WILEY

ARTICLE

Cultural snapshots: Theory and method

Max Weisbuch[1] ⓘ | Sarah A. Lamer[1] | Evelyne Treinen[1] | Kristin Pauker[2]

[1] University of Denver

[2] University of Hawaii

Correspondence
Max Weisbuch, Psychology Dept., University of Denver, 2155 S Race St., Denver, CO 80210, USA.
Email: max.weisbuch@du.edu

Abstract

Causal influences of culture on cognition are challenging to examine scientifically. We here introduce a method to address this challenge. *Cultural snapshots* enable scientists to (a) characterize the cultural information commonly and frequently encountered by a collective, (b) examine how such cultural information influences the cognitions of individuals, and (c) draw conclusions about the emergence of shared cognition. Specifically, cultural snapshots are recorded samples of public environments commonly encountered by many people. Television scenes, photographs of public spaces, magazine pages, and social media conversations are all examples of cultural snapshots. Representative sets of cultural snapshots can be coded to index the systematic patterns of information encountered by a collective (i.e., *cultural patterns*). These same materials can be used to experimentally manipulate those cultural patterns, allowing scientists to examine cultural influences on cognition and behavior. We here review and provide guidelines for cultural snapshots research, trace cultural snapshots to classic theories of culture, and describe how cultural snapshots balance the constraints of representative design (Brunswik, 1956) with those of causal inference. We then illustrate how this approach is used to address (a) questions of causality in cultural psychology and (b) questions of applicability in social cognition research. We conclude by evaluating the strengths and weaknesses of the approach.

1 | INTRODUCTION

People see things, hear sounds, and smell odors and, through such perceptions, develop knowledge of the world that exists beyond their bodies. But in what sense could people literally perceive culture and thus develop knowledge about it? We suggest that culture is perceived over time in quantifiable patterns of observed behaviors, artifacts, and utterances; these *cultural patterns* may then influence individual humans' cognitions, including cognition about culture. Cultural patterns are necessarily embedded in the sensory chaos of daily life, and it is this embedding that makes culture perceptually rich and irreducible to conceptual description. For example, Americans who have a common racial identity may tend to behave more positively toward each other than people without a common racial identity but this statement is only a conceptual description of a cultural pattern. Real cultural patterns are instantiated

in perceptually-complex events that present specific persons of various ethnicities and genders, in different locations, wearing various styles of clothing, against various background colors, ambient sounds, and so forth.

This characterization highlights an obstacle to examining the influence of culture on cognition, and also to examining social cognition within the rich cultural contexts that it occurs: True experiments are necessary for strong tests of causality, yet it is difficult to experimentally manipulate culture in the same manner that people encounter it. To address these challenges, we introduce cultural snapshots as a method for examining the influence of cultural patterns on cognition and for examining social cognition in culturally infused settings. In the first section, we define cultural snapshots and illustrate the method by reviewing prior studies. The second section describes the advantages of cultural snapshots for cultural psychology, drawing a conceptual framework from influential approaches to culture (Adams & Markus, 2004; Sperber, 1996). The third section describes the advantages of cultural snapshots for social cognition research, including a provision for ecological approaches to information processing. Finally, we note the strengths and limitations of cultural snapshots and summarize potential applications.

2 | CULTURAL SNAPSHOTS: DEFINITION AND ILLUSTRATION

2.1 | What are cultural snapshots?

Cultural snapshots are recorded samples of public environments commonly encountered by many people. These may be samples from mass media (e.g., TV, webpages, and magazines; De Vreese, Boomgaarden, & Semetko, 2011; Han & Shavitt, 1994; Kim & Markus, 1999; Lewis & Hill, 1998; Schuck & de Vreese, 2006; Tsai, Louie, Chen, & Uchida, 2007; Weisbuch & Ambady, 2009; Weisbuch, Pauker, & Ambady, 2009), social media (e.g., blogs or Facebook updates; Huang & Park, 2013; Schwab & Greitemeyer, 2015; Weisbuch, Ivcevic, & Ambady, 2009), or personal recordings, such as cell phone video, images, or written descriptions of commonly encountered public spaces or situations (i.e., physical space sampling or situation sampling; e.g., Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997; Miyamoto, Nisbett, & Masuda, 2006; Morling, Kitayama, & Miyamoto, 2002; Savani, Morris, Naidu, Kumar, & Berlia, 2011). One key advantage of the cultural snapshots methodology is that it permits experimental manipulations of cultural patterns within perceptually rich contexts. Specifically, the method includes (a) a content analysis to create a numerical index of one or more cultural patterns among these snapshots and (b) a true experiment in which participants are randomly assigned to observe sets of snapshots (from the content analysis) that either do or do not include the identified cultural pattern. The resulting data can yield conclusions regarding the influence of cultural patterns on cognition, including shared cognitions, but the veracity of those conclusions depends critically on the sampling process used to collect cultural snapshots.

Guidelines for cultural snapshots are informed by extant definitions of culture and approaches to achieving a representative sample (for detailed guidelines, see Table 1). First, nearly all definitions of culture include the idea of something "shared" among people (Schaller, Conway, & Crandall, 2004), so cultural snapshots should capture *commonly encountered* public environments. Thus, public environments frequently encountered by many people must be identified—prime-time television, neighborhoods, sports websites, and college dorm rooms are a few examples of many such environments (see Table 1, Rows 1–3). Second, a representative sample of recordings must be collected within that frequently encountered environment to ensure (a) that cultural patterns can be identified *across* events and (b) that any cultural patterns identified in the sample characterize the broader public environment (i.e., the "population"). Third, cultural patterns are identified by coding or measuring each cultural snapshot for the pattern(s) of interest. As detailed below, these patterns can be coded at a level of abstraction consistent with the researchers' theory but could range from more reductionist cues like human movement speed or visual brightness to more emergent behavioral cues such as leadership style or emotion.

Finally and most importantly, sets of cultural snapshots used in experimental manipulations should be selected from the sample of snapshots collected for the content analysis so that (at least) one set of snapshots contains the

TABLE 1 Guidelines for using cultural snapshots methodology

Step		Description	Example	Additional criteria
Content analysis	Identify cultural pattern of interest	Identify a pattern that the researcher hypothesizes to exist across public environments	Nonverbal race bias: People direct more positive nonverbal behavior toward White than Black persons	
	Identify human population	Identify the human population exposed to hypothesized pattern	U.S. Americans	
	Identify environment	Identify environment that is commonly and frequently encountered by the population of interest	Televised media	*Commonality*—Select environments that a large proportion of people in the population of interest encounter. *Frequency*—Select environments that people frequently encounter
	Identify exemplars	Identify the population of exemplars that define the environments	Scripted television programs that include both Black and White characters	Set criteria that allow a large and representative sample of exemplars (e.g., sample of scripted programs from a variety of genres, TV and cable networks, and air dates)
	Identify time and location	Identify a representative sample of times and locations to ensure that cultural snapshots can be used to estimate the more general environment	3 10-second silent video samples from each of 3 episodes for each character	Select a sample of stimuli that are representative of the exemplars (e.g., select one clip from each 1/3 of an episode to ensure that clips are representative of the entire episode)
	Identify and code variables of interest	The variable(s) of interest are defined by the research question and should be coded with an eye toward potential confounding variables	Nonverbal emotion expressions toward White vs. Black characters	Account for other variables that might explain the cultural pattern (e.g., code verbal behavior via transcripts to examine whether it was confounded with and explained nonverbal bias)
Experiment	Generate experimental conditions	Select (or edit) snapshots from content analysis so that one condition contains snapshots consistent with the cultural pattern and another condition without that pattern (or with a reverse pattern)	Characters display more positive behavior toward White Targets than toward Black targets (cultural pattern) or not (control) across a large number of clips.	*Representative design*—The specific cultural pattern should not be isolated from the noise surrounding it. The environment should be left as unchanged as possible. A large sample of snapshots helps model extended exposure to a cultural pattern across different instantiations.
	Test exposure to pattern on outcome variables of interest	Identify variables of interest and test after exposure to experimental condition	Implicit associations between race and valence	

cultural pattern of interest and (at least) one set does not. These sets can be created simply by selecting appropriate snapshots or via editing of individual snapshots. Participants can then be randomly assigned to view a set of cultural snapshots that does or does not include the cultural pattern. Differences in outcomes between these conditions thus reflects the influence of cultural patterns on cognition, or by our definition, the influence of culture on cognition.

2.2 | What does a cultural snapshot study look like?

Cultural snapshots were developed to examine influences of culture on a broad array of psychological processes, ranging from perceptual and cognitive processes (e.g., Segall, Campbell, & Herskovits, 1963) to beliefs, ideologies, and social biases. We initially utilized this method to examine the cultural influence of subtle expressions of race bias (Weisbuch, Pauker, et al., 2009). We identified adult Americans as our human population of interest and popular prime-time television as a public environment commonly and repeatedly encountered by this population. Within this population of TV programs, we identified 11 programs that included a White main character who could be gender, age, and status matched to a Black main character. These programs collectively reached over 100 million Americans on a weekly basis. From each program, we sampled three episodes from Winter of 2006. From each episode, we set rules a priori for sampling 3 clips for both characters (6 total clips per episode), resulting in a set of 9 clips for each target character spread over 3 episodes. These clips were then edited to remove the sound and target character so that only co-characters could be seen. These edited clips were then rated by study-naïve coders (N = 23) for how positively the "seen" character(s) behaved toward the "unseen" character. The coders achieved high interrater reliability and the resulting aggregate scores could not have been biased by the target characters' race. These aggregate scores revealed that White characters exhibited more positive nonverbal behavior toward White co-characters than toward Black co-characters. Ultimately, through the use of cultural snapshots, we identified a cultural pattern of nonverbal race bias.

