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Studying social change, culture, and human development: A theoretical framework and methodological guidelines

Patricia M. Greenfield

Department of Psychology, University of California, Los Angeles, United States

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ABSTRACT

In a time of massive social change around the world, a major goal of the present article is to provide interdisciplinary methods for studying social change, culture, and human development and an interdisciplinary theory that can serve as a framework for this research (Greenfield, 2009, 2016). The purpose is to provide developmental researchers with useful theoretical and methodological guidelines to study human development in changing sociodemographic and cultural contexts. Examples of two types of research design for studying social change are presented: Diachronic, in which data are gathered at different points in time; and synchronic, in which all data are gathered at the same point in time. While research designs and techniques vary, the findings that are summarized provide strong support for Greenfield's interdisciplinary theory of social change and human development. One take-away is that researchers should avoid methodocentrism: a strong theoretical framework can be tested, supported, and enhanced using a variety of methods and methodologies. In addition to research designs, the article describes and analyzes data gathering techniques that can be used with participants across the whole sociodemographic spectrum of educational levels, technology experience, agricultural or commercial economy, and rural or urban residence. These techniques are equally useful for both cross-cultural comparison and the study of social change. The article concludes by comparing the WEIRD conceptualization (Henrich, Heine, & Norazayan, 2010) with the theory of social change and human development.

Introduction

In a time of massive social change around the world, a major goal of the present article is to provide methods for studying social change, culture, and human development and an interdisciplinary theory that can serve as a framework for this research (Greenfield, 2009, 2016). Cultural change has drawn considerable attention from important researchers in social psychology (Twenge, 2015) and political science (Inglehart & Norris, 2003). However, the integration of cultural change into the study of human development has been limited.

The goal here is to provide developmental researchers with useful theoretical and methodological guidelines to study human development in changing sociodemographic and cultural contexts. I first present an interdisciplinary theory of social change, culture, and human development that can provide a guide for both research designs and interdisciplinary procedures to assess the implications of social change for culture and human development. The next section lays out research designs and sample studies. It is followed by a section describing procedures that provide a culture-fair approach to cultural research and cross-cultural comparison wherever they are used. In line with the interdisciplinary nature of the theory, the methods integrate techniques from sociology and

E-mail address: greenfield@psych.ucla.edu.

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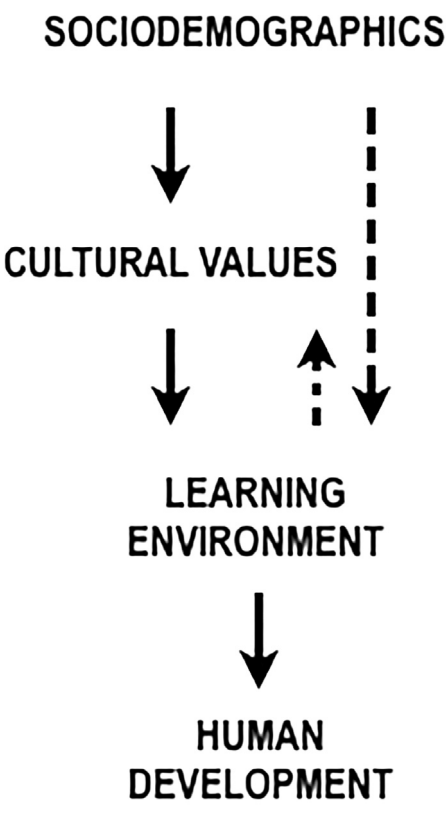

Fig. 1. A multilevel model linking sociological, cultural, environmental, and behavioral variables. Solid arrows denote the main causal pathway, with dashed arrows indicating an alternative causal pathway (figure from Greenfield, 2016).

anthropology with the more traditional tools of developmental psychology. The last section compares the theory of social change and human development to a related paradigm, the WEIRD-nonWEIRD conceptualization (Henrich, Heine, & Norazayan, 2010).

Theory of social change, culture, and human development

Culture is placed in the context of a multilevel and interdisciplinary theory of social change, cultural change, and human development (Greenfield, 2009, 2016). Fig. 1 portrays the levels and major pathways of influence from one level to another. In this model, culture is operationalized as cultural values and these values are seen as being adapted to and influenced by sociodemographic factors such as degree of urbanization, level of formal education, type and spread of technology, and type of economy. Values in turn both affect and are affected by learning environments. Sociodemographics can also have a direct influence on learning environments, which, in turn, influence development.

