The Psychology of Cultural Change: Introduction to the Special Issue

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Human societies are not static. Attitudes, norms, institutions, behavior, and cultural products shift over time, sometimes with dizzying speed. However psychological science has either largely ignored cultural change or tacitly treated it as a source of noise. These changes in fact have important implications not only for psychological theory and research, but also policy, public health, and daily life. The present special issue draws together cutting-edge research and theory that addresses what one might think of as "the What," the "Why," and the "How" of cultural change. The articles encompass a range of theoretical perspectives and methodological approaches and focus on a diverse set of phenomena and processes ranging from personality to prejudice, to collective memory. Here we provide a brief overview and introduction, laying out our hopes to encourage more psychologists to consider cultural change in their own research and to join us in the emerging field of cultural dynamics.

Keywords: cultural change, cultural evolution, big data, computational models, computational social science

The once controversial proposition that cultural matters for understanding human psychology is now widely accepted within the field of psychology (e.g., García Coll et al., 1996; Henrich et al., 2010; Markus & Kitayama, 1991; Wang, 2021). However, human cultures do not stand still. In many societies dramatic changes have occurred within the past couple centuries, and even in the past couple decades (see Varnum & Grossmann, 2017, for a review). Taking a broader historical view, such shifts become even more apparent over longer spans of time (e.g., Kashima, 2014; Pinker, 2012). These changes have profound theoretical, methodological, and real-world implications. Understanding how and why cultures change enables us to generate and test theories regarding the origin of contemporary patterns of cultural variation and to make informed predictions for the future trajectories of our societies (Varnum & Grossmann, 2017). This knowledge can also be used to design social policies and interventions aimed at promoting public health, improving education, and enhancing well-being.

The present issue draws together new work on cultural change from scholars from a variety of areas within psychology (including social, personality, cultural, developmental, and quantitative psychology), and beyond (e.g., sociology and data science). These pieces capture a range of theoretical perspectives that have been brought to bear on how and why cultures change over time, including insights from evolutionary psychology (Jackson et al., 2021; Kusano & Kemmelmeier, 2021; Pan et al., 2021), behavioral ecology (Rotella et al., 2021), cultural evolution (Schaller & Muthukrishna, 2021), and socioecological psychology (Buttrick & Oishi, 2021). The special issue also highlights the diversity of methodological approaches in this emerging field ranging from computational modeling (Jung et al., 2021; Schaller & Muthukrishna, 2021; Pan et al., 2021), to machine learning (Sheetal & Savani, 2021; Stavrova et al., 2021), to time series analyses (Charlesworth & Banaji, 2021; Chan et al., 2021; Götz et al., 2021; Kusano & Kemmelmeier, 2021; Rotella et al., 2021).

Some of the articles in this special issue focus on the "What" of cultural change—documenting shifts in specific phenomena such as prejudice (Charlesworth & Banaji,

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2021), mental health (Infurna et al., 2021), individualism (Hamamura et al., 2021), social mobility (Chan et al., 2021), and religious beliefs and practices (Jackson et al., 2021). Other articles focus on the "Why"—testing theories regarding the causes of specific cultural changes, such as shifts over time in levels of individualism (Kusano & Kemmelmeier, 2021), or openness (Götz et al., 2021), or fertility (Rotella et al., 2021). Finally, the special issue includes articles that tackle the "How"—attempts to model and capture the broad processes involved in cultural change writ large. These include studies on the dynamics of collective memory and forgetting (Candia & Uzzi, 2021), investigations of how the meaning of concepts can change over time (Haslam et al., 2021), and work modeling the likelihood and speed of cultural change as a function of factors like cultural drift, interpersonal influence, and network characteristics (Jung et al., 2021; Schaller & Muthukrishna, 2021).

In many cases, these pieces yield insights that are not intuitive, challenge conventional wisdom, or contradict prior theorizing. For example, Charlesworth and Banaji (2021) show declines in prejudice in the United States from 2007 through 2016 occurred broadly across geographic regions and demographic groups. Rotella and colleagues (Rotella et al., 2021) find robust evidence that increasing population density in the past several decades is linked to people having fewer children around the globe. Schaller and Muthukrishna (2021) use agent-based models to show that an initially unpopular opinion is more likely to rapidly become the majority view in societies typically thought of as highly traditional. Candia and Uzzi's (2021) work suggests that a scholarly article published today, *including the article you are reading right now*, will likely be forgotten more quickly by the academic community than if it had been published before the Internet era.

Beyond the value of these individual contributions, this issue has three broad objectives: (1) to catalyze a new field within and beyond psychology for the study of cultural change, (2) to promote more rigorous methods in the emerging field, and (3) to make the methods of this field more accessible to a broad audience.