To examine cultural influence, however, it was critical to conduct experiments using these cultural snapshots. Our goal was to examine if perceivers' own racial cognitions would be influenced by exposure to a frequently encountered cultural pattern (nonverbal race bias). To create experimental conditions, we returned to the sample of clips from Study 1 and selected the two most positive and most negative clips for each target character. These clips were not visually edited (all characters could be seen) but were muted. The *traditional race bias* condition included those clips in which White characters were targets of co-characters' positive nonverbal behavior and clips in which Black characters were targets of co-characters' negative nonverbal behavior. The mirror image of this condition was the *reverse race bias* condition. A *control* condition included no identifiable pattern of nonverbal race bias. Participants each watched over 50 short silent TV that were consistent with their experimental condition, and then completed implicit measures of racial bias followed by explicit measures of racial bias. Across each of three experiments, participants in the traditional race bias condition exhibited heightened implicit and explicit race biases favoring White persons over Black persons, as compared to participants in the control and reverse bias conditions, with the latter exhibiting the lowest such bias. These three experiments included an exact replication at the measurement level (i. e., identical measures), conceptual replications between different measures, and a conceptual replication at the TV-clip level, in which the experimental conditions comprised the same patterns but via a new sample of TV clips.

There are several notable characteristics of these experiments. First, the cultural pattern of nonverbal race bias existed within a public environment consistently and commonly encountered by Americans (prime-time TV) and the causal influence of this cultural pattern was observed to occur through that same, perceptually rich, environment. Put differently, we experimentally modeled how a cultural pattern can exert widespread influence on a population of minds. Second, there existed considerable variability in the "noise" surrounding the cultural pattern (i.e., it occurred across otherwise quite different TV clips) to which participants were exposed, indicating that human minds can adapt to cultural patterns embedded in complex and variable ecologies. Collectively, these results highlight how cultural snapshots can be used to examine widespread influences of real cultural patterns on cognition.

More broadly, we believe that such cultural snapshots studies can fill critical voids in the scientific understanding of the influence of culture on cognition, and in the extent to which social-cognitive processes do (vs. can) operate on

social environments. In the following sections, we review the benefits of the cultural snapshots method to these two research domains, and in so doing, we derive the conceptual framework on which cultural snapshots are based.

3 | CONCEPTUAL FRAMEWORK: ADVANTAGES FOR CULTURAL PSYCHOLOGY

Cultural snapshots enable researchers of cultural dynamics, cultural transmission, and cultural differences to examine causal phenomena that are otherwise resistant to scientific inquiry. Each of these fields has a rich history, of course, and we intend for cultural snapshots to extend their scope rather than replace them. As detailed in what follows, meta-theoretical assumptions of the cultural snapshots methodology are derived from influential metatheories in different domains of cultural psychology and thus support the use of cultural snapshots across cultural psychology. We here describe the derivation of these assumptions and use the resulting framework to describe advantages of cultural snapshots for cultural dynamics and cultural differences.

3.1 | What is culture?

The theoretical background for cultural snapshots begins with the (mostly) uncontroversial assumption that humans are unable to communicate telepathically, and therefore, people must influence each other via the material world. Accordingly, we assume that influences of culture on an individual are mediated by patterns that occur in the material world. More specifically, as defined by Adams and Markus (2004),

> Culture consists of explicit and implicit patterns of historically derived and selected ideas, and their embodiment in institutions, practices, and artifacts; culture patterns may, on one hand, be considered as products of action, and on the other as conditioning elements of further action. (p. 341; italics in original; definition refines that of Kroeber & Kluckhohn, 1952),

In addition to highlighting how material patterns ("embodiment") are important to culture. Adams and Markus's influential definition is distinctive in that it is the product of an essay reviewing the myriad definitions of culture and the heavy criticisms that plague them. In particular, the emphasis on cultural patterns departs from the heavily critiqued tendency for social scientists to describe cultures as static, unchanging entities, or to equate culture with social identity (e.g., "Japanese people" as a culture; Hannerz, 1992; Hermans & Kempen, 1998; Hong, Morris, Chiu, & Benet-Martínez, 2000; Strauss & Quinn, 1992). Conversely, cultural *patterns* may be relatively static *or* dynamic, where consistency over time in cultural patterns reflects cultural stability whereas change to those patterns is equivalent to cultural change. We thus embrace the emphasis on *patterns* in defining culture, though our terminology departs slightly from that of Adams and Markus. Consistent with our goal of examining how people perceive and develop knowledge of culture, we use the phrase *cultural patterns* to refer strictly to patterns that can be observed via human senses (Adams and Markus' "embodiment").

3.2 | Where is culture?

In this article, we locate the contents of cultural patterns in "public representations." Sperber (1996) describes a representation as "something that represents something for someone" (p. 78) and suggests that public representations (e.g., utterances, behaviors, and artifacts) exist in the world external to minds, are derivative of the human minds that generate them, and represent something to the people who observe them. Hence, as with cultural patterns, public representations are material, are generated by humans, and influence humans. The relationship between cultural patterns and public representations should now be clear: we assume that cultural patterns are *collections* of public representations, which themselves exist in public environments. As typically defined, "patterns" are recurring and thus, cultural patterns will not be located in any single public representation. For example, contemporary American institutions include men more frequently than women in leadership positions (e.g., Carroll, 2004; Hegewisch, Williams, & Harbin, 2012; Refki, Eshete, & Hajiani, 2012). This is a cultural *pattern* that cannot be observed at any one moment in time.

One public representation of gendered institutional hierarchy (e.g., a specific man leading a board meeting) would not itself be considered a cultural pattern, even if the people who encounter it activate the mental representation "this man is in charge." Instead, the recurrence of similar public representations across situations and time is necessary to achieve the status of cultural pattern.

3.3 | How do people perceive culture?

Although cultural patterns are located in collections of public representations, scientific inquiry on public representations has almost exclusively focused on verbally communicated beliefs, including research on "the epidemiology of beliefs" (Boudry, Blancke, & Pigliucci, 2015; Claidiere, Scott-Phillips, & Sperber, 2014; Norenzayan & Atran, 2004; Sperber, 1996, 2009), "cultural dynamics" (Kashima, 2000, 2016), and "cultural transmission" (Bangerter & Heath, 2004; Berger & Heath, 2005; Fragale & Heath, 2004). Yet human life is perceptually rich, as is human culture, consisting of far more than words. We seek to understand public representations as part of this perceptually rich life. Cultural snapshots thus represent an application of a conceptual approach that includes but is not limited to verbally communicated public representations.

Our conceptual framework flexibly accommodates many different theories of culture by allowing public representations to vary in levels of abstraction, just as different approaches to examining culture can be identified along a continuum of abstraction. For example, an especially reductionist approach to culture might describe a public representation as

> large right hand with fingers and thumb clenched into palm with moderate force, quickly moving forward in space with a leftward trajectory ultimately making contact with left lower-quarter of a human face, which moves rapidly to the right and turns red.

This description could be contrasted with more abstract descriptions of the same action, which might include "punched someone in the face," "behaved aggressively," or even "threatened the status quo." We assume that all of the above can constitute public representations. Public representations can thus be described in terms of their more concrete physical (perceptual) features or their more abstract features, and we assume that concrete and abstract represent opposite poles of a continuum on which public representations, and thus cultural patterns, can be identified and examined.

Cultural snapshots can thus be used to test a broad array of hypotheses that exist within the bounds of extant assumptions in cultural psychology (Adams & Markus, 2004; Berger & Heath, 2005; Sperber, 1996, 2009). We here describe how research on cultural dynamics and cultural differences can gain explanatory power by incorporating cultural snapshots.

3.4 | Cultural dynamics

Cultural dynamics research explores cultural stability and change, and this research area is divided into macro-level versus micro-level research traditions (Kashima, 2016). Macro-level approaches in cultural dynamics aim to characterize the distribution of cultural information within a population. Cultural snapshots are transparently relevant to this approach, as they can be (and have been) used to characterize the distribution of cultural patterns. Conversely, the causal influence of culture on cognition has typically been examined via micro-level approaches that examine how public representations are interpreted, grounded (i.e., the meaning is agreed-upon), remembered, and reproduced. Hence, macro-level and micro-level approaches have typically been methodologically segregated. Cultural snapshots provide a unique means for linking macro-level to micro-level approaches, by examining how distributions of cultural patterns exert widespread influences on human minds. Put differently, the method can be used to examine how socially common cognitions are generated, maintained, or changed via cultural patterns.

3.4.1 | Intersubjective norms

These advantages of cultural snapshots can be illustrated with respect to the emerging view that *intersubjective norms*—beliefs about psychological processes and characteristics that are widespread in a culture—mediate the relationship between cultural patterns and human behavior (see Chiu, Gelfand, Yamagishi, Shteynberg, & Wan, 2010). For example, in one set of studies, cultural differences in beliefs about *others'* collectivism, internal/external attribution tendencies, and regulatory focus, respectively, accounted for cultural differences in compliance, person attributions, and counterfactual thinking (Zou et al., 2009). In another set of studies, parents' beliefs about normative values were predictive of the values that they intended to pass on—and actually did pass on—to their children (Tam, Lee, Kim, Li, & Chao, 2012). Intersubjective norms can govern cultural differences in behavior (e.g., Zou et al., 2009), can be influenced by institutional patterns such as job mobility and opportunities for gossip (Chen, Chiu, & Chan, 2009), and, once learned, can help people achieve "cultural competence" and acculturation (e.g., Kurman & Ronen-Eilon, 2004).

One prominent issue in this area regards how people develop intersubjective norms, and cultural snapshots provide a means for examining *how* people acquire these beliefs about others' beliefs. Extant research has documented that intersubjective norms differ between nations and explain international differences in cognition and behavior (see Chiu et al., 2010) yet has not investigated how these norms are learned, created, and distributed among a population to begin with. Speculation has focused on one-to-one verbal communication (e.g., discussing others' beliefs; Chiu et al., 2010), but it also seems reasonable that encounters with cultural patterns inform what people think people think. For example, frequent encounters with people directing positive emotion toward slim women may cause a person to learn that other people like slim women. To examine this learning process empirically, it is important that cultural patterns are always embedded in complex patterns of perceptual noise, as this noise may change or obscure how learn about what other people believe. For this reason, it is important that cultural snapshots incorporate perceptual noise by using recordings of cultural patterns encountered in daily life.

