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Review

Culture and Health: Recent Developments and Future Directions[1]

YURI MIYAMOTO* *Hitotsubashi University*

CAROL D. RYFF *University of Wisconsin-Madison*

Abstract: Evidence of cultural differences in relationships and emotions has accumulated over the past few decades. As findings on cultural differences in psychological processes have increased, there has been growing interest in investigating whether they have implications for other phenomena, such as health. Using scientific advances from the MIDUS and MIDJA studies, both publicly available, we examine links between culture and health. First, there is a brief review of the accumulated evidence on cultural influences on health correlates concerning psychosocial factors. We then feature two recent developments: a more micro-level perspective regarding biological factors that may be involved in the culture and health linkage, and a more macro-level view of socioeconomic inequality, which also concerns health. Both perspectives inform the pathways through which health effects become manifest. Finally, we conclude our review by highlighting the changing historical contexts within which these cross-cultural investigations occur. Specifically, we draw attention to the widening of economic inequality across cultures and the world-wide COVID-19 pandemic. These instances bring notable implications for future research on health across cultural contexts.

Key words: culture, health, biological pathways, socioeconomic inequality, COVID-19.

Evidence of cultural differences in psychological processes has accumulated over the past three decades (cf., *Handbook of Cultural Psychology*, edited by Cohen & Kitayama, 2019). Among the many patterns and dimensions along which cultures differ, independence and interdependence are some of the most widely documented ways to characterize different cultural meaning systems (Markus & Kitayama, 1991; Triandis, 1989). According to an independent way of viewing the self and relationships prevalent in Western cultural contexts, the self is defined by its internal attributes that are separate from social relationships and contexts. Alternatively, according to an interdependent way of viewing the self and relationships dominant in non-Western cultural contexts, such as East Asia, the self is viewed as fundamentally embedded in social relationships and contexts. It has been suggested that such divergent views of the self and relationships lead to cultural differences in a wide

*Correspondence concerning this article should be sent to: Yuri Miyamoto, Graduate School of Social Science, Hitotsubashi University, Naka, Kunitachi, Tokyo 186-8601, Japan. (E-mail: y.miyamoto@r.hit-u.ac.jp)

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range of psychological processes, including how people relate to each other (H. S. Kim, Sherman, & Taylor, 2008) and experience emotions (Mesquita, De Leersnyder, & Albert, 2014).

As the evidence of cultural differences in psychological processes has accumulated, there is growing interest in investigating the implications of such cultural differences. That is, beyond explicating the nature of cultural differences in psychological processes, there are critical issues of whether they *matter* for other phenomena such as one's health or functional capacities. Investigating health implications with regard to cultural differences in psychological processes is important, not only because of the practical significance, but because it may inform understanding of how culturally divergent psychological processes are sustained over time, or are modified. Exploring health and functional capacities, however, calls for a different approach to data collection than has been used in much of the preceding cultural psychology literature, or psychological research in general, where samples were often based on available college students, or local community participants. Guided by thinking in population-based disciplines (demography, epidemiology, sociology), health inquiries make it imperative to recruit samples that reflect the heterogeneity (e.g., variation by gender, age, race, educational status/income, marital status) of the societies from which they are drawn. Extensive prior science had documented the import of these sociodemographic factors on health.

These observations were center stage at the inception of the parallel Midlife in the U.S. (MIDUS) and Midlife in Japan (MIDJA) studies. MIDUS was first conceived in 1995 as a multidisciplinary endeavor seeking to investigate the interplay of sociodemographic, psychosocial, and behavioral factors on health, broadly defined, in a representative sample of approximately 3,500 U.S. adults, aged 25 to 74. MIDUS expanded scientifically, over time, to incorporate biological factors and neuroscience assessments that were obtained from subsamples of participants. In 2008, MIDJA was launched with a probability sample of approximately 1,000 midlife adults from Tokyo, Japan. The overall objective of the two endeavors was to bring cultural factors into the formulation of what matters for health and well-being as individuals age across the decades of adult life. To the extent possible, there was commitment to obtaining parallel assessments in both studies, including the collection of biomarkers on subsamples within each. There was also a commitment to longitudinal tracking of MIDUS and MIDJA participants. The overarching idea motivating these parallel studies was the belief (hypothesis) that psychosocial and behavioral factors matter for health across all societal contexts, but how they unfold may be shaped, importantly, by distinct norms and values across cultures.

An overview of findings that have emerged from MIDUS and MIDJA comparative studies of culture and health (cf. Figure 1) is now presented. In the opening section, below, we briefly distill some of the initial findings that emerged using self-reported survey data. Many of these expanded on prior findings in cultural psychology. We then move to two areas that present more recent developments growing up around these two studies. Prominent among them are findings that have utilized the biological data available in MIDUS and MIDJA, while often linking them to different psychosocial variables. We see the addition of such objectively measured biological factors as an important advance in cross-cultural research. Our second focus on new developments focuses on the critical need to bring socioeconomic-status variables into cross-cultural studies. A central point is that individuals are simultaneously embedded not only in cultural contexts, but they also occupy differing positions in socioeconomic hierarchies that are increasingly recognized as important influences on health. Finally, we conclude our review with consideration of the changing historical context within which this broad-ranging comparative research is unfolding. The global pandemic provides a dramatic example of such historical change that brings with it notable implications for future research on health across cultural contexts.

Culture and Self-Reported Health: Initial Findings

Initial studies from MIDJA and MIDUS examined how independent and interdependent psychosocial factors are associated with physical health in U.S. and Japanese adults. Kitayama, Karasawa, Curhan, Ryff, and Markus (2010) used pilot data based on community samples from Tokyo and Sapporo that were compared to U.S. adults in MIDUS. Using a combined measure of health (including subjective health, number of chronic conditions, somatic symptoms, and sensitivity to unpleasant sensations) and well-being, the results showed that independence (operationalized as high personal control) was more strongly associated with better well-being/health in the U.S. than in Japan, whereas interdependence (high relational harmony and low relational strain) was more firmly linked to better well-being/health in Japan than in the U.S. Using the MIDJA and MIDUS samples, Park et al. (2013a) further highlighted specific psychosocial contexts in which perceived social support was associated with better health in Japan, such as experience of high stress, or low neuroticism. Levine et al. (2016), in turn, focused on healthy eating habits (e.g., consumption of more vegetables) and found that, in the U.S., independence was associated with healthier eating habits, whereas in Japan, interdependence was associated with healthier eating habits. These findings suggested that the type of psychosocial factors that are associated with better health often vary across contexts, depending on the feelings, beliefs, or practices that are endorsed (sanctioned) within specific cultures.

Other findings examined how emotions are linked to health across cultures, beginning with a focus on dialectical beliefs, which had been suggested to characterize East Asian cultural contexts (Peng & Nisbett, 1999; Spencer-Rodgers, Williams, & Peng, 2010). According to dialectical beliefs, opposites, such as positive emotions and negative emotions, coexist and constantly change into each other. In line with

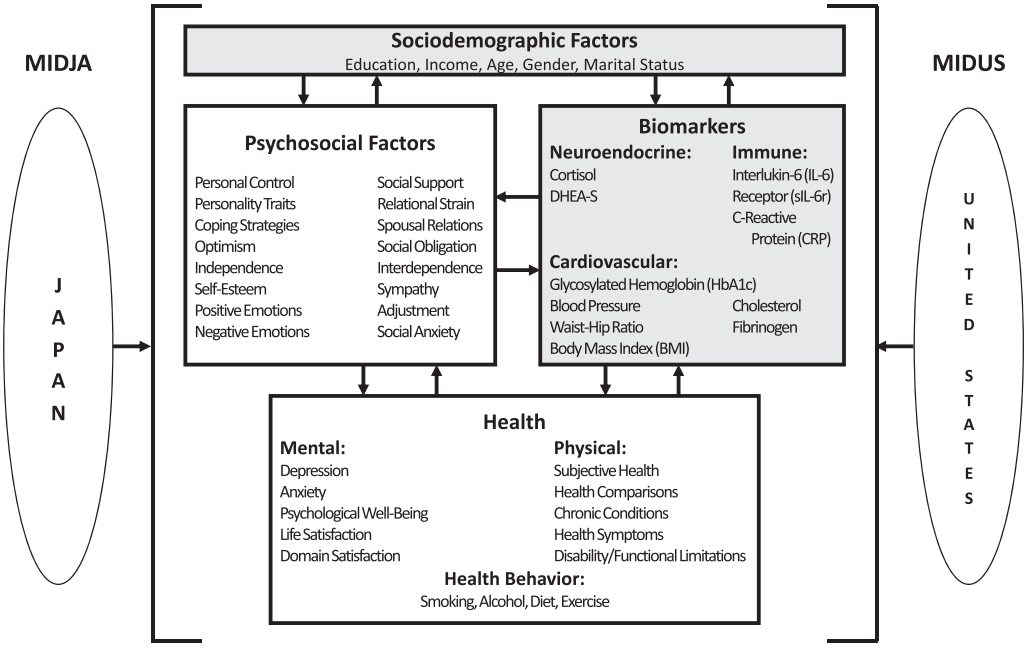

Figure 1 An overview of the MIDUS and MIDJA content. Boxes that include two recent developments featured in this paper are highlighted in gray.