Cultural Dynamics

The overarching goal for the special issue is to promote and foster a vibrant, interdisciplinary research enterprise focused on cultural change. Rather than advancing any particular *model* or overarching *theory*, this issue aims to do something larger, namely to catalyze a *field* by beginning to sketch the contours of what is likely a vast problem space. To do so this collection of articles draws together research traditions that have historically had little communication despite their interest in many of the same questions. What to call this new field? Here we opt for the term "cultural dynamics," a term Kashima (2014, 2019) has used to describe research concerned with

many of the broad questions and methods represented in this special issue. This field may be roughly conceptualized as addressing the "What," the "Why," and the "How" of cultural change—assessing whether temporal changes have occurred at the level of populations, testing theories regarding the causes of those changes, and developing insights into micro- and macrolevel processes by which change writ large takes place. Ideally, this field will also begin to place greater emphasis on the "What Next?"—encouraging researchers to consider forecasting the future, both as means to evaluate models and theories, and as a way to provide useful information for the public, policymakers, industry, and other stakeholders.

This special issue is certainly not the first attempt to build some of these interdisciplinary bridges, nor is it the first attempt to address some of these major questions about cultural change. Indeed, the hope is that cultural dynamics might be a big enough tent to include (or at least complement) other interdisciplinary endeavors broadly interested in cultural change, such as cultural evolution (Brewer et al., 2017), historical psychology (Muthukrishna et al., 2021), and cliodynamics (Turchin, 2008).

Ideally, this issue will lead to generative conversations across disciplinary boundaries among those interested in cultural dynamics. Much might be gained from conversations between psychologists and anthropologists interested in cultural transmission and data scientists interested in collective memory. Similarly, historians and cultural psychologists trying to understand changes in religious norms and beliefs over the centuries might benefit from combining their expertise. Economists interested in forecasting demographic trends might apply insights from behavioral ecology and evolutionary psychology to enhance the accuracy of their models. Those studying cultural evolution might consider testing their theories with big data from social media. Natural language processing and big data might also inform the work of psycholinguists trying to understand how languages change and evolve, and how such linguistic changes interact with societal and psychological trends. Sociologists and social psychologists might combine forces with economists to gain insight into the drivers of cultural cycles in politics, fashion, and art.

Enhancing Methodological Rigor

The second goal for the special issue is to promote more rigorous methods in the study of cultural dynamics. To this end, the reader will note that all empirical articles testing Why claims in the present issue address issues of robustness, including to the potentially confounding effects of temporal autocorrelation. It is common practice for psychologists analyzing data taken at single time points to assess whether correlations hold when statistically controlling for potential confounds or theoretically driven alternative explanations. However, this is not always the case when

psychologists look at time series data. Although one can never rule out all potential alternative explanations in a correlational design, nonetheless inferences are strengthened when researchers can show robustness to several plausible alternatives and confounds. This is true when studying cultural change, just as it is true when assessing individual differences or societal-level correlations.

Another common threat to validity in cultural dynamics comes from the fact that researchers often pick phenomena to study where there is a temporal trend (or they suspect one) and attempt to explain them with reference to another temporal trend. If significant correlations are observed this is taken as evidence that the variables are related. However, there is a potentially serious problem with this approach. Few of us would believe that results of competitive hot dog eating competitions influence trends in book sales, or that Jennifer Lawrence's popularity drives the U.S. stock market. Yet, without accounting for autocorrelation present in these time series (e.g., via detrending or explicit modeling of autoregressive components) there is a remarkably strong *spurious* correlation between the number of hot dogs consumed at the Nathan's hot dog eating contest and the number of books making the *New York Times* fiction best seller list (Vigen, 2015). Similarly, during 2014 the performance of Dow Jones seemed to be highly related to Internet searches for Jennifer Lawrence, a popular 21st century American actress, unless one accounts for autocorrelation (Fawecett, 2015). As these humorous examples illustrate, looking for relationships between two variables that contain strong time trends will tend to reveal strong, but often false evidence that they are highly linked. Thus, accounting for autocorrelation is crucial when using time series data to assess claims regarding the causes of specific cultural changes (for more detailed arguments and specific recommendations see Jebb et al., 2015; Varnum & Grossmann, 2017).

Some articles also adopt what is arguably another gold standard for such work, making out-of-sample predictions (Sheetal & Savani, 2021; Stavrova et al., 2021), including predictions for the future (Rotella et al., 2021). This approach will become increasingly common in this emerging field. As part of an effort to encourage others to take these steps, the reader may find code that enables several common methods of correcting or otherwise accounting for temporal autocorrelation and for generating forecasts at the following link: https://osf.io/njydv/.

