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Cultural Psychology: Beyond East and West

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Abstract

Research in cultural psychology over the last three decades has revealed the profound influence of culture on cognitive, emotional, and motivational processes shaping individuals into active agents. This article aims to show cultural psychology's promise in three key steps. First, we review four notable cultural dimensions believed to underlie cultural variations: independent versus interdependent self, individualism versus collectivism, tightness versus looseness of social norms, and relational mobility. Second, we examine how ecology and geography shape human activities and give rise to organized systems of cultural practices and meanings, called eco-cultural complexes. In turn, the eco-cultural complex of each zone is instrumental in shaping a wide range of psychological processes, revealing a psychological diversity that extends beyond the scope of the current East–West literature. Finally, we examine some of the non-Western cultural zones present today, including Arab, East Asian, Latin American, and South Asian zones, and discuss how they may have contributed, to varying degrees, to the formation of the contemporary Western cultural zone.

Contents

Cultural zone: a geographic area associated with a given eco-cultural complex that emerged over time, typically over several thousand years

Independent vs interdependent orientation: the psychological tendency afforded by holding a view of the self as independent or interdependent

Individualism vs collectivism: a constellation of values in a culture prioritizing the personal self over collective welfare (individualism) or collective welfare over the personal self (collectivism)

1. INTRODUCTION

The last few decades have seen substantial growth of the study of culture in psychology (Cohen & Kitayama 2018, Gelfand et al. 2011, Hofstede 1980, Markus & Kitayama 1991, Nisbett et al. 2001, Schwartz 2006, Triandis 1995). The bulk of research conducted in this field demonstrates various cultural differences in cognitive, emotional, and motivational processes, thereby calling for a thorough reconceptualization of human psychology as situated and realized through a complex of various cultural practices and meanings (Kitayama & Uskul 2011; Kitayama et al. 2022; Markus & Kitayama 2010; Muthukrishna et al. 2021, 2021). Each such complex is an adaptation to geographies and ecologies existing since the advent of human culture as we know it today and spanning several thousand years. This new theoretical perspective has broadened the field's empirical scope. While traditionally focusing on contrasting East and West, the psychology of culture, now equipped with several theoretical components, is poised to explore various cultural zones in the remaining regions.

This exploration of the "Rest" is still in its early stages (Kitayama et al. 2022); however, it has already yielded data that challenge the two prototypes of an interdependent, collectivistic East and an independent, individualistic West. Most cultures outside of the East and West seem to fall in between. The main objective of this article is to elucidate these findings, examine them in the context of prevailing cross-cultural dimensions and the evolution of cultures in the past 10,000 years, and provide a tentative integration that enhances the existing theoretical framework for understanding the human mind as an adaptation to diverse eco-cultural environments. This discussion leads us to two primary conclusions.

First, it is evident that cultures exhibit systematic variations along the dimension of independent versus interdependent orientations (or, equivalently, individualism versus collectivism). These

cultural differences extend to how individuals perceive the self, construct social realities, and organize behaviors. Second, we depart from the existing literature by highlighting that there is no predefined set of universally applicable behavioral traits or tendencies that define these orientations. On the contrary, we draw upon the principle of human cognition known as the schematic principle, which suggests that the meaning of various parts depend on the larger context that encompasses them (Asch 1946, Fiske & Taylor 1991, Nisbett & Ross 1980). Applying this principle to the current discussion, we propose that the overarching cultural orientations, such as independence and interdependence, act as interpretive frameworks (or schemas) that define and clarify the meanings of different psychological and behavioral traits. Depending on the cultural and social context, these psychological tendencies can be indicative of either independence (or individualism) or interdependence (or collectivism). It is important to note that the formation of these behavioral meanings is a historical process (Bruner 1990), unfolding over generations and influenced by geographic, ecological, economic, and other factors (Kitayama et al. 2022).

In this article, we examine recent research that explores psychological tendencies related to analytic (versus holistic) cognition, emotional expression (versus moderation), and self-enhancement (versus effacement). A seemingly identical behavioral tendency, such as analytic cognition, emotional expression, or self-enhancement, can serve as a marker of independence when interpreted and defined within an independent cultural frame. However, within an interdependent cultural frame, the same tendency can easily be interpreted and defined as a marker of interdependence. As we delve into this research, we observe that one emerging empirical focus within the field is to identify the psychological tendencies prevalent in specific cultures and ascertain whether these tendencies primarily serve the goals of independence or interdependence. This research agenda seeks to uncover the nuanced ways in which cultural contexts shape individuals' psychological tendencies and determine their broader functions.

We proceed in three distinct steps to shed light on the promise of cultural psychology. First, we examine the major theoretical perspectives that have shaped the field, including independent versus interdependent self, individualism versus collectivism, tightness versus looseness, and relational mobility. Within these perspectives, we highlight a few novel findings that have emerged, providing an updated overview of this vibrant area of research. Second, we delve into the theoretical considerations regarding the emergence of various psychological characteristics over several thousand years of cultural evolution. By exploring the concept of cultural evolution, we aim to establish a framework for understanding how these characteristics have developed and transformed over time. This discussion of cultural evolution sets the stage for our third and final topic. We focus on a 10,000-year period of cultural evolution, which plays a crucial role in understanding both similarities and differences across several non-Western cultural zones present today. We observe that all non-Western zones, such as East Asia, South Asia, the Arab world, and Latin America, have a foundation in the concept of the self as interdependent. However, it is important to recognize that interdependence takes on diverse forms within these cultural contexts. We propose that their distinct long-term ecological and geographic conditions influenced the development of cultural systems that foster specific psychological tendencies aligned with their respective forms of interdependence. Furthermore, we explore how these non-Western cultural zones have likely contributed, to varying degrees, to the formation of the modern Western independent cultural zone over the past several centuries. This analysis provides insights into why some non-Western zones may superficially resemble the Western zone, while also highlighting the deeper differences that exist beneath the surface.

By traversing these three steps, we aim to enhance our understanding of cultural psychology, uncover the complexities of interdependence within different cultural contexts, and illuminate

Tightness vs looseness of social norms: the attributes of societies and cultures as having more (vs less) stringent social norms and enforcing those norms with more (vs less) severe punishments

Relational mobility: the degree to which people freely choose their social relations or relations are ascribed

the intricate relationships between non-Western cultural zones and the modern Western cultural zone.

Modern Western cultural zone: a geographic area defined by an eco-cultural complex based on a view that the self is independent, emerging over the last 1,000 years

2. THEORETICAL PERSPECTIVES

2.1. Independent Versus Interdependent Self

One central concept that has emerged from the last three decades of research on culture in psychology is the recognition that the self, as an agent, can vary significantly across cultures. The distinction between independent and interdependent selves has provided a crucial theoretical framework for investigating cultural variations in psychological processes (Kitayama & Uskul 2011; Markus & Kitayama 1991, 2010). In Western societies, the prevailing perspective portrays the self or person as an independent entity composed of internal attributes such as personality traits, motives, goals, and attitudes. Individuals in these cultures draw on these internal attributes to guide their actions, exerting influence over others and events in their surroundings. While this view is pervasive and intuitive within Western cultures, it is not as widely prevalent in many other societies and cultures. As noted by Clifford Geertz (1975, p. 45), "however incorrigible [this view] may seem to [those engaged in Western cultures, it] is a rather peculiar idea within the contexts of the world's cultures." This insight offers an explanation as to why individuals with Western traditions may be psychologically atypical and can be characterized as WEIRD[1] (Henrich et al. 2010).

In numerous non-Western societies, a distinct perspective on the self as interdependent with others in their ingroups is prevalent. The interdependent self is characterized centrally by relational attributes, such as social roles and status, which defines one's identity. In these cultures, each person's internal attributes take a secondary role, particularly when they conflict with social expectations and norms. Rather than pursuing personal agendas and individual goals, individuals are motivated to adjust themselves to social expectations and norms. Over the last three decades, research on culture and the self has identified various psychological differences across cultures. Although the existing literature has primarily focused on comparisons between East Asians and European Americans, it provides valuable insights into how culture can shape fundamental psychological processes such as cognition, emotion, and motivation.

2.1.1. Cognitive variation. Independent selves prioritize their personal goals, which encourage them to focus on goal-relevant objects while disregarding other contextual elements. In contrast, interdependent selves adopt a broader attentiveness to their surroundings. As a result, East Asians, compared to European Americans, exhibit a holistic cognitive style whereby their attention is more broadly distributed across the context, even when thinking about a specific object (Nisbett et al. 2001). For example, East Asians demonstrate heightened sensitivity to others' perspectives (Cohen & Gunz 2002), allocate attention to a wider field or context when observing an object (Kitayama et al. 2003, Masuda et al. 2008), exhibit reduced spontaneous trait inferences (Na & Kitayama 2011), and display a decreased dispositional bias in attribution (which refers to the tendency to explain another person's behavior based on their internal traits rather than situational factors—a tendency commonly observed in European Americans) (Choi et al. 1999, Kitayama et al. 2009, Masuda & Kitayama 2004). Moreover, East Asians also demonstrate more intuitive or less categorical modes of inference (Ji et al. 2004). Scholars have proposed that the cognitive differences stem from social orientations of interdependence (versus independence) that are more prevalent

[1]Henrich et al. (2010) used this acronym for "Western, educated, industrialized, rich, and democratic" and argued that societies characterized by these adjectives are outliers psychologically because of their emphasis on independence.

and stronger in East Asia (Varnum et al. 2010). In support of this idea, scholars have also found that temporarily activating or priming interdependent self-construals can foster holistic cognitive styles (Oyserman & Lee 2008; see also Grossmann & Jowhari 2018).

More recent work has dived into the potential brain mechanisms underlying the observed cultural differences in cognitive style. One specific mechanism related to holistic attention involves the processing of visual scenes. Early in visual processing, the brain differentiates the focal object from the surrounding scene (Epstein & Baker 2019). Researchers have identified three distinct areas involved in scene processing: the hippocampal place area, the medial place area, and the occipital place area. Individuals from East Asian cultures, who tend to exhibit holistic cognitive styles, may rely more extensively on these scene-processing regions as they continuously engage in holistic processing. In contrast, European Americans, who tend to exhibit more analytic cognitive styles, allocate their neural resources primarily to object processing (Gutchess et al. 2006). Consistent with this notion, a study found that the gray matter volume of all three scene-processing regions was greater in East Asian college undergraduates than in European American college undergraduates (Yu et al. 2021).

2.1.2. Emotional variation. Independent selves view their self-worth based on their internal attributes, including feelings, and often seek to maximize positive feelings. A study comparing American and Japanese participants provided an illustrative example of these cultural differences. Participants were asked to list features of happiness, and their responses revealed contrasting patterns. American participants predominantly listed emotionally positive features, whereas Japanese participants generated responses that were more ambivalent (Uchida & Kitayama 2009). Japanese participants included not only positive features, such as "having a good time with family members," but also negative ones, such as "inviting the envy of others" and "not lasting long." Moreover, when asked to report the frequency of various emotions experienced, American participants reported a higher frequency of positive emotions compared to Japanese participants (Kitayama et al. 2000). Likewise, self-evaluations tend to be more positive among Americans than among East Asians (Heine et al. 1999). European Americans also place a greater value on high-arousal positive emotions compared to East Asians (Tsai et al. 2006).

Building on these previous findings, Hsu and colleagues (2021) examined whether cultural differences in the valued emotions may explain the spread of fake news on social media. Recent analyses suggest that social media platforms are predominantly characterized by positive affective content. As a result of this normative positivity, highly arousing negative tweets are relatively infrequent. Consequently, when such negative tweets are posted, they tend to attract more attention and have a higher likelihood of being retweeted (Crockett 2017, Vosoughi et al. 2018). Since fake news often contains highly negative and arousing content, this mechanism could contribute to its spread. Hsu et al. (2021) conducted a comprehensive analysis of numerous tweets in both the United States and Japan. Their findings revealed a substantial emotional climate difference between the two countries, with the American social media space being far more positive than the Japanese space. Moreover, in line with the divergent base rates of positivity in social media, Americans were influenced more by negative, highly arousing posts by others, which aligns with the current theory of fake news spread on social media. Conversely, Japanese were more influenced by others' highly arousing positive posts. These findings by Hsu et al. (2021) suggest that fake news may be less common on social media in East Asia. Alternatively, the mechanisms underlying the spread of fake news, as postulated in the current literature, may not apply in the same way to East Asia.

The prevalence of the norms emphasizing positivity in the United States can have various consequences, including on health and well-being. Because of these norms, negative emotions may be perceived as more threatening and have a greater deleterious impact on the health and

well-being of European Americans. Supporting this notion, research has shown that European American adults in midlife who reported higher intensity of negative emotions over the previous 60 days demonstrated poorer biological health. In contrast, a comparable sample of Japanese did not exhibit the observed effect (Miyamoto et al. 2013, Park et al. 2020).