The origins of the theory lie in the work of two social scientists of the nineteenth and twentieth century, sociologist Ferdinand Tönnies and anthropologist Robert Redfield. Linking psychology with sociology and anthropology, the roots of the theory are clearly interdisciplinary.

Tönnies, the sociologist

A nineteenth century sociologist, Tönnies, the son of a well-to-do German peasant family, “saw the influence of rationalism, as the old rural culture of his native province, Schleswig-Holstein, had to submit to the inroads of mechanization and commercialization” (Loomis & McKinney, 1957, p. 1). He termed the rural culture *Gemeinschaft* and the mechanized, commercial culture *Gesellschaft.* He saw enjoyment of common goods (i.e., sharing) as a paradigmatic Gemeinschaft motive, accumulation of personal wealth as a paradigmatic Gesellschaft motive. While focusing on the unequal distribution of wealth in Gesellschaft environments, he also saw that, overall, in the paradigmatic Gesellschaft environment, “money and capital are unlimited and almighty” (Tönnies, 1887/1957, p. 228). Tönnies also viewed education, science, and scholarship as essential components of a Gesellschaft environment. He saw the dominant direction of social change from Gemeinschaft to Gesellschaft and attributed it to “large-scale trade involving the desire for the profitable use of money” (Loomis & McKinney, 1957, p. 3).

The Gemeinschaft and Gesellschaft complexes “establish 'outer limits' or standards by means of which the processes of change or intermediate structural forms can be comprehended from the perspective of the continuum.” (McKinney & Loomis, 1957, p. 12). This

notion of a continuum with intermediate forms, rather than a dichotomy, is extremely important in the empirical application of the theory, because we are almost always measuring sociodemographic features that have multiple points or are continuous variables.

Redfield, the anthropologist

Anthropologist Robert Redfield elaborated Tönnies' theory on an empirical level and in a way that has been very influential for my theory of social change, culture, and human development. Redfield developed the "folk-urban continuum." His folk society is an elaboration of the Gemeinschaft concept. "To Redfield, the folk society is a small collectivity containing no more people in it than can know each other well. It is an isolated nonliterate, homogenous grouping with a strong sense of solidarity. Technology is simple… Behavior is spontaneous, traditional, and personal, and there is no motivation toward reflection, criticism, or experimentation. Kinship … is central to all experience, and the family is the unit of action." (McKinney & Loomis, 1957, pp. 15-16). Urban society has the opposite characteristics, but Redfield (1941) studied whole continuum empirically through research on four communities in the Mexican state of Yucatan, each occupying a different place on the continuum from urban to rural folk society.

Newson: an evolutionary approach to family size

While neither Tönnies nor Redfield considered family size per se, small families are part of the Gesellschaft ecology. Representing an evolutionary approach, Newson and colleagues posit that, where kin-based communication is less frequent and non-kin-based communication increases, family size declines. In their view, this reduction occurs because potential mothers receive less social pressure to have children (Newson & Richerson, 2009; Newson, Postmes, Lea, & Webley, 2005). In fact, a shift to non-kin-based communication occurs where education expands, people move to the city, commerce develops, and technologically-mediated communication develops (Greenfield, Maynard, & Marti, 2009; Manago, 2012, in press). In other words, smaller families are linked to Gesellschaft-conditions that widen women's social networks beyond the family. Family size has direct implications for the child's learning environment (Fig. 1).

Empirical evidence for the coherence of Gesellschaft and Gemeinschaft characteristics

If Gemeinschaft and Gesellschaft are each composed of interrelated features, the intercorrelation of these features constitutes important empirical support for the theory. Recent evidence is compelling: Across 51 years and 78 countries, national census data showed that more white-collar jobs (indicating an economy based on commerce and technology), higher educational attainment, and higher income – each a component of the Gesellschaft ecology – clustered together to a statistically significant degree (Santos, Varnum, & Grossmann, 2017). The implication of course is that fewer white-collar jobs, lower educational attainment, and lower income – all features of a Gemeinschaft environment – also cluster together.

Implications of the two ecologies for culture, learning environment, and development

The social domain

Redfield saw social interdependence as typical of folk society and independent individuals as adapted to urban society. Tönnies had the same idea: He saw Gemeinschaft as embodying cooperation, consensus, and sharing; Gesellschaft as embodying separate, isolated individuals competing with each other. In the smaller families of a Gesellschaft environment, parents focus more on the individual child, providing a learning environment that fosters individualism in the domain of social development (Cameron, Erkal, Ganadharan, & Meng, 2013).