Cultural snapshots therefore enable scientists to examine where people get their beliefs about what other people think, do, or condone. In this respect, our studies to date have focused narrowly on the influence of seeing patterns of nonverbal behavior. For example, in a cultural snapshot study similar to the race studies described earlier, TV characters were more likely to exhibit positive nonverbal behavior toward unusually slim female characters than toward average-sized or heavy female characters (Weisbuch & Ambady, 2009). Participants in a follow-up experiment were randomly assigned to view cultural snapshots with this "pro-slim" pattern or to view cultural snapshots depicting the opposite ("pro-average size") pattern. Afterwards, participants identified the body size that they thought other women and men would value in women. Participants in the "pro-slim" condition identified a body that was slimmer than those in the "pro-average size" condition. These findings suggest that people draw inferences about intersubjective norms (at least with respect human body preferences) from cultural patterns of nonverbal bias. Critically, cultural patterns of nonverbal bias were embedded in complex and real perceptual environments such that learning processes were sensitive to this nonverbal pattern among the considerable noise that characterizes social environments.

Another recent study in a separate domain provides converging evidence. Study participants viewed cultural snapshots from alcohol commercials and were randomly assigned to either view snapshots in which positive nonverbal behavior was edited out or view the same snapshots in which neutral/negative nonverbal behavior was edited out. Extensive coding demonstrated that cultural snapshots were otherwise identical (e.g., character identities and brand name presentation) between the two conditions. Underage participants who saw alcohol paired with positive nonverbal behavior later reported that other people their age condone alcohol consumption, as compared to participants who had been exposed to pairings of negative nonverbal behavior and alcohol (Weisbuch, Treinen, Zad, & Lagerwaard, 2016). Together with evidence from the body-size studies, this research suggests that learning mechanisms sensitive to social covariation may play an important role in the development of intersubjective norms. More generally, it provides converging evidence that people do learn intersubjective norms from exposure to cultural patterns.

This research dovetails nicely with mass media research in similar domains. For example, the degree to which news reports highlighted problematic binge drinking was predictive of youth's intersubjective norms regarding drinking, a relationship that held over a 20-year period in the USA (Yanovitzky & Stryker, 2001). This research, like many other studies in the mass media effects tradition, put considerable effort toward obtaining a large sample of news stories and using an unbiased metric for coding of those stories. Cultural snapshots take a similar approach but with the key addition of using those materials to create a true experiment to examine causality. Moving beyond extant approaches to mass media effects, then, cultural snapshots provide a methodological platform for exploring a variety of hypotheses about the causes of intersubjective norms.

In fact, given their apparent role in cultural differences (Zou et al., 2009) and cultural transmission (Tam et al., 2012), intersubjective norms may mediate the influence of cultural patterns on individual beliefs and behaviors. Specifically, people may conform their cognitions and behaviors to be consistent with intersubjective norms (Chiu et al., 2010). We found precisely this pattern. Indeed, in the body-size study, beliefs about others' body-size preferences mediated the influence of cultural patterns on women's personal preferences for their own body size and on their personal attitudes toward slim and heavy women (Weisbuch & Ambady, 2009). Following these studies, we suspected that affiliation needs might be a precondition for cultural patterns to influence personal beliefs and behaviors via intersubjective norms. Indeed, in the alcohol study noted above (Weisbuch et al., 2016), we hypothesized and found that cultural patterns only influenced the drinking intentions of participants with strong affiliation needs (i.e., those most motivated to conform to intersubjective norms). Thus, cultural snapshots can provide important insight into the causes of intersubjective norms, as well as the downstream consequences of those norms.

3.4.2 | Cultural learning

Learning is necessary for cultural patterns to exert lasting influence on individual cognitions. Put differently, learning is necessary for acculturation (Berry, 1992; Brislin, Landis, & Brandt, 1983). Fortunately, an enormous research literature on learning provides considerable information about the processes likely to facilitate acculturation, including conditioning, implicit/statistical learning, social referencing, and so on (Conway & Christiansen, 2006; Hofmann, de Houwer, Perugini, Baeyens, & Crombez, 2010; Houwer et al., 2001; Klinnert, Emde, Butterfield, & Campos, 1986; Reber, 1989). Cultural snapshots provide an excellent means for marrying this literature with acculturation research and for examining how people may develop similar cognitive processes and beliefs by virtue of common exposure to cultural patterns.

Regionally common perceptual processes, for example, may be learned via exposure to cultural patterns. Specifically, the scenes and statements that characterize public representations, and that appear in cultural snapshots, include statistical dependencies, which can range from low-level physical features (e.g., proximity and luminance) to higher level social variables (e.g., race and emotion). Collectives may learn which features appear together, and such learning may direct their attention accordingly. For example, scene perception is an expansive research area in vision science, and considerable evidence describes low-level physical dependencies that occur across scenes as well as patterns that differentiate scene categories from each other (e.g., Geisler, 2008; Torralba & Oliva, 2003). Average images of forest and mountains systematically differ in their patterns of object orientation and spatial frequency, and natural scenes vary on these dimensions in a different manner than do man-made objects and scenes (Torralba & Oliva, 2003). Of course, orientation and spatial frequency are only two of many low-level properties available in scenes and people exhibit statistical learning of those scene properties, ultimately changing how attentional processes are deployed and enabling people to quickly identify objects within scenes (Chun & Jiang, 1998, 1999; Fiser & Aslin, 2001, 2005). Unfortunately, the large research literature on these phenomena have yet to be fully applied to understanding how people exposed to similar cultural patterns seem to develop similar cognitive processing patterns. Cultural snapshots can be used to address this question.

Although this area of inquiry has yet to be fully explored, the foundations have been laid. A half-century ago, Segall, Campbell, and Herskovits (1963) found that susceptibility to geometric illusions (e.g., the Muller-Lyer illusion) was strongest in cultures whose members frequently interpreted 2-D acute and obtuse angles as part of 3-D

rectangular objects—those who lived in highly carpentered (urban) environments or frequently observed photographs. These correlational data suggested that even speedy visual processes were shaped by cultural patterns. However, absent experimental methods, the influence of culture and learning processes on perception was more conjecture than conclusion.

Forty years later, Miyamoto et al. (2006) used a cultural snapshots approach to explore how the visual features of scenes might give rise to regionally common cognitive processing styles. These researchers sampled images from small, medium, and large cities in Japan and the United States, finding that Japanese scenes were more visually complex than American scenes, consistent with Nisbett and colleagues' (Nisbett, Peng, Choi, & Norenzayan, 2001) speculation that the complexity of agrarian Eastern cultures (vs. fishing/herding Greek culture) would produce complex environments. These cultural snapshots were used in a second study which manipulated public representations: Participants who viewed snapshots of Japanese scenes subsequently exhibited more holistic attention patterns than those who had viewed snapshots of American scenes. This evidence was consistent with the authors' hypotheses that cultural differences in holistic versus analytic cognition stem in part from environmental differences. This research thus measured cultural patterns (of scene complexity) prevalent in a public environment, included thoughtful sampling of a large number of images, and then demonstrated that this cultural pattern can influence cognition (attention). By using cultural snapshots in a cross-cultural study, the authors were able to provide causal evidence for the influence of culture on an important and commonly observed difference in attention.

3.4.3 | Cultural differences

Cultural snapshots could be quite informative to understanding cultural differences, but with the exception of the study reviewed in the prior paragraph, this method has only been used in a limited fashion in cross-cultural research. Nonetheless, cross-cultural research has revealed a plethora of consistent cultural differences across a range of domains, including cultural differences in how individuals process scenes (e.g., holistic versus analytic processing), the causal attributions they make to explain human behavior (e.g., situational vs. dispositional attributions), and how individuals construe the self (e.g., interdependent vs. independent self; see Markus & Kitayama, 1991). Although cultural psychology has provided a wealth of information about cultural differences, and has generated complex theoretical models to help explain and predict those differences, what is missing is a clear link between the cultural ingredients proposed to cause cultural differences and the impact of those ingredients on empirically observed differences (Matsumoto & Yoo, 2006). More simply, what are the critical ecological variables (or public representations) that produce such cultural variation?

It might be said that most cultural psychologists understand culture as a dynamic process in which humans create cultural products (i.e., public representations) and in which those cultural products exert an influence on humans (see Adams & Markus, 2004). However, existing research on cultural differences has primarily examined the influence of cultural beliefs and values on public representations. These studies aim to document the existence of a hypothesized cultural difference in public representations, such as magazine advertisements (e.g., Han & Shavitt, 1994; Kim & Markus, 1999; Stephens, Markus, & Townsend, 2007), news media (e.g., Lee, Hallahan, & Herzog, 1996; Markus, Uchida, Omoregie, Townsend, & Kitayama, 2006; Menon, Morris, Chiu, & Hong, 1999; Miyamoto, Knoepfler, Ishii, & Ji, 2013; Morris & Peng, 1994), or proverbs (e.g., Peng & Nisbett, 1999; Weber, Hsee, & Sokolowska, 1998). For example, in a recent meta-analysis, Morling and Lamoreaux (2008) found that public representations sampled in North America were more individualistic and less collectivistic (e.g., magazine advertisements with distinctiveness appeals, high-intensity emotion, or low scene context integration) than those sampled in East Asia. Studies in cultural psychology, such as these, have primarily examined cultural patterns in public representations as outcomes (and thus as a reflection of cultural differences), rather than as potential causes of cultural differences in cognition or preferences.

A handful of exceptions have examined the cross-cultural influence of cultural patterns on social cognition and preferences (e.g., Miyamoto et al., 2006; Tsai et al., 2007). Tsai and colleagues found that best selling children's storybooks in the United States depicted people experiencing excitation more than storybooks in Taiwan, whereas Taiwanese storybooks depicted people experiencing calmness more frequently. In a follow-up study, hearing a single story about an excited character or a calm character caused children to prefer excited or calm states, respectively. The research of Miyamoto et al. (2006) and of Tsai and colleagues were the only cross-cultural studies we could locate that fit the cultural snapshots methodology in that they identified a cultural pattern and manipulated that pattern in naturally occurring perceptual noise.