2.1.3. Motivational variation. Independent selves are motivated to uphold and enhance positive aspects of themselves, whereas interdependent selves may not prioritize such self-enhancement. This reasoning is supported by research indicating that individuals in Western cultures often perceive themselves as better, smarter, and more important than others (Heine et al. 1999). Further, they exhibit various strategies to maintain their positive self-views, such as devaluing the significance of a test if they fail it (Campbell & Sedikides 1999). Self-enhancement tendencies are commonly observed in Western samples, while this evidence is less prevalent in East Asia.[2] A particularly striking cultural difference was revealed in a study by Kitayama et al. (1997). American and Japanese participants were asked to recall situations in which they experienced success or failure and then rate how strongly each event increased or decreased their self-esteem. The results demonstrated that Americans reported greater increases in self-esteem from successes compared to decreases from failures. This finding aligns with the notion of self-enhancement, as it suggests that Americans place more weight on positive outcomes. In contrast, Japanese reported that failures had a stronger negative impact on their self-esteem than successes had a positive impact. This effect reflects self-effacement or criticism tendencies, as it indicates that Japanese individuals assign more significance to negative events.

Building on the evidence by Kitayama et al. (1997), Salvador and colleagues (2022) investigated whether Americans spontaneously link their own successes to self-knowledge and discount failures (Salvador et al. 2022). They drew on previous electroencephalogram (EEG) literature, which has shown that alpha-band power serves as a reliable marker of attention allocated to internal processes, including internal thoughts (Knyazev 2013, Kraus et al. 2021). When individuals are prompted to think about the self, the relevant internal thoughts involve the processing of self-knowledge. Based on this premise, Salvador et al. (2022) hypothesized and found that among Americans, exposure to personal success events was associated with a particularly strong alpha-band power, indicating increased attention allocated to internal thoughts, specifically self-referential processing. In contrast, this effect was missing among a group of East Asians from Taiwan. Furthermore, the cultural difference in the alpha-band power explained why for Americans, compared to Taiwanese, perceived successes would have a greater impact on self-esteem than failures.

2.2. Individualism Versus Collectivism

The concepts of individualism and collectivism (I-C) are closely linked to the notion of independent versus interdependent self. On the one hand, individualism refers to a cultural orientation

[2] A lively debate unfolded between Heine and colleagues and a group of scholars led by Sedikides, who argued that self-enhancement is pancultural (Sedikides et al. 2003). The debate centered around a specific version of a paradigm designed to demonstrate the so-called better-than-average effect. The version in question employed the term "average" and asked participants to judge whether they were better than average others. Under this condition, both Westerners and East Asians indicated that they were better than average. Sedikides and colleagues used this evidence to support their pancultural self-enhancement thesis (Sedikides et al. 2007). Heine and colleagues highlighted that the term "average" carries a negative connotation, which could potentially obscure existing cultural differences (Heine et al. 2007). In other paradigms, East Asians have consistently shown less self-enhancement compared to Westerners.

that prioritizes individual goals and desires over collective welfare, fostering the development of independent selves. On the other hand, collectivism represents a tendency to prioritize collective welfare over individual goals, thereby promoting the development of interdependent selves. These two cultural orientations are often conceptualized as opposite ends of a single continuum.

Three studies laid the foundation of this perspective. A pivotal moment of the individualism versus collectivism literature was the groundbreaking survey conducted among IBM workers across international offices worldwide (Hofstede 1980). In this survey, Hofstede utilized factor analysis to examine eight attitudinal items assessing workplace values and formed the basis of the I-C dimension. These items aimed to capture the perceived importance of various workplace attributes in an ideal job. Upon closer examination of the items used to assess the I-C dimension, one might observe certain instances in which face validity may appear lacking. For instance, one attribute defining the individualism end of the I-C dimension was "sufficient time for both self and family." The rationale explaining why devoting time to family is considered an indicator of individualism remains unclear. Similarly, the availability of "training opportunities for one's skills" was used to define the collectivistic end of the dimension. The reason for associating personal skill development with collectivistic values is not immediately apparent either.

Given these and other ambiguities, it may initially seem surprising that the I-C scale was able to successfully differentiate between Western and non-Western societies. However, it did reveal distinct cultural patterns. Western countries, including Western European countries and their extensions in North America (the United States and Canada) and various other parts of the globe, such as South Africa, Australia, and New Zealand, tend to score high on individualism (or low on collectivism). Conversely, countries in Africa and Latin America tend to score low on individualism (or high on collectivism). It is plausible, and in line with the broader idea that the meaning of behaviors is contingent on the dominant cultural framework, that the items used by Hofstede carried specific meanings that justified the scale in the context of the US-based international technology company from which the survey data was collected. However, the precise nature of these meanings remains uncertain.

Similarly successful in uncovering cultural variations was the World Value Survey (WVS), designed by Ronald Inglehart, a political scientist, with a focus on various attitudes and beliefs in policy-related domains. Through a factor analysis performed on a select set of items from the WVS, Inglehart & Baker (2000) identified two orthogonal dimensions. The first dimension encompassed a diverse range of traditional and conservative values, including stances on issues such as abortion, authority, national security, and religious beliefs. The second of the two dimensions pitted survival values against self-expression values. A higher inclination toward survival values was characterized by a lower quality of life, reluctance to sign petitions, anti-homosexuality attitudes, and general mistrust of others. While these items may not overtly appear as direct measures of survival values or opposition to self-expression, they successfully differentiated among various world regions. Western societies tend to score high on self-expression values, while many countries outside the West, including ex-communist countries, South Asia, and Sub-Saharan Africa, exhibit low self-expression values or a strong emphasis on survival values. Interestingly, the self-expression versus survival dimension shows a significant correlation with the I-C dimension identified by Hofstede.

Although the two surveys mentioned above have been highly successful, there was also ambiguity regarding the meaning of the identified dimensions. Fortunately, cross-cultural psychologist Shalom Schwartz addressed this limitation through a different approach (Schwartz 1992, 2006). Schwartz began by compiling a comprehensive set of 65 values that were identified across many cultures and societies. Grade-school teachers and college undergraduates from over 60 countries were then asked to indicate the importance of each value as a guiding principle in their lives.

Using these data, cross-correlations among all the values were examined, indicating the psychological distance between them. Subsequently, the values were mapped onto a multidimensional space using a technique called multidimensional scaling. Through this analysis, Schwartz and his team identified several categories of values that were systematically organized in a circular fashion. Adjacent value categories were highly compatible, with values such as independence and freedom (self-direction values) being compatible with values like having a varied life and excitement (stimulation values). Compatibility decreased as the distance between value categories increased, and value categories placed on the opposite ends of any given diagonal were considered incompatible. Within this map of values, Schwartz (1992, 2006) identified two overarching dimensions. One of these dimensions is the dimension of autonomy versus embeddedness, which has shown a high correlation with Hofstede's I-C dimension and Inglehart's self-expression versus survival dimension.

2.2.1. The individualism-collectivism dimension matters. The convergence of the three lines of work on values discussed above has provided a solid foundation for defining the I-C dimension. Where the Hofstede and Inglehart surveys left interpretive questions, the evidence from Schwartz's research has offered much-needed conceptual clarity and empirical rigor. In combination, these lines of inquiry have firmly established that societies and cultures exhibit variation along the I-C dimension, which is defined by the relative emphasis placed on individual autonomy versus collective welfare. In recent decades, there has been a noticeable shift toward individualistic values in many regions. However, it is important to note that the shift is observed in most countries (Ogihara et al. 2015, Santos et al. 2017), and consequently, the relative cultural differences along this dimension remain unchanged.

Two recent extensions of this work have provided valuable insights. First, the prioritization of personal freedom over collective welfare in individualistic cultures may have implications for behaviors benefiting the collective at the expense of personal liberty. Lu and colleagues (2021) showed that individualism strongly predicted a lower likelihood to wear a face mask across 67 countries during the first year of the COVID-19 pandemic (Lu et al. 2021). This finding aligns with the idea that individualistic values may be associated with a decreased inclination to engage in collectivistic behaviors that require personal sacrifices. Second, collectivism is associated with stronger norms for external behaviors, such as not smiling at a funeral and staying quiet in a library (Gelfand et al. 2011). Conversely, individualism may be linked to stronger norms for internal states, particularly in relation to emotional experiences. This point has been addressed in relation to emotional states. Arlie Russell Hochschild, a sociologist, has highlighted the prevalence of feeling rules in the United States, which are cultural guidelines dictating which emotions are appropriate in different social settings (Hochschild 1979). Building on this work, Vishkin and colleagues (2023) assessed the strength of emotion norms by examining the concordance between each person's emotional experience and the national average of these experiences.[3] Their findings indicate that individualism positively predicts the strength of emotion norms, suggesting that

[3]The notion of norms for emotions may initially seem paradoxical, as emotions are often perceived as genuine and authentic when they arise spontaneously and without external constraints. However, one hypothesis suggests that norms for emotions serve to regulate the responses of others to individuals displaying specific emotional expressions. In this view, when a person exhibits an emotion that aligns with the cultural norms for emotions, others are more likely to provide positive feedback, thus reinforcing the emotional response. Through repeated occurrences of this feedback, the mechanisms underlying the emotion display may become spontaneous and automatic, producing genuine and authentic emotional experiences that are congruous with the emotion norms. In Section 3, we argue that this reinforcement-based social process plays a central role in cultural acquisition (Kitayama & Salvador 2017).

individualistic cultures may have more pronounced expectations regarding emotional states (Vishkin et al. 2023). These recent studies, among others, continue to support and reinforce the generative and explanatory power of the I-C construct.

2.2.2. Self-construal and individualism-collectivism. The two approaches reviewed above represent very different research traditions. The literature on culture and the self relies primarily on experimental methods, focusing on exploring cultural diversity in psychological processes. In contrast, the I-C research relies on survey methods to capture and summarize cultural values. Despite these methodological differences, the convergence of the two lines of work is encouraging. The constructs of independent versus interdependent selves are closely related to the I-C dimension. The independent culture of European Americans is more individualistic, whereas the interdependent culture of East Asians is more collectivistic. Thus, the two pairs of constructs could be used interchangeably. For instance, one could argue that mask wearing was more common in collectivistic (versus individualistic) cultures (Lu et al. 2021) due to the emphasis on the interdependence of the self with others. Similarly, individuals with independent (versus interdependent) orientations are more concerned with the normative appropriateness of their internal attributes, including their feelings, leading to greater conformity to the typical emotional profiles of their societies (Vishkin et al. 2023).

Notably, the two approaches are complementary. The I-C work, using large-scale surveys, provides broad coverage of countries but may not delve deeply into specific psychological mechanisms. Consequently, the exploration of the psychological processes that constitute individualism or collectivism has been relatively limited in the I-C research. On the other hand, the self-construal approach often utilizes elaborate experimental methods to investigate specific psychological mechanisms. However, due to the nature of such methods, it is challenging to simultaneously test multiple cultures. As a result, this line of work has predominantly focused on comparisons between East and West. Hence, it is essential to integrate the two approaches to shed new light on cultural variations in mentality. We turn to this issue in Section 4.

2.2.3. Apparent anomalies and theory refinement. As we move forward, it is crucial to acknowledge that certain phenomena may appear to challenge the theoretical framework. For example, it is well established that Americans often exhibit high levels of prosocial behavior, actively seeking and providing social support to others (Rhoads et al. 2021). Furthermore, non-Western collectivistic societies generally exhibit lower levels of general trust compared to Western individualistic societies (Schulz et al. 2019, Yamagishi & Yamagishi 1994). Additionally, the phenomenon of ingroup commitment or tribalism is commonplace in individualistic societies (Iyengar et al. 2019, Weidman et al. 2020). In some cases, this commitment can be highly passionate, leading to various intergroup behaviors, including instances of violence, as seen in numerous riots observed in the Western world, including the storming of the US Capitol on January 6, 2021.

At first glance, these phenomena would seem counterintuitive and challenging to reconcile with the existing theoretical framework. However, they present an important opportunity for theory refinement and deeper exploration. To illustrate this, consider theories of intergroup behavior. One prevailing theory explaining tribalism in the current literature is social identity theory, which suggests that individuals are motivated by social identity when it is linked to their personal identity (Tajfel & Turner 2004). According to this theory, the primary motivational force for tribalism is personal in nature, stemming from the need for self-enhancement or high self-esteem. Recent instances of political polarization in the United States have been explained by using the social identity construct (Iyengar et al. 2019). However, it is important to acknowledge that the personal motive for self-enhancement or high self-esteem may be culturally dependent. Thus, as Brewer

& Yuki (2007, p. 310) argued, "processes consistent with [social identity theory may turn out to be] most applicable to intergroup situations involving people from Western cultures." More work is needed to clarify nonindividualistic psychological mechanisms for tribalism, which may be expected to be more dominant in non-Western regions. Nevertheless, it is essential to recognize that ingroup favoritism or any other group-oriented behavior does not necessarily indicate collectivism at the level of underlying motivations.