such dialectical beliefs, Miyamoto and Ryff (2011) found, using MIDUS and pilot data from MIDJA, that Japanese adults were more likely than American adults to report experiencing both positive and negative emotions with moderate frequency. Furthermore, this moderate dialectical emotion type was associated with fewer physical symptoms in Japan than in the U.S., although no cultural difference was found for the subjective health rating. Reflecting both interdependence and dialectical beliefs, other studies suggested that East Asians are more likely than Americans to perceive negative sides of positive emotions and positive sides of negative emotions (Miyamoto, Ma, & Wilken, 2017; Uchida & Kitayama, 2009). Using MIDUS and MIDJA, Curhan, Sims, et al. (2014) found that the links between negative emotions and measures of health (i.e., chronic health conditions and physical functioning) were weaker in Japan than in the U.S., although no cultural difference was found for subjective health. Employing a structural equation model analysis, Ishii (2019) showed that the link between negative emotions and somatosensory amplification (i.e., sensitivity to unpleasant bodily sensation, a component of physical health in Kitayama et al., 2010) was weaker among the Japanese than among Americans.

Some studies have examined longitudinal relationships between well-being or emotions and health. Focusing on MIDJA, Yoo and Ryff (2019) found that those with persistently high psychological well-being across 4 years showed better subjective health, fewer chronic health conditions (e.g., hypertension, arthritis), fewer health symptoms (e.g., headaches), and fewer functional limitations over time than those with persistently low well-being. Similar findings had previously been documented with data from MIDUS (Ryff, Radler, & Friedman, 2015). Willroth, Ong, Graham, and Mroczek (2020) examined both MIDUS and MIDJA and found that a lower level of negative emotions and a higher level of positive emotions across time were associated with better health (i.e., subjective health and chronic health conditions).

Taken together, the above findings point to evidence that types of emotion more accepted (sanctioned) in Japan than in the U.S. (e.g., dialectical emotion, negative emotions) are less predictive of poor physical health in Japan compared to the U.S. At the same time, the results sometimes varied across different measures of health and emotions; for example, cultural differences tended to be smaller for subjective health ratings than for concrete measures of health (Curhan, Sims, et al., 2014; Miyamoto & Ryff, 2011) and for the longitudinal measures (Willroth et al., 2020) than for a single-time measure of emotions (Curhan, Sims, et al., 2014). Such mixed findings highlight the need for further investigations to clarify the contextual aspects of culture that are more (or less) conducive for emotions to matter for health outcomes.

Importantly, these initial MIDUS and MIDJA inquiries provided researchers with opportunities to do more than demonstrate cultural differences in specific psychological processes. In addition, they examined whether and how such psychological processes mattered for individual health and functioning across different sociocultural contexts. The emerging evidence underscored the need to augment self-reported measures of health with objectively measured biological factors to elucidate possible pathways through which psychosocial factors may matter for physical health, which is covered in the next topic.

Recent Developments

Culture and Health: Probing Biological Pathways

A key innovation in the MIDUS and MIDJA studies has been to augment self-reported health assessments (subjective health, chronic conditions, functional capacities) with the objective measurement of biological risk factors. These biomarkers, particularly when combined with psychosocial assessments, have offered new windows on the interplay of factors that may matter for health, and for how they may vary by cultural context. What follows summarizes some of the key findings, organized by distinct physiological systems.

Neuroendocrine and inflammatory markers. As described above, multiple studies have documented cultural differences in experiences of positive and negative emotion. Extending such work, Park, Kitayama, Miyamoto, and Coe (2020) examined whether culture moderates the relationship between negative affect and biological stress of the neuroendocrine system, measured with diurnal cortisol. The healthy pattern of cortisol diurnal variation is characterized by a rapid increase after waking in the morning, followed by a steady decline over the day (i.e., declining slope). After controlling for demographic factors, personality traits, and health behaviors, findings showed that negative affect was associated with a flattening of the diurnal cortisol slope among Americans, but not among the Japanese. Additional analyses showed that diurnal cortisol mediated the link between negative affect and other aspects of biological risk (inflammatory, cardiovascular) among Americans. These findings suggested cultural differences in the experience of negative affect that make it more (or less) stressful and thus differentially consequential for health.

Another study (Miyamoto et al., 2013) investigated negative emotion but linked it to a specific pro-inflammatory marker, interleukin-6 (IL-6), which is implicated in numerous disease outcomes. Although previous studies conducted in Western cultures had shown that negative emotion predicted elevated levels of IL-6, this investigation replicated the finding with the U.S. biomarker sample, but showed no association between negative emotion and IL-6 in the Japanese biomarker sample. The obtained interaction between culture and negative emotion in predicting a major pro-inflammatory biomarker remained after adjusting for numerous demographic, psychological, and health factors.

Several studies have utilized a composite index of biological health risks (BHR) including inflammatory markers and cardiovascular factors. Using the BHR, Kitayama and Park (2017) showed that negative emotions (negative affect, anger expression) were inversely linked with biological health among Americans. The relationships were not present (negative affect), or were reversed (anger expression) for Japanese adults (Kitayama et al., 2015). In addition, happiness measured with eudaimonic assessments was linked with better biological health in both cultural contexts but when happiness was measured with hedonic assessments, the links with biological health were less clear (Kitayama, Akutsu, Uchida, & Cole, 2016).

Another study (Kitayama et al., 2018) investigated links between neuroticism and the above BHR composite. Behavioral adjustment (a propensity to flexibly adjust behaviors to environmental contingencies) was examined as a moderator. Japanese participants were higher in behavioral adjustment than U.S. adults, and as predicted, neuroticism was linked to lower BHR among Japanese but not Americans, which was partly explained by cultural differences in behavioral adjustment; that is, among those who were high in behavioral adjustment, neuroticism was linked to lower BHR. At the same time, neuroticism was associated with worse self-reported health regardless of behavioral adjustment or cultural context.

Finally, Kitayama and Park (2021) examined links between conscientiousness and the BHR composite, considering various mediating factors. Among Americans, conscientiousness was associated with lower BHR, and the relationship was mediated by a healthy lifestyle. In contrast, the relationship between conscientiousness and BHR was not significant among the Japanese, although further analyses showed that conscientiousness was associated with greater commitment to social obligation, which in turn predicted *higher* BHR. Thus, the findings showed that conscientiousness may or may not be beneficial to health, depending on normatively sanctioned behaviors in different cultures.

Underscoring that much of what is known about the normal functioning of IL-6 and other inflammatory markers has been generated with European samples and Americans of European descent, Coe et al. (2011) examined levels of these biomarkers among Japanese adults, and Caucasian and African American adults from the U.S. Across adults aged 30–80, IL-6 levels were strikingly lower in Japanese individuals and also significantly lower for C-reactive protein (CRP) and

fibrinogen (FBG) compared to U.S. adults. Differences in body mass index (BMI) were taken into consideration, although differences in IL-6 persisted after including this covariate. The soluble receptor for IL-6 (sIL-6r) was also evaluated. This marker was higher in Japanese than American adults, with notably low levels for African Americans. These findings pointed to the importance of population diversity in studies of health and aging.

Reflecting on the fact that Japan is an exceptionally healthy East Asian country with notable longevity, Coe et al. (2020) examined four cultural practices (drinking tea, eating seafood, consuming vegetables, taking relaxing baths) to see if they were associated with levels of CRP and IL-6 among participants in the MIDJA biomarker sample. After controlling for demographic factors, health status, and health behaviors, findings showed that consuming a Japanese diet was associated with significantly lower levels of both biomarkers, while more frequent bathing was associated with lower IL-6 but not CRP.

The social relational realm has been of interest in investigating cultural differences in biological health risks. Hartanto, Yee-Man Lau, and Yong (2020) examined whether culture moderates the link between perceived obligation to others and both inflammatory and cardiovascular risk. Findings showed that a higher tendency to disengage from stressful social obligations is associated with better health for Americans, but poorer health outcomes among Japanese participants. These results thus highlighted culturally distinct pathways between perceived obligations to others and objectively measured physical health.