There is related work, however, that is at least a scientific cousin of cultural snapshots. Specifically, work on situation sampling has examined the self-reported frequencies with which people in different cultures encounter specific situations. Critically, this work examines how reading about culturally specific situations (or imagining oneself in them) can cause people to have cognitions typically observed in that culture (e.g., Boiger, De Deyne, & Mesquita, 2013; Kitayama et al., 1997; Morling, Uchida, & Frentrup, 2015; Morling et al., 2002; Savani et al., 2011). For example, Morling et al. (2002) sampled situations from American and Japanese respondents that involved social influence (changing other people, events, or objects by their own accord; e.g., "I told my sister she needs to take off her shoes when she comes to my house") or social adjustment (adjusting yourself to other people, events, or objects; e.g., "I let my sister wear her shoes in my house, even though I make everyone else remove their shoes"). Participants were asked to describe personally experienced situations involving social influence or social adjustment. American participants recalled more social influence (vs. social adjustment) situations, whereas Japanese participants recalled more social adjustment (vs. social influence) situations. From the more than 1,300 influence and adjustment situations generated by participants, the researchers randomly sampled 320 (with equal numbers of influence and adjustment situations generated by Japanese and American participants) for a follow-up experiment. In this follow-up experiment, and regardless of participants' own cultural background, both Japanese and American participants responded with more feelings of efficacy (typical of Americans) when exposed to descriptions of social influence situations and more feelings of relatedness (typical of Japanese) when exposed to descriptions of social adjustment situations.

The method of situation sampling is a close cousin to cultural snapshots but also differs in some ways from cultural snapshots. First, in situation sampling, there is an overwhelming focus on sampling and coding *verbally* communicated cultural practices (e.g., coding people's verbal description of a situation when they accommodated to another person; Boiger et al., 2013; Kitayama et al., 1997; Morling et al., 2002, 2015; Savani et al., 2011). While it has been argued that language plays a powerful role in transmitting culture (Lau, Lee, & Chiu, 2004; Maass, Karasawa, Politi, & Suga, 2006; Morris & Peng, 1994; Sperber, 1996), it is only one of several ways in which people encounter cultural patterns (e.g., images, spatial relationships, and nonverbal behavior). Many causes of cultural differences may be missed in research that focuses solely on language, and in this respect, cultural snapshots offer a more inclusive formulation for examining the psychological impact of situations and cultural patterns. Second, situations are often sampled from memory, which has its own biases and capacity. This limitation does not compromise the entire situation sampling methodology but should limit researchers' conclusions about the breadth with which the results apply. Finally, and by design, situation-sampling studies do not typically measure the precise ingredients that constitute a cultural pattern or the situation itself, making it difficult to identify the processes through which those noisy situations contribute to cognition. The absence of perceptual noise in the presentation of situations to participants leaves it unclear if the results would apply when the content of the situation is not made obvious via a verbal description. That is, would those results apply to the common experience of directly encountering a situation versus encountering a conceptual description (or simulation) of that experience?

This latter point helps to illustrate the difference between the two cross-cultural snapshot studies reviewed above (Miyamoto et al., 2006; Tsai et al., 2007) and the situation sampling method. For example, Miyamoto et al. (2006) not only found that exposing people to snapshots of Japanese and American scenes influenced their visual attention but also (a) quantified the precise perceptual pattern that differed between Japanese and American scenes

(visual complexity) and (b) demonstrated that this pattern influenced participants even when that pattern was embedded in natural perceptual noise. Cultural snapshots emphasize the importance of identifying the precise cultural pattern of interest and measuring the features of this pattern in order to examine their causal influence.

4 | CULTURAL SNAPSHOTS: A TOOL FOR EXAMINING SOCIAL COGNITION

We view cultural snapshots as a methodological advance for cultural psychology because of the otherwise limited methods available for examining causal influences of culture on cognition. Yet cultural snapshots also provide a methodological advance for an area rich in experimental designs: social cognition. Specifically, and as explained below, cultural snapshot experiments enable scientists to identify how people typically process information.

4.1 | Importance of representative design in understanding social cognition

Over 30 years ago, McArthur and Baron (1983) argued that extant research on impression formation (how people form impressions of each other) had been limited to explaining and examining post-perceptual phenomena, as if perception—and the world represented via perception—played little role in impression formation. In a similar approach, but applied to decision making, Gigerenzer (e.g., Todd & Gigerenzer, 2000) and others (e.g. Simon, 1991) argued that so-called cognitive biases simply reflect the environments in which those biases develop. That is, human environments typically require fast and cognitively frugal decisions from minds that are not omniscient; in this respect, learned or inherited cognitive biases optimize decisions in typical human environments. McArthur and Baron based their critique on the ecological approach introduced in perceptual science by Gibson (1979) whereas Gigerezer and colleagues based their critique—in part—on the ecological approach introduced by Brunswik (1956). Cultural snapshots were inspired by both of these original sources, as well as their applications in modern social cognition (Gigerenzer & Goldstein, 1996; McArthur & Baron, 1983).

4.1.1 | The role of confounding variables in traditional experiments

Both Brunswik (1956) and Gibson (1979) argue that each public environment includes a wide variety of naturally confounded elements. They argue that human perception and cognition operate (and adjust) to identify specific patterns in those naturally complex and confounded environments.

Indeed, this understanding of psychological processes underlies historical advances in experimental methodology. For example, increased use of multi-factor experimental designs and complex stimuli in social cognition research have enabled closer approximations of real, complex environments without sacrificing control. Experimental methods in social cognition have thus been developed to model the complexity of social life, while advancing scientific understanding of conformity, priming, and many other phenomena that describe the causal influence of public environments on individual cognitions (e.g., Bargh, 2006; Cialdini & Goldstein, 2004; Hofmann, Asnaani, & Hinton, 2011; Petty & Brinol, 2010; Zebrowitz, 2011).

Multi-factor experimental designs in social cognition are nonetheless consistent with simpler experimental approaches in an emphasis on eliminating confounds. The elimination of confounding variables in experimental research is of course necessary for isolating causal influences but, ironically, poorly represents real social environments, which are naturally confounded. As Brunswik noted over 70 years ago (as reviewed in Brunswik, 1956), most naturally occurring stimuli are statistically associated with many other stimuli such that any *real* social setting is saturated with numerous confounding variables. Even low-level features (e.g., size and location) are correlated in natural scenes (Geisler, 2008; Graham & Field, 2007; Long, Yang, & Purves, 2006; Ruderman & Bialek, 1994; Simoncelli & Olshausen, 2001; Srivastava, Lee, Simoncelli, & Zhu, 2002; Torralba

& Oliva, 2003), pairs of words vary in how frequently they co-occur in natural texts (Lund & Burgess, 1996; Spence & Owens, 1990), and specific ethnicities, genders, and ages are more likely to be seen in some places than others (Coltrane & Messineo, 2000; Dill, Gentile, Richter, & Dill, 2005; Mastro & Stern, 2003; Smith & Granados, 2009; Taylor & Stern, 1997; Wilkes & Valencia, 1989). These are a few of an almost infinite number of possibilities for statistical confounds among stimuli in real social settings, and psychological processing may be oriented to those confounds. With cultural snapshots, we aim to reconcile the importance of eliminating confounds for causal conclusions with the importance of preserving "natural confounds" in an effort to examine *typical* social-cognitive processing.

To explain the importance of retaining noise and "natural confounds" in psychological research, Brunswik (1956) and others argue that human minds adapt to functionally relevant information that is embedded within naturally confounded and noisy environments (Brunswik, 1956; Gibson & Pick, 2000; Gibson, 1979; McArthur & Baron, 1983). *Attunement* (Gibson & Pick, 2000; Gibson, 1979; McArthur & Baron, 1983), for example, refers to processes through which organisms learn (over the lifetime of a species or an individual) to distinguish functionally relevant stimuli (human examples: anger vs. joy expressions and interracial vs. intraracial conflict) from the noisy environments in which they appear. Attunement to any stimulus may generalize to new settings but this is not a given, such that a stimulus may not be selected for processing in the same way across different environments. Robbing stimuli of their natural environments may thus lead to conclusions that reflect what is *possible* rather than what is *typical*, even in reference to basic visual processes (e.g., Biederman, Mezzanotte, & Rabinowitz, 1982; Brunswik, 1956). Conversely, the manipulation of variables within their natural settings can provide critical insights into how people naturally process and are influenced by social stimuli.

4.1.2 | Representative design: Cultural snapshots versus traditional experiments

People encounter specific emotions, persuasive arguments, and other social stimuli within specific arrays of "noise" that characterize an environment or context, so the stimulus of interest (e.g., anger expression, source credibility), and adaptive responses to that stimulus may be dependent on the type of "noise" contextualizing it. Experiments with multi-factor designs and/or designs that insert noise to stimulus presentation improve on more reductionistic designs, but statistical dependencies so saturate natural contexts that it is difficult to determine *a prior* which specific dependencies are central to a cultural pattern. Accordingly, Brunswik (1956) argued that experimental materials should be representative of natural settings to explore how cognitive processing typically operates. Hence, the cultural snapshots methodology emphasizes *representative design* (Brunswik, 1956).

Representative design of cultural snapshots can be evaluated at multiple levels noted in the guidelines above, just as epidemiological studies can be evaluated for participant sampling procedures at several levels (Bartlett, Kotrlik, & Higgins, 2001; Cochran, 1977; Kalsbeek & Heiss, 2000). For example, in the study on race bias reviewed above, it was possible to design a study in which the sampled genre (prime time) was representative of the 5 hr of TV Americans watch daily, the sampled programs were representative of prime-time television, the sampled episodes were representative of the program, and the sampled clips were representative of the episode. Representative design is critical for the use of cultural snapshots in social cognition research, as a substantial benefit of this approach is examining how social-cognitive processes typically operate on the social environment.

More broadly, representative design describes the extent to which variables of interest (e.g., emotion expressions) are presented in the complexity and richness of their natural environment. Although cultural snapshots do not meet this ideal in all ways—videos and images of environments do not include some contextual features available in direct encounters with those environments—they surpass traditional experiments in their representation of environmental "noise." Traditional experiments understandably circumvent representative design in favor of control and strong interpretations of causality, even if these interpretations may be questionable with respect to the operation of a

cognitive process in the more complex natural world (Kingstone, 2009; Neisser, 1976; Schmuckler, 2001; Zaki & Ochsner, 2009).