Likewise, it is important to recognize that people in collectivistic societies may exhibit behaviors that seem individualistic on the surface. For instance, a recent study shows that East Asians are far more vigilant against sabotage by ingroup members compared to European Americans (Liu et al. 2019). A similar form of vigilance against others' sabotage and wrongdoing, known as enemyship, has been identified in West Africa, another collectivistic context (Adams 2005). These analyses are also consistent with a recent observation that many collectivistic cultures, particularly in Africa and Latin America, exhibit a strong inclination to protect self-interests (Vignoles et al. 2016). These phenomena observed outside of the Western context are not yet well understood. However, it would be premature to use these observations to challenge the hypothesis that non-Western cultures tend to be interdependent or collectivistic. Instead, more specific theories are needed to understand the underlying psychological concerns that motivate seemingly individualistic behaviors. Following this line of reasoning, Adams (2005) argued that interdependent social relations in West Africa foster enemyship. These relations can be highly binding, to the extent that the individuals feel unable to leave their group even when exploited. This social reality may sensitize them to the importance of protecting their self-interests. Just as individual motives can drive collective behaviors (as explained by social identity theory in intergroup contexts), apparently individualistic behaviors can emerge from collectivistic social relations and a sense of the self as interdependent.

2.2.4. Norm tightness versus looseness. One construct that is related to, but distinct from, the I-C dimension is the concept of tightness versus looseness of social norms. Proposed by Gelfand and colleagues (2006), this framework suggests that cultures vary in the overall strength of their norms and the extent of punishment for deviant behavior. Tightness refers to cultures with strict social norms and high levels of punishment for nonconformity, while looseness refers to cultures with more relaxed norms and lower levels of punishment (Gelfand et al. 2006). The idea behind the tightness versus looseness construct is that historical threats, such as pathogens and wars, have led to a need for social coordination and the development of strict social norms in some societies. Gelfand and colleagues (2011) used self-report measures of tightness versus looseness and showed a systematic variation across 33 nations. Importantly, while tightness is related to collectivism, they are distinct constructs, as evidenced by the finding that certain Latin American societies are high in collectivism but low in tightness.

The construct of tightness versus looseness has been validated through various measures (see Gelfand et al. 2017 for a recent review). For example, Jackson and colleagues (2021) showed that high ecological threat and greater cultural tightness predict a higher prevalence of punitive god beliefs, using both historical data and experiments supplemented by agent-based modeling (Jackson et al. 2021). In another notable study, Jackson et al. (2019) investigated the longitudinal change of tightness and its consequences. Through text analysis of historical documents, they assessed the longitudinal change of tightness of social norms in American society over the past 20 years and found evidence of a gradual loosening of social norms. This loosening was associated with various societal indicators, including increased creativity as measured by registered patents and unique baby names.

2.3. Relational Mobility

Another construct that is related to, but distinct from, the I-C dimension is relational mobility, which refers to the level of openness in a community to form new relationships and freely choose friends (Yuki & Schug 2020). A large-scale online survey study conducted by Thomson et al. (2018) identified variation in relational mobility across 39 countries, with lower relational mobility observed in many collectivistic cultures, including East and Southeast Asia and the Middle East. This pattern is consistent with the notion that collectivistic cultures prioritize stable, closely knit communities where social relations are often ascribed rather than chosen (Schug et al. 2010). However, it is worth noting that Latin American societies disrupt this association, as they tend to exhibit high relational mobility despite their collectivistic tendencies. We return to this puzzle in Section 4.

Recent work shows that relational mobility predicts various outcomes across cultures. For example, a study by Awad et al. (2020) tested moral decision making using different versions of the trolley problem, a scenario involving sacrificing one person to save several others. The study found that individuals in relationally stable societies were less likely to endorse sacrificing one person, regardless of the version of the problem, compared to individuals in relationally mobile societies. This association remained significant even after controlling for the I-C dimension. The authors suggest that, especially in relationally stable societies, people may be more reluctant to commit the arguably unpopular act of killing someone, even though this act would save several lives and thus make sense on a utilitarian basis alone. Conversely, people in relationally mobile societies may be more rational or utilitarian and be willing to balance costs and benefits from a detached third-person perspective.

Relational mobility is also relevant to the spread of infectious diseases that transmit through human contact, as observed during the COVID-19 pandemic. Salvador et al. (2020) examined the growth curves of confirmed COVID-19 cases and deaths in the first 30 days of the outbreaks in 39 countries for which relational mobility scores were available. The study found that countries high in relational mobility, such as Mexico and the United States, experienced a faster spread of the virus compared to societies with low relational mobility, such as Japan and Hungary. Importantly, these effects persisted even after controlling for the I-C dimension and norm tightness.

2.4. Interim Summary

The evidence indicates that dimensions differentiating various world cultures include independent versus interdependent self, individualism versus collectivism, tightness versus looseness of social norms, and relational mobility. They are related but distinct and, taken together, can help explain some of the psychological diversity across the globe today.

3. CULTURAL EVOLUTION

Understanding the cultural variations in mentality requires a better understanding of how different cultural zones have formed; while the East and West are commonly discussed, there are numerous other cultural zones that contribute to global diversity. The origins of these cultural zones can be traced to ancient times, even though they are relatively recent in terms of human evolutionary history. *Homo sapiens* evolved in Africa more than 200,000 years ago (Cann et al. 1987) and subsequently migrated out of Africa around 50,000 to 70,000 years ago. During this period, human subsistence primarily relied on hunting and gathering. Approximately 12,000 years ago, the advent of agriculture and animal husbandry occurred in the Fertile Crescent region, encompassing modern-day Syria and adjacent areas. This transformative development rapidly spread

across the Eurasian continent and eventually beyond. To understand the differentiation between the East and West, it is crucial to examine the time span of at least 10,000 years. Psychological research informed by an analysis of this historical period has begun to emerge (Kitayama et al. 2022, Muthukrishna et al. 2021). To make further progress, it is important to consider how contemporary cultures may be both constrained and enabled by ecology and geography on the one hand and genetics on the other hand.

3.1. Ecology and Geography

When examining cultural and societal development from a macroscopic perspective, there is no question that geography and the associated ecology play decisive roles in determining the emergence, flourishing, and characteristics of different cultures and societies (Morris 2010). As Jared Diamond outlined in his book *Guns, Germs, and Steel*, ecological conditions tend to be more similar across the horizontal axis of the Earth than along the vertical axis (Diamond 1999). This geographic reality had significant implications for the spread of technical innovations and cultural inventions prior to the advent of modern transportation systems. Hence, before trains or trucks, let alone large container ships or cargo jets, various technological innovations and cultural inventions traveled primarily on the horizontal axis. This consideration may explain the rapid spread of agriculture, which originated in the Fertile Crescent, to the Mediterranean region.

A closer examination of specific cases reveals that the effects of geography are intertwined with socio-historical contexts. For example, the British Isles historically were considered on the periphery of civilization. However, their access to the ocean provided a significant advantage during the sixteenth and seventeenth centuries, when European powers were competing to expand their colonies using naval power (Morris 2022). In this historical context, geography played a crucial role in shaping Britain's maritime strength and its colonial pursuit.

Expanding on these insights, we may propose that understanding the differentiation between East and West on the Eurasian continent over the last 10,000 years requires considering the interplay of geography, ecology, socio-historical factors, and cultural developments (Kitayama et al. 2022, Morris 2010). In particular, one key factor contributing to the East-West differentiation is the availability of crops suitable for domestication, influenced by geography, climate, and various ecological conditions. Wheat, a major crop that thrived in the Western half of Eurasia, was domesticated in the Fertile Crescent approximately 8,000 years ago and quickly spread to the Western regions of the continent. However, this spread was hindered in East Asia due to geographic and climatic conditions. The highly humid and warm climate in East Asia made wheat cultivation challenging. Instead, rice emerged as a staple crop in central China, where it was suitable for the local geography and climate. Compared to wheat, rice cultivation requires higher degrees of social coordination and cooperation due to the regulated use of water and the need for irrigation technologies. Successful rice farming necessitates active cooperation among members of the farming community to ensure equitable access to water for individual rice paddies (Uchida et al. 2019). This cooperative nature of rice farming creates strong pressures to conform to community rules and norms, fostering interdependence and collectivistic tendencies.

Talhelm and colleagues (2014) proposed that rice, as opposed to wheat, serves as a distal factor that fosters highly collectivistic social values and institutions. In support of this proposal, Talhelm and colleagues have shown systematic regional variations within China. Specifically, people from traditionally rice-growing regions exhibit a more holistic cognitive style, a more interdependent sense of the self, stricter social norms, and a higher propensity toward self-effacement (Talhelm & English 2020; Talhelm et al. 2014, 2023). This evidence suggests a broader hypothesis that cultural zones encompass a combination of beliefs and practices shaped by the unique geographies and

ecologies over thousands of years. In other words, each zone represents a complex interplay of these interconnected constituents, forming an eco-cultural system.

3.2. Eco-Cultural Complex

Eco-cultural complex: an organized set of cultural practices and meanings grounded in and promoted by the existing ecological, historical, and geographic conditions

At first glance, our emphasis on ecology and geography may seem reminiscent of the notion of evoked culture commonly discussed in evolutionary psychology (Tooby & Cosmides 1992). This idea suggests that objective ecological conditions existing in contemporary cultural environments (e.g., sex ratio) are sufficient to foster (and thus evoke) specific psychological tendencies (e.g., varying levels of aggression in society) (Sng et al. 2018). A preferred heuristic in this body of work is to observe nonhuman animal behaviors as a function of objective environmental conditions and develop analogs in human behaviors. For example, researchers might establish an association between sex ratio and aggression in nonhuman animals (e.g., fruit flies; Bath et al. 2021); develop a hypothesis proposing a similar association between sex ratio and the prevalence of various violent crimes, such as rape, across societies; and subsequently test it (e.g., Diamond-Smith & Rudolph 2018). While this approach is potentially valuable, it is merely one heuristic and has its limitations.[4]

The central aim of the evolutionary approach is to establish connections between human behavior and the natural world. This disciplinary orientation might help explain why some proponents of the evoked culture perspective downplay the significance of cultural and social institutions, which often play a mediating, amplifying, and nullifying role in the evocative effects of ecology. However, the apparent reluctance to examine the role of cultural and social institution can be problematic. For example, consider the case of rice. Ecological conditions conducive to rice farming give rise to farming villages equipped with irrigation systems. These transformed ecological conditions are no longer purely natural or strictly objective. Thus, a complex interplay of eco-cultural conditions emerges, forming a "behavioral environment" [Hallowell 2016 (1955)]. Human activities have already altered this complex by turning rice into a food source. Consequently, this eco-cultural complex encompasses various practices (e.g., water management conventions for rice cultivation) and carries diverse meanings (e.g., ideologies and religious beliefs). In turn, this complex of rice-farming villages shapes contemporary mentality (Talhelm et al. 2014, Uchida et al. 2019).[5]

With the exception of natural forces such as earthquakes, nearly all ecologies have been profoundly influenced by human activities in the previous generations. In a classic monograph published in 1935 (whose English translation is published in Watsuji 1988), Tetsuro Watsuji, a professor at Kyoto University, made an important observation that predates modern research on ecology and mentality. As one interpreter of Watsuji noted, "space as a container, or environment considered as something without human subjects in it, is merely an abstraction" (McCarthy 2019, p. 508). This is the case because any psychological effects evoked and fostered by contemporary

[4]To illustrate such limitations, consider a learning experiment involving a mouse that presses a bar to receive food pellets and consume them within a Skinner box. A researcher might develop an analogy from this observation to human eating behavior, suggesting that humans would order and consume a five-course meal when placed in a Michelin three-star French restaurant. However, such an analogy overlooks the cultural and social institutions that have historically shaped diverse culinary traditions, including those found in France. These cultural factors may in turn contribute to the shaping of different psychological orientations (Rozin et al. 1997, 2003).

[5]Nonhuman animals also engage in niche construction (Odling-Smee et al. 2000), actively modifying the natural environment. Further, their behavioral and even morphological characteristics can adapt to the environment they create. This process is analogous to human culture. As in all analogies, including the one in the evoked culture construct under discussion, this analogy is useful, and sometimes illuminating, to a certain extent. However, it may also obscure the socio-cultural processes involved in the historical transformations that have given rise to the diverse cultural variations we observe today.

ecologies are inseparably intertwined with the cultural practices and meanings that have historically shaped those ecologies. The extensive shaping and radical transformation of behavioral environments through human activity have likely been ongoing since the emergence of the Homo lineage, if not earlier (Tomasello 2019). Notably, this process is assumed to have been particularly intensive over the past several thousand years as humans formed increasingly larger social units and institutions to adapt to their surroundings. This observation is consistent with numerous instances of diverse cultures emerging in a single region, despite sharing ostensibly identical natural ecologies (Graeber & Wengrow 2021). It is hardly possible to overemphasize the significant role of historical transformations in understanding contemporary cultural variations in mentality (Kitayama et al. 2022, Morris 2010, Muthukrishna et al. 2021).

Genetic determinism: a view that genes influence, and often determine, human cultural traits, leading in its malicious form to racism and the ideologies supporting it

Coevolution of culture and genes: the process by which culture selects genetic variants, which in turn reinforce the culture from which they are derived; it has accelerated over the last 50,000 years

Genetic mediation: a view that culture is a potent selective context for genes, which in turn undergird the culture from which they are derived

3.3. Coevolution of Culture and Genes

Despite the crucial significance of geography and ecology in cultural evolution, we should not underestimate the potential role of genetics. While the common lay view suggests that genes alone determine culture, leading to theories of genetic determinism, it is crucial to recognize that genes function within the context of cultural evolution and respond to and reinforce it. Thus, the role of genes might be better conceptualized as mediating or moderating the impact of culture on human psychological processes.

