LETTER TO THE EDITOR

On prospective resilience methods and precision medicine approaches

Key words: resilience, aging, research design and methodology

We read with great interest Miller-Lewis' "Predicting and promoting resilience in later life" (2023). Her emphasis on employing multiple methods to understand resilience resonates deeply with the work we undertake at the Precision Mental Health Lab (www.precisionmentalhealthlab.com) and has been influential in furthering both the conceptual and methodological approaches to the study of resilience (e.g., Cosco, *et al.* (2019) and Hopper, *et al.* (2023)). We were honored to see her commentary and kind words on our paper "Contributors to mental health resilience in middle-aged and older adults: An analysis of the Canadian Longitudinal Study on Aging."

Miller-Lewis's approach to defining resilience through various methodological lenses aligns with our lab's commitment to precision medicine in resilience research. A specific passage from the publication encapsulates this approach "Consideration should also be given to using more than one method to operationally define resilience ... If similar resource factors emerge as predictive of resilience from different methodological approaches, this can increase our confidence that targeting these resources ... is a worthwhile endeavor." By integrating diverse methods, which include use of experimental and quasi-experimental methods, such as randomized controlled trials (RCT) and potentially natural experiments, we can identify genuine causal pathways, enabling the development of targeted interventions tailored to individual needs. In particular, intervention studies, notably RCTs, that examine between-group differences in sufficiently statistically powered samples may provide greater insights into these nuances. This type of triangulation of multiple methods is critical both in the context of the replication crisis that has plagued many psychological phenomena (Nosek *et al.*, 2022), but also in the context of harder-to-pin-down constructs, such as resilience (Ungar, 2019). Once we are able to demonstrate evidence for causal pathways between exposure(s) and resilience using multiple methods in diverse sample groups, we can start to unpack with much greater granularity, the types of interventions that have the highest likelihood of success. Further, we can identify how and who is best suited to specific interventions.

Adopting aspects of precision medicine that focus on more individualized recommendations for resilience – rather than a one-size-fits-all model – is clearly the path forward. We must, however, be cognizant that these methods have their pitfalls, notably with respect to within-person variance over time (Senn, 2018), and that these approaches must be continuously refined. Given the heterogeneity of the aging process and of older adults themselves, taking into greater consideration these nuances may allow for more targeted, and hopefully more effective, pathways to greater resilience. This type of approach is the foundation on which our Precision Mental Health Lab is built and one that has been greatly influenced by pioneers in the field, such as Miller-Lewis.

Miller-Lewis' prior contributions and thoughtful commentary provide a valuable roadmap for the future of resilience research (e.g. Miller-Lewis *et al.*, 2013; Miller-Lewis, 2023), emphasizing the importance of multi-method strategies and approaches that lead to real-world impact.

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