Moving beyond Brunswik's (1956) somewhat impractical "diary" approach—in which an experimenter shadows a participant through their natural life and takes objective measures of the environment—and expanding on decision-making experiments in the "fast and frugal" tradition (e.g., Gigerenzer & Goldstein, 1996), we use cultural snapshots to experimentally manipulate social variables in a manner consistent with representative design. As detailed above (see Table 1), purposeful sampling of many cultural snapshots is required to provide meaningful estimates of cultural patterns. Study participants are thus presented with social variables as they naturally occur within complex settings, and their responses can thus be used to examine how people *typically* perceive and think about other people. One natural application of cultural snapshots regards social norms, which are similar to, but broader than intersubjective norms.

4.2 | Cultural snapshots in social cognition: Social norms and social influence

We believe that the result is a methodology that can address critiques of social cognition research, especially whether cognitive processes discovered in laboratory experiments apply to daily social life (see Bargh, 2006). Information processing approaches to norms take on a different quality than cultural approaches to norms. For example, one information-processing model of norms describes how people recruit cognitive representations of norms in decision making and suggests that these representations might be both exemplar based and category based, at times including features *and* context (Kahneman & Miller, 1986). Yet it remains this model focused on the structure and influence of norm representations, rather than the origins of those representations, and a variety of encoding processes may help to explain how people develop specific norm representations from perceiving the behavior of other people. It remains unclear how encoding processes attune to frequent (normative) behavioral patterns, which features of those patterns are selected for encoding, and which contextual elements of those patterns are included in the resulting representations. Cultural snapshots can be used to examine such questions regarding the translation of perceived behavior into norm representations, as well as questions about how people develop accurate versus biased norm representations (Miller & Prentice, 1994).

Perhaps more importantly for social cognition, norm inferences are also relevant to conformity, with classic studies suggesting that people comply with majority (normative) behavior but that they convert their beliefs to be in concert with consistent minorities (Asch, 1956; Moscovici, 1980). Majority and minority influence can also be examined in a manner that extends these topics to naturally encountered behaviors. Indeed, classic work on these phenomena typically modeled majority and minority behavior with real groups in laboratories, and such work is now complemented by research in which individual participants are explicitly told how many people support a particular viewpoint (e.g., Erb, Bohner, Hewstone, Werth, & Reinhard, 2006; Stangor, Sechrist, & Jost, 2001). These paradigms can be used to answer a wide variety of questions about conformity but stop short of identifying how people conform to many of the behavioral patterns that they naturally encounter. For example, we have observed that people "conform" to attitudes implied by perceived covariation between nonverbal emotion and racial categories, body sizes, or beverages (Weisbuch & Ambady, 2009; Weisbuch et al., 2009; Weisbuch et al., 2016). Specifically, a majority of people depicted in cultural snapshots (of the studies cited above) behaved positively toward a specific race, body size, or beverage. In these studies, majority influence might cause perceivers to report positive attitudes toward those races, body sizes, and beverages. Although most participants succumbed to such majority influence, many did not, and the processing differences among individual participants remains unclear. Moderators of the effectiveness of social influence seem quite relevant here, such as the motives of message recipients (e.g., Wood, 2000).

In general, a wide variety of questions remain unanswered regarding how people conform to the behaviors they naturally encounter including how elaboration likelihood might shape conformity to behaviors observed in complex environments (Petty & Cacioppo, 1986; Petty & Wegener, 1999), the cultural frequency with which people encounter explicit statements about what "most people" think (Atkin, 1969; McAllister & Studlar, 1991), as well as the manifestation and influence of minority versus majority influence as it occurs in daily environments. Ecological

theories suggest that the complexity of ecology as well as the critical role of attunement might contribute novel answers to these questions—answers which are not testable in typical experiments but are testable via cultural snapshots experiments. More broadly, cultural snapshots research on norms and conformity can mutually benefit research on social cognition and cultural psychology by providing an experimental model for how information processing supports collective cognition.

4.3 | Cultural snapshots in social cognition: Automaticity and associative learning

The use of cultural snapshots methodology may also be used to answer calls for a paradigmatic transition from basic understanding of automaticity in social-cognition to how such automaticity functions in our social worlds (Bargh, 2006). Through cultural snapshots, it is possible to examine the extent to which people efficiently, unintentionally, or uncontrollably activate cognitions upon encountering features of public environments, and such work would not only address skepticism about the real-world applications of priming but would also offer new theory-driven insights into the nature of priming and automaticity. Theoretical insights may accrue by virtue of the inclusion of factors that are typically controlled in laboratory experiments. As noted, public environments are saturated with confounded features, such that the automatic influence of any one feature might only occur when embedded with its typical confounds (i.e., only in its typical setting) whereas an entirely different influence might occur when the feature is isolated from that setting or when that feature appears in a different setting. Of course, many priming experiments demonstrate contextual boundary conditions for priming (see Loersch & Payne, 2011), but we are drawing attention to the idea that a stimulus feature might *typically* prime cognitions that are not primed in more reductionist experimental paradigms. In fact, ecological theorizing suggests that people attune to the conceptual meaning of complex stimulus configurations. Such complexity can refer to a single object (e.g., a person is a complex stimulus configuration), an object-in-context (e.g., a person in an office versus a field), or the context itself (e.g., an office vs. a field), and any or all might consistently prime cognitions. Accordingly, research with cultural snapshots offers an opportunity for automaticity researchers to enrich scientific understanding of priming "in the wild."

The automaticity of social cognition is sometimes explored with respect to *learning*, or the simple associative processes through which people might develop beliefs, attitudes, and behaviors. Importantly, many of these experiments create extremely complex stimulus environments from which people might learn specific patterns, and thus might provide a basis for hypotheses about how people might automatically learn social cognitions, attitudes, and behaviors (Conway & Christiansen, 2006; Hofmann et al., 2010; Houwer et al., 2001; Klinnert et al., 1986; Reber, 1989). However, the complex noise presented in these studies is not typically derived from an analysis of the environments people encounter and so underestimate the influence of natural confounds. Nonetheless, the few cultural snapshots studies that do exist on this topic suggest that some type of associative learning may operate within natural settings.

In our prior cultural snapshots research, we found that participants were unable to recall the pattern of statistical dependencies that emerged over time, even when offered a cash incentive for doing so (Weisbuch & Ambady, 2009; Weisbuch et al., 2009). Conversely, mounting evidence in well-controlled experimental studies suggests that low-level awareness of dependencies is important for some types of learning (e.g., Dawson, Rissling, Schell, & Wilcox, 2007; Pleyers, Corneille, Luminet, & Yzerbyt, 2007), though measures of such low-level awareness (often, recognition) are not equivalent to some colloquial definitions of awareness (stated memory for a simple pattern). More generally, and independent of conscious awareness, it does appear that focal attention is necessary for many forms of statistical learning in visually complex scenes and may thus be necessary even in typically encountered environments—though this remains an empirical question as do so many other questions regarding automaticity. In at least one sense of "awareness," perceived culture may influence cognitive styles, attitudes, and norm inferences in a manner that occurs outside of awareness.

4.4 | Alternative approaches to cultural influence: Limitations of cultural snapshots

In the preceding sections, we have identified shortcomings in extant research in cultural psychology and in social cognition and argued that cultural snapshots can be used to address some of these shortcomings. Yet such reasoning cuts both ways, as cultural snapshots have limitations that are addressed by other approaches. First, cultural snapshots take an experimental approach and although we make an effort to avoid reductionism, we do not avoid it entirely. Specifically, (a) any single cultural snapshot fails to capture what came before or after in the same public environment; (b) cultural snapshots could but do not typically include smell, taste, or touch, all of which may contribute important perceptual noise; and (c) cultural snapshots do not account for participants' actual experience in public environments (e.g., watching TV with several friends). In these respects, cross-cultural research is superior in that it does not exclude any aspect of natural, lifelong experience in examining the relationship between culture and cognition. Of course, cross-cultural research also does not typically specify the precise causes of cultural differences in cognition, as noted above. For this reason, we do not regard either scientific approach as broadly superior but instead complementary.

Second, the cultural snapshots approach is less appropriate than others for examining how people contribute to cultural patterns. Conversely, situation-sampling approaches construct conceptual descriptions of cultural settings from the memories of real participants. For example, individual participants in some situation-sampling studies write about a particular type of situation they have encountered, thus communicating their psychological construal of a situation to other people and thereby shaping others' responses to that situation. In one study, participants in Japan and the United States wrote about situations that either increased or decreased their self-esteem. New participants then read a number of these and for each, indicated if and how their self-esteem would have been influenced (Kitayama et al., 1997). "Success" descriptions generated by Americans were imagined to be more influential for (increasing) self-esteem than those generated by Japanese, whereas "failure" descriptions generated by Japanese were imagined to be more influential for (decreasing) self-esteem than those generated by Americans. The authors drew conclusions about how culture is constructed to support self-enhancement or self-criticism. Again, there is a trade-off in the strengths and weakness of these two methodologies that make them complementary rather than in competition. The use of participant descriptions in situation-sampling permits tests of the influence of psychological construals on cultural differences in cognition, whereas the use of recordings of public representations permits tests of the direct influence of cultural patterns on cognition.

Third, cultural snapshots do not model the give and take of interpersonal communication that (a) contributes to cultural patterns and (b) almost certainly help to generate shared cognition. Instead, cultural snapshots focus primarily on the "take" side of communication– perceiving others' behavior. Indeed, neo-diffusionist theories emphasize that perceivers learn cultural information via material communication but that the influence of such learning on shared cognition depends on whether those perceivers do (or do not) pass on that information still other people (for a review, see Kashima, 2008). Hence, these theories are often tested in interpersonal communication paradigms in which key questions regard the types of information that people prefer to communicate and that "receivers" tend to remember (Heath, Bell, & Sternberg, 2001; Norenzayan, Atran, Faulkner, & Schaller, 2006; Schaller, Conway, Gideon, & Tanchuk, 2002). For example, in one rich paradigm based on classic rumor transmission research, Kashima and others (e.g., Kashima, 2000; Lyons & Kashima, 2003; Peters, Kashima, & Clark, 2009) have examined how shared assumptions shapes cultural transmission and the emergence of shared cognition. Data generated through this methodology allows for many conclusions, including how consensual knowledge informs (a) the information that people choose to communicate, (b) the communicated information that people remember, and perhaps ultimately (c) what people within a culture regard as knowledge. Cultural snapshots permit tests of similar questions but on a broader scale, in that this methodology focuses less on individual to individual transmission of beliefs and focuses more on broad transmission of beliefs from widely encountered material information, thus helping to wed macro- and micro-approaches to culture.