3.3.1. Genetic determinism. The question of how genes might influence cultural differences in mentality has been an important yet often contentious topic. Racist theories of culture have frequently relied on genetic differences to try to account for variations in contemporary economic or intellectual achievements (Gould 1981). These theories assert that culture is primarily driven and shaped by genetic predispositions, with genes seen as the sole determinants of cultural characteristics.

Genetic determinism, when applied to culture, poses problems not only politically and culturally but also theoretically and empirically. Extensive evidence demonstrates that learning plays a crucial role in the acquisition and transmission of culture (Greenfield et al. 2003). This evidence strongly suggests that characteristics such as individualism and collectivism are highly unlikely to be genetically determined. Multiple cultural forms can emerge from the same set of genes, indicating that culture is not solely dictated by genetic factors. Therefore, it is essential to temper genetic determinism, acknowledging its limitations and introducing nuanced perspectives that modify it substantially. However, it would be overly simplistic to completely dismiss the influence of genes. There is an urgent need to develop theories that explore how genes contribute to, support, and facilitate various aspects of culture, even if they do not determine them outright. Recent research has proposed the coevolution of culture and genes, wherein culture provides the context for genetic selection, which in turn reinforces the culture on which it is based. Two perspectives must be recognized.

3.3.2. Genetic mediation: culture as a selection context. First, it is important to consider that the causal direction between culture and genetics may operate in reverse as well: Culture can influence genetic selection. Across generations, ecological environments shaped by culture serve as powerful contexts for genetic selection (Henrich 2015, Laland et al. 2010, Richerson & Boyd 2005). The specific genetic elements favored by culture may function to support and reinforce the very culture from which they have emerged. From this perspective, genes play a mediating role in the intergenerational transmission of culture.

Supporting the notion of genetic mediation, evidence suggests that the rate of selection has accelerated in humans in the relatively recent evolutionary past, particularly over the last several

thousand years. Numerous genes (somewhere between several hundred and two thousand) display signs of this accelerated selection (Hawks et al. 2007). These genes may have coevolved with culture, whereby culture acts as a context for genetic selection. Moreover, in certain cases, the selected genes can reinforce the eco-cultural complexes for which they have been selected, thus perpetuating them (Henrich 2015, Laland et al. 2010). One notable example involves genetic mutations that enable lactose digestion, which would be advantageous in regions where consumption of animal milk is crucial for survival (Richerson & Boyd 2005). There is a tight relationship between the historical prevalence of milk production and the occurrence of such mutations across the globe. Once selected for milk consumption, these genes would contribute to the continuity of pastoral traditions in future generations.

Research on the alcohol dehydrogenase gene, specifically *ADH1B*, is relevant in understanding East Asian collectivism. In the process of fermenting rice, which transforms it into rice wine, alcohol is produced. When alcohol is metabolized, it generates a byproduct called acetaldehyde. Higher concentrations of acetaldehyde in the body can lead to facial flushing, increased susceptibility to intoxication, and heightened hangover effects. A specific mutation of the *ADH1B* gene reduced the efficiency of acetaldehyde breakdown, causing a rapid buildup of acetaldehyde in the bloodstream upon alcohol consumption. This mutation is associated with decreased alcohol tolerance, commonly observed among East Asians, and is colloquially referred to as Asian flush. Interestingly, this *ADH1B* mutation emerged approximately 8,000 years ago in the southeast region of present-day China, predominantly in rice-farming areas. Evidence indicates that the mutation was positively selected in these regions, with a higher prevalence of carriers closer to the epicenter of rice cultivation in ancient China (Peng et al. 2010). We may speculate that rice wine held significant value, and excessive consumption could impair one's ability to work effectively. Consequently, farmers who consumed excessive amounts of alcohol may have had reduced opportunities to find partners within tightly knit rice-farming communities. In this scenario, the *ADH1B* mutation is precipitated by the cultural ethos of collectivism, which prioritizes hard work dedicated to rice production. Further, the *ADH1B* mutation may have facilitated the industriousness required for rice farming within the collectivistic cultural context, thereby contributing to the stability of the eco-cultural complex across generations.

3.3.3. Genetic moderation: genes for cultural learning. A second perspective on genetic influences on culture comes from the idea that specific genes may support increased efficiency of cultural learning and acquisition processes (Kitayama & Yu 2020). People with genotypes that support cultural learning will exhibit more pronounced adherence to cultural norms and patterns of behavior, meaning that genes moderate the impact of culture on mentality.

This view is based on the understanding that learning plays a decisive role in the acquisition of cultural practices and meanings. To this understanding, it contributes the insight that the mechanisms involved in learning are genetically regulated, suggesting a potential genetic influence on cultural acquisition. One gene that appears to be involved in this process is the dopamine D4 receptor gene (*DRD4*). The 7- or 2-repeat allele of *DRD4*, often referred to as the 7/2-R allele, is known as a plasticity allele, since carriers of this allele are strongly influenced by parental quality (Belsky & Pluess 2009). Recent research indicates that carriers of this allele exhibit heightened sensitivity to both rewards and their contingencies (Glazer et al. 2020). Hence, those carrying the 7/2-R allele of *DRD4* may display culturally typical mental and neural phenotypes, especially when raised in environments organized by cultural practices and meanings.

Yu et al. (2019) found that the volume of the prefrontal cortex, including the orbitofrontal cortex (OFC) and medial prefrontal cortex (mPFC), tends to be larger for European American college students compared to East Asian college students. This finding is consistent with existing evidence

Genetic moderation: the process by which genes augment cultural learning

that mental functions associated with OFC (e.g., preference-based decision making) and mPFC (e.g., development of abstract self-representations) are more closely related to independence than to interdependence. If this brain volume difference is a result of cultural learning, it might be more pronounced among carriers of the *DRD4* 7/2-R than among noncarriers. Supporting this reasoning, Yu et al. (2019) tested Asian and European American college undergraduates in a US university and found that the cultural difference in the prefrontal volume is statistically significant among the carriers but not among the noncarriers. Similar evidence has been found for another brain region, the temporoparietal junction (TPJ), which is involved in perspective taking and mind reading—mental functions likely associated with interdependence rather than independence. The TPJ brain volume was significantly greater for East Asians compared to European Americans, and again, this cultural difference was significant among carriers but not among noncarriers (Kitayama et al. 2020; see Kitayama & Yu 2020 for a review).

The current working hypothesis is that the 7/2-R allele of *DRD4* emerged over the last 50,000 years (Wang et al. 2004) and turbo-charged the acquisition of culturally sanctioned behaviors suitable for survival (e.g., interdependence in East Asian regions suitable for rice farming) (Kitayama & Yu 2020, Kitayama et al. 2016). It is important to note, however, that this turbo-charging could backfire, since culture sometimes does require changes and innovations. Also, the 7/2-R allele of *DRD4* can entail adverse effects when its carriers are placed in disorganized and chaotic environments entailing random or near-random reward contingencies accompanied by strong immediate rewards, such as drugs and sex (Sagvolden et al. 2005). These reasons may help explain why the 7/2-R allele is present only in approximately 30% of both European American and East Asian populations.

3.3.4. Monogenic regulation of polygenic systems. A comment is warranted on the polygenic nature of numerous phenotypes, including those in social and cultural domains. The consensus in genetics research is that a multitude of genes influence nearly all phenotypes. For example, a large number of genes contribute to human height variation (Visscher 2008). Based on this consensus, many behavioral scholars testing genetic effects have concluded that the influence of any single gene phenotype is highly unlikely, resulting in a widespread rejection of single-candidate-gene approaches (Duncan & Keller 2011). Indeed, as a general statement, there is no denying that single genes are unlikely to exert strong influences on phenotypes. However, exceptions to this rule do exist, and when they occur, they can provide valuable insights.

We may hypothesize that genetic selection by culture operates on preexisting genetic networks and alters the parameters of their functioning. Hence, in the context of cultural adaptation, monogenic modulation may prove rather common, even though the phenotype at issue is fully polygenic. We have already discussed two such cases. Both lactose tolerance and alcohol intolerance are likely influenced by multiple genes (polygenic), but they are regulated by a single gene (monogenic). Despite being monogenic, these effects are sizable and consequential. It is evident that culture capitalizes on specific genetic variations that significantly influence the functioning of polygenic networks, resulting in phenotypes that enhance adaptation (i.e., survival and reproduction). In other words, through trial and error, culture identifies single genes that have a profound impact on the functioning of polygenic systems of digesting milk products, alcohol, and perhaps many more. The case of *DRD4* is analogous, although it does not directly impact behavioral outcomes. The *DRD4* mutation under discussion (the 7/2-R variant emerging in the last 50,000 years) upregulates the functioning of the preexisting gene network of reward processing. Consequently, this monogenic upregulation of the polygenic reward processing system facilitates the acquisition of culture-typical phenotypes (thus called genetic moderation). Under these conditions, single genetic mutations may be sufficient to produce significant effects on phenotypes.

3.4. Interim Summary

Over the last 50,000 years, and particularly within the last 10,000 years of cultural evolution, humans gradually formed increasingly large and elaborate eco-cultural complexes for adaptation and survival. These eco-cultural complexes represent organized systems of cultural meanings and practices that are influenced by ecology and geography. Moreover, specific genetic mutations may have played a role in fortifying and sustaining these complexes. Some of these mutations may have supported various cultural activities (e.g., herding). Further, the evidence indicates that certain genetic changes, including of the *DRD4* gene, during this period facilitated the acquisition of increasingly elaborate eco-cultural complexes through learning processes.

4. BEYOND EAST AND WEST

Up to this point, we have reviewed the available evidence demonstrating the variations among cultures along the dimension of independence versus interdependence or individualism versus collectivism. We also discussed the significance of other dimensions, including tightness versus looseness and relational mobility. We then presented evidence indicating that each cultural zone may have evolved over the last 10,000 years by developing its distinctive eco-cultural complex. In this section, we will integrate these two sets of evidence to illustrate how several cultural zones that exist today on the globe may have diverged and differentiated over this period.

4.1. Cultural History over the Last 10,000 Years

We already noted that anatomically modern humans evolved in the African continent more than 200,000 years ago (Cann et al. 1987, Reich 2018). Subsequently, a small group of humans ventured out of Africa around 50,000–70,000 years ago, embarking on a migration that likely took generations to complete. In the context of evolutionary timescales, this migration was rapid and unprecedented. The descendants of these individuals went on to populate the Eurasian continent, eventually reaching North and South America as well as Oceania. During this period, humans primarily relied on hunting and gathering as their way of life. Around 10,000–12,000 years ago, a significant transition occurred, with the emergence of farming and herding in the Fertile Crescent and neighboring regions. This transformative shift, often referred to as the agricultural revolution, had a profound impact on human societies. It led to a shift from a nomadic lifestyle to settled communities centered around domesticated crops and livestock, enabling the development of sedentary and more complex social structures.

There is a widespread consensus that group affiliation is crucial for survival. Over the next several thousand years, early kinship-based bonds evolved into quasi-kin units like tribes and clans, which served as the foundation for larger feudal social institutions, including empires and kingdoms. The survival of individuals became intertwined with the survival of their respective social units (Wilson & Dugatkin 1997). Consequently, the emerging values of these societies placed a greater emphasis on security, welfare, and cohesion within the ingroup, often at the expense of individual autonomy and freedom. This prioritization of collectivism over individualism prevailed for the majority of human history. It is only within the past 1,000 years that individualism began to take root as a defining principle of life in the Western regions of the Eurasian continent, giving rise to what is now known as the modern West (Morris 1991, Taylor 1992). This development aligns with the evidence reviewed in Section 2. However, preceding the emergence of the modern West, various non-Western groups across the globe developed diverse eco-cultural complexes for adaptation, depending on the geography and ecology of different regions. Hence, the forms of collectivism or interdependence in each region should vary from one another.

Table 1 Cultural variations in cognition, emotion, and motivation: patterns of the empirical evidence available so far from five cultural zones

	Western cultural zone (e.g., North America and Western Europe)	East Asian cultural zone (e.g., China, Korea, Japan, and Taiwan)	Arab cultural zone (e.g., Lebanon, Morocco, and Saudi Arabia)	Latin American cultural zone (e.g., Chile, Colombia, and Mexico)	South Asian cultural zone (e.g., India and Pakistan)
Cognition (reasoning style and analytic versus holistic attention)	analytic	holistic	holistic	holistic	analytic in reasoning (but holistic in attention)
Emotion (expression versus moderation)	expressive (of independent emotions)	less expressive (especially of positive emotions)	ND	expressive (of interdependent emotions)	ND
Motivation (self-enhancement and assertion)	enhancing	non-enhancing	enhancing	moderately enhancing	enhancing

Darker shades of color (*dark blue* and *dark green*) indicate possible differences with the seemingly identical tendencies represented in lighter color (*light blue* and *light green*). Abbreviation: ND, no data.

A significant portion of the evidence on cultural variations in psychological processes, as reviewed in Section 2, has focused on comparisons between Western cultures (referred to as the West) and East Asian cultures (referred to as the East). However, in recent years, there has been a concerted effort to expand this research beyond the West and East as defined by the Western and East Asian cultural zones, with a particular emphasis on exploring Arab, Latin American, and South Asian cultural zones.

