Novel methods in psychiatric epidemiology

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Published online: 22 June 2016
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In January 2014, SPPE began to publish a series of reviews, editorials, and commentaries with the goal of synthesising evidence and providing a platform for discussing and advancing the state of the art in social psychiatry and psychiatric epidemiology. More than 2 years into these series, it is useful to take stock, look back, and provide an overview of what comes next.

The series set off to synthesise and discuss evidence on the biological and psychological mechanisms through which social contexts and experiences increase risk of adverse mental health outcomes [1, 2], reflecting the recent shift in theoretical and measurement foundations towards integrated models of aetiology. This included reviews and commentaries on gene–environment interactions [3–6] and on epigenetic [7, 8], inflammatory [9, 10], cognitive, affective [11–13], and neurobiological mechanisms [14] through which stress, adversity, and other key socio-environmental exposures may affect mental health. These

reviews and commentaries highlight the rapid technological and subsequent scientific advances in psychiatry in uncovering mechanisms that underlie the epidemiological associations between adversity and illness that have been documented, since the advent of psychiatric epidemiology, yet also reveal a paradigm shift in its beginning stages of formation. In view of recent and impending revisions of the Diagnostic and Statistical Manual of Mental Disorders and International Classification of Diseases as well as movements towards non-binary classifications of psychiatric phenomena, the series then addressed current challenges in diagnostic classification in psychiatry [15–19], reviewing the enduring challenge of high comorbidity rates [19], methodological considerations in the use of latent variable models of psychopathology [16], and the evidence on transdiagnostic factors [17, 18] that may underlie individual common mental disorders [17, 18], personality disorders [18], and psychotic disorders [18, 20–22]. This was followed by reviews pulling together and discussing key findings from major epidemiological studies in the context of new challenges in the field and directions for future research [23–30]. It is abundantly clear, particularly from large-scale epidemiological studies, that the origins of most mental health problems trace back to childhood and adolescence [1] and the series continued with reviews and commentaries on youth mental health [31–36], including key findings from developmental epidemiology [32–34], protective and promotive factors [31], and the ongoing youth mental health reform in several countries [35, 36].

These reviews and commentaries testify to the continued value and vigour of social epidemiological research in mental health. However, there are of course challenges that remain to be addressed. The rapid advances in design, measurement, and statistics are often difficult to convey to a wider research audience and considered in isolation

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despite their overlap. One example of the latter are accelerated longitudinal designs, which, through developments in multilevel and growth mixture modelling, can now be more readily applied in psychiatric epidemiology [37]. Furthermore, as Keyes and Susser [1] note, debates about measurement are non-trivial given their implications not only for researchers but for all stakeholders. Therefore, what comes next in the SPPE series is an overview of recent advances in design, measurement, and statistics relevant to social psychiatry and psychiatric epidemiology.

In this issue of SPPE, a decade of research into the use of Immersive Virtual Reality (VR) designs for investigating psychological mechanisms associated with the onset and maintenance of psychosis is synthesised [38] and discussed [39]. While there has been a long tradition of using routine data and harnessing case registers in psychiatric epidemiology, data resources now accumulate in larger volumes in electronic format; Stewart and Davis [40] will review the current status and emerging possibilities of such ‘big data’ in mental health research in the next issue of SPPE. The series will then continue with reviews of recent developments in the closely related area of e-health, in particular, the use of ecological and geographic momentary assessment for measuring moment-to-moment variation in socio-environmental exposures, mental health, and substance use outcomes [41–44], and for investigating causal criteria under real-world conditions [44]. Ecological and geographic momentary designs bring into focus statistical methods for modelling spatial variation, studying local contexts, and testing network models of the structure of psychopathology; these will be considered in subsequent issues. As the range of novel technologies for measuring socio-environmental exposures increases, both between and within individuals, across the life course and in combination with biological and psychological mechanisms, as illustrated in the previous parts of the series on youth mental health and on integrated models, this brings to the fore statistical approaches for testing how exposures combine, in a multitude of ways, to increase risk of mental disorders. The current part of the SPPE series will illustrate this by illuminating methods for joint effects of time-varying exposures and statistical tests of additive interaction including a newly proposed statistical measure of disparities at the intersection of multiply marginalized groups.

In providing a platform for researchers to explain and engage with the SPPE audience regarding these developments of novel methodologies, the goal of this part of the SPPE series of reviews and commentaries is to contribute to advancing what is at the very heart of research and forms the basis for generating new insights and moving forward the field of social psychiatry and psychiatric epidemiology.

Acknowledgments UR is supported by a Veni grant from the Netherlands Organisation for Scientific Research (Grant No. 451-13-

022). CM acknowledges financial support from the National Institute for Health Research (NIHR) Biomedical Research Centre for Mental Health at South London and Maudsley NHS Foundation Trust and King’s College London. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR, or the Department of Health.

Compliance with ethical standards

Conflict of interest None.

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