5 | CONCLUSION

One prominent assumption in social and cultural psychologies is that shared environments strongly influence individual cognitions, and several methodologies exist for testing such influence. Cultural snapshots are unique among these methods in

combining representative measurement of culture with experimental studies that manipulate cultural patterns with minimal experimenter interference. The result is a method that allows for broad conclusions regarding the influence of cultural patterns on individual and collective cognition. To date, cultural snapshots research has largely focused on television and print media, but with the increased availability of personal image and video recordings, and the saturation of social media in many cultures, we look forward to the use of cultural snapshots in exploring how such "digital culture" shapes cognition.

REFERENCES

Adams, G., & Markus, H. R. (2004). Toward a conception of culture suitable for a social psychology of culture. In M. Schaller, & C. S. Crandall (Eds.), *The psychological foundations of culture* (pp. 335–360). Mahwah, NJ: Lawrence Erlbaum Associates. https://doi.org/10.4324/9781410608994

Asch, S. E. (1956). Studies of independence and conformity: I. A minority of one against a unanimous majority. *Psychological Monographs: General and Applied*, 70(9), 1–70. https://doi.org/10.1037/h0093718

Atkin, C. K. (1969). The impact of political poll reports on candidate and issue preference. *Journalism & Mass Communication Quarterly*, 46, 515–521. https://doi.org/10.1177/107769906904600308

Bangerter, A., & Heath, C. (2004). The Mozart effect: Tracking the evolution of a scientific legend. *British Journal of Social Psychology*, 43, 605–623. https://doi.org/10.1348/0144666042565353

Bargh, J. A. (2006). What have we been priming all these years?: On development, mechanisms, and ecology of nonconsious social behavior. *European Journal of Social Psychology*, 36, 147–168. https://doi.org/10.1002/ejsp.336.What

Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational research: Determining appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal*, 19(1), 43–50. https://doi.org/10.1109/LPT.2009.2020494

Berger, J. A., & Heath, C. (2005). Idea habitats: How the prevalence of environmental cues influences the success of ideas. *Cognitive Science*, 29, 195–221. https://doi.org/10.1207/s15516709cog0000_10

Berry, J. W. (1992). Acculturation and adaptation in a new society. *International Migration*, 30, 69–85.

Biederman, I., Mezzanotte, R. J., & Rabinowitz, J. C. (1982). Scene perception: Detecting and judging objects undergoing relational violations. *Cognitive Psychology*, 14(2), 143–177. https://doi.org/10.1016/0010-0285 (82)90007-X

Boiger, M., De Deyne, S., & Mesquita, B. (2013). Emotions in "the world": Cultural practices, products, and meanings of anger and shame in two individualist cultures. *Frontiers in Psychology*, 4(867), 1–14. https://doi.org/10.3389/fpsyg.2013.00867

Boudry, M., Blancke, S., & Pigliucci, M. (2015). What makes weird beliefs thrive? The epidemiology of pseudoscience. *Philosophical Psychology*, 28, 1177–1198. https://doi.org/10.1080/09515089.2014.971946

Brislin, R. W., Landis, D., & Brandt, M. E. (1983). Conceptualizations of intercultural behavior and training. In D. Landis, & R. W. Brislin (Eds.), *Handbook of intercultural training: Issues in theory and design* (pp. 1–35). Elmsford, NY: Pergamon Press.

Brunswik, E. (1956). *Perception and the representative design of psychological experiments* (2nd ed.). Berkely, CA: University of California Press.

Carroll, S. J. (2004). Women in state government: Historical overview and current trends. *The Books of the States*, 1–11. Retrieved from http://www.cawp.rutgers.edu/sites/default/files/resources/womeninstategov_overviewandtrends.pdf

Chen, J., Chiu, C.-Y., & Chan, S. F. (2009). The cultural effects of job mobility and the belief in a fixed world: Evidence from performance forecast. *Journal of Personality and Social Psychology*, 97, 851–865. https://doi.org/10.1037/a0015950

Chiu, C.-Y., Gelfand, M. J., Yamagishi, T., Shteynberg, G., & Wan, C. (2010). Intersubjective culture: The role of intersubjective perceptions in cross-cultural research. *Perspectives on Psychological Science*, 5(4), 482–493. https://doi.org/10.1177/1745691610375562

Chun, M. M., & Jiang, Y. (1998). Contextual cueing: Implicit learning and memory of visual context guides spatial attention. *Cognitive Psychology*, 36(1), 28–71. https://doi.org/10.1006/cogp.1998.0681

Chun, M. M., & Jiang, Y. (1999). Top-down attentional guidance based on implicit learning of visual covariation. *Psychological Science*, 10(4), 360–365. https://doi.org/10.1111/1467-9280.00168

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, 55, 591–621. https://doi.org/10.1146/annurev.psych.55.090902.142015

Claidiere, N., Scott-Phillips, T. C., & Sperber, D. (2014). How Darwinian is cultural evolution? *Philosophical Transactions of the Royal Society B: Biological Sciences*, 369, 20130368–20130376. https://doi.org/10.1098/rstb.2013.0368

Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). New York: John Wiley & Sons.

Coltrane, S., & Messineo, M. (2000). The perpetuation of subtle prejudice: Race and gender imagery in 1990s television advertising. *Sex Roles*, 42, 363–389. https://doi.org/10.1023/A:1007046204478

Conway, C. M., & Christiansen, M. H. (2006). Statistical learning within and between modalities: Pitting abstract against stimulus-specific representations. *Psychological Science*, 17, 905–912. https://doi.org/10.1111/j.1467-9280.2006.01801.x

Dawson, M. E., Rissling, A. J., Schell, A. M., & Wilcox, R. (2007). Under what conditions can human affective conditioning occur without contingency awareness? Test of the evaluative conditioning paradigm. *Emotion*, 7, 755–766. https://doi.org/10.1037/1528-3542.7.4.755

De Vreese, C. H., Boomgaarden, H. G., & Semetko, H. A. (2011). (In)direct framing effects: The effects of news media framing on public support for Turkish membership in the European Union. *Communication Research*, 38, 179–205. https://doi.org/10.1177/0093650210384934

Dill, K. E., Gentile, D. A., Richter, W. A., & Dill, J. C. (2005). Violence, sex, race, and age in popular video games: A content analysis. In *Featuring females: Feminist analyses of media* (pp. 115–130) Washington, DC: American Psychological Association. https://doi.org/10.1037/11213-008

Erb, H.-P., Bohner, G., Hewstone, M., Werth, L., & Reinhard, M.-A. (2006). Large minorities and small majorities: Interactive effects of inferred and explicit consensus on attitudes. *Basic and Applied Social Psychology*, 28, 221–231. https://doi.org/10.1207/s15324834basp2803_2

Fiser, J., & Aslin, R. N. (2001). Unsupervised statistical learning of higher-order spatial structures from visual scenes. *Psychological Science*, 12, 499–504.

Fiser, J., & Aslin, R. N. (2005). Encoding multielement scenes: Statistical learning of visual feature hierarchies. *Journal of Experimental Psychology: General*, 134, 521–537. https://doi.org/10.1037/0096-3445. 134.4.521

Fragale, A. R., & Heath, C. (2004). Evolving informational credentials: The (mis)attribution of believable facts to credible sources. *Personality and Social Psychology Bulletin*, 30, 225–236. https://doi.org/10.1177/0146167203259933

Geisler, W. (2008). Visual perception and the statistical properties of natural scenes. *Annual Review of Psychology*, 59, 167–192. https://doi.org/10.1146/annurev.psych.58.110405.085632

Gibson, E. J., & Pick, A. D. (2000). *An ecological approach to perceptual learning and development*. New York: Oxford University Press.

Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston: Houghton Mifflin.

Gigerenzer, G., & Goldstein, D. G. (1996). Reasoning the fast and frugal way: Models of bounded rationality. *Psychological Review*, 103, 650–669. https://doi.org/10.1192/bjpo.bp.115.000224

Graham, D. J., & Field, D. J. (2007). Statistical regularities of art images and natural scenes: Spectra, sparseness and nonlinearities. *Spatial Vision*, 21, 149–164. https://doi.org/10.1163/156856808782713771

Han, S., & Shavitt, S. (1994). Persuasion and culture: Advertising appeals in individualistic and collectivistic societies. *Journal of Experimental Social Psychology*, 30, 326–350. https://doi.org/10.1006/jesp.1994.1016

Hannerz, U. (1992). *Cultural complexity: Studies in the social organization of meaning*. New York: Columbia University Press.

Heath, C., Bell, C., & Sternberg, E. (2001). Emotional selection in memes: The case of urban legends. *Journal of Personality and Social Psychology*, 81, 1028–1041. https://doi.org/10.1037//0022-3514.81.6.1028

Hegewisch, A., Williams, C., & Harbin, V. (2012). The gender wage gap by occupation, (April), 1–7.

Hermans, H. J. M., & Kempen, H. J. G. (1998). Moving cultures: The perilous problems of cultural dichotomies in a globalizing society. *American Psychologist*, 53, 1111–1120. https://doi.org/10.1037/0003-066X.53.10.1111

Hofmann, S. G., Asnaani, A., & Hinton, D. E. (2011). Cultural aspects in social anxiety and social anxiety disorder. *Depression and Anxiety*, 27, 1117–1127. https://doi.org/10.1002/da.20759.Cultural

Hofmann, W., de Houwer, J., Perugini, M., Baeyens, F., & Crombez, G. (2010). Evaluative conditioning in humans: A meta-analysis. *Psychological Bulletin*, 136, 390–421. https://doi.org/10.1037/a0018916

Hong, Y., Morris, M. W., Chiu, C., & Benet-Martínez, V. (2000). Multicultural minds: A dynamic constructivist approach to culture and cognition. *American Psychologist*, 55, 709–720. https://doi.org/10.1037/0003-066X.55.7.709

Houwer, J. De, Thomas, S., Baeyens, F., De Houwer, J., Thomas, S., & Baeyens, F. (2001). *Association learning of likes and dislikes: A review of 25 years of research on human evaluative conditioning. Psychological Bulletin*. https://doi.org/10.1037/0033-2909.127.6.853

Huang, C.-M., & Park, D. (2013). Cultural influences on Facebook photographs. *International Journal of Psychology*, 48, 334–343. https://doi.org/10.1080/00207594.2011.649285

Kahneman, D., & Miller, D. T. (1986). Norm theory: Comparing reality to its alternatives. *Psychological Review*, 93, 136–153. https://doi.org/10.1037/0033-295X.93.2.136

Kalsbeek, W., & Heiss, G. (2000). Building bridges between populations and samples in epidemiological studies. *Annual Review of Public Health*, 21, 147–169.