It is important to note that Gemeinschaft and Gesellschaft are complexes of related sociodemographic features; they do not equate to the cultural values of collectivism and individualism. Instead they are the ecological conditions to which cultural values are adapted: collectivism is adaptive in Gemeinschaft conditions, individualism in Gesellschaft conditions; these ideas flesh out the meaning of the sociodemographic and cultural value levels in Fig. 1 – they are separate but related levels of analysis. A central manifestation of individualism on the levels of learning environment and development is independence; a central manifestation of collectivism on the levels of learning environment and development is interdependence.

The cognitive domain

In a Gesellschaft environment, subsistence skills lose their adaptive value, and more abstract skills, such as calculation, must develop in order to adapt to a money-oriented commercial economy (Saxe, 1982). Following tradition is adaptive in a Gemeinschaft world in which fitting in to the community is of great importance; but innovative thinking becomes more adaptive in a commercial world of entrepreneurship and competition. As a community moves in the Gesellschaft direction, the learning environment also shifts: Elder family members become less valued as possessing authoritative knowledge, while sources of knowledge outside the family and community take on increasing value: professional experts, books, media, and teachers (Weinstock, 2015).

Conceptualizing social change and its effects

The theory posits that the dominant direction of influence is from higher to lower levels (Fig. 1). (But influence can also occur in the opposite direction and be reciprocal.) In general, sociodemographic change produces change at lower levels. A key theoretical

idea is that all Gesellschaft elements push development in the same direction. Thus, for example, increases in wealth, education, or technology will each lead to an increase in individualism. Similarly, all Gemeinschaft elements push development in a common direction. Thus, declining wealth, education, or technology will each produce an increase in collectivism. This is the concept of sociodemographic equipotentiality. An important corollary is that the particular sociodemographic element causing shifts on lower levels will be the one that is changing most rapidly in a particular time and place.

The theory is bidirectional in that shifts can occur in the Gemeinschaft direction as well as in the more globally dominant Gesellschaft direction, with predictable consequences: that is, with sociodemographic shift in the Gemeinschaft direction, the desired endpoint of adult development will become more collectivistic (Bianchi, 2016). While this is a causal theory, we must recognize that most of the empirical evidence will establish predicted associations but not strict causality.

How can we best study the implications of social change for culture, learning environments, and development? While the focus in the present article is methodological, the examples given will also provide empirical confirmation of theoretical tenets.

Methods for assessing sociodemographic and cultural change

The theoretical framework in Fig. 1 includes two levels – sociodemographic and cultural - that can exist as features of larger entities like the nation or as features of individuals. Because these levels are less familiar in the discipline of psychology, I single them out for special attention.

Assessing sociodemographic change

On the societal level, one can use national census data to describe sociodemographic shifts over time, for example, in income, education, or urbanization (e.g., Santos, Varnum, & Varnum, 2017). One can also combine census data with other governmental sources such as the National Center for Health Statistics (e.g., Grossmann & Varnum, 2015). Where a study has an intergenerational comparative design, a method for assessing sociodemographic change is to describe generational shifts in historical experience, for example, generational differences in experiencing a market economy in China (e.g., Chen, Cen, Li, & He, 2005; Zhou, Yiu, Wu, & Greenfield, 2017).

On the individual level, researchers can use interviews or surveys in order to compare the sociodemographic characteristics of cohorts representing different chronological time periods (e.g., Greenfield, Maynard, & Childs, 2003; Keller & Lamm, 2005; Manago, 2014; Weinstock, 2015),

Assessing cultural change

For purposes of the theory of social change, culture, and human development, cultural values, as noted earlier, define the cultural level shown in Fig. 1. One way to measure cultural values and their shifts on a societal level is by analyzing cultural products. Cultural shifts have been assessed through content analysis of books, songs, television shows, and textile design over decades or centuries (U.S.: DeWall, Pond, Campbell, & Twenge, 2011; Greenfield, 2004, 2013; Uhls & Greenfield, 2011; China: Zeng & Greenfield, 2015; Germany: Younes & Reips, 2017; and Russia: Velichkovsy, Solovyev, Bochkarev, & Ishkineeva, 2017). These studies provide historical trends on the cultural level that can then be related to historical shifts in learning environments and behavioral development over the same periods of time.