East Asian cultural zone: a geographic area defined by an eco-cultural complex highlighting social harmony and self-effacement and promoted by farming, typically rice farming

South Asian cultural zone: a geographic area defined by an eco-cultural complex highlighting debate and argumentation as a means for maintaining commerce-based social relations

Although this work is currently ongoing, a pattern has begun to emerge and is summarized in **Table 1** (Kitayama et al. 2022). As discussed in Section 2 of this article, Western Europeans and East Asians show markedly different psychological tendencies in cognition, emotion, and motivation. However, when the same tendencies are tested in other non-Western regions, the pattern seems to fall somewhere in between, as certain cultural zones display similarities to Western cultures in specific aspects. In **Table 1**, these tendencies are represented by a darker shade of blue than that used for the West, indicating the possibility that seemingly identical tendencies could still differ in significant ways. Conversely, certain aspects align more closely with the effects found in East Asia. Again, the apparent similarities between East Asia and some non-Western regions may also involve notable differences, denoted by a darker shade of green. This section reviews the evidence supporting these observations and examines the cultural evolutionary processes that might account for these patterns.

At first glance, this review might appear to challenge the current East-West paradigm, and there may be a temptation to replace it with a new framework. However, upon closer examination, it becomes evident that these apparent anomalies serve to significantly broaden and enrich the existing paradigm rather than refute its fundamental premises.

4.2. Honor in Arab Regions and Their Vicinities (Including the Mediterranean)

The Arab world today encompasses a diverse geographic region spanning from Western Asia to West Africa. Although marked by heterogeneity, many of these countries share Islam as a primary religion and Arabic as a common language. Additionally, there are some cultural similarities with adjacent countries in the Mediterranean (e.g., Spain and Turkey) and South West Asia (e.g., Iran). The central construct traditionally used to characterize this broad region, potentially extending to the Mediterranean, is the notion of honor (Gilmore 1987). Honor is a form of esteem conferred on individuals by others within the community. It can be asserted and validated through public demonstrations of skill, competence, and prestige. The honor code dictates a duty to respond aggressively to insults, even resorting to violence in some cases (Nisbett & Cohen 1996) and exhibiting antisocial behaviors (Herrmann et al. 2008). Furthermore, honor encompasses adherence to sexual norms, particularly for women. Failure to attain and maintain honor can result in shame, which carries various social consequences, including public shaming, social exclusion, and, in extreme cases, suicide or homicide (as shown in the so-called honor killings of women who have tarnished the family honor by violating sexual taboos) (AlQahtani et al. 2022).

Uskul and colleagues (2023) conducted an extensive empirical investigation of two Arab countries, Lebanon and Egypt, and five adjacent countries in the Mediterranean (Spain, Italy, Greece, Turkey, and Cyprus), testing the hypothesis that all these countries prioritize honor (Uskul et al. 2023). The researchers compared these countries with East Asian (Korea and Japan) and Western countries (the United States and United Kingdom), assessing college students from each country using various indicators of independence and interdependence based on prior work (Kitayama et al. 2009, Vignoles et al. 2016). While the pattern that emerged was complex, it is notable that the Arab/Mediterranean groups exhibited more similarities to Westerners than to East Asians. For example, the reported intensity of experiencing socially disengaging emotions (e.g., pride, self-esteem, anger, and frustration) relative to socially engaging emotions (e.g., closeness, connection, guilt, and shame) was high for Mediterranean groups, similar to the respective intensities for Westerners.

Prior work has suggested that socially disengaging emotions are associated with the promotion of the self's independence from others, whereas socially engaging emotions foster interdependence with others (Kitayama et al. 2000, 2006; Uchida & Kitayama 2009). This work suggests that disengaging emotions are independence inducing. Hence, one could argue that Mediterranean groups are as independent as Westerners and more so than East Asians. However, it is important to note that the evidence linking disengaging (rather than engaging) emotions to independence (rather than interdependence) is based on comparisons between Westerners and East Asians. In these cultures, disengaging emotions are a clear indicator of the self's independence. However, the association between disengagement and independence may not be universally applicable or extend beyond the East and West. In honor cultures, such as many of the Mediterranean and Arab cultures, the perception of disengaging emotions, such as pride and anger, may differ. In these cultures, expressing such emotions can be viewed as a display of one's honor, enabling individuals to gain public esteem and become integrated into the community. This dynamic may be relatively rare in East Asia. This may be a first instance of cases in which the meaning of specific behaviors depends on an overarching cultural frame. Within the honor cultural regions in the Arab and adjacent areas, disengaging emotions could be a signature of interdependence rather than independence.

Initial evidence supporting this possibility was found in a study by San Martin et al. (2018). In this work, the researchers employed a conventional priming method available in the literature to induce either independence or interdependence. Participants were asked to think about how they differ from other family members (designed to prime independence) or how they are similar to

them (designed to prime interdependence). One of the studies tested Moroccan undergraduates in Morocco and showed that the intensity of experiencing disengaging emotions was greater in the interdependence priming condition than in the independence priming condition. This finding suggests that disengaging emotions can signal the self's resourcefulness, stature, and honor vis-à-vis relevant groups. Further, in the study by Uskul and colleagues (2023) discussed above, the intensity of experiencing disengaging emotions (a putative indicator of interdependence in the Arab and adjacent regions) predicted social well-being, as assessed by satisfaction in one's relations and communities, for people in the Mediterranean and Arab regions but not in either East Asian or Western countries.

Arab cultural zone: a geographic area defined by an eco-cultural complex highlighting self-assertiveness, promoted by harsh desert environments, either imagined or actual

The assumption that disengaging emotions form a signal of interdependence in the Arab and adjacent regions has been reinforced by another recent study (Atari et al. 2020). This study sought to validate the moral foundation theory (MFT; Graham et al. 2013) in Iran, a country presumed to share similarities with other countries in this region in terms of its emphasis on honor. MFT had primarily focused on the contemporary US context. Converging evidence shows that two of the components putatively individuating (fairness and care) are higher in liberals (versus conservatives), whereas the remaining three putatively binding components (authority, loyalty, and purity) are higher in conservatives (Graham et al. 2013). Atari et al. (2020) used a standard questionnaire assessing the five proposed foundations of morality (Graham et al. 2011) and examined network structures of the five morality components in the United States and Iran, using a computational procedure called adaptive LASSO algorithm (Borsboom et al. 2021). The procedure enabled them to identify the most parsimonious network among the five components. In the US sample, two separate clusters emerged (fairness and care on the one hand and authority, loyalty, and purity on the other hand), thereby confirming the theory's validity in the United States. However, in Iran, this clear-cut structure did not emerge. Instead, all the five components related to each other directly or indirectly, with loyalty serving as a central node uniting all the remaining four components. The authors suggest that Iranian morality is organized by *qeirat* (or *ghеirat*), glossed as "honor," which is a culturally unique constellation of moral values that would protect "a loved/sacred thing against intrusion" (Atari et al. 2020, p. 369). Another recent paper finds the concept of qeirat in Iran to be associated with romantic betrayal and intrusion by third persons in addition to the need for protecting close others (Razavi et al. 2023). These descriptions amount to the hypothesis that the culture of honor found in this region may be fundamentally interdependent.[6]

One central insight from the growing research on honor in the Arab cultural zone and adjacent regions is the possibility that self-enhancement or assertion of the self—as reflected, for example, in a show of disengaging emotions—can be a basis for interdependence that requires ingroup protection. This body of work challenges the assumption in East-West research that disengaging emotions are tied to interdependence rather than independence. The data based on the priming procedure (San Martin et al. 2018) and the association with social well-being (Uskul et al. 2023) have offered initial evidence that social disengagement is associated with independence in East Asia and North America, while being associated with interdependence in Arab and related cultures.

[6]The culture of honor is also well documented in the US South (Nisbett & Cohen 1996). However, it remains to be seen how interdependently or independently leaning the honor culture in the US South might be. Qeirat and other honor constructs in the Arab and adjacent regions emphasize honor shared in a group; hence, they are demonstrably interdependent. By contrast, the notion of honor as realized in highly individualistic US cultural contexts may focus more, if not exclusively, on the protection of personal property and safety, potentially reflecting a more independent perspective. Future work should examine the possibility that the notion of honor can vary in the degree of independence and interdependence associated with it. Whereas honor could be more interdependent in the Arab and adjacent regions, it could lean more toward independence in the US South.

4.3. Emotional Expression in Latin America

Latin American countries, including those in Central America and the Caribbean, share a common history of colonization by Spaniards and Portuguese in the fifteenth and sixteenth centuries. Numerous enslaved Africans were brought to the continent. The region is also home to various indigenous cultures. Unlike the United States, Latin America experienced a high degree of interracial mixing during the colonial period, shaping its own unique identity influenced by Latin European culture (Martinez-Echazabal 1998).

Latin American cultural zone: a geographic area defined by an eco-cultural complex highlighting emotional expression as a means for social interdependence, promoted by ethnic and linguistic diversity

Latin America stands out as a unique region characterized by a combination of collectivism, loose social norms, and high relational mobility. This represents a significant departure from the typical associations observed between collectivism, norm tightness, and low relational mobility in most cultures. While collectivism in many cultures emphasizes ingroup cohesion through the tightening of social norms and exclusion of outsiders, the collectivism found in Latin America appears distinct. It focuses on maintaining the viability of the ingroup by extending social networks and embracing diverse individuals from outside. For this and possibly other reasons, the Latin American cultural zone may exhibit a type of collectivism or interdependence while remaining socially open and relatively loose in social norms.[7]

The evidence is growing that Latin Americans value positive emotions. This propensity toward positive emotions appears quite strong, much stronger than among East Asians and Asian Americans, although it is not as strong as it is among European Americans (Senft et al. 2021). This strong preference for positive emotions makes Latin Americans more similar to European Americans than to East Asians in this dimension. Moreover, like European Americans but unlike East Asians, Latin Americans value high-arousal emotions (Ruby et al. 2012). The apparent similarity between European Americans and Latin Americans can be partly attributed to Latin Europe's influence on Latin America. Given this similarity, some scholars have argued that Latin Americans are as independent as European Americans (Krys et al. 2022). However, it is important to note that the assumption linking emotional expression to independence and emotional moderation to interdependence has primarily been established through comparisons involving European Americans and East Asians. Therefore, the generalizability of this linkage beyond these comparisons remains uncertain.

Once again, the meaning of emotional expression becomes uncertain when considered outside of cultural contexts. Similar to the hypothesis proposed for Arabs above, the interpretation of emotional expression may differ for Latin Americans. For Westerners, emotional expression may serve as a display of one's feelings and passion, signifying the self's independence. However, for Latin Americans, it may signify something else. Campos & Kim (2017) argue that Latin Americans and Americans with Latin American heritage (Latinx) are convivial and expressive of positive emotions (Campos & Kim 2017). This argument is consistent with a core idiom of *simpatia*, a common term in Latin America to describe a preference for interactions that are warm and positive (Triandis et al. 1984). Moreover, the existing evidence indicates that the emphasis on emotional expression historically depends on ethnic and linguistic diversity of a given region (Niedenthal et al. 2019). Latin America exhibited high levels of ethnic and linguistic diversity over the past several hundred years, which may have contributed to a greater utilization of emotional expression as a means of social communication.

In a recent study, Salvador et al. (2023) tested whether Latin Americans use emotional expression to connect with others and attain emotional resonance with them. They compared individuals

[7]This propensity toward inclusivity may have been influenced, at least in part, by the ancient Roman tradition of territorial expansion as a strategy for ingroup survival (Eckstein 2007). Future work should examine ancient texts to seek insights to evaluate the validity of this conjecture.

from several Latin American countries (Chile, Colombia, and Mexico) with European Americans. Participants reported how strongly they would express various emotions in four situations that varied in valence (positive or negative) and type (personal or social) (i.e., something good/bad happening to the self/someone else). The researchers found two striking cultural differences. First, Latin Americans were highly expressive of positive socially engaging emotions (e.g., friendly feelings), which would promote interdependence. Interestingly, this effect was most pronounced when something bad happened to another person, indicating that the Latin American tendency to express positive emotions of friendliness and connectedness is contingent on others' setbacks and hardships. This evidence is consistent with the hypothesis that emotional expression is in service of building and maintaining interdependence in Latin America. This effect existed but was much weaker for European Americans. Second, European Americans were also highly expressive of positive emotions, but this effect was especially pronounced with socially disengaging emotions (e.g., pride), which would promote independence. Notably, this effect was most apparent when something good happened to the self, consistent with the hypothesis that emotional expression is in service of showing and affirming the self's positivity (which may be yet another case of self-enhancement). Although existent, this effect was much attenuated among Latin Americans.

One important insight garnered from the emerging work in Latin America is that emotional expression is a means to nurture and maintain social interdependence, which starkly contrasts with a common assumption in the current East-West paradigm that emotional expression is a means to promote independence. Initial evidence regarding what emotions people express in Latin and North America supports this proposition. However, more work is needed to explore further implications of the emerging thesis.