Metabolic and cardiovascular risk factors. Links between psychological resources and glucoregulation in the MIDJA sample were investigated (Boylan, Tsenkova, Miyamoto, & Ryff, 2017) to augment prior U.S. findings. Such inquiry is important, given increasing rates of type 2 diabetes in Japan. Three categories of resources were considered: hedonic well-being (life satisfaction, positive affect), eudaimonic well-being (personal growth, purpose in life, *ikigai* [the sense of "life worth living"; Sone et al., 2008]), and interdependent well-being (gratitude, peaceful disengagement, adjustment). After adjusting for demographic, health status, health behaviors, antidiabetic medication and negative affect, findings showed that purpose in life was associated with significantly lower HbA1c (glycosylated hemoglobin), while hedonic well-being was not associated with HbA1c and peaceful disengagement was associated with significantly higher HbA1c. Although *ikigai* was not linked to HbA1c, it was related to lower systolic blood pressure. Thus, while the findings on the associations between psychological resources and metabolic risk were mixed, eudaimonic well-being tended to be associated with reduced metabolic risk in Japan, which is in line with the findings in MIDUS (Boylan & Ryff, 2015). These mixed results suggest the need for continuing inquiry into which psychological resources might be associated with reduced metabolic risk.

Two studies have examined links between psychosocial factors and lipids. Yoo, Miyamoto, Rigotti, and Ryff (2017) linked positive affect to a wider array of serum lipid profiles known to be strongly predictive of risk for cardiovascular disease. Findings showed that healthier lipid profiles were evident among Americans with higher levels of positive affect, but no significant links were evident among Japanese adults. Further analyses showed that this cultural moderation was mediated by body mass index (BMI); positive affect was linked to lower BMI among Americans, but not among Japanese, and lower BMI predicted healthier lipid profiles across cultures. Experiencing positive affect, the culturally normative emotion in the U.S., was associated with lower BMI (possibly through engagement in healthy behaviors, such as exercise), in turn, leading to healthier lipid profiles. These patterns were less evident in a cultural context with different norms concerning emotions.

Although Yoo et al. (2017) found no link between positive affect and lipids in Japan, this may not necessarily mean that positive affect is irrelevant for health in Japan. Yoo, Miyamoto, and Ryff (2016) examined positive affect in the context of different levels of social connectedness.

They focused on two indicators of well-functioning physiology: HDL (high-density lipoprotein) cholesterol, and DHEA-S (dehydroepiandrosterone-sulfate). Lower levels of both biomarkers (i.e., less healthy profiles) were found among Japanese adults who reported high positive affect in combination with low social connectedness. Such findings suggest that experiencing positive emotions without maintaining high social connectedness is associated with poorer health in Japan. In contrast, the general pattern in the U.S. was that those with higher positive affect showed healthier HDL levels regardless of social connectedness. The findings thus highlighted cultural variation in contexts where positive affect is linked to health.

Other studies have examined biological health correlates of personality across cultures. A study using six large community samples, including MIDUS and MIDJA, examined links between personality traits and risk of diabetes (Stephan, Sutin, Luchetti, Canada, & Terracciano, 2020). After controlling for demographic factors and health status, findings showed that higher conscientiousness was consistently linked with lower HbA1c levels across most samples and in the meta-analysis as well as to lower risk of the threshold score for diabetes. This finding, based on more than 26,000 participants, pointed out the potential health-protective features of conscientiousness across cultural contexts.

While Stephan, Sutin, Luchetti, Canada, and Terracciano (2020) found the link between conscientiousness and lower HbA1c levels across cultures, other studies have shown cultural variation in the links between conscientiousness and metabolic and cardiovascular risk factors. Sutin et al. (2015) examined the associations between personality traits and BMI among three East Asian samples, including MIDJA. Unlike previous findings in Western cultures that found associations between low conscientiousness and high BMI (Terracciano et al., 2009), conscientiousness was *not* associated with BMI in East Asian samples. Interestingly, extraversion and agreeableness were, however, associated with *higher* BMI among Asian men. Although the reason is unclear, it may be that men who are socially skilled in Asia tend to eat in a group setting, which could lead to more eating and drinking. Furthermore, as discussed in the preceding section, using a composite index of BHR including both inflammatory markers and cardiovascular factors, Kitayama and Park (2021) found that conscientiousness was associated with lower BHR among Americans, but the association was not significant among the Japanese.

Researchers have also examined how personality traits predict physical inactivity (Sutin et al., 2016), which is a cardiovascular risk factor associated with increased mortality (Schmid, Ricci, & Leitzmann, 2015). They examined the links among 16 samples, including MIDUS and MIDJA as well as other large datasets (e.g., Health and Retirement Study, National Longitudinal Study of Adolescent to Adult Health). Although samples differed in the specific measure of physical (in)activity (e.g., participation in therapies for MIDJA, engagement in vigorous physical exercise for MIDUS), the researchers found that, across all samples, respondents who scored high on neuroticism were more likely to be physically inactive, whereas those who scored high on conscientiousness were less likely to be physically inactive. Extraversion, openness, and agreeableness were also negatively associated with physical inactivity, but their associations tend to be weaker for specific activities.

It is important to underscore that the links between conscientiousness and health behaviors may vary for specific health behaviors due to different cultural norms and beliefs associated with a particular behavior. An example is the work of Lee, Gao, and Ryff (2020), which focused on smoking, wherein norms vary widely across societies and by gender. They found that conscientiousness was associated with a lower likelihood of smoking (former or current) across both genders in the U.S. However, there were gender differences in Japan; conscientiousness was associated with a lower likelihood of being a former smoker among Japanese women, but was not associated with smoking status among Japanese men. Conscientiousness is likely effective in preventing smoking in sociocultural contexts where smoking is stigmatized (e.g., Western cultures, or for women in Japan), but less so in a sociocultural context

where smoking is less stigmatized (e.g., men in Japan).

The emerging picture and remaining issues. Numerous scientific advances have followed from the MIDUS and MIDJA biomarker samples. Several have extended prior findings on cultural differences in emotional and social experiences, showing that linkages between psychosocial factors and different aspects of physiological risk, such as BMI, inflammation, and cardiovascular malfunction, also vary by cultural context. The emerging picture is that psychosocial factors that are relatively more accepted in Japan than in the U.S. (e.g., negative emotions and neuroticism) are less likely to be associated with poor biological health in Japan than in the U.S., whereas psychosocial factors related to positive emotions and conscientiousness tend to be associated with better biological health in the U.S. than in Japan, or are linked to health only in specific contexts in Japan. Social relations provide specific contexts, or specific factors, whereby psychosocial factors matter for health in Japan.

What theoretical framework can be invoked to understand such findings on cultural differences in health correlates of psychosocial factors? Social and cultural psychologists have suggested the idea that cultural fit—i.e., the extent to which one's psychological experiences are in accordance with the expectations sanctioned in the given cultural context—leads to beneficial outcomes, such as higher motivation, better relationships, and greater well-being (De Leersnyder, Mesquita, Kim, Eom, & Choi, 2014; Fulmer et al., 2010; Miyamoto, Yoo, & Wilken, 2019; Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012). According to a psychosocial resources model (Yoo & Miyamoto, 2018), cultural fit is further thought to lead to better health outcomes by increasing both psychological (e.g., meaning, intrinsic motivation) and social resources (e.g., social integration), which in turn lead to better health via behavioral (e.g., exercise, diet) and biological pathways (e.g., inflammation). That is, such behavioral and biological factors themselves are formulated as pathways (mechanisms) to disease outcomes (morbidity) and mortality. These proposed causal pathways need to be empirically assessed in future research. Critical to such endeavors will be longitudinal designs, such as the multiple waves of MIDUS and MIDJA. With such data, investigators can test whether the putative antecedent temporally preceded change in the putative consequent, thereby increasing confidence in the hypothesized causal directionality. Evidence of bi-directional influences can also be documented, as illustrated by recent findings from MIDUS showing that physical activity and purpose in life each influenced each other over time (Yemiscigil & Vlaev, 2021).

Although cultural fit is an important theoretical concept in advancing research on culture and health, we note that it may not always lead to better health. Indeed, some culturally sanctioned practices may be maladaptive for some individuals. For example, *karoshi* (death from overwork) has been identified as a societal issue of concern in Japan (Iwasaki, Takahashi, & Nakata, 2006). Such practices may partly arise from cultural emphasis on fulfilling one's duties and obligations, even at the expense of individual health. Other norms within societies that sanction unfair or discriminative treatment of certain subgroups may also have negative effects on members of those subgroups (Fuller-Rowell, Curtis, Chae, & Ryff, 2018; Fuller-Rowell, Doan, & Eccles, 2012), an issue to which we will return in discussing social inequality in the next section. These examples underscore the importance of being mindful of and critically evaluating the benefits as well as possible harms of culturally sanctioned norms and practices. It is important to understand which norms and practices are beneficial or harmful, including when, where, and for whom.

Reviewing the above findings as a whole, we want to comment on the apparent inconsistencies evident in some of them: sometimes the evidence has supported cultural differences in how psychosocial factors and health are linked, and other times similarities in such linkages have been evident across cultural contexts.