A cultural product that has clear significance for the values inherent in the child's learning environment is baby names. The frequency of common (vs. unique or rare) names has been used as a cultural measure of individualism in the United States (Bianchi, 2016; Twenge, Abebe, & Campbell, 2010) and Japan (Ogihara et al., 2015). In U.S. studies, the source of names is the U.S. Social Security Administration; in Japan, the source was two private Japanese companies. Because parents are the ones who name their children, the uniqueness of a name can imply something about the parents' implicit developmental goals for their child. As predicted by the theory of social change, culture, and human development, all three studies found that unique names were more common in periods of greater societal wealth than in periods of less affluence.

Changing cultural values can also be assessed on the societal level through extracting time trends in mean responses to value questions on national surveys in contiguous years, specified time periods, (e.g., Park, Twenge, & Greenfield, 2014; Twenge & Campbell, 2018, in the United States) or decades apart (e.g., Kağıtçıbaşı & Ataca, 2005, in Turkey). Directly pertinent to developmental issues are questions on parents' socialization goals (e.g., Park, Coello, & Lau, 2014; Bianchi, 2016). Interviews or surveys concerning cultural values can also be given to different generations in the same families on a national scale (e.g., Kağıtçıbaşı & Ataca (2005) in Turkey); or value change can be studied with greater depth on the community level (e.g., Manago (2014) in Chiapas, Mexico; Weinstock et al. (2014) in Arab communities in Israel).

Research designs for studying social change, culture, and human development

Ideally empirical methods will integrate measurement of sociodemographic change, cultural change, shifts in learning environment, and shifts in developmental trajectories into a single study. However, it is difficult for one study to capture variables on all of these levels. Sometimes it is necessary to make inferences from combining findings from more than one study, where each has addressed different levels in the same community or society. The minimal design to explore the developmental implications of a changing ecology would be to assess shifts in one of the two top levels (sociodemographic or cultural) and relate them to changes in

one of the two bottom levels (learning environment, behavior/development).

One important aspect of this exposition of methods is to explicate the reasons why each method worked in a culturally fair way in a particular context. Therefore, detailed methodological description will rely heavily on my own research collaborations because that is where I can best explain the thinking behind each research design and procedure. However, I also discuss methods I have not used and studies carried out by other research teams.

Cross-temporal or diachronic approaches utilize data collected at different points in time. They contrast with synchronic approaches, which utilize data collected in a single time period. The next two major sections take up diachronic and synchronic approaches in that order.

Diachronic designs and projects

Diachronic or cross-temporal designs are the most direct way to study the implications of social change for culture and human development. Here are some examples:

Behavioral study of three generations: A Maya community in Chiapas, Mexico

This research has taken place in the Zinacantec Maya village of Nabenchauk in Chiapas, Mexico over a period of 46 years. The heart of the research design is a comparison of three generations in the same village, with a space of 21 years between each wave of data collection. Participants in later generations were descendants of earlier generations. Using the same families as participants in each generation provided a well-controlled window into changing patterns of socialization and development in the community (Greenfield et al., 2003; Maynard, Greenfield, & Childs, 2015).

Using methods from developmental psychology, we have used video microanalysis to study the apprenticeship processes of three generations of girls as they learned to weave (level of learning environment, Fig. 1) (Greenfield et al., 2003; Maynard, Greenfield, & Childs, in preparation). We have used an experimental pattern representation procedure to study cognitive development in three generations of boys and girls (level of human development, Fig. 1) (Greenfield et al., 2003; Maynard et al., 2015).

These methods from psychology provided the information on the level of learning environment and development. Analysis of cultural products, the community's woven patterns, provided information on the cultural level (Greenfield, 1999, 2004, 2010; Maynard & Greenfield, 2010). Interviews with the participants, as well as observation of the community and government statistics, provided information on the sociodemographic level.

The major sociodemographic change between Generation 1 (studied in 1970) and Generation 2 (studied in 1991 and 93) was the shift in the economic environment from subsistence and agriculture to money and commerce. As predicted by the theory, weaving learners became more independent of their teachers between Generation 1, the agricultural period, and Generation 2, the commercial period; this conclusion was based microanalyzing videos of girls learning to weave in both generations (Greenfield et al., 2003).