Improving Accessibility

Finally, this special issue aims to make methods in cultural dynamics research feel more approachable to those who may be less familiar with them. This issue contains accessible overviews of agent-based modeling (Schaller & Muthukrishna, 2021) and broad discussions of common time series methods (Jackson et al., 2021; Rotella et al., 2021; also see https://osf.io/njydv/ for annotated *R* code for many common time series analyses). Further, several articles identify additional overviews and tutorials for those interested in becoming more familiar with these and other methods highlighted in this issue that are not typically part of the psychologist's statistical toolkit. These tutorials and accessible overviews will hopefully encourage scholars to apply these tools in their own research.

Why Study Cultural Dynamics?

Most psychologists do not study cultural change. Nor are the methods described in these articles common within psychology. However, many researchers might benefit from incorporating theories and methods from this emerging field into their research programs. One key insight from cultural dynamics is that psychological processes are embedded and deeply intertwined with the fabric of the society people live in—societies that are often in flux. For example, researchers interested in group differences or psychological variation across societies often proceed under the tacit assumption that such differences are stable and enduring. However, sizable amounts of change have occurred in many key psychological tendencies in the past several decades alone (Varnum & Grossmann, 2017).

Further, psychologists who study cultural differences (*ourselves included*) have often attempted to assess the origins of patterns of variation around the world using data taken at a single timepoint (e.g., Varnum et al., 2010), or by assessing the relationship between the presence of technology or societal features at a single point in the past and contemporary patterns of variation (e.g., Alesina et al., 2013; Schulz et al., 2019; Talhelm et al., 2014). Although such approaches might be a reasonable first step, without time series data such claims cannot really be adequately tested. Simulations and computer modeling may also be useful tools to test such theories where adequate time series data do not exist or may complement time series analyses testing such theoretical claims. Time series data also enable researchers to assess the *direction* of relations in correlational designs and can provide insight into the timing of such relationships that may have important theoretical implications for models of culture and psychological processes.

Taking cultural change seriously may also be important for understanding a wide range of experimental effects and individual difference relationships. Just as cultural context might affect the likelihood of a particular effect replicating, so too might cultural shifts, of the kind documented in the special issue and in other work, have implications for whether we should expect effects observed in decades past to replicate today (Bond & Smith, 1996; Greenfield, 2017; Varnum & Grossmann, 2017). Indeed, some of these effects and relationships may vary across historical time periods. In

a similar vein, just as it is now common practice to report *where* it was collected, it should be common practice to report *when*.

Finally, a key goal of cultural dynamics is to enhance the ability of psychologists and others to predict future societal trends and developments. Being able to forecast such events with some accuracy would be invaluable in helping to shape policy and interventions. It could also be used to reduce conflict and promote public health and prosperity. Although the state of the science is nowhere near Asimov's "psychohistory," a fictional discipline that merged computer science and social and behavioral science to accurate predict societal trends and events thousands of years into the future, and indeed there may be inherent limits to how accurate such predictions can be (e.g., Hofman et al., 2017; Tetlock & Gardner, 2016). Cultural dynamics may one day be able to generate forecasts that are accurate enough to be of practical use; this will require psychologists and others in related fields to buy into the idea that prediction can be as important as explanation and become more versed in forecasting (Yarkoni & Westfall, 2017). Explanation will matter too, as uncovering regular principles or laws of cultural change may help societies deal with the fallout of rare events and sudden shocks when they occur, even if such events themselves cannot be predicted.

Cultural Dynamics and the Current Moment

The past 2 years have been a time of change and uncertainty. A global pandemic changed the way most people work, socialize, and pursue education. Millions of people died and millions more were sickened. Economies suffered and unemployment hit historic levels in many places. Massive social and political upheaval occurred in societies around the globe. In the United States, long considered one of the most stable democracies, a mob sacked the Capitol in an attempt to overturn the results of the 2020 election. There has been a surge of research interest in how individuals and societies might have been affected by these developments. There has also been increased demand by the media and the public to know what's coming next.

When this special issue was originally proposed in September of 2019, the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus had not yet been detected. Three months later, that proposal was accepted and the outbreak in Wuhan was starting to gain the world's attention. Like most of the world that December, neither of us expected the dramatic events that came next. And the following Spring, when Hutcherson and colleagues (2021) asked hundreds of psychologists and other experts in human behavior to spontaneously predict the societal consequences of the pandemic in the coming months, by-and-large they were as inaccurate as members of the general public. This project began with the belief that a field of cultural dynamics was something

important to develop, both for science and for society. The events of the past 2 years have only strengthened that conviction.

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