These patterns need further examination in future research and will likely be illuminated by paying attention to multiple factors. First, the nature of psychosocial factors under consideration and the associated cultural norms need continuing attention. Most evidence for cultural differences has been accumulated for emotions, for which norms are known to vary across cultures (Mesquita et al., 2014; Miyamoto et al., 2017). On the other hand, some findings point to cultural similarities, including psychological factors, such as purpose in life and *ikigai*, which are sanctioned in both the U.S. and Japanese cultural contexts. Second, the nature of the health outcome may also play a role in discrepant findings. Cultural differences have been more often evident when examining objective measures of health, such as inflammation and cardiovascular malfunction, whereas cultural similarities are more common in studies using self-reported health. These varying patterns need to be supported or refuted by additional science.

Finally, we draw attention to another potentially important factor in making sense of mixed findings; namely, the guiding motivations of researchers studying health across diverse countries. Culturally-oriented investigators tend to focus on cultural meanings and norms surrounding particular psychosocial factors and their health sequelae (Miyamoto et al., 2019; Ryff et al., 2014). This approach typically involves comparison of a few cultures (or a single culture) due to the in-depth exploration of the meanings and norms associated with various psychosocial factors. Other investigators seek to test the scope of replicative consistency in factors that influence health across diverse countries. These inquiries more often involve multiple international comparisons with limited attention given to underlying meanings and norms associated with particular psychosocial factors *within* differing cultural context. This approach is more conducive to finding similarities in links between psychosocial factors and health at the general level. We draw attention to these differences not to argue that one approach is better than the other, but rather to underscore that comparative studies of health across countries are not always explicitly oriented toward the understanding of cultural contexts, which is the central theme of our review.

Bringing Socioeconomic Inequalities into Work on Culture and Health

Specific socioeconomic contexts in which individuals are located provide certain meanings that shape how psychological processes may be linked to health. Thus, examining psychosocial processes in relation to specific socioeconomic contexts as well as cultural contexts is, in our view, essential. Perhaps due to the reliance on college students as the main source of samples in much contemporary social psychology (Arnett, 2008; Henrich, Heine, & Norenzayan, 2010), psychologists have traditionally not paid much attention to issues of inequality that exist within the societies in which they are embedded. However, there is growing recognition that socioeconomic inequality is powerfully implicated in psychological processes and health. Furthermore, such socioeconomic inequality is widening over time. Thanks to recruitment of representative samples from the U.S. and Japan, MIDUS and MIDJA have fostered research on socioeconomic inequality across cultures. Here, we explain how the intersection of culture and SES contexts is a critical and rich topic for further scientific inquiries.

Health disparities due to socioeconomic status (SES) have been widely documented (Adler et al., 1994; Marmot, 2015; Matthews & Gallo, 2011). For example, compared to high SES people (e.g., those with higher education, occupational status, or income), low SES people tend to experience not only more psychological distress, such as anxiety and depression (Gallo & Matthews, 2003), but also poorer physical health, including increased mortality (Adler et al., 1994). Using the MIDUS data, many studies have elucidated behavioral (e.g., smoking; Glei, Lee, & Weinstein, 2020) and biological pathways (e.g., inflammation and hormones; Friedman & Herd, 2010; Zilioli, Imami, & Slatcher, 2017) through which SES leads to good or poor mental and physical health (see also Kirsch, Love, Radler, & Ryff, 2019). Experiences of discrimination have also been documented as adverse influences on

health among disadvantaged minorities (Fuller-Rowell et al., 2018; 2012; Surachman, Jenkins, Santos, & Almeida, 2021).

Cultural influences on SES-Health links. How might the surrounding cultural context play a role in the links between SES and psychological and physical health? Some pathways through which SES is linked to health and well-being may be culturally similar, for example, Yu and Blader (2020) found that higher SES is linked to greater well-being through the perceived respect from co-workers in both MIDUS and MIDJA. The MIDUS and MIDJA investigations have shown at least three ways through which cultural contexts influence how SES is linked to health. First, Kan et al. (2014) examined factors mediating the association between SES and physical health (i.e., self-rated health and chronic conditions). They found that, whereas a sense of control mediated the association across cultures, self-esteem mediated the association in the U.S., but less so in Japan. Thus, self-esteem seemed to play a more prominent role in the pathway between SES and health in a cultural context, where having a positive self-view is valued (Heine, Lehman, Markus, & Kitayama, 1999).

Second, the particular facets of SES related to psychological well-being may differ across cultures. SES has both objective (e.g., education) and subjective facets (e.g., subjective perceptions of one's status within society; Adler, Epel, Castellazzo, & Ickovics, 2000). Curhan, Levine, et al. (2014) showed that subjective SES was more strongly associated with well-being in the U.S., where personal judgments of the self are valued moreso than in Japan. In contrast, objective SES was more strongly associated with well-being in Japan, where others' judgment of the self plays a more prominent role than in the U.S.

Third, the strength of links between SES and health may differ across cultures. Several studies found weaker links between SES and psychological and physical health (e.g., depressive symptoms, mortality, morbidity, and health behaviors) in East Asian cultures (Inaba et al., 2005; Kagamimori, Gaina, & Nasermoaddeli, 2009; S. Kim, Symons, & Popkin, 2004; Lahelma et al., 2010; Takao, Kawakami, & Ohtsu, 2003). Using MIDUS/MIDJA, Takahashi and colleagues (Takahashi, Fujiwara, Nakayama, & Kawachi, 2018) showed that such cultural differences extend to the expected trajectories of one's health. Respondents were asked to rate their current health status, their past health status from 10 years ago, and their predicted future health status in 10 years. In the U.S., there was an SES gradient in the expected trajectory of health decline; low SES people expected their health to decline more steeply than high SES people. On the other hand, in Japan, people expected their health to decline, but no SES gradient in the expected trajectory was found. Structural and institutional factors, such as the availability of the universal healthcare system, likely underlie such differences, although the cultural meanings associated with SES may also play some role, to which we now turn.

Cultural meanings of SES: privileges and burdens. The importance of cultural contexts in shaping meanings and expectations associated with varying SES strata and their psychological sequelae has been suggested by cultural psychologists (Ishii & Eisen, 2020; Miyamoto et al., 2018; Schooler, 2007; Snibbe & Markus, 2005; Stephens, Markus, & Phillips, 2014). In American cultural contexts, where the independent view of the self is dominant (Markus & Kitayama, 1991), many findings have shown that high SES people tend to focus on pursuing the self-set goals (i.e., self-orientation) that reinforce the independence of the self (Stephens et al., 2014). For example, higher SES was associated with greater self-esteem and entitlement in the U.S. (Côté et al., 2021; Kohn, 1969; Piff, 2014). On the other hand, in East Asian cultural contexts, where the interdependent view of the self is dominant (Markus & Kitayama, 1991), high SES is linked not only to greater self-orientation (Kohn, Naoi, Schoenbach, Schooler, & Slomczynski, 1990; Takemura, Hamamura, Guan, & Suzuki, 2016), but also to the maintenance of relationships and fulfillment of social responsibilities (i.e., other-orientation;

Miyamoto et al., 2018; Na, McDonough, Chan, & Park, 2016; Naoi & Schooler, 1985; Rule et al., 2010) that support interdependence of the self. Based on analyses of MIDUS and MIDJA data as well as data from the World Values Survey, Miyamoto et al. (2018) showed that higher SES was associated with both self-orientation (e.g., self-esteem) and other-orientation (e.g., sympathy, support given to others) in Japan, whereas the association between SES and other-orientation was weaker or absent in the U.S. The fact that high-social-status individuals in Japan tend to engage in both self-orientation and other-orientation may confer privileges as well as burdens.

In terms of privilege, Park et al. (2013b) examined how SES is linked to expression of anger using MIDUS/MIDJA. They theorized that, in Japan, where there is a normative pressure to suppress anger, only those who have high social status are conferred a privilege to express anger. The results showed that higher objective SES (education, occupation) was linked to more anger expression in Japan, and the link was mediated by the decision-making authority (i.e., the extent to which individuals had the authority to make decisions at work). In contrast, in the U.S., where frustration resulting from thwarted goal pursuit is the main determinant of anger expression, those with lower social status who tend to experience more life difficulties may express anger. Supporting this prediction, they found that lower subjective SES was linked to more anger expression in the U.S., which was mediated by feelings of frustration.

At the same time, higher social status, especially in terms of occupational positions, are also associated with possible burdens in Japan. Compared to Western cultures, people who occupy a managerial position in Japan tend to work longer hours, which is linked to unhealthy lifestyles (e.g., less sleep, less exercise) and higher stress (Maruyama & Morimoto, 1996). Further, the rise in Japan's suicide rate since the 1990s was most noticeable among people in managerial positions, likely tied to their increased responsibilities and job demands during the recession (Wada et al., 2012). Similarly, one-third of victims of *karoshi* (death from overwork) in years following the economic crisis in Japan were from professional and administrative positions, despite the smaller share of such higher occupational positions in the workforce (Kondo & Oh, 2010). A recent survey with Japanese respondents in the workforce ($n = 9{,}123$) showed that higher managerial status was associated with higher well-being, yet *worse* self-reported physical health (e.g., sleep problems, pain) in Japan (Miyamoto, 2021) after controlling for demographic factors (e.g., age, gender). Such a negative association between managerial status and health was partly explained by the tendency of those with higher managerial status having excessive working styles (Miyamoto, 2021). Burdens associated with higher status may partly underlie the weaker (or even reversed) link between higher social status and health in Japan.