4.4. Argumentative Interdependence in South Asia

South Asia is located between East Asia and the Arab world, encompasses the Indian subcontinent, and has historically served as a hub of trade and cultural exchanges between Eastern and Western regions of the Eurasian continent. This rich tradition of interaction and negotiation across diverse cultures may have given rise to numerous ancient schools of thought in the region. Moreover, the importance of negotiation in business transactions may have contributed to the significance of debating in this cultural area. At present, debating is one of the most popular extracurricular school activities in India and Pakistan (Cambr. Assess. Int. Educ. 2018). Similar to emotional expression, debating is typically regarded as a show of independent self in Western cultural contexts (Morling et al. 2002, Tsai et al. 2007). However, the meaning of debating may vary across cultures. In South Asian cultural contexts, debating may hold a different cultural meaning: It may serve the purpose of fostering interdependent social relations. The limited empirical evidence available supports this possibility. This evidence indicates that Indians do not engage in argumentation solely to influence others and impose their views on others; rather, they argue with the intention of assisting others and ensuring that others benefit from their arguments. The style of argumentation in Indian debates tends to be more prosocial, contrary to the common assumptions associated with debating in Western contexts (Savani et al. 2011).

Recent evidence indicates that South Asians are argumentative (Lu 2022, Sen 2013). This trait linked to the South Asian cultural zone appears to contribute to the success of South Asian immigrants in business settings in the United States. Lu and colleagues have begun to document that South Asians are more likely than their East Asian counterparts to assume leadership roles both in Master of Business Administration (MBA) courses in US business schools and in top US companies (Lu 2022; Lu et al. 2020, 2022). One major reason for South Asians' success is their propensity to make arguments. South Asians' strength only highlights a cultural mismatch that East Asians

experience in the United States. Typically, East Asians tend not to speak up in various settings, including business settings. Of note, argumentation requires logical, analytic reasoning. Hence, it is reasonable to assume that, unlike East Asians but more like European Americans, South Asians would demonstrate high proficiency in logical reasoning. If this holds true, South Asians may appear similar to European Americans in terms of being argumentative, expressive of their opinions, and inclined to justifying and defending them using logical reasoning. As we discussed earlier regarding Middle Eastern honor cultures, this similarity may suggest that South Asians are as independent as European Americans. However, given the Gestalt principle that the meaning of the part depends on the whole (Asch 1946, Fiske & Taylor 1991, Nisbett & Ross 1980), the apparent similarity of behavior, such as argumentativeness, may conceal a deeper difference. Whereas argumentation and thus logical reasoning signify independence for Westerners, they could be part of the prosocial, interdependent orientation typical among people of South Asian heritage (Savani et al. 2011).

One crucial cultural insight from South Asia is that argumentation and the analytic cognition it fosters can be important facets of interdependent social relations. Even in the United States and elsewhere, members of a debating club may enjoy debating because by do so doing, they form social bonding and perhaps they can help each other improving their debating skills. Yet, argumentation is more typically used to defeat opponents in the debate, and analytic cognition is seen as a personal skill rather than a social resource. Future work must test the two modes of argumentation (and the resulting analytic cognition) in North America and South Asia. In particular, it is important to test whether people from these two cultural regions would show divergent social antecedents and consequences of argumentation and analytic cognition.

4.5. How Can We Make Sense of the Modern West?

Our discussion highlights the presence of distinct cultural themes in each non-Western cultural zone, as summarized in the right-hand side of **Table 2**. These themes include self-effacement for East Asians, self-assertion (or enhancement) for Arabs, emotional expressivity for Latin Americans, and argumentation for South Asians. These themes diverge from the East Asian cultural pattern and resemble the Western cultural pattern, as indicated by **Table 1**. However, it is important to recognize that these similarities at the behavioral level hide deeper differences at the level of cultural meaning, as noted in **Table 2**. To understand this pattern, we must consider geography, ecology, and the time course of cultural evolution. At the outset, we must note that Latin

Table 2 Four non-Western cultural zones and the Western zone: how the central cultural themes are similar (in terms of focal behavioral traits) and yet distinct (in terms of what the respective behavioral traits mean)

Non-Western zones	Behavioral traits of non-Western zones	Social and psychological functions	Behavioral traits of the Western zone	Social and psychological functions
East Asia	Self-effacement	Assumed to be conducive to social harmony	Not applicable	Not applicable
Arabia	Self-assertion	Assumed to be conducive to ingroup protection	Self-enhancement	Assumed to be conducive to bolstering the self's independence
Latin America	Emotional expressivity	Assumed to be conducive to relationship-building	Emotional expressivity	Assumed to be conducive to showing inner passion
South Asia	Argumentation	Assumed to be conducive to relations formed through negotiation and debating	Analytic thought	Assumed to anchor independent reason

America today emphasizes emotional expression, which may have been influenced by the effects of colonization from Latin regions in Europe. With this assumption, we recognize that the three non-Western cultural zones (Arab, Latin, and South Asian zones) have been closely related geographically, not only with one another but also with Western regions of the Eurasian continent, over the last several thousand years. In this respect, the East Asian cultural zone is different. It was separated from the rest of the Eurasian continent during much of this period, consistent with the ancient DNA evidence (Reich 2018).

In addition to considering geographical and ecological factors, it is essential to acknowledge the time constraints that have shaped the cultural evolution of different regions. The emergence of the modern West stands out in this regard, as it occurred relatively recently over the past thousand years in the Western edge of the Eurasian continent.[8] Multiple factors contributed to the emergence of the modern West, including herding (Uskul et al. 2008) and wheat farming (Talhelm et al. 2014), which have been associated with greater independence. Moreover, the Roman Catholic Church's prohibition of cousin marriages for an extended period played a significant role in weakening kinship networks and the feudal systems based on them (Schulz et al. 2019). These transformations gradually gave rise to the idea of the self as separate from the surrounding community, leading to the emergence of independence as a defining aspect of Western culture. Transformative events such as the Renaissance, the Protestant Reformation, and the Enlightenment movements of the fourteenth to eighteenth centuries further solidified and propagated the concept of an independent self within the modern West.

In combination, the above considerations suggest that when the idea of the self as independent was emerging in the western corner of the Eurasian continent, residents in this region were extensively exposed to the Arab, Latin, and South Asian zones. During this period, contemporary Western Europe was still developing and held a relatively peripheral position in terms of economic wealth, political stature, and geographical location. It is important to acknowledge that cultural influences often flow from the rich, high-status, and powerful to the poor, low-status, and powerless. In this case, the residents of the emerging modern West may have willingly embraced and imported various luxury items, including spices, drinks, musical instruments, and other cultural artifacts, from the Arab, Latin, and South Asian zones. These items and practices gradually became incorporated into the emerging new culture of the modern West.

To this list of non-Western imports to the emerging modern West, we may add the behavioral characteristics of the relevant non-Western zones, such as the self-assertion observed in Arab culture, the emotional expression common among people of Latin heritage, and the tradition of argumentation prevalent in South Asian cultures. These non-Western imports signified wealth, status, power, and aspirations. However, as noted throughout this article, these behavioral traits do not carry fixed and universal meanings in and of themselves. The interpretation and meaning of these traits are context-dependent and subject to historical and collective processes. Applying this principle to the present case, we may suggest that the residents of the newly emerging Western cultural zone (Westerners, in short) came up with new meanings for the imported behaviors. Westerners had no choice but to understand these behaviors based on a model of the self they have developed for themselves—namely, the view of it as independent rather than interdependent. This

[8]The hypothesis developed here is consistent with the commonly discussed notion that contemporary Western civilization has roots in ancient Greek culture. However, it is essential to recognize that ancient Greek culture itself had its predecessors, including South Asian cultures, that made significant contributions to history. Moreover, it is worth considering the possibility of direct influences from non-Greek civilizations on the emerging modern West, including influences from South Asian cultures. Acknowledging these possibilities can provide a more comprehensive understanding of the complex historical and cultural dynamics that have shaped the modern Western cultural zone.

change of the meaning process that supposedly unfolded in a broad historical timescale of several hundred years is illustrated in **Table 2**. We propose that the behaviors that were originally associated with interdependence in the three non-Western cultural zones became emblematic of independence in the modern West. This transformation in the meaning of these behaviors reflects the cultural adaptation and reinterpretation that took place in the Western cultural context (Kitayama et al. 2022).

4.6. Interim Summary

Multiple forms of interdependence can be traced back several thousand years. They include (*a*) self-effacing interdependence of the East Asian cultural zone, (*b*) self-assertive interdependence of the Arab cultural zone, (*c*) expressive interdependence of the Latin cultural zone, and (*d*) argumentative interdependence of the South Asian cultural zone. The modern Western cultural zone emerged with a radically new view of the self as independent and, in this process, incorporated self-assertion (or enhancement), emotional expression, and argumentation as signature features of this new independent—rather than interdependent—way of being.

5. CONCLUSIONS AND FUTURE DIRECTIONS

This article has provided a comprehensive review of four key cultural dimensions and their relationship to cultural evolution. It then discussed several distinct cultural zones identified on the globe today. This discussion led us to propose that various non-Western cultural zones developed over several thousands of years, while the Western cultural zone emerged more recently, influenced by the preceding non-Western zones. Our analysis helps explain why contemporary Westerners are more independent and individualistic than non-Westerners, who are interdependent and collectivistic. It also highlights the apparent similarities between certain non-Western groups and the Western group in specific behavioral traits. However, these similarities mask underlying differences in the meanings assigned to these behaviors in different cultural contexts. For example, self-assertion or enhancement may signify allegiance to the ingroup for Arabs, while for Westerners it represents a signature feature of independence. This reformulation emphasizes that cultures today vary in the degree of independence and interdependence or individualism and collectivism. It also underscores the importance of recognizing that there is no single objective set of behavioral features that define culture. Instead, the overarching culture of independence or interdependence serves as a cognitive frame or schema that shapes the interpretation and meaning of specific behavioral traits. Our work underscores the crucial significance of 10,000-year diachronic analysis of cultural evolution in understanding the spatial distribution of various behavioral traits and their meanings across the globe today.

Future work should further examine the change-of-meaning hypothesis as it applies to cultural behavioral traits. Ultimately, this hypothesis fosters a self-conscious effort to decenter the Western conception of the self as independent within the current psychological theories and reconsider these theories from non-Western, interdependent perspectives. This conceptual effort is indispensable in the current effort to globalize psychology. In terms of regions to investigate, it is imperative to include Africa, which has received limited attention thus far (Mughogho et al. 2023). Despite initial efforts (Adams 2005, Thomas et al. 2020), there is still much to be discovered about the diverse cultures and psychological processes in this region. Additionally, there is a need to explore Central Asia and Eastern Europe (Grossmann & Kross 2010, Varnum et al. 2008), among other numerous local cultures that have been underrepresented in the discipline today. This effort would benefit from multiple methods, not only the traditional ones, such as survey and behavioral experimentation, but also neuroscience, genetics, and computational analyses of

both cultural artifacts (notably including ancient texts) and ancient DNA. By combining these approaches, we can strive to develop a truly global psychology that is rooted in the experiences of people from all regions and backgrounds, both in the past and present.

SUMMARY POINTS

1. Independent versus interdependent social orientations are linked to individualism versus collectivism across cultures.
2. Independent or individualistic cultures are typically relationally mobile and normatively looser, except Latin American culture, which is interdependent or collectivistic even though it is demonstrably high in relational mobility and loose in social norms.
3. The dopamine D4 receptor gene was involved in undergirding the historically evolved eco-cultural complexes by playing a key role in cultural learning.
4. Although non-Western cultures are interdependent, there are substantial variations among them in the ways used to promote and maintain interdependent social relations.
5. These non-Western cultural zones include the East Asian zone (emphasizing self-effacement), Arab zone (emphasizing self-assertiveness), Latin American zone (emphasizing emotional expression), and South Asian zone (emphasizing argumentativeness).
6. The modern Western cultural zone emerged in the last thousand years as a result of numerous historical events reinforcing a view of the self as independent under heavy influences from preceding non-Western cultures.
7. The modern Western cultural zone was least influenced by East Asia, due to geographic constraints, but influenced by other non-Western cultures, which may explain why the West shares similar psychological traits with non-Western cultures outside East Asia.
8. We propose an emerging perspective that (*a*) individualism and collectivism differ across cultures and (*b*) the psychological tendencies that make up individualism and collectivism are culturally defined.

FUTURE ISSUES

1. It is important to spell out how the cultural ideas of independence and interdependence are defined in a culturally specific fashion.
2. It is also important to explore how seemingly identical behavioral tendencies serve different social functions across cultures.
3. It is important to examine how eco-cultural complexes are reinforced and undergirded by specific genetic variants selected during the emergence of the respective complexes.
4. It is important to explore genetic variants linked to cultural evolution.
5. It is urgent to test cultural zones beyond those most studied so far, including Sub-Saharan Africa and Central Asia.
6. It is crucial to identify methods suitable for examining the historical development of distinct cultural zones. These methods include computerized analysis of ancient DNA and ancient texts.

