


# Editorial: Moments in History as a Catalyst for Science: Placing the Individual Within a Specific Time and Place

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**B**ronfenbrenner's ecological systems theory<sup>1</sup> argued that the historical context of development, the chronosystem, can have as large an impact on the course and tenor of development as the closely tethered microsystem of family, neighborhood, and school that we typically focus on in the laboratory and in the clinic. While we often speak of these nested systems as a background construct, we rarely have a direct view of the empirical consequences of matching the individual with a unique moment of time, separate and apart from the typical factors thought to influence development. Zeytinoglu *et al.*<sup>2</sup> provide an opportunity to do just that as they examine the consequences of having a childhood history of behavioral inhibition on patterns of anxiety in the face of novel COVID-19 restrictions in early 2020. In doing so, they note the mediating factors, evident in the years between toddlerhood and adulthood, that help better understand the coming together of individual and context. In discussing this important contribution to the literature, we can also see how the field has often relied on accidents of history to advance our understanding of human development and psychological functioning.

To start at a granular level, the study by Zeytinoglu *et al.*<sup>2</sup> is one of a series of studies carefully examining the life trajectories of children characterized by the temperamental trait behavioral inhibition in toddlerhood. First described by Kagan's group,<sup>3</sup> behavioral inhibition is marked by an early sensitivity to sensory and social novelty and linked to a distinct pattern of neural functioning in networks that reach across limbic, striatal, and prefrontal regions.<sup>4</sup> These networks, in turn, are associated with fairly stable cognitive (eg, attention bias), emotional (eg, worry), and social (eg, wariness) phenotypes.<sup>5</sup> Of interest here, behavioral inhibition is also our best-characterized individual difference factor leading to the emergence of anxiety in adolescence and young adulthood.<sup>6</sup>

The study by Zeytinoglu *et al.*<sup>2</sup> is nested within a larger longitudinal study by Hane *et al.*,<sup>7</sup> which characterized behavioral inhibition in a cohort (N = 291) of toddlers and then noted patterns of social wariness at age 7, worry at age 15, and general anxiety at age 18 (now N = 168). This final time point

was assessed in the first months of the COVID-19 shutdown, when our understanding of the disease was spotty and evolving, and the coming disruptions were raw and unfamiliar. As can be expected, given the sample and the circumstances, anxiety levels were high at time point 1. Yet, following the first pinprick of upheaval, anxiety levels dropped significantly over the course of a single month—although they remained relatively high compared with typical community levels. This suggests that the young adults were able to adjust from the acute effects, if not completely return to baseline.

Thus, the focus was on the subset of participants who maintained high levels of anxiety. Zeytinoglu *et al.*<sup>2</sup> found that persistent anxiety was undergirded by a complex developmental chain from behavioral inhibition to social wariness and from social wariness to dysregulated worry. While participants may have had an early-appearing propensity for anxiety, there are multiple process that influence when, and if, these propensities emerge. These forking pathways provide insight into the mechanisms that shape development and highlight targets for intervention. Zeytinoglu *et al.*<sup>2</sup> make an important contribution by empirically illustrating how early traits are carried over development to impact functioning at a specific moment in history. An added contribution comes in illustrating the larger point that the specific time of our research can have an impact on our findings, much like the developmental timing of assessments.

For fans of time-travel and multiverse stories, there is always the intriguing “what if?” question of moving characters and events across a shifting time line. As noted above, Bronfenbrenner embedded his entire model within the “what if?” question.<sup>1</sup> Building on the current example of COVID-19, we can shift back and imagine the developmental trajectory of a person born into a middle-class U.S. household in 1900. They would have seen World War I and the influenza pandemic as a young adolescent, come of age in the roaring 20s, and tried to stabilize a family during the Great Depression. Weathering another World War, they would have observed the blinking prosperity (for some) of the 1950s, the racial reckoning of the 1960s, and the disorienting self-doubts of the Vietnam era. Each event, in turn, is coupled with a

specific point in development, such that its impact would reflect the person's current skills and social supports and their prior life history. As such, if we seeded the person into different points in history, by having them born in 1920 or 1940, we lose part of the time line and shift the coupling between developmental windows (eg, sensitive periods) and events. Changing the sex, race, socioeconomic status, or geographic location of the person may cause another telling shift.

In the study by Zeytinoglu *et al.*,<sup>2</sup> the participants were largely White, middle-class, well-educated young adults. For this particular population, age 18 is expected to be a time of expanding autonomy and self-determination.<sup>8</sup> These young adults are in, or are about to enter, college or the workforce and are making decisions that have long-term consequences. This is also a time when we see a sharp rise of psychological distress and worry over an unknown future. Zeytinoglu *et al.*<sup>2</sup> suggest that the risk is particularly high when you couple a vulnerable developmental trajectory with an acute and unexpected disruption to daily life.

This coupling is formalized in diathesis-stress models,<sup>9</sup> which show that an external factor, such as an acute stress, can activate an internal factor, such as a temperamental vulnerability, to transform a psychiatric predisposition into a disorder. This model is well grounded in both theory and data. Both, in turn, were built on larger events outside of the laboratory and clinic to advance the science. To illustrate, we can look to posttraumatic stress disorder.<sup>10</sup> Its modern antecedents can be seen in the shell shock displayed by soldiers in World War I who emerged from the trenches of Europe. All saw horrors, but not all displayed the same acute and lingering effects. Shell shock became known as post concussion syndrome and battle fatigue in World War II and then operational exhaustion in the Korean War. This

led to the first mention of gross stress reaction in *DSM-I* in 1952. Posttraumatic stress disorder, as a term, was first noted in 1980 in *DSM-III* and the lingering aftermath of Vietnam. Since then, we have developed a deeper understanding of the neural, cognitive, and social correlates of posttraumatic stress disorder. We understand that the profile is not simply limited to experiences of battle, but can emerge with an array of stressors. We know that the symptoms manifest differently with age, sex, and culture. We are also harnessing this knowledge to better treat the disorder.

In the end, developmental science builds on tangible biological and psychological constructs carried by individuals across the life span. However, their expression and their consequences for daily functioning are generated, defined, and constrained by the larger sociohistorical forces at play. Thus, as illustrated by Zeytinoglu *et al.*<sup>2</sup> and formalized by diathesis-stress models, our constructs of interest are neither natural kinds nor epiphenomena. Rather they are emergent properties reflecting the deep coupling of the individual with time and place. With such a moving target, we must use complex and interwoven measures to robustly capture the form and function of our psychology.

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