The emerging picture and remaining issues. There is rapidly accumulating evidence on socioeconomic inequality in health and their psychological correlates using the MIDUS and MIDJA samples. Some studies have shown different ways through which SES links to health are influenced by culture. Furthermore, other studies have shown culturally shared and dependent psychological correlates of SES, and highlighted both the privileges and burdens associated with higher social status in Japan. The emerging picture is that, while socioeconomic inequality exists across cultures, the way it is manifest in psychological processes and health depends on cultural meanings and expectations associated with varying socioeconomic status. While higher status in Japan is associated with the privilege to express anger and thus may signal dominance, it is also associated with greater burden and responsibility, which can have some health costs.

The exploration of socioeconomic inequality across cultures has just begun. There are many important questions yet to be explored and addressed. For example, while most studies have focused on cultural meanings and expectations associated with higher status people in Japan, what are the implications for lower social status people in Japan? People who are at high risk for "NEET" (i.e., Not engaged in

Employment, Education, or Training) in Japan have shown lower levels of interdependence compared to those who are at low risk (Norasakkunkit & Uchida, 2011). Building on such findings, it would be fruitful for future research to elucidate cultural meanings and expectations associated with lower SES strata and their psychological meanings. One promising avenue is to employ qualitative strategies to illuminate cultural meanings surrounding lower (vs. higher) SES strata. Illustrating this idea with MIDUS, Markus, Ryff, Curhan, and Palmersheim (2004) conducted in-depth qualitative interviews with a subset of participants to examine meanings of well-being among high school-educated and college-educated adults in the U.S. The results revealed that among high school-educated adults, narratives about meanings of well-being centered around family relationships, financial security, and jobs, as well as adjusting to the world.

For example, a high school-educated woman stated: "A good life is having the things you need. Having your health. You know, with the things you need. […] I'm talkin' about havin' a roof over your head, a job, some kind of security. That would be to me—it's havin' a good life. Friends and family. Without them, maybe I'd be a little lonely." (p.286.) A high school-educated man said: "A good wife. How she takes care of me. She's nice and she's sweet. I just love her. And each day God blesses me to see her. It seems like I grow more in love with her. It's just, she's just a sweet person." (pp.301–302.)

In contrast, enjoyment, achievement, and influencing the world were more prominent among the college-educated adults' narratives about meanings of well-being. Such a qualitative approach to well-being among those from low (vs. high) SES levels in Japan could provide informative bottom-up insights into the cultural meanings and expectations surrounding life from differing social strata in Japan.

Also, the findings examining psychological correlates of SES in diverse cultures have relied on self-reported measures of psychological processes and behaviors (e.g., support provided to others, anger expression, perceived discrimination). However, how high (vs. low) status people perceive and interpret their own behavior may diverge from how such behavior is perceived and interpreted by other people from the same or different SES strata. Exploring such potential discrepancies between one's own and others' perspectives may illuminate interpersonal dynamics that underlie the observed psychological correlates of SES in Japan. In the next (and last) section, we turn to the issue of increasing economic inequality that faces many societies around the world.

Summary and Our Changing Historical Contexts

We have focused this review on scientific advances in two key areas of research at the interface of culture and health. The first emphasized a more micro perspective on biological pathways that are part of how psychosocial and behavioral factors matter for diverse health outcomes in different cultural contexts. The second emphasized more macro-level influences involving socioeconomic inequality that are central to understanding health differences within cultures. Both of these directions represent relatively new questions in cultural psychology and thus are important directions for future research, possibly using publicly available data from MIDJA and MIDUS. While such inquiries unfold, it is important to acknowledge change in the surrounding historical contexts within which such science is conducted. Therefore, we conclude this review with a call for attention to two specific historical issues: widening economic inequality and the worldwide COVID-19 pandemic.

Widening Economic Inequality

Sadly, economic inequality has been increasing over time in most OECD countries since the mid-1980s (OECD, 2011), though the increase is notably steeper in the U.S. compared to European countries (Graham, 2017; Piketty & Saez, 2014; Reeves, 2018). These problems were exacerbated by the Great Recession of 2008, which fueled dramatic increases in poverty and accompanying health costs due to job loss,

unemployment, and financial strain (Burgard & Kalousova, 2015; Kirsch & Ryff, 2016). This heightened trauma among the disadvantaged has been linked with growing "deaths of despair"; i.e., suicides, deaths due to addictions, such as opioids and alcohol among midlife adults in the U.S. (Case & Deaton, 2015, 2020).

A unique feature of the MIDUS design made it possible to examine historical change in health inequalities. Specifically, MIDUS includes two national samples of U.S. adults situated on either side of the Great Recession. The baseline sample (aged 25 to 74) was recruited in 1995, and was subsequently followed by recruitment of a new "refresher" sample (same ages) in 2012. Over this period of time, educational attainment in the U.S. improved: college-educated adults increased by 24.8%–33.2% and those with less than a high school degree of education decreased from 15.3% to 11.3%. Despite such gains the post-Recession sample reported less household income (after adjusting for inflation) and lower financial stability than the pre-Recession sample (Kirsch et al., 2019). The post-Recession sample also had worse health (chronic conditions, body mass index, functional limitations, physical symptoms) and lower levels of many aspects of eudaimonic and hedonic well-being. Further work from MIDUS comparing these two national samples (Goldman, Glei, & Weinstein, 2018) showed that mental health (using multiple negative and positive indicators) had become more compromised among the later refresher (post-Recession) sample compared to the baseline MIDUS sample particularly among those of lower socioeconomic positions (measured with a composite of education, occupation, income, wealth).

Economic inequality has also been rising consistently in Japan since the mid-1980s (Shirahase, 2014). Parallel cross-time trends of health in Japan need to be examined as well, thereby underscoring the need for recruitment of new probability samples of socio-demographically diverse participants. That is to say, government-supported research in both Japan and the U.S. is needed to facilitate continuing scientific inquiries that build on the kinds of research described above, while also remain responsive to changing historical contexts. Relevant questions are whether historic economic crises lead to the comparable widening of health inequalities across all cultures, or whether some countries are less prone toward deepening discrepancies in life resources and opportunities. Prior research on the impact of the economic crisis in Japan, conducted with a nationally representative sample over two decades, found that health inequalities across income groups actually narrowed after the economic crisis in Japan. Interestingly, this outcome was mostly driven by the decline in health among middle to high-income individuals (Kachi, Inoue, Nishikitani, Tsurugano, & Yano, 2013; see also Kondo, Subramanian, Kawachi, Takeda, & Yamagata, 2008). The authors speculated that the health decline in higher-income people may reflect corporate restructuring that increased their workload (Kachi et al., 2013). Missing from these national health studies are the rich psychosocial, behavioral, and biological assessments involved in the MIDJA and MIDUS endeavors, thus underscoring the need to broaden the multidisciplinary scope of national health research, guided by a commitment to understand cultural factors of the sort covered in this review.

The COVID-19 Pandemic

Over the past year the world has been shaken by the COVID-19 pandemic that has contributed to soaring death rates across countries, while also in many places, aggravated pre-existing disparities in unemployment, education, housing, health and survival. A study conducted in the U.K. found that the risk of COVID-19 hospitalization was greater among low SES people than among higher SES people (Patel, Paranjpe, Kathiresan, Rivas, & Khera, 2020). Data from the U.S. showed that the economic fallout of the pandemic hit lower-income Americans the hardest, measured in terms of problems paying bills, receiving help from a foodbank, job loss, and risk of eviction (Kochhar, 2020). More recent evidence has shown that the wealthiest segments of society were more likely to stay at home during the

lockdown and rely on delivery services compared to those at the low end of the income hierarchy (Serkez, 2021). The disadvantaged, in turn, were more likely to experience changes in employment and have greater problems with online schooling (availability of a computer, evidence of less progress in math coursework) compared to the advantaged. Finally, life expectancy fell for all in the U.S. over the past year, although notably more so for Black compared to White Americans (Serkez, 2021).