Between Generation 1 and Generation 2, not all families moved at the same pace towards the commercial way of life. As predicted on theoretical grounds, in families where mother and daughter were more involved in textile commerce (e.g., selling their weavings, running a thread store), girls were learning to weave more independently of the teacher; or put the other way around, there was less teacher guidance (Greenfield et al., 2003). The proximal mechanism creating this connection between the commercial ecology and the learning environment seemed to be that, when mothers were more involved in commercial activity, they were less available to their daughters as teachers; for example, they might be off selling goods in an urban market miles from the village (Greenfield, 2004).

Between Generation 2 and Generation 3, the main sociodemographic change was increased school attendance by girls. They no longer expressed their independence by the way they learned to weave because many went to school rather than learning to weave; increased independence was expressed in different ways, by going to high school in a different community or by working in city markets, where they were often on their own in dealing with customers (Greenfield et al., 2009).

In the pattern representation experiment, as predicted on theoretical grounds, the participants in Generation 2 more skillfully represented novel patterns in an experimental situation (placing sticks in a frame to continue striped patterns begun by the researcher and unknown in their cultural environment) than did participants in Generation 1. They were also more abstract and less detailed in the task of representing striped Zinacantec clothing patterns (Greenfield et al., 2003). Instead of using narrow sticks to represent woven stripes thread-by-thread (as in the construction of woven cloth), they more often used broad sticks to represent the visual image of a broad stripe, a strategy that was more abstract (i.e., it eliminated the concrete detail of component threads). However, greater weaving experience and skill was linked to creating accurate, detailed, thread-by-thread representations of a culturally central woven pattern in the experiment. This is the type of respresentation that would be required for a weaver to actually create the pattern in woven cloth.

This trend continued in Generation 3. Compared with Generation 2, children in Generation 3 were even more skilled with representing novel patterns and more abstract in representing Zinacantec woven patterns. Between Generation 1 and Generation 2, the main social change was the development of commercial activity; causal modeling showed that this more abstract cognitive strategy was related to degree of overall family participation in the commercial economy both as a consumer (e.g., having a TV) or work opportunities in a commercial activity (e.g., family owns a shop). What all commerce has in common is the abstraction of money which is a generalized medium of exchange that obliterates the detail of what is purchased or sold (Tönnies, 1887/1957). So we attributed the connection between commercial activity and abstract representation to the shift from subsistence activities like weaving and farming to participation in a money economy. But note the other side of the coin: girls with greater weaving skill and experience more frequently produced accurate thread-by-thread representations of a culturally central striped pattern. This is the type of representation that would be required to actually create the cloth pattern in the weaving process. So adaptive modes of

pattern representation differed in a money-based commercial economy and a subsistence based economy where weaving provided clothing for the family. Our experimental results revealed these two different cognitive adaptations, each linked to participants' specific activities (Maynard et al., 2015).

Between Generation 2 and Generation 3, the main sociodemographic change was the tremendous expansion of formal education; statistical analysis indicated that formal education played the same role in cognitive change as commercial activities had in an earlier generation – towards even greater skill in representing novel patterns and more abstract representation of familiar woven patterns (Maynard et al., 2015). These results illustrate the theoretical principle that whatever sociodemographic element is changing most rapidly in a given period will have the strongest relationship to developmental shifts.

In addition, there was the connection between shifts on the level of learning environment and shifts on the cognitive level that is shown in Figure l: Those girls in Generation 2 who were more independent in learning to weave (learning environment level) were also, as predicted, better able to represent novel patterns in the pattern representation experiment (developmental level) (Greenfield et al., 2003).

As commerce became increasingly developed in the economic environment from Generation 1 (1969) to Generation 3 (2012), there was the predicted change on the cultural level in the domain of textiles: creativity as an implicit value shifted from maintaining tradition in the agricultural period, where all woven garments utilized the same traditional designs, identifying one as a member of the Zinacantec community. The first shift was to family innovation, where members of a family copied each others' designs, but distinguished their woven and embroidered textiles from those of other families; the second shift was to individual creativity, where an individual could build her own distinctive style of embroidery and brocade weaving (Greenfield, 2004; Maynard & Greenfield, 2010; Greenfield & Klein, 2010). Even though weaving became a less universal experience for Zinacantec girls in Generation 3 and became a more specialized activity, innovative techniques developed further (Greenfield, 2017).

This research program, stretching over many decades, was able to trace how changes on the sociodemographic level from Gemeinschaft to Gesellschaft reverberated in intergenerational changes on the cultural level, the level of the learning environment, and the level of human development. With this cross-cohort comparative design, change over time is directly observed and assessed on all of the levels across multiple generations. However, there are several other approaches to cross-cohort comparison. One of them will be discussed next.

