculty, staff, and trainees from different laboratories, area groups, and departments to linger and spontaneously socialize. Brainstorming hubs take this a step further, adding whiteboards, comfortable seating, and other 'props' specifically aimed at promoting information exchange and organic collaboration. Of course, while physical infrastructure is important, it is not

[1] As a doctoral student and postdoctoral fellow at the University of Wisconsin, I (AJS) witnessed the benefits of psycho-architectural social engineering first-hand. Thoughtful additions to the Waisman Center and the Wisconsin Psychiatric Institute and Clinics in the early 2000s created numerous opportunities for faculty, staff, and trainees from multiple disciplines to spontaneously interact in a sustained fashion. This naturally evolved into a wide variety of multidisciplinary adventures, from grants and papers to beer brewing and cycling trips. In the long run, these seemingly trivial architectural features facilitated the development of dozens of lifelong friendships and several multidisciplinary marriages.

sufficient to create a culture of camaraderie and scientific curiosity. Cross-cutting colloquia, luncheons, happy hours, group events, retreats, and targeted intramural grants are all useful accelerants (see Davidson, *in press* for further suggestions). Clinically relevant multidisciplinary conferences (e.g., Society of Biological Psychiatry, Computational Psychiatry) can play a similar role and provide a more immersive opportunity to cultivate multidisciplinary fluency. Still, a simple lack of bandwidth can undermine curiosity. Clinical students and faculty are under tremendous pressure to produce: in the laboratory, the classroom, and the clinic. They need sufficient time and energy to linger, socialize, and capitalize on everyday opportunities for insight, collaboration, and delight (Gee et al., 2022).

REFERENCES

Barch, D. M. (*in press*). Multidisciplinary Psychological Clinical Science: Charting the Path Forward. *Clinical Psychological Science*.

Collison, K. L., Lawrence, E., Rees, D., & Jackson, D. (*in press*). A Solution to the 17-Year Science-to-Practice Gap? Clinical Psychological Scientists and Multidisciplinary Collaborations. *Clinical Psychological Science*.

Davidson, R. J. (*in press*). Reflections on a highly multi-disciplinary career. *Clinical Psychological Science*.

Fairbairn, C. E., & Bosch, N. (*in press*). Applying Artificial Intelligence to Expand the Measurement Toolkit in Clinical Psychological Science: Moving Beyond Self-Reports. *Clinical Psychological Science*.

Gee, D. G., DeYoung, K. M., McLaughlin, K. A., Tillman, R. M., Barch, D. M., Forbes, E. E., . . . Shackman, A. J. (2022). Training the next generation of clinical psychological scientists: A data-driven call to action. *Annual Review of Clinical Psychology*, *18*, 43-70.

Manczak, E. M., Hoisington, A., Lacey, F., Waxman, M., Czech, K., Millwood, S., . . . Wilhelmi, O. (*in press*). Revisiting 'environmental effects': Directions for multidisciplinary investigations of air quality and psychopathology. *Clinical Psychological Science*.

Pokorny, V., Damme, K., Haase, C. M., Goldrick, M., & Mittal, V. A. (*in press*). Unique Challenges of Multidisciplinary Clinical Science: Perspectives from a Multidisciplinary Team. *Clinical Psychological Science*.

Robinaugh, D. J., Blanken, T. F., Bridger, E. K., Casamento-Moran, A., de Ron, J., Henry, T. R., . . . Fried, E. I. (*in press*). The Future of the Biopsychosocial Model: Toward a Transdisciplinary Systems Science of Mental Health. *Clinical Psychological Science*.