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LITERATURE CITED

Adams G. 2005. The cultural grounding of personal relationship: enemyship in North American and West African worlds. *J. Pers. Soc. Psychol.* 88(6):948–68

AlQahtani SM, Almutairi DS, BinAqeel EA, Almutairi RA, Al-Qahtani RD, Menezes RG. 2022. Honor killings in the Eastern Mediterranean region: a narrative review. *Healthcare* 11(1):74

Asch S. 1946. Forming impressions of personality. *J. Abnorm. Soc. Psychol.* 41(3):258–90

Atari M, Graham J, Dehghani M. 2020. Foundations of morality in Iran. *Evol. Hum. Behav.* 41(5):367–84

Awad E, Dsouza S, Shariff A, Rahwan I, Bonnefon J-F. 2020. Universals and variations in moral decisions made in 42 countries by 70,000 participants. *PNAS* 117(5):2332–37

Bath E, Edmunds D, Norman J, Atkins C, Harper L, et al. 2021. Sex ratio and the evolution of aggression in fruit flies. *Proc. R. Soc. B* 288(1947):20203053

Belsky J, Pluess M. 2009. Beyond diathesis stress: differential susceptibility to environmental influences. *Psychol. Bull.* 135(6):885–908

Borsboom D, Deserno MK, Rhemtulla M, Epskamp S, Fried EI, et al. 2021. Network analysis of multivariate data in psychological science. *Nat. Rev. Methods Primers* 1(1):58

Brewer MB, Yuki M. 2007. Culture and social identity. In *Handbook of Cultural Psychology*, ed. S Kitayama, D Cohen, pp. 307–22. New York: Guilford

Bruner J. 1990. *Acts of Meaning*. Cambridge, MA: Harvard Univ. Press

Camb. Assess. Int. Educ. 2018. *Global education census report*. Rep., Camb. Assess. Int. Educ., Cambridge, UK. **https://www.cambridgeinternational.org/Images/514611-global-education-census-survey-report.pdf**

Campbell WK, Sedikides C. 1999. Self-threat magnifies the self-serving bias: a meta-analytic integration. *Rev. Gen. Psychol.* 3(1):23–43

Campos B, Kim HS. 2017. Incorporating the cultural diversity of family and close relationships into the study of health. *Am. Psychol.* 72(6):543–54

Cann RL, Stoneking M, Wilson AC. 1987. Mitochondrial DNA and human evolution. *Nature* 325:31–36

Choi I, Nisbett RE, Norenzayan A. 1999. Causal attribution across cultures: variation and universality. *Psychol. Bull.* 125:47–63

Cohen D, Gunz A. 2002. As seen by the other. . .: perspectives on the self in the memories and emotional perceptions of Easterners and Westerners. *Psychol. Sci.* 13(1):55–59

Cohen D, Kitayama S, eds. 2018. *Handbook of Cultural Psychology*. New York: Guilford. 2nd ed.

Crockett MJ. 2017. Moral outrage in the digital age. *Nat. Hum. Behav.* 1(11):769–71

Diamond J. 1999. *Guns, Germs, and Steel: The Fates of Human Societies*. New York: W.W. Norton & Co.

Diamond-Smith N, Rudolph K. 2018. The association between uneven sex ratios and violence: evidence from 6 Asian countries. *PLOS ONE* 13(6):e0197516

Duncan LE, Keller MC. 2011. A critical review of the first 10 years of candidate gene-by-environment interaction research in psychiatry. *Am. J. Psychiatry* 168(10):1041–49

Eckstein AM. 2007. *Mediterranean Anarchy, Interstate War, and the Rise of Rome*. Berkeley: Univ. Calif. Press

Epstein RA, Baker CI. 2019. Scene perception in the human brain. *Annu. Rev. Vis. Sci.* 5:373–97

Fiske ST, Taylor SE. 1991. *Social Cognition*. New York: McGraw-Hill

Geertz C. 1975. *The Interpretation of Cultures: Selected Essays*. New York: Basic Books

Gelfand MJ, Harrington JR, Jackson JC. 2017. The strength of social norms across human groups. *Perspect. Psychol. Sci.* 12(5):800–9

Gelfand MJ, Nishii LH, Raver JL. 2006. On the nature and importance of cultural tightness-looseness. *J. Appl. Psychol.* 91(6):1225–44
Gelfand MJ, Raver JL, Nishii L, Leslie LM, Lun J, et al. 2011. Differences between tight and loose cultures: a 33-nation study. *Science* 332(6033):1100–4
Gilmore DG, ed. 1987. *Honor and Shame and the Unity of the Mediterranean*. Arlington, VA: Am. Anthropol. Assoc.
Glazer J, King A, Yoon C, Liberzon I, Kitayama S. 2020. *DRD4* polymorphisms modulate reward positivity and P3a in a gambling task: exploring a genetic basis for cultural learning. *Psychophysiology* 57(10):e13623
Gould SJ. 1981. *The Mismeasure of Man*. New York: W.W. Norton & Co. 1st ed.
Graeber D, Wengrow D. 2021. *The Dawn of Everything*. London: Macmillan
Graham J, Haidt J, Koleva S, Motyl M, Iyer R, et al. 2013. Moral foundations theory. *Adv. Exp. Soc. Psychol.* 47:55–130
Graham J, Nosek BA, Haidt J, Iyer R, Koleva S, Ditto PH. 2011. Mapping the moral domain. *J. Pers. Soc. Psychol.* 101:366–85
Greenfield PM, Keller H, Fuligni A, Maynard A. 2003. Cultural pathways through universal development. *Annu. Rev. Psychol.* 54:461–90
Grossmann I, Jowhari N. 2018. Cognition and the self: attempt of an independent close replication of the effects of self-construal priming on spatial memory recall. *J. Exp. Soc. Psychol.* 74:65–73
Grossmann I, Kross E. 2010. The impact of culture on adaptive versus maladaptive self-reflection. *Psychol. Sci.* 21(8):1150–57
Gutchess AH, Welsh RC, Boduroĝlu A, Park DC. 2006. Cultural differences in neural function associated with object processing. *Cogn. Affect. Behav. Neurosci.* 6(2):102–9
Hallowell AI. 2016 (1955). *Culture and Experience*. Philadelphia: Univ. Pa. Press
Hawks J, Wang ET, Cochran GM, Harpending HC, Moyzis RK. 2007. Recent acceleration of human adaptive evolution. *PNAS* 104(52):20753–58
Heine SJ, Kitayama S, Hamamura T. 2007. Inclusion of additional studies yields different conclusions: comment on Sedikides, Gaertner, & Vevea 2005, *Journal of Personality and Social Psychology*. *Asian J. Soc. Psychol.* 10(2):49–58
Heine SJ, Lehman DR, Markus HR, Kitayama S. 1999. Is there a universal need for positive self-regard? *Psychol. Rev.* 106(4):766–94
Henrich J. 2015. *The Secret of Our Success: How Culture Is Driving Human Evolution, Domesticating Our Species, and Making Us Smarter*. Princeton, NJ: Princeton Univ. Press
Henrich J, Heine SJ, Norenzayan A. 2010. The weirdest people in the world? *Behav. Brain Sci.* 33(2–3):61–83
Herrmann B, Thöni C, Gächter S. 2008. Antisocial punishment across societies. *Science* 319(5868):1362–67
Hochschild AR. 1979. Emotion work, feeling rules, and social structure. *Am. J. Sociol.* 85(3):551–75
Hofstede G. 1980. *Culture's Consequences: International Differences in Work-Related Values*. London: SAGE
Hsu TW, Niiya Y, Thelwall M, Ko M, Knutson B, Tsai JL. 2021. Social media users produce more affect that supports cultural values, but are more influenced by affect that violates cultural values. *J. Pers. Soc. Psychol.* 121(5):969–83
Inglehart R, Baker WE. 2000. Modernization, cultural change, and the persistence of traditional values. *Am. Sociol. Rev.* 65(1):19–51
Iyengar S, Lelkes Y, Levendusky M, Malhotra N, Westwood SJ. 2019. The origins and consequences of affective polarization in the United States. *Annu. Rev. Political Sci.* 22:129–46
Jackson JC, Caluori N, Abrams S, Beckman E, Gelfand M, Gray K. 2021. Tight cultures and vengeful gods: how culture shapes religious belief. *J. Exp. Psychol. Gen.* 150(10):2057–77
Jackson JC, Gelfand M, De S, Fox A. 2019. The loosening of American culture over 200 years is associated with a creativity-order trade-off. *Nat. Hum. Behav.* 3(3):244–50
Ji L-J, Zhang Z, Nisbett RE. 2004. Is it culture or is it language? Examination of language effects in cross-cultural research on categorization. *J. Pers. Soc. Psychol.* 87(1):57–65
Kitayama S, Duffy S, Kawamura T, Larsen JT. 2003. Perceiving an object and its context in different cultures: a cultural look at new look. *Psychol. Sci.* 14(3):201–6
Kitayama S, King A, Hsu M, Liberzon I, Yoon C. 2016. Dopamine-system genes and cultural acquisition: the norm sensitivity hypothesis. *Curr. Opin. Psychol.* 8:167–74

Kitayama S, Markus HR, Kurokawa M. 2000. Culture, emotion, and well-being: good feelings in Japan and the United States. *Cogn. Emot.* 14(1):93–124

Kitayama S, Markus HR, 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. *J. Pers. Soc. Psychol.* 72(6):1245–67

Kitayama S, Mesquita B, Karasawa M. 2006. Cultural affordances and emotional experience: socially engaging and disengaging emotions in Japan and the United States. *J. Pers. Soc. Psychol.* 91(5):890–903

Kitayama S, Park H, Sevincer AT, Karasawa M, Uskul AK. 2009. A cultural task analysis of implicit independence: comparing North America, Western Europe, and East Asia. *J. Pers. Soc. Psychol.* 97(2):236–55

Kitayama S, Salvador C. 2017. Culture embrained: going beyond the nature-nurture dichotomy. *Perspect. Psychol. Sci.* 12(5):841–54

Kitayama S, Salvador CE, Nanakdewa K, Rossmaier A, San Martin A, Savani K. 2022. Varieties of interdependence and the emergence of the Modern West: toward the globalizing of psychology. *Am. Psychol.* 77(9):991–1006

Kitayama S, Uskul AK. 2011. Culture, mind, and the brain: current evidence and future directions. *Annu. Rev. Psychol.* 62:419–49

Kitayama S, Yu Q. 2020. Mutual constitution of culture and the mind: insights from cultural neuroscience. In *Culture, Mind, and Brain: Emerging Concepts, Models, and Applications*, ed. LJ Kirmayer, CM Worthman, S Kitayama, R Lemelson, C Cummings, pp. 88–119. Cambridge, UK: Cambridge Univ. Press

Kitayama S, Yu Q, King AP, Yoon C, Liberzon I. 2020. The gray matter volume of the temporoparietal junction varies across cultures: a moderating role of the dopamine D4 receptor gene (DRD4). *Soc. Cogn. Affect. Neurosci.* 15(2):193–202

Knyazev GG. 2013. EEG correlates of self-referential processing. *Front. Hum. Neurosci.* 7:264

Kraus B, Salvador CE, Kamikubo A, Hsiao N-C, Hu J-F, et al. 2021. Oscillatory alpha power at rest reveals an independent self: a cross-cultural investigation. *Biol. Psychol.* 163:108118

Krys K, Vignoles VL, de Almeida I, Uchida Y. 2022. Outside the "cultural binary": understanding why Latin American collectivist societies foster independent selves. *Perspect. Psychol. Sci.* 17(4):1166–87

Laland KN, Odling-Smee J, Myles S. 2010. How culture shaped the human genome: bringing genetics and the human sciences together. *Nat. Rev. Genet.* 11(2):137–48

Liu SS, Morris MW, Talhelm T, Yang Q. 2019. Ingroup vigilance in collectivistic cultures. *PNAS* 116(29):14538–46

Lu JG. 2022. A social network perspective on the Bamboo Ceiling: Ethnic homophily explains why East Asians but not South Asians are underrepresented in leadership in multiethnic environments. *J. Pers. Soc. Psychol.* 122(6):959–82

Lu JG, Jin P, English AS. 2021. Collectivism predicts mask use during COVID-19. *PNAS* 118(23):e2021793118

Lu JG, Nisbett RE, Morris MW. 2020. Why East Asians but not South Asians are underrepresented in leadership positions in the United States. *PNAS* 117(9):4590–600

Lu JG, Nisbett RE, Morris MW. 2022. The surprising underperformance of East Asians in US law and business schools: the liability of low assertiveness and the ameliorative potential of online classrooms. *PNAS* 119(13):e2118244119

Markus HR, Kitayama S. 1991. Culture and the self: implications for cognition, emotion, and motivation. *Psychol. Rev.* 98(2):224–53

Markus HR, Kitayama S. 2010. Cultures and selves: a cycle of mutual constitution. *Perspect. Psychol. Sci.* 5(4):420–30

Martinez-Echazabal L. 1998. Mestizaje and the discourse of national/cultural identity in Latin America, 1845–1959. *Latin Am. Perspect.* 25(3):21–42

Masuda T, Ellsworth PC, Mesquita B, Leu J, Tanida S, Van de Veerdonk E. 2008. Placing the face in context: cultural differences in the perception of facial emotion. *J. Pers. Soc. Psychol.* 94(3):365–81

Masuda T, Kitayama S. 2004. Perceiver-induced constraint and attitude attribution in Japan and the US: a case for the cultural dependence of the correspondence bias. *J. Exp. Soc. Psychol.* 40(3):409–16