More rapid social change: Studying three cohorts of children in Shanghai

Because China has undergone such rapid social change, Chen et al. (2005) were able to detect changes in the adaptive value of shyness between cohorts of children studied just eight and four years apart: 1990, 1998, and 2002. In each of these waves of data collection, the researchers accessed school records, administered child surveys, and elicited teacher ratings of child behavior. The data were collected in Shanghai elementary schools; the children on average were ten-years-old. Whereas shyness was associated with social and academic achievement in 1990, the relationship disappeared in 1998. By 2002, shyness was associated with peer rejection, school problems, and depression. Implicitly, shyness as a valued trait disappeared. The authors relate this change in valued child behavior to rapid sociodemographic change: the economic reforms in China have led to a “requirement of assertiveness, self-direction, and exploration in the challenging market-oriented society” (Chen et al., 2005, p. 193).

Historical change in children's social behavior and learning environment: The use of behavioral experiments in Baja California, Mexico

Camilo Garcia and collaborators exactly replicated a number of experiments in the form of games designed by the late Millard Madsen to assess the development of cooperation and competition in children in middle childhood and the learning environment provided by mothers. The researchers returned to San Vicente in Baja, California, original site of Madsen's study. Replicating Madsen's (1971) procedures, they found that, as the community moved ecologically in the Gesellschaft direction, children had become less cooperative (a collectivistic quality) and more competitive (an individualistic quality) in their interactions with each other (Garcia, Rivera, & Greenfield, 2015).

The next step was to explore what changes in children's proximal learning environments could promote more individualistic child behavior. Garcia and his team replicated two more games developed by Madsen & Kagan (1973); these games involved interaction between mothers and children and revealed mothers' socialization strategies. The purpose was to investigate historical change in mothers' reward practices and goal-setting in San Vicente (Garcia, Greenfield, Montiel-Acevedo, Vidana-Rivera, & Colorado, 2017). The first study showed that, over a period of 43 years, as the community's ecology had moved in the Gesellschaft direction, mothers' reward practices, i.e., the learning environments they provided for their children, became less unconditionally giving and more contingent on the child's accomplishment. To give is a social behavior adaptive in a Gemeinschaft environment in which family and community members fulfill each other's survival needs. To make rewards contingent upon performance is intended to maximize individual achievement, an individualistic value adapted to a Gesellschaft environment in which survival needs are not at issue and people compete to maximize individual resources. In line with this interpretation, mothers in the second study set higher goals in 2015 for their children's game performance than mothers who had played the same game with their children 43 years earlier.

Although there is no direct causal relationship between the study of child behavior by Garcia et al. (2015) and this study of maternal behavior (Garcia et al., 2017), they both make sense as related consequences of the transition to a more Gesellshaft environment in which both competition and achievement are adaptive. They therefore provide information about social change on two levels in the theoretical framework (Fig. 1), learning environment and human development.

Experimental replication or detection of social change?

Note too that this is a distinctive use of experimental replication in psychological science; The goal is not to demonstrate validity

by replicating the results of an experiment at a later time, but to demonstrate the effects of social change by demonstrating differences from the earlier findings (Greenfield, 2017). In order to separate this use of replication from the traditional goal of replication in psychology – to validate the findings of an earlier study – it is useful to have a theory that enables the researcher to make predictions about historical change before replicating the procedure at a later time point. Without theory-based predictions, researchers could rationalize either replication (as validation) or nonreplication (as resulting from social change), depending on results.

Using survey databases to compare cohorts over time

Here we shift methodologically from researchers collecting behavioral data in the field to use of data from existing surveys that have been given internationally or nationally over many decades.

Relating demographic shift to value shift. The World Values Survey, developed by Inglehart, has been an important tool in such research. Surveying almost 100 countries in multiple waves starting in 1981, Inglehart and colleagues showed that increasing economic prosperity was linked not only to more egalitarian gender roles, but to a larger "human development syndrome" associated with individualism. This syndrome includes individual choice, individual freedom, and self-expression (Inglehart, 1997; Inglehart & Norris, 2003; Inglehart & Oyserman, 2005).