Data from Japan indicates that gender differences are important to tracking the pandemic's effects. Risk of unemployment and household burdens have been disproportionately placed on women (Nomura et al., 2021). Re-invoking the above theme of increased deaths of despair in the U.S., the suicide rate during the COVID-19 pandemic increased significantly among Japanese women (20%–30% more than the previous year) but not among Japanese men (Nomura et al., 2021). Alongside the gender differences is the divide between regular workers and non-regular workers, many of whom are women. Compared to regular workers, non-regular workers have less job security, lower compensation, and less benefits (Inoue & Dooley, 2020). The gap between regular and non-regular workers became even more evident during the pandemic; while the number of regular workers increased in 2020 from the previous year, the number of non-regular workers dropped by 750,000 (Ministry of Internal Affairs and Communications, 2021). Furthermore, foreign technical trainees, who come from developing countries to work in Japan and often experience harsh working conditions (Oono, 2019), have been especially vulnerable to social isolation (Nagata, 2020) and job losses (Uchihashi, 2021) during the pandemic. These early reports thus implicate different patterns of impact in differing countries: socioeconomic status and race are key indicators of disproportionate suffering in the U.S., whereas gender differences and vulnerable workers appear prominent in patterns of impact in Japan. Older people in either context have been at increased risk of death, but how their burdens have been managed may vary by country and cultural context.

Missing from these initial pandemic reports are further important questions; for example, what psychological and social experiences underlie these experienced stresses of the pandemic, and how might they vary depending on sociodemographic factors, as well as cultural context? How might those in positions of privilege and power (defined by educational, economic, occupational status) versus those who are disadvantaged be at risk for, or protected from, pandemic-related burdens and trauma? Are there cultural differences in conceptions of social duties and responsibilities during periods of enormous societal strain? How are these communicated and what is their impact? In thinking about constructive responses, what kinds of interventions and public policy actions are needed to assist those who are most vulnerable in coping with pandemic-related losses as well as to mobilize the more comfortable to play their part? And which interventions and policies are most effective in particular cultural contexts? These wide-ranging questions are at the heart of how countries around the globe must respond to the major historical challenges currently unfolding. Drawing on the recent scientific advances summarized in our review, we submit that culturally informed perspectives will be needed to understand the health impacts of growing inequality and the COVID-19 pandemic. What people are facing, how they can most adaptively respond, and what will facilitate long-term recovery (individually and societally) from adverse historical events demand looking through the lens of culture.

Conflict of Interest

The authors declare no conflicts of interest are associated with this manuscript.

References

Adler, N. E., Boyce, T., Chesney, M. A., Cohen, S., Folkman, S., Kahn, R. L., & Syme, S. L. (1994). Socioeconomic status and health: The challenge of the gradient. *American Psychologist*, *49*, 15–24.

Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, white women. *Health Psychology*, *19*, 586–592.

Arnett, J. J. (2008). The neglected 95%: Why American psychology needs to become less American. *American Psychologist*, *63*, 602–614.

Boylan, J. M., & Ryff, C. D. (2015). Psychological well-being and metabolic syndrome: Findings from the midlife in the United States national sample. *Psychosomatic Medicine*, *77*, 548–558.

Boylan, J. M., Tsenkova, V. K., Miyamoto, Y., & Ryff, C. D. (2017). Psychological resources and glucoregulation in Japanese adults: Findings from MIDJA. *Health Psychology*, *36*, 449–457.

Burgard, S. A., & Kalousova, L. (2015). Effects of the great recession: Health and well-being. *Annual Review of Sociology*, *41*, 181–201.

Case, A., & Deaton, A. (2015). Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *Proceedings of the National Academy of Sciences*, *112*, 15078–15083.

Case, A., & Deaton, A. (2020). *Deaths of despair and the future of capitalism*. Princeton, NJ: Princeton University Press.

Coe, C. L., Love, G. D., Karasawa, M., Kawakami, N., Kitayama, S., Markus, H. R., … Ryff, C. D. (2011). Population differences in proinflammatory biology: Japanese have healthier profiles than Americans. *Brain, Behavior, and Immunity*, *25*, 494–502.

Coe, C. L., Miyamoto, Y., Love, G. D., Karasawa, M., Kawakami, N., Kitayama, S., & Ryff, C. D. (2020). Cultural and life style practices associated with low inflammatory physiology in Japanese adults. *Brain, Behavior, and Immunity*, *90*, 385–395.

Cohen, D., & Kitayama, S. (2019). *Handbook of cultural psychology* (2nd ed.). New York, NY: Guilford Press.

Côté, S., Stellar, J. E., Willer, R., Forbes, R. C., Martin, S. R., & Bianchi, E. C. (2021). The psychology of entrenched privilege: High socioeconomic status individuals from affluent backgrounds are uniquely high in entitlement. *Personality and Social Psychology Bulletin*, *47*, 70–88.

Curhan, K. B., Levine, C. S., Markus, H. R., Kitayama, S., Park, J., Karasawa, M., … Ryff, C. D. (2014). Subjective and objective hierarchies and their relations to psychological well-being: A U.S. /Japan comparison. *Social Psychological and Personality Science*, *5*, 855–864.

Curhan, K. B., Sims, T., Markus, H. R., Kitayama, S., Karasawa, M., Kawakami, N., … Ryff, C. D. (2014). Just how bad negative affect is for your health depends on culture. *Psychological Science*, *25*, 2277–2280.

De Leersnyder, J., Mesquita, B., Kim, H., Eom, K., & Choi, H. (2014). Emotional fit with culture: A predictor of individual differences in relational well-being. *Emotion*, *14*, 241–245.

Friedman, E. M., & Herd, P. (2010). Income, education, and inflammation: Differential associations in a national probability sample (the MIDUS study). *Psychosomatic Medicine*, *72*, 290–300.

Fuller-Rowell, T. E., Curtis, D. S., Chae, D. H., & Ryff, C. D. (2018). Longitudinal health consequences of socioeconomic disadvantage: Examining perceived discrimination as a mediator. *Health Psychology*, *37*, 491–500.

Fuller-Rowell, T. E., Doan, S. N., & Eccles, J. S. (2012). Differential effects of perceived discrimination on the diurnal cortisol rhythm of African Americans and Whites. *Psychoneuroendocrinology*, *37*, 107–118.

Fulmer, C. A., Gelfand, M. J., Kruglanski, A. W., Kim-Prieto, C., Diener, E., Pierro, A., & Higgins, E. T. (2010). On "feeling right" in cultural contexts: How person-culture match affects self-esteem and subjective well-being. *Psychological Science*, *21*, 1563–1569.

Gallo, L. C., & Matthews, K. A. (2003). Understanding the association between socioeconomic status and physical health: Do negative emotions play a role? *Psychological Bulletin*, *129*, 10–51.

Glei, D. A., Lee, C., & Weinstein, M. (2020). Socioeconomic disparities in U.S. mortality: The role of smoking and alcohol/drug abuse. *SSM - Population Health*, *12*, 100699. https://doi.org/10.1016/j.ssmph.2020.100699

Goldman, N., Glei, D. A., & Weinstein, M. (2018). Declining mental health among disadvantaged Americans. *Proceedings of the National Academy of Sciences*, *115*, 7290–7295.

Graham, C. (2017). *Happiness for all? Unequal hopes and lives in pursuit of the American dream*. Princeton, NJ: Princeton University Press.

Hartanto, A., Yee-Man Lau, I., & Yong, J. C. (2020). Culture moderates the link between perceived obligation and biological health risk: Evidence of culturally distinct pathways for positive health outcomes. *Social Science & Medicine*, *244*, 112644. https://doi.org/10.1016/j.socscimed.2019.112644

Heine, S. J., Lehman, D. R., Markus, H. R., & Kitayama, S. (1999). Is there a universal need for positive self-regard? *Psychological Review*, *106*, 766–794.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, *33*, 61–83.

Inaba, A., Thoits, P. A., Ueno, K., Gove, W. R., Evenson, R. J., & Sloan, M. (2005). Depression in the United States and Japan: Gender, marital status, and SES patterns. *Social Science & Medicine*, *61*, 2280–2292.

Inoue, M. & Dooley, B. (2020). A job for life, or not? A class divide deepens in Japan. The New York Times. Retrieved from https://www.nytimes.com/2020/11/27/business/japan-workers.html (June 1, 2021).

Ishii, K. (2019). Cultural influences in somatosensory amplification and their association with negative affective states. *Asian Journal of Social Psychology*, *22*, 106–112.

Ishii, K., & Eisen, C. (2020). Socioeconomic status and cultural differences. In *Oxford research encyclopedia of psychology*. Oxford University Press. https://doi.org/10.1093/acrefore/9780190236557.013.584

Iwasaki, K., Takahashi, M., & Nakata, A. (2006). Health problems due to long working hours in Japan: Working hours, workers' compensation (Karoshi), and preventive measures. *Industrial Health*, *44*, 537–540.

Kachi, Y., Inoue, M., Nishikitani, M., Tsurugano, S., & Yano, E. (2013). Determinants of changes in income-related health inequalities among working-age adults in Japan, 1986–2007: Time-trend study. *Social Science & Medicine*, *81*, 94–101.

Kagamimori, S., Gaina, A., & Nasermoaddeli, A. (2009). Socioeconomic status and health in the Japanese population. *Social Science & Medicine*, *68*, 2152–2160.