Kashima, Y. (2000). Maintaining cultural stereotypes in the serial reproduction of narratives. *Personality and Social Psychology Bulletin*, *26*, 594–604. https://doi.org/10.1177/0146167200267007

Kashima, Y. (2008). A social psychology of cultural dynamics: Examining how cultures are formed, maintained, and transformed. *Social and Personality Psychology Compass*, *2*, 107–120. https://doi.org/10.1111/j.1751-9004.2007.00063.x

Kashima, Y. (2016). Culture and psychology in the 21st century: Conceptions of culture and person for psychology revisited. *Journal of Cross-Cultural Psychology*, *47*, 4–20. https://doi.org/10.1177/0022022115599445

Kim, H., & Markus, H. R. (1999). Deviance or uniqueness, harmony or conformity? A cultural analysis. *Journal of Personality and Social Psychology*, *77*, 785–800. https://doi.org/10.1037/0022-3514.77.4.785

Kingstone, A. (2009). Taking a real look at social attention. *Current Opinion in Neurobiology*, *19*, 52–56. https://doi.org/10.1016/j.conb.2009.05.004

Kitayama, S., Markus, H. R., Matsumoto, H., & Norasakkunkit, V. (1997). Individual and collective processes in the construction of the self: Self-enhancement in the United States and self-criticism in Japan. *Journal of Personality and Social Psychology*, *72*(6), 1245–1267. https://doi.org/10.1037/0022-3514.72.6.1245

Klinnert, M. D., Emde, R. N., Butterfield, P., & Campos, J. J. (1986). Social referencing: The infant's use of emotional signals from a friendly adult with mother present. *Developmental Psychology*, *22*, 427–432. https://doi.org/10.1037/0012-1649.22.4.427

Kroeber, A. L., & Kluckhohn, C. (1952). Culture: A critical review of concepts and definitions. In *Papers of the Peabody Museum of American Archaeology and Ethnology*. Cambridge, MA: Harvard University Press.

Kurman, J., & Ronen-Eilon, C. (2004). Lack of knowledge of a culture's social axioms and adaptation difficulties among immigrants. *Journal of Cross-Cultural Psychology*, *35*, 192–208. https://doi.org/10.1177/0022022103262244

Lau, I. Y.-M., Lee, S., & Chiu, C.-Y. (2004). Language, cognition, and reality: Constructing shared meaning through communication. In M. Schaller, & C. S. Crandall (Eds.), *The psychological foundations of culture* (pp. 77–100). Mahwah, NJ: Lawrence Erlbaum Associates.

Lee, F., Hallahan, M., & Herzog, T. (1996). Explaining real-life events: How culture and domain shape attributions. *Personality and Social Psychology Bulletin*, *22*, 732–741. https://doi.org/0803973233

Lewis, M. K., & Hill, A. J. (1998). Food advertising on British children's television: A content analysis and experimental study with nine-year olds. *International Journal of Obesity and Related Metabolic Disorders : Journal of the International Association for the Study of Obesity*, *22*, 206–214. https://doi.org/10.1038/sj.ijo.0800568

Loersch, C., & Payne, B. K. (2011). The situated inference model. *Perspectives on Psychological Science*, *6*, 234–252. https://doi.org/10.1177/1745691611406921

Long, F., Yang, Z., & Purves, D. (2006). Spectral statistics in natural scenes predict hue, saturation, and brightness. *Proceedings of the National Academy of Sciences of the United States of America*, *103*, 6013–6018. https://doi.org/10.1073/pnas.0600890103

Lund, K., & Burgess, C. (1996). Producing high-dimensional semantic spaces from lexical co-occurrence. *Behavior Research Methods, Instruments, & Computers*, *28*, 203–208. https://doi.org/10.3758/BF03204766

Lyons, A., & Kashima, Y. (2003). How are stereotypes maintained through communication? The influence of stereotype sharedness. *Journal of Personality and Social Psychology*, *85*, 989–1005. https://doi.org/10.1037/0022-3514.85.6.989

Maass, A., Karasawa, M., Politi, F., & Suga, S. (2006). Do verbs and adjectives play different roles in different cultures? A cross-linguistic analysis of person representation. *Journal of Personality and Social Psychology*, *90*, 734–750. https://doi.org/10.1037/0022-3514.90.5.734

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological review*, *98*, 224–253.

Markus, H. R., Uchida, Y., Omoregie, H., Townsend, S. S. M., & Kitayama, S. (2006). Going for the gold-models of agency in Japanese and American contexts. *Psychological Science*, *17*, 103–112. https://doi.org/10.1111/j.1467-9280.2006.01672.x

Mastro, D. E., & Stern, S. R. (2003). Representations of race in television commercials: A content analysis of prime-time advertising. *Journal of Broadcasting and Electronic Media*, *47*, 638–647.

Matsumoto, D., & Yoo, S. H. (2006). Toward a new generation of cross-cultural research. *Perspectives on Psychological Science*, *1*, 234–250.

McAllister, I., & Studlar, D. T. (1991). Bandwagon, underdog, or projection: Opinion polls and electoral choice in Britain, 1979-1987. *The Journal of Politics*, *53*, 720–741.

McArthur, L. Z., & Baron, R. M. (1983). Toward an ecological theory of social perception. *Psychological Review*, *90*, 215–238. https://doi.org/10.1037//0033-295X.90.3.215

Menon, T., Morris, M. W., Chiu, C., & Hong, Y. (1999). Culture and the construal of agency: Attribution to individual versus group dispositions. *Journal of Personality and Social Psychology*, 76, 701–717. https://doi.org/10.1037/0022-3514.76.5.701

Miller, D. T., & Prentice, D. A. (1994). Collective errors and errors about the collective. *Personality and Social Psychology Bulletin*, 20, 541–550. https://doi.org/10.1177/0146167294205011

Miyamoto, Y., Knoepfler, C. A., Ishii, K., & Ji, L.-J. (2013). Cultural variation in the focus on goals versus processes of actions. *Personality and Social Psychology Bulletin*, 39, 707–719. https://doi.org/10.1177/0146167213483579

Miyamoto, Y., Nisbett, R. E., & Masuda, T. (2006). Culture and the physical environment holistic versus analytic perceptual affordances. *Psychological Science*, 17, 113–119. https://doi.org/10.1111/j.1467-9280.2006.01673.x

Morling, B., Kitayama, S., & Miyamoto, Y. (2002). Cultural practices emphasize influence in the United States and adjustment in Japan. *Personality and Social Psychology Bulletin*, 28, 311–323. https://doi.org/10.1177/0146167202286003

Morling, B., & Lamoreaux, M. (2008). Measuring culture outside the head: A meta-analysis of individualism—Collectivism in cultural products. *Personality and Social Psychology Review*, 12, 199–221. https://doi.org/10.1177/1088868308318260

Morling, B., Uchida, Y., & Frentrup, S. (2015). Social support in two cultures: Everyday transactions in the U.S. and empathic assurance in Japan. *PloS One*, 10(6), 1–22. https://doi.org/10.1371/journal.pone.0127737

Morris, M. W., & Peng, K. (1994). Culture and cause: American and Chinese attributions for social and physical events. *Journal of Personality and Social Psychology*, 67, 949–971. https://doi.org/10.1037/0022-3514.67.6.949

Moscovici, S. (1980). Toward a theory of conversion behavior. *Advances in Experimental Social Psychology*, 13. https://doi.org/10.1016/S0065-2601(08)60133-1

Neisser, U. (1976). Cognition and reality: Prinicples and implications of cognitive psychology *(New York)*. W. H: Freeman.

Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review*, 108, 291–310. https://doi.org/10.1037/0033-295X.108.2.291

Norenzayan, A., & Atran, S. (2004). Cognitive and emotional processes in the cultural transmission of natural and nonnatural beliefs. In M. Schaller, & C. S. Crandall (Eds.), *The psychological foundations of culture* (pp. 149–170). Mahwah, NJ: Lawrence Erlbaum Associates.

Norenzayan, A., Atran, S., Faulkner, J., & Schaller, M. (2006). Memory and mystery: The cultural selection of minimally counterintuitive narratives. *Cognitive Science*, 30, 531–553. https://doi.org/10.1207/s15516709cog0000_68

Peng, K., & Nisbett, R. E. (1999). Culture, dialectics, and reasoning about contradiction. *American Psychologist*, 54, 741–754. https://doi.org/10.1037/0003-066X.54.9.741

Peters, K., Kashima, Y., & Clark, A. (2009). How social experience is related to children's intergroup attitudes. *European Journal of Social Psychology*, 39, 207–222. https://doi.org/10.1002/ejsp

Petty, R. E., & Brinol, P. (2010). Attitude change. In R. F. Baumeister, & E. J. Finkel (Eds.), *Advanced social psychology: The state of the science* (pp. 217–262). New York: Oxford University Press.

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. *Advances in Experimental Social Psychology*, 19, 123–205. https://doi.org/10.1016/S0065-2601(08)60214-2

Petty, R. E., & Wegener, D. T. (1999). The elaboration likelihood model: Current status and controversies. In S. Chaiken, & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 37–72). New York: Guilford Press.