Focusing on developmental populations, Twenge and colleagues have used national surveys like Monitoring the Future to show that many psychological shifts have occurred as the United States became wealthier, more urban, more well educated, and more technological. Children, early adolescents, high-school students, and college students increased in self-esteem and positive self-views between the 1960s and the 2000s (summarized in Twenge, 2015); increasingly, they favored self-enhancement values such as money, fame, and image.

Relating bidirectional shifts in developmental trajectories to historical variation in economic conditions. The theory of social change and human development predicts that reversing sociodemographic trends, for example, wealth reduction, will reverse cultural and psychological trends. Our research tested that prediction, focusing on a discrete set of historical events, the Great Recession. In line with our prediction, yearly national surveys of high school students (Monitoring the Future) and college students (UCLA Freshman Survey) from 1976 to 2010 showed that concern for others and for the environment were higher during times of relative economic deprivation, whereas materialism and positive self-views were higher in better economic times (Park, Twenge et al., 2014, 2017). With respect to positive self-views, the Great Recession was an historical exception to this 30+ year pattern, probably because of conflicting sociodemographic trends: the increasing role of technology, with its focus on self-presentation, seemed to overwhelm reduced economic level; and self-views continued to become more positive, even as concern for others and for the environment rose (Park, Twenge et al., 2014; Park et al., 2017).

Moving from analyses of single years to considering a multiyear developmental trajectory, Park, Twenge, and Greenfield (2017) compared the development of values from freshman through senior year in two cohorts – one completing college right before the Great Recession, one meeting the Great Recession in the middle of their college years. Hence, this design involved comparing the implications of particular historical events for developmental trajectories, rather than for a single snapshot of development.

For instrumentation, we utilized the Freshman and Senior Surveys, two national surveys administered by UCLA's Higher Education Research Institute. For this comparative analysis of developmental trajectories, Institute personnel selected and combined data from the two surveys to create two longitudinal cohorts. Data for each cohort consisted of the subset of students who took the survey both freshman and senior years.

In line with the theory of social change and human development, the cohort who met the Great Recession in the middle of their college career developed more communitarian values during their college years than did the prerecession cohort. We also found that, whereas the prerecession cohort developed increasingly positive self-views during their four years of college, this trajectory occurred more slowly for the recession cohort.

A different and very clever way to explore the effect of the Great Recession on developmental trajectories was used by Bianchi (2014). Using the national samples collected by the General Social Survey, she compared the narcissism scores of mature adult respondents who were emerging adults during the Great Recession vs. those who emerged as adults during periods of relative wealth. Narcissistic Personality Scale measures nonpathological narcissism, an aspect of individualistic functioning. Those who became adults during the Great Recession (low societal wealth) were significantly less narcissistic years later than those who emerged as adults during times of greater societal wealth. One implication of this study is that there could be a sensitive developmental period during emerging adulthood for imprinting the effect of this kind of event on personality development.

Having explored development, Bianchi (2016) later assessed the effects of social change – from wealth to recession and back again – on an aspect of learning environment – parents' goals for their children. Utilizing the General Social Survey from 1986 through 2014, she selected a measure of individualism as a parenting value – parents' relative of ranking of autonomy as a child-rearing goal. She also utilized a measure of parental collectivism from the survey – the relative importance of helping others as a child-rearing goal. During times of plenty (low unemployment as measured by the U.S. Bureau of Labor Statistics), autonomy increased in importance as a child-rearing goal, while helping others decreased in importance. During recessions (i.e. high unemployment), the opposite pattern prevailed: the relative importance of autonomy as a child-reading goal declined, while the relative importance of helping others increased. These findings are what would be predicted by the theory of social change and human development. This is a very significant study, as it indicates the forward acting nature of economic conditions – by affecting parents' childrearing goals, they have an influence on development decades after their presence in society. The studies together provide a coherent picture of the forward-acting effects of shifts in national wealth on two related levels (Fig. 1), learning environment and human development.

Relating value shift to changing life cycle-strategies. Because individualism maximizes personal development and is associated with smaller families, it emphasizes individual freedom over family roles. Based on this conceptualization, Twenge and Campbell (2018) explored the link between historical rise in individualism and the onset of adult responsibility roles in the United States. Their measure of cultural values included percentage of unique baby names in a given year plus some attitude measures (e.g., percentage of respondents viewing themselves as above average on a number of agentic qualities such as leadership ability). They also used unemployment rate from the Bureau of Labor statistics as their major sociodemographic factor. Their developmental variable, onset of adult-responsibility roles, was innovative and pertained to life-span development and life-cycle strategy with respect to family and work. The family component included age of first marriage, while the work component included percentage of males between 18 and 25 currently in the workforce (with lower percentages reflecting later entry into the workforce). Across the time span from1973 to 2015, a rise in cultural-level individualism in the United States was, as predicted, significantly correlated with later entry into the workforce and later assumption of family responsibilities.