McCarthy E. 2019. Watsuji Tetsurō: the mutuality of climate and culture and an ethics of betweenness. In *The Oxford Handbook of Japanese Philosophy*, ed. BW Davis, pp. 502–22. Oxford, UK: Oxford Univ. Press

Miyamoto Y, Boylan JM, Coe CL, Curhan KB, Levine CS, et al. 2013. Negative emotions predict elevated interleukin-6 in the United States but not in Japan. *Brain Behav. Immun.* 34:79–85

Morling B, Kitayama S, Miyamoto Y. 2002. Cultural practices emphasize influence in the United States and adjustment in Japan. *Pers. Soc. Psychol. Bull.* 28(3):311–23

Morris B. 1991. *Western Conceptions of the Individual*. London: Bloomsbury

Morris I. 2010. *Why the West Rules—For Now*. London: Macmillan

Morris I. 2022. *Geography Is Destiny: Britain and the World, a 10,000 Year History*. London: Profile Books

Mughogho W, Adhiambo J, Forscher PS. 2023. African researchers must be full participants in behavioural science research. *Nat. Hum. Behav.* 7:297–99

Muthukrishna M, Henrich J, Slingerland E. 2021. Psychology as a historical science. *Annu. Rev. Psychol.* 72:717–49

Na J, Kitayama S. 2011. Spontaneous trait inference is culture-specific: behavioral and neural evidence. *Psychol. Sci.* 22(8):1025–32

Niedenthal PM, Rychlowska M, Zhao F, Wood A. 2019. Historical migration patterns shape contemporary cultures of emotion. *Perspect. Psychol. Sci.* 14(4):560–73

Nisbett RE, Cohen D. 1996. *Culture of Honor: The Psychology of Violence in the South*. London: Routledge

Nisbett RE, Peng K, Choi I, Norenzayan A. 2001. Culture and systems of thought: holistic versus analytic cognition. *Psychol. Rev.* 108(2):291–310

Nisbett RE, Ross L. 1980. *Human inference: Strategies and Shortcomings of Social Judgment*. Hoboken, NJ: Prentice Hall

Odling-Smee FJ, Laland KN, Feldman MW. 2000. Niche construction and gene-culture coevolution: an evolutionary basis for the human sciences. In *Perspectives in Ethology: Evolution, Culture, and Behavior*, ed. F Tonneau, NS Thompson, pp. 89–111. New York: Springer

Ogihara Y, Fujita H, Tominaga H, Ishigaki S, Kashimoto T, et al. 2015. Are common names becoming less common? The rise in uniqueness and individualism in Japan. *Front. Psychol.* 6:1490

Oyserman D, Lee SWS. 2008. Does culture influence what and how we think? Effects of priming individualism and collectivism. *Psychol. Bull.* 134(2):311–42

Park J, Kitayama S, Miyamoto Y, Coe CL. 2020. Feeling bad is not always unhealthy: Culture moderates the link between negative affect and diurnal cortisol profiles. *Emotion* 20(5):721–33

Peng Y, Shi H, Qi X, Xiao C, Zhong H, et al. 2010. The ADH1B Arg47His polymorphism in East Asian populations and expansion of rice domestication in history. *BMC Evol. Biol.* 10(1):15

Razavi P, Shaban-Azad H, Srivastava S. 2023. Gheirat as a complex emotional reaction to relational boundary violations: a mixed-methods investigation. *J. Pers. Soc. Psychol.* 124(1):179–214

Reich D. 2018. *Who We Are and How We Got Here*. Oxford, UK: Oxford Univ. Press

Rhoads SA, Gunter D, Ryan RM, Marsh AA. 2021. Global variation in subjective well-being predicts seven forms of altruism. *Psychol. Sci.* 32(8):1247–61

Richerson PJ, Boyd R. 2005. *Not by Genes Alone: How Culture Transformed Human Evolution*. Chicago: Univ. Chicago Press

Rozin P, Kabnick K, Pete E, Fischler C, Shields C. 2003. The ecology of eating: Smaller portion sizes in France than in the United States help explain the French paradox. *Psychol. Sci.* 14(5):450–54

Rozin P, Markwith M, Stoess C. 1997. Moralization and becoming a vegetarian: the transformation of preferences into values and the recruitment of disgust. *Psychol. Sci.* 8(2):67–73

Ruby MB, Falk CF, Heine SJ, Villa C, Silberstein O. 2012. Not all collectivisms are equal: opposing preferences for ideal affect between East Asians and Mexicans. *Emotion* 12(6):1206–9

Sagvolden T, Johansen EB, Aase H, Russell VA. 2005. A dynamic developmental theory of attention-deficit/hyperactivity disorder (ADHD) predominantly hyperactive/impulsive and combined subtypes. *Behav. Brain Sci.* 28(3):397–419

Salvador CE, Berg MK, Yu Q, Martin AS, Kitayama S. 2020. Relational mobility predicts faster spread of COVID-19: a 39-country study. *Psychol. Sci.* 31(10:1236–44

Salvador CE, Carlier SI, Ishii K, Castillo CT, Nanakdewa K, et al. 2023. Emotionally expressive interdependence in Latin America: triangulating through a comparison of three cultural regions. *Emotion*. In press. **https://doi.org/10.1037/emo0001302**

Salvador CE, Kamikubo A, Kraus B, Hsiao N-C, Hu J-F, et al. 2022. Self-referential processing accounts for cultural variation in self-enhancement versus criticism: an electrocortical investigation. *J. Exp. Psychol. Gen.* 151(8):1904–18

San Martin A, Sinaceur M, Madi A, Tompson S, Maddux WW, Kitayama S. 2018. Self-assertive interdependence in Arab culture. *Nat. Hum. Behav.* 2(11):830–37

Santos HC, Varnum MEW, Grossmann I. 2017. Global increases in individualism. *Psychol. Sci.* 28(9):1228–39

Savani K, Morris MW, Naidu NVR, Kumar S, Berlia NV. 2011. Cultural conditioning: understanding interpersonal accommodation in India and the United States in terms of the modal characteristics of interpersonal influence situations. *J. Pers.* 100(1):84–102

Schug J, Yuki M, Maddux W. 2010. Relational mobility explains between- and within-culture differences in self-disclosure to close friends. *Psychol. Sci.* 21(10):1471–78

Schulz JF, Bahrami-Rad D, Beauchamp JP, Henrich J. 2019. The Church, intensive kinship, and global psychological variation. *Science* 366(6466):eaau5141

Schwartz SH. 1992. Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. *Adv. Exp. Soc. Psychol.* 25:1–65

Schwartz SH. 2006. A theory of cultural value orientations: explication and applications. *Comp. Sociol.* 5(2–3):137–82

Sedikides C, Gaertner L, Toguchi Y. 2003. Pancultural self-enhancement. *J. Pers. Soc. Psychol.* 84(1):60–79

Sedikides C, Gaertner L, Vevea JL. 2007. Inclusion of theory-relevant moderators yield the same conclusions as Sedikides, Gaertner, and Vevea 2005: a meta-analytical reply to Heine, Kitayama, and Hamamura 2007. *Asian J. Soc. Psychol.* 10(2):59–67

Sen A. 2013. *The Argumentative Indian: Writings on Indian History, Culture and Identity*. New York: Farrar, Straus and Giroux. 1st ed.

Senft N, Campos B, Shiota MN, Chentsova-Dutton YE. 2021. Who emphasizes positivity? An exploration of emotion values in people of Latino, Asian, and European heritage living in the United States. *Emotion* 21(4):707–19

Sng O, Neuberg SL, Varnum MEW, Kenrick DT. 2018. The behavioral ecology of cultural psychological variation. *Psychol. Rev.* 125(5):714–43

Tajfel H, Turner JC. 2004. *The Social Identity Theory of Intergroup Behavior*. London: Psychol. Press

Talhelm T, English AS. 2020. Historically rice-farming societies have tighter social norms in China and worldwide. *PNAS* 117(33):19816–24

Talhelm T, Lee C-S, English AS, Wang S. 2023. How rice fights pandemics: nature-crop-human interactions shaped COVID-19 outcomes. *Pers. Soc. Psychol. Bull.* 49(11):1567–86

Talhelm T, Zhang X, Oishi S, Shimin C, Duan D, et al. 2014. Large-scale psychological differences within China explained by rice versus wheat agriculture. *Science* 344(6184):603–8

Taylor C. 1992. *Sources of the Self: The Making of the Modern Identity*. Cambridge, MA: Harvard Univ. Press

Thomas CC, Otis NG, Abraham JR, Markus HR, Walton GM. 2020. Toward a science of delivering aid with dignity: experimental evidence and local forecasts from Kenya. *PNAS* 117(27):15546–53

Thomson R, Yuki M, Talhelm T, Schug J, Kito M, et al. 2018. Relational mobility predicts social behaviors in 39 countries and is tied to historical farming and threat. *PNAS* 115(29):7521–26

Tomasello M. 2019. *Becoming Human: A Theory of Ontogeny*. Cambridge, MA: Harvard Univ. Press

Tooby J, Cosmides L. 1992. The psychological foundations of culture. In *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, ed. JH Barkow, L Cosmides, J Tooby, pp. 19–136. Oxford, UK: Oxford Univ. Press

Triandis HC. 1995. *Individualism & Collectivism*. Boulder, CO: Westview Press

Triandis HC, Marin G, Lisansky J, Betancourt H. 1984. Simpatia as a cultural script of Hispanics. *J. Pers. Soc. Psychol.* 47(6):1363–75

Tsai JL, Knutson B, Fung HH. 2006. Cultural variation in affect valuation. *J. Pers. Soc. Psychol.* 90(2):288–307

Tsai JL, Miao FF, Seppala E, Fung HH, Yeung DY. 2007. Influence and adjustment goals: sources of cultural differences in ideal affect. *J. Pers. Soc. Psychol.* 92(6):1102–17

Uchida Y, Kitayama S. 2009. Happiness and unhappiness in east and west: themes and variations. *Emotion* 9(4):441–56

Uchida Y, Takemura K, Fukushima S, Saizen I, Kawamura Y, et al. 2019. Farming cultivates a community-level shared culture through collective activities: examining contextual effects with multilevel analyses. *J. Pers. Soc. Psychol.* 116(1):1–14

Uskul AK, Kirchner-Häusler A, Vignoles VL, Rodriguez-Bailón R, Castillo VA, et al. 2023. Neither Eastern nor Western: patterns of independence and interdependence in Mediterranean societies. *J. Pers. Soc. Psychol.* 125(3):471–95

Uskul AK, Kitayama S, Nisbett RE. 2008. Ecocultural basis of cognition: Farmers and fishermen are more holistic than herders. *PNAS* 105(25):8552–56

Varnum M, Grossmann I, Katunar D, Nisbett R, Kitayama S. 2008. Holism in a European cultural context: differences in cognitive style between Central and East Europeans and Westerners. *J. Cogn. Cult.* 8(3–4):321–33

Varnum MEW, Grossmann I, Kitayama S, Nisbett RE. 2010. The origin of cultural differences in cognition: the social orientation hypothesis. *Curr. Dir. Psychol. Sci.* 19(1):9–13

Vignoles VL, Owe E, Becker M, Smith PB, Easterbrook MJ, et al. 2016. Beyond the "east-west" dichotomy: global variation in cultural models of selfhood. *J. Exp. Psychol. Gen.* 145(8):966–1000

Vishkin A, Kitayama S, Berg MK, Diener E, Gross-Manos D, Ben-Arieh A, Tamir M. 2023. Adherence to emotion norms is greater in individualist cultures than in collectivist cultures. *J. Pers. Soc. Psychol.* 124(6):1256–76

Visscher PM. 2008. Sizing up human height variation. *Nat. Genet.* 40(5):489–90

Vosoughi S, Roy D, Aral S. 2018. The spread of true and false news online. *Science* 359(6380):1146–51

Wang E, Ding Y-C, Flodman P, Kidd JR, Kidd KK, et al. 2004. The genetic architecture of selection at the human dopamine receptor D4 (DRD4) gene locus. *Am. J. Hum. Genet.* 74(5):931–44

Watsuji T. 1988. *Climate and Culture*, transl. Geoffrey Bownas. New York: Greenwood Press

Weidman AC, Sowden WJ, Berg MK, Kross E. 2020. Punish or protect? How close relationships shape responses to moral violations. *Pers. Soc. Psychol. Bull.* 46(5):693–708

Wilson DS, Dugatkin LA. 1997. Group selection and assortative interactions. *Am. Nat.* 149(2):336–51

Yamagishi T, Yamagishi M. 1994. Trust and commitment in the United States and Japan. *Motiv. Emot.* 18(2):129–66

Yu Q, Abe N, King A, Yoon C, Liberzon I, Kitayama S. 2019. Cultural variation in the gray matter volume of the prefrontal cortex is moderated by the dopamine D4 receptor gene (DRD4). *Cereb. Cortex.* 29(9):3922–31

Yu Q, King AP, Yoon C, Liberzon I, Schaefer SM, et al. 2021. Interdependent self-construal predicts increased gray matter volume of scene processing regions in the brain. *Biol. Psychol.* 161:108050

Yuki M, Schug J. 2020. Psychological consequences of relational mobility. *Curr. Opin. Psychol.* 32:129–32