Pleyers, G., Corneille, O., Luminet, O., & Yzerbyt, V. (2007). Aware and (dis)liking: Item-based analyses reveal that valence acquisition via evaluative conditioning emerges only when there is contingency awareness. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 33, 130–144. https://doi.org/10.1037/0278-7393.33.1.130

Reber, A. S. (1989). Implicit learning and tacit knowledge. *Journal of Experimental Psychology: General*, 118, 219–235. https://doi.org/10.1037/0096-3445.118.3.219

Refki, D., Eshete, A., & Hajiani, S. (2012). *Women in federal and state-level judgeships*.

Ruderman, D. L., & Bialek, W. (1994). Statistics of natural images: Scaling in the woods. *Physical Review Letters.*. https://doi.org/10.1103/PhysRevLett.73.814

Savani, K., Morris, M. W., Naidu, N. V. R., Kumar, S., & Berlia, N. (2011). Cultural conditioning: Understanding interpersonal accommodation in India and the United States in terms of the modal characteristics of interpersonal influence situations. *Journal of Personality and Social Psychology*, 100, 84–102. https://doi.org/10.1037/a0021083

Schaller, M., Conway, L., Gideon, I., & Tanchuk, T. L. (2002). Selective pressures on the once and future contents of ethnic stereotypes: Effects of the communicability of traits. *Journal of Personality and Social Psychology*, 82, 861–877. https://doi.org/10.1037//0022-3514.82.6.861

Schaller, M., Conway, L. G., & Crandall, C. S. (2004). The psychological foundations of culture: An introduction. *The psychological foundations of culture*, 3–12.

Schmuckler, M. A. (2001). What is ecological validity? A dimensional analysis. *Infancy*, *2*, 419–436. https://doi.org/10.1207/S15327078IN0204_02

Schuck, A. R. T., & de Vreese, C. H. (2006). Between risk and opportunity: News framing and its effects on public support for EU enlargement. *European Journal of Communication*, *21*(1), 5–32. https://doi.org/10.1177/0267323106060987

Schwab, A. K., & Greitemeyer, T. (2015). Failing to establish evaluative conditioning effects for indirect intergroup contact on Facebook. *Basic and Applied Social Psychology*, *37*(2), 87–104. https://doi.org/10.1080/01973533.2014.999073

Segall, M. H., Campbell, D. T., & Herskovits, M. J. (1963). Cultural differences in the perception of geometric illusions. *Science*, *139*, 769–771.

Simon, H. A. (1991). Bounded rationality and organizational learning. *Organization Science*, *2*, 125–134.

Simoncelli, E. P., & Olshausen, B. A. (2001). Natural image statistics and neural representation. *Annual Review of Neuroscience*, *24*, 1193–1216. https://doi.org/0147-006X/01/0621-1193

Smith, S., & Granados, A. (2009). Content patterns and effects surrounding sex-role stereotyping on television and film. *Media effects: Advances in theory and research*, *3*, 342–361.

Spence, D. P., & Owens, K. C. (1990). Lexical co-occurrence strength and association. *Journal of Psycholinguistic Research*, *19*, 317–330.

Sperber, D. (1996). *Explaining culture: A naturalistic approach*. Cambridge, MA: Blackwell.

Sperber, D. (2009). Culturally transmitted misbeliefs: The evolution of misbelief adaptive misbeliefs and false memories. *Behavioral and Brain Sciences*, *32*, 534–535. https://doi.org/10.1017/S0140525X09991348

Srivastava, A., Lee, A. B., Simoncelli, E. P., & Zhu, S. C. (2002). On advances in statistical modeling of natural images. *Journal of Mathematical Imaging and Vision*, *18*, 17–33. https://doi.org/10.1023/A:1021889010444

Stangor, C., Sechrist, G. B., & Jost, J. T. (2001). Changing racial beliefs by providing consensus information. *Personality and Social Psychology Bulletin*, *27*, 486–496. https://doi.org/10.1177/0146167201274009

Stephens, N. M., Markus, H. R., & Townsend, S. S. M. (2007). Choice as an act of meaning: The case of social class. *Journal of Personality and Social Psychology*, *93*, 814–830. https://doi.org/10.1037/0022-3514.93.5.814

Strauss, C., & Quinn, N. (1992). Preliminaries to a theory of culture acquisition. In H. L. J. Pick, P. W. van den Broek, & D. C. Knill (Eds.), *Cognition: Conceptual and methodological issues* (pp. 267–294). Washington, D.C.: American Psychological Assocation.

Tam, K. P., Lee, S. L., Kim, Y. H., Li, Y., & Chao, M. M. (2012). Intersubjective model of value transmission: Parents using perceived norms as reference when socializing children. *Personality and Social Psychology Bulletin*, *38*, 1041–1052. https://doi.org/10.1177/0146167212443896

Taylor, C. R., & Stern, B. B. (1997). Asian-Americans: Television advertising and the "model minority" stereotype. *Journal of Advertising*, *26*(2), 47–61. https://doi.org/10.1080/00913367.1997.10673522

Todd, P. M., & Gigerenzer, G. (2000). Précis of simple heuristics that make us smart. *Behavioral and Brain Sciences*, *23*, 727–780. https://doi.org/10.1017/S0140525X00003447

Torralba, A., & Oliva, A. (2003). Statistics of natural image categories. *Network: Computation in Neural Systems*, *14*, 391–412. https://doi.org/10.1088/0954-898X/14/3/302

Tsai, J. L., Louie, J. Y., Chen, E. E., & Uchida, Y. (2007). Learning what feelings to desire: Socialization of ideal affect through children's storybooks. *Personality and Social Psychology Bulletin*, *33*, 17–30. https://doi.org/10.1177/0146167206292749

Weber, E. U., Hsee, C. K., & Sokolowska, J. (1998). What folklore tells us about risk and risk taking: Cross-cultural comparisons of American, German, and Chinese proverbs. *Organizational Behavior and Human Decision Processes*, *75*, 170–186. https://doi.org/10.1006/obhd.1998.2788

Weisbuch, M., & Ambady, N. (2009). Unspoken cultural influence: Exposure to and influence of nonverbal bias. *Journal of Personality and Social Psychology*, *96*(6), 1104–1119. https://doi.org/10.1037/a0015642

Weisbuch, M., Ivcevic, Z., & Ambady, N. (2009). On being liked on the web and in the "real world": Consistency in first impressions across personal webpages and spontaneous behavior. *Journal of Experimental Social Psychology*, *45*, 573–576.

Weisbuch, M., Pauker, K., & Ambady, N. (2009). The subtle transmission of race bias via televised nonverbal behavior. *Science*, *326*, 1711–1714. https://doi.org/10.1126/science.1178358

Weisbuch, M., Treinen, E., Zad, M., & Lagerwaard, A. (2016). *Bias contagion: Influence of nonverbal bias on underage drinking norms and intentions*Unpublished Manuscript.

Wilkes, R. E., & Valencia, H. (1989). Hispanics and blacks in television commercials. *Journal of Advertising*, *18*, 19–25. https://doi.org/10.1080/00913367.1989.10673139

Wood, W. (2000). Attitude change: Persuasion and social influence. *Annual Review of Psychology*, *51*, 539–570. https://doi.org/10.1146/annurev.psych.51.1.539

Yanovitzky, I., & Stryker, J. (2001). Mass media, social norms, and health promotion efforts: A longitudinal study of media effects on youth binge drinking. *Communication Research*, *28*(2), 208–239.

Zaki, J., & Ochsner, K. (2009). The need for a cognitive neuroscience of naturalistic social cognition. *Annals of the New York Academy of Sciences*, *1167*, 16–30. https://doi.org/10.1111/j.1749-6632.2009.04601.x

Zebrowitz, L. A. (2011). Ecological and social approaches to face perception. In A. J. Calder, G. Rhodes, M. H. Johnson, & J. V. Haxby (Eds.), *Oxford handbook of face perception* (pp. 31–50). New York: Oxford University Press.

Zou, X., Tam, K.-P., Morris, M. W., Lee, S.-L., Lau, I. Y.-M., & Chiu, C.-Y. (2009). Culture as common sense: Perceived consensus versus personal beliefs as mechanisms of cultural influence. *Journal of Personality and Social Psychology*, *97*, 579–597. https://doi.org/10.1037/a0016399

Max Weisbuch received his BA in psychology from Tulane University, his PhD in social psychology from the University of California, Santa Barbara, and his postdoctoral training at Tufts University. His research takes an ecological approach to social cognition and focuses on if and how nonverbal communication mediates the relationship between culture and cognition. His research has been funded by the National Science Foundation and the National Institute of Mental Health, and he has published in *Science, Psychological Science, Journal of Personality and Social Psychology, Personality and Social Psychology Bulletin, Journal of Experimental Social Psychology*, and elsewhere. With his postdoctoral mentor, Nalini Ambady, Max co-authored the nonverbal communication chapter of the most recent version of the *Handbook of Social Psychology*. He is currently Associate Professor of Psychology at the University of Denver.

Sarah A. Lamer is a PhD student at the University of Denver in the social psychology program. Her primary research interest is examining if and how subtle sociocultural cues can reinforce and challenge social inequities, shape individual values, and inform lay theories. She holds a BA in Psychology from Connecticut College with an emphasis in Public Policy and Community Action. She has published her research regarding the interaction between eye gaze and emotion at the *Journal of Experimental Social Psychology* and at *Social Cognition*.

Evelyne Treinen's research focuses on understanding how and when the observation of social nonverbal cues in an individual's environment can shape and influence the preferences and behavior of this individual. After completing a specialized Masters in Research, Evelyne completed her PhD at the Université Catholique de Louvain-la-Neuve in Belgium through the support of a predoctoral research fellowship from the Belgian National Foundation for Scientific Research (F.R.S.-FNRS). More recently, she was awarded a postdoctoral fellowship from the Belgian American Educational Foundation (B.A.E.F.) to conduct research at the University of Denver, where she additionally taught graduate and undergraduate courses in psychology.

Kristin Pauker received her BA in psychology from Dartmouth College, her PhD in social psychology from Tufts University, and her postdoctoral training at Stanford University. Her research examines intergroup cognition in adults and children and focuses on how people experience and think and about race. Her research has been funded by the National Science Foundation and the National Institute for Child Health and Human Development. She has published in *Science, Psychological Science, Journal of Personality and Social Psychology, Child Development, Social Psychological and Personality Science*, and elsewhere. She is currently Associate Professor of Psychology at the University of Hawaii.