Synchronic designs and projects

These designs, in which all the data are collected in the same period of time, are more indirect ways of assessing the implications of social change for culture and human development.

Intergenerational comparison: Moving towards independence and gender equality across the generations in a Maya community in Chiapas, Mexico

Manago (2014) assessed preferred gender role behaviors in three generations in the Maya community of Zinacantan, but members of all three generations – teenage girls, their mothers, and their daughters – were interviewed in the same period of time. Therefore, it was a synchronic design.

Ethnographic observations from anthropologists, combined with Manago's own ethnography, were the source of the relevant sociodemographic information (Manago, 2014): The first generation, the grandmothers, had grown up in the agricultural period without any formal education; the second generation, the mothers, had grown up in a commercial environment, but still with little formal education; the teenage daughters were the first generation of high school students in the community. Manago found that both the development of commerce and the development of formal education were associated with changes over the generations in the direction of Gesellschaft adaptations, notably movement across the generations from gender hierarchy and family interdependence towards the values of gender equality and independence.

Grandmothers' perspectives on intergenerational change in parenting practices and child behavior in Beijing

Zhou interviewed 19 Beijing grandmothers who took care of their young children while their parents worked (Zhou et al., 2017). The grandmothers were asked to compare how they were raised with how they raised their child and how their child was raising their grandchild. They were also asked to compare their own behavior between four and six years of age with their child's and their grandchild's. This was a mixed method study in which quantitative comparisons (ranking of the three generations on multiple and theoretically relevant dimensions across the generations) were combined with qualitative descriptions. Because the grandmothers had experienced three generations of parental care and child behavior, we considered them to be sensitive comparative instruments. Using the grandmother as reporter, we also took advantage of the grandmother as a cultural expert. In other words, we had a strong insider's perspective on cultural change as it was affecting parent and child behavior. In short, we can think of this study as exploring grandmothers' experience of social change as it has impacted them and their family.

In this design, generation is again a stand-in for time. However, unlike the Manago study, all three generations are assessed through the eyes of the grandmothers. Given that this was a study of early childhood (focus on the 4–6 year old age range), it would not have been possible to interview all three generations. Using the grandmother as reporter enabled us to examine how social change affects early childhood development and parenting, something that had never been attempted before.

Rankings of the three generations on child qualities, such as shyness, and parent behaviors, such as praise, were subjected to nonparametric statistics to assess significant intergenerational shifts. Nonparametric statistics had to be employed because of the highly constrained possibilities when you rank three items, in this case, three generations. Without such constraints, one might have used a repeated measures analysis of variance.

As predicted, we found an intergenerational increase in perceived child autonomy, curiosity, and self-expression — individualistic traits adapted to *Gesellschaft* environments. Also as predicted, perceived child obedience and shyness, adapted to *Gemeinschaft* environments, declined across the generations. Related changes in reported child-rearing behaviors were also expected and found: Grandmothers judged that parental support and praise, which foster individuated self-development, had increased significantly across the generations, although the cross-generational patterns for parental criticism and control were less clear. In addition, each generation shifted to a more Gesellschaft location on the ecological spectrum in terms of parental education and urbanization, mirroring the nation's social change, as assessed with World Bank data (Zeng & Greenfield, 2015).

This study was methodologically unique in the field of social change, culture, and human development in that it assessed sociodemographic factors, parent behaviors, and child behaviors in the same study. This set of variables enabled us to report a causal model in which change in parent behavior in the Gesellschaft direction was related to change in child behavior in the same direction. Results of causal modeling suggest that grandmothers perceive the younger generations to exhibit more positive socialization strategies, leading to more individualistic child traits, as they adapt to China's more *Gesellschaft* ecology: urbanization, formal education, and smaller family size.

Kağitçibaşi: Combining synchronic and diachronic approaches in a single study

The late Cigdem Kağitçibaşi was a pioneer in connecting social change and family change (Kağitçibaşi, 1996, 2007). As early as 1973, she recognized that social change – then called modernization – had ramifications for the family environment, in other words, children's learning environment (Kağitçibaşi, 1973).

Here I call attention to her work