Kan, C., Kawakami, N., Karasawa, M., Love, G. D., Coe, C. L., Miyamoto, Y., … Markus, H. R. (2014). Psychological resources as mediators of the association between social class and health: Comparative findings from Japan and the U.S. *International Journal of Behavioral Medicine*, *21*, 53–65.

Kim, H. S., Sherman, D. K., & Taylor, S. E. (2008). Culture and social support. *American Psychologist*, *63*, 518–526.

Kim, S., Symons, M., & Popkin, B. M. (2004). Contrasting socioeconomic profiles related to healthier lifestyles in China and the United States. *American Journal of Epidemiology*, *159*, 184–191.

Kirsch, J. A., Love, G. D., Radler, B. T., & Ryff, C. D. (2019). Scientific imperatives vis-à-vis growing inequality in America. *American Psychologist*, *74*, 764–777.

Kirsch, J. A., & Ryff, C. D. (2016). Hardships of the great recession and health: Understanding varieties of vulnerability. *Health Psychology Open*, *3*(1), 2055102916652390. https://doi.org/10.1177/2055102916652390

Kitayama, S., Akutsu, S., Uchida, Y., & Cole, S. W. (2016). Work, meaning, and gene regulation: Findings from a Japanese information technology firm. *Psychoneuroendocrinology*, *72*, 175–181.

Kitayama, S., Karasawa, M., Curhan, K. B., Ryff, C. D., & Markus, H. R. (2010). Independence and interdependence predict health and wellbeing: Divergent patterns in the United States and Japan. *Frontiers in Psychology*, *1*, 163. https://doi.org/10.3389/fpsyg.2010.00163

Kitayama, S., & Park, J. (2017). Emotion and biological health: The socio-cultural moderation. *Current Opinion in Psychology*, *17*, 99–105.

Kitayama, S., & Park, J. (2021). Is conscientiousness always associated with better health? A U.S.–Japan cross-cultural examination of biological health risk. *Personality and Social Psychology Bulletin*, *47*, 486–498.

Kitayama, S., Park, J., Boylan, J. M., Miyamoto, Y., Levine, C. S., Markus, H. R., … Ryff, C. D. (2015). Expression of anger and ill health in two cultures. *Psychological Science*, *26*, 211–220.

Kitayama, S., Park, J., Miyamoto, Y., Date, H., Boylan, J. M., Markus, H. R., … Ryff, C. D. (2018). Behavioral adjustment moderates the link between neuroticism and biological health risk: A U.S.-Japan comparison study. *Personality and Social Psychology Bulletin*, *44*, 809–822.

Kochhar, R. (2020). Unemployment rose higher in three months of COVID-19 than it did in two years of the Great Recession. June 11, 1-9. Retrieved from https://pewrsr.ch/2UADTTZ (April 1, 2021).

Kohn, M. L. (1969). *Class and conformity: A study in values*. Homewood, IL: Dorsey Press.

Kohn, M. L., Naoi, A., Schoenbach, C., Schooler, C., & Slomczynski, K. (1990). Position in the class structure and psychological functioning in the United States, Japan, and Poland. *American Journal of Sociology*, *95*, 964–1008.

Kondo, N., & Oh, J. (2010). Suicide and karoshi (death from overwork) during the recent economic crises in Japan: The impacts, mechanisms and political responses. *Journal of Epidemiology & Community Health*, *64*, 649–650.

Kondo, N., Subramanian, S. V., Kawachi, I., Takeda, Y., & Yamagata, Z. (2008). Economic recession and health inequalities in Japan: Analysis with a national sample, 1986–2001. *Journal of Epidemiology & Community Health*, *62*, 869–875.

Lahelma, E., Lallukka, T., Laaksonen, M., Martikainen, P., Rahkonen, O., Chandola, T.,

… Sekine, M. (2010). Social class differences in health behaviours among employees from Britain, Finland and Japan: The influence of psychosocial factors. *Health & Place*, *16*, 61–70.

Lee, C., Gao, M., & Ryff, C. D. (2020). Conscientiousness and smoking: Do cultural context and gender matter? *Frontiers in Psychology*, *11*, 1593. https://doi.org/10.3389/fpsyg.2020.01593

Levine, C. S., Miyamoto, Y., Markus, H. R., Rigotti, A., Boylan, J. M., Park, J., … Ryff, C. D. (2016). Culture and healthy eating: The role of independence and interdependence in the United States and Japan. *Personality and Social Psychology Bulletin*, *42*, 1335–1348.

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

Markus, H. R., Ryff, C. D., Curhan, K. B., & Palmersheim, K. A. (2004). In their own words: Well-being at midlife among high school and college educated adults. In O. G. Brim, C. D. Ryff, & R. C. Kessler (Eds.), *How healthy are we? A national study of well-being at midlife* (pp. 273–319). Chicago, IL: University of Chicago Press.

Marmot, M. (2015). The health gap: The challenge of an unequal world. *Lancet*, *386*(10011), 2442–2444.

Maruyama, S., & Morimoto, K. (1996). Effects of long workhours on life-style, stress and quality of life among intermediate Japanese managers. *Scandinavian Journal of Work, Environment & Health*, *22*, 353–359.

Matthews, K. A., & Gallo, L. C. (2011). Psychological perspectives on pathways linking socioeconomic status and physical health. *Annual Review of Psychology*, *62*, 501–530.

Mesquita, B., De Leersnyder, J., & Albert, D. (2014). The cultural regulation of emotions. In J. J. Gross (Ed.), *Handbook of emotion regulation* (2nd ed., pp. 284–301). New York, NY: Guilford Press.

Ministry of Internal Affairs and Communications (2021). Labor force survey 2000. Retrieved from https://www.stat.go.jp/data/roudou/rireki/nen/ft/pdf/2020.pdf (June 1, 2021) (In Japanese, title translated by the author of this article.)

Miyamoto, Y. (2021). *Managerial status and well-being/health in Japan* (Unpublished manuscript). Hitotsubashi University.

Miyamoto, Y., Boylan, J. M., Coe, C. L., Curhan, K. B., Levine, C. S., Markus, H. R., … Ryff, C. D. (2013). Negative emotions predict elevated interleukin-6 in the United States but not in Japan. *Brain, Behavior, and Immunity*, *34*, 79–85.

Miyamoto, Y., Ma, X., & Wilken, B. (2017). Cultural variation in pro-positive versus balanced systems of emotions. *Current Opinion in Behavioral Sciences*, *15*, 27–32.

Miyamoto, Y., & Ryff, C. D. (2011). Cultural differences in the dialectical and non-dialectical emotional styles and their implications for health. *Cognition & Emotion*, *25*, 22–39.

Miyamoto, Y., Yoo, J., Levine, C. S., Park, J., Boylan, J. M., Sims, T., … Ryff, C. D. (2018). Culture and social hierarchy: Self- and other-oriented correlates of socioeconomic status across cultures. *Journal of Personality and Social Psychology*, *115*, 427–445.

Miyamoto, Y., Yoo, J., & Wilken, B. (2019). Well-being and health: A cultural psychology of optimal human functioning. In D. Cohen & S. Kitayama (Eds.), *Handbook of cultural psychology* (2nd ed., pp. 319–342). New York, NY: Guilford Press.

Na, J., McDonough, I. M., Chan, M. Y., & Park, D. C. (2016). Social-class differences in consumer choices: Working-class individuals are more sensitive to choices of others than middle-class individuals. *Personality and Social Psychology Bulletin*, *42*, 430–443.

Nagata, K. (2020). "Inclusion" becomes watchword as Japan seeks to address interns' isolation. The Japan Times. https://www.japantimes.co.jp/news/2020/11/18/business/inclusion-japan-interns-isolation/

Naoi, A., & Schooler, C. (1985). Occupational conditions and psychological functioning in Japan. *American Journal of Sociology*, *90*, 729–752.

Nomura, S., Kawashima, T., Yoneoka, D., Tanoue, Y., Eguchi, A., Gilmour, S., … Hashizume, M. (2021). Trends in suicide in Japan by gender during the COVID-19 pandemic, up to September 2020. *Psychiatry Research*, *295*, 113622. https://doi.org/10.1016/j.psychres.2020.113622

Norasakkunkit, V., & Uchida, Y. (2011). Psychological consequences of postindustrial anomie on self and motivation among Japanese youth. *Journal of Social Issues*, *67*, 774–786.

OECD. (2011). An overview of growing income inequalities in OECD countries: Main findings. Retrieved from http://www.oecd.org/els/soc/49499779.pdf (April 1, 2021).

Oono, M. (2019). No love for foreign trainees? NHK World-Japan. Retrieved from https://www3.nhk.or.jp/nhkworld/en/news/backstories/413/ (June 1, 2021).

Park, J., Kitayama, S., Karasawa, M., Curhan, K., Markus, H. R., Kawakami, N., … Ryff, C. D. (2013a). Clarifying the links between social support and health: Culture, stress, and neuroticism matter. *Journal of Health Psychology*, *18*, 226–235.

Park, J., Kitayama, S., Markus, H. R., Coe, C. L., Miyamoto, Y., Karasawa, M., … Ryff, C. D.

(2013b). Social status and anger expression: The cultural moderation hypothesis. *Emotion*, *13*, 1122–1131.

Park, J., Kitayama, S., Miyamoto, Y., & Coe, C. L. (2020). Feeling bad is not always unhealthy: Culture moderates the link between negative affect and diurnal cortisol profiles. *Emotion*, *20*, 721–733.

Patel, A. P., Paranjpe, M. D., Kathiresan, N. P., Rivas, M. A., & Khera, A. V. (2020). Race, socioeconomic deprivation, and hospitalization for COVID-19 in English participants of a national biobank. *International Journal for Equity in Health*, *19*, 114. https://doi.org/10.1186/s12939-020-01227-y

Peng, K., & Nisbett, R. E. (1999). Culture, dialectics, and reasoning about contradiction. *American Psychologist*, *54*, 741–754.

Piff, P. K. (2014). Wealth and the inflated self: Class, entitlement, and narcissism. *Personality and Social Psychology Bulletin*, *40*(1), 34–43.

Piketty, T., & Saez, E. (2014). Inequality in the long run. *Science*, *344*(6186), 838–843.

Reeves, R. V. (2018). *Dream hoarders: How the American upper middle class is leaving everyone else in the dust, why that is a problem, and what to do about it*. Washington, DC: Brookings Institution Press.

Rule, N. O., Ambady, N., Adams, R., Ozono, H., Nakashima, S., Yoshikawa, S., & Watabe, M. (2010). Polling the face: Prediction and consensus across cultures. *Journal of Personality and Social Psychology*, *98*, 1–15.

Ryff, C. D., Love, G. D., Miyamoto, Y., Markus, H. R., Curhan, K. B., Kitayama, S., … Karasawa, M. (2014). Culture and the promotion of well-being in East and West: Understanding varieties of attunement to the surrounding context. In G. A. Fava & C. Ruini (Eds.), *Increasing psychological well-being in clinical and education settings: Interventions and cultural contexts* (pp. 1–19). New York, NY: Springer.

Ryff, C. D., Radler, B. T., & Friedman, E. M. (2015). Persistent psychological well-being predicts improved self-rated health over 9–10 years: Longitudinal evidence from MIDUS. *Health Psychology Open*, *2*(2), 205510291560158. https://doi.org/10.1177/2055102915601582

Schmid, D., Ricci, C., & Leitzmann, M. F. (2015). Associations of objectively assessed physical activity and sedentary time with all-cause mortality in US adults: The NHANES study. *PLoS One*, *10*(3), e0119591. https://doi.org/10.1371/journal.pone.0119591

Schooler, C. (2007). Culture and social structure: The relevance of social structure to cultural psychology. In S. Kitayama & D. Cohen (Eds.), *Handbook of cultural psychology* (pp. 370–388). New York, NY: Guilford Press.

Serkez, Y. (2021). We did not suffer equally. New York Times. Retrieved from https://www.nytimes.com/interactive/2021/03/11/opinion/covid-inequality-race-gender.html (April 1, 2021).

Shirahase, S. (2014). *Social inequality in Japan*. Abingdon: Routledge.

Snibbe, A., & Markus, H. (2005). You can't always get what you want: Educational attainment, agency, and choice. *Journal of Personality and Social Psychology*, *88*, 703–720.

Sone, T., Nakaya, N., Ohmori, K., Shimazu, T., Higashiguchi, M., Kakizaki, M., … Tsuji, I. (2008). Sense of life worth living (ikigai) and mortality in Japan: Ohsaki study. *Psychosomatic Medicine*, *70*, 709–715.

Spencer-Rodgers, J., Williams, M. J., & Peng, K. (2010). Cultural differences in expectations of change and tolerance for contradiction: A decade of empirical research. *Personality and Social Psychology Review*, *14*, 296–312.

Stephan, Y., Sutin, A. R., Luchetti, M., Canada, B., & Terracciano, A. (2020). Personality and HbA1c: Findings from six samples. *Psychoneuroendocrinology*, *120*, 104782. https://doi.org/10.1016/j.psyneuen.2020.104782

Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C. S., & Covarrubias, R. (2012). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology*, *102*, 1178–1197.

Stephens, N. M., Markus, H. R., & Phillips, L. T. (2014). Social class culture cycles: How three gateway contexts shape selves and fuel inequality. *Annual Review of Psychology*, *65*, 611–634.

Surachman, A., Jenkins, A. I. C., Santos, A. R., & Almeida, D. M. (2021). Socioeconomic status trajectories across the life course, daily discrimination, and inflammation among black and white adults. *Psychoneuroendocrinology*, *127*, 105193. https://doi.org/10.1016/j.psyneuen.2021.105193

Sutin, A. R., Stephan, Y., Luchetti, M., Artese, A., Oshio, A., & Terracciano, A. (2016). The five-factor model of personality and physical inactivity: A meta-analysis of 16 samples. *Journal of Research in Personality*, *63*, 22–28.

Sutin, A. R., Stephan, Y., Wang, L., Gao, S., Wang, P., & Terracciano, A. (2015). Personality traits and body mass index in Asian populations. *Journal of Research in Personality*, *58*, 137–142.

Takahashi, Y., Fujiwara, T., Nakayama, T., & Kawachi, I. (2018). Subjective social status and

trajectories of self-rated health status: A comparative analysis of Japan and the United States. *Journal of Public Health*, *40*, 713–720.

Takao, S., Kawakami, N., & Ohtsu, T. (2003). Occupational class and physical activity among Japanese employees. *Social Science & Medicine*, *57*, 2281–2289.

Takemura, K., Hamamura, T., Guan, Y., & Suzuki, S. (2016). Contextual effect of wealth on independence: An examination through regional differences in China. *Frontiers in Psychology*, *7*, 384. https://doi.org/10.3389/fpsyg.2016.00384

Terracciano, A., Sutin, A. R., McCrae, R. R., Deiana, B., Ferrucci, L., Schlessinger, D., … Costa, P. T. Jr. (2009). Facets of personality linked to underweight and overweight. *Psychosomatic Medicine*, *71*, 682–689.

Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, *96*, 506–520.

Uchida, Y., & Kitayama, S. (2009). Happiness and unhappiness in east and west: Themes and variations. *Emotion*, *9*, 441–456.

Uchihashi, T. (2021). Coronavirus crisis pushing many foreign trainees in Japan out of work, into poverty. The Mainichi. Retrieved from https://mainichi.jp/english/articles/20210205/p2a/00m/0na/027000c (June1, 2021).

Wada, K., Kondo, N., Gilmour, S., Ichida, Y., Fujino, Y., Satoh, T., & Shibuya, K. (2012). Trends in cause specific mortality across occupations in Japanese men of working age during period of economic stagnation, 1980-2005: Retrospective cohort study. *BMJ*, *344*, e1191. https://doi.org/10.1136/bmj.e1191

Willroth, E. C., Ong, A. D., Graham, E. K., & Mroczek, D. K. (2020). Being happy and becoming happier as independent predictors of physical health and mortality. *Psychosomatic Medicine*, *82*, 650–657.

Yemiscigil, A., & Vlaev, I. (2021). The bidirectional relationship between sense of purpose in life and physical activity: A longitudinal study. *Journal of Behavioral Medicine*. Advance online publication. https://doi.org/10.1007/s10865-021-00220-2

Yoo, J., & Miyamoto, Y. (2018). Cultural fit of emotions and health implications: A psychosocial resources model. *Social and Personality Psychology Compass*, *12*(2), e12372. https://doi.org/10.1111/spc3.12372

Yoo, J., Miyamoto, Y., Rigotti, A., & Ryff, C. D. (2017). Linking positive affect to blood lipids: A cultural perspective. *Psychological Science*, *28*, 1468–1477.

Yoo, J., Miyamoto, Y., & Ryff, C. D. (2016). Positive affect, social connectedness, and healthy biomarkers in Japan and the U.S. *Emotion*, *16*, 1137–1146.

Yoo, J., & Ryff, C. D. (2019). Longitudinal profiles of psychological well-being and health: Findings from Japan. *Frontiers in Psychology*, *10*, 2746. https://doi.org/10.3389/fpsyg.2019.02746

Yu, S., & Blader, S. L. (2020). Why does social class affect subjective well-being? The role of status and power. *Personality and Social Psychology Bulletin*, *46*(3), 331–348.

Zilioli, S., Imami, L., & Slatcher, R. B. (2017). Socioeconomic status, perceived control, diurnal cortisol, and physical symptoms: A moderated mediation model. *Psychoneuroendocrinology*, *75*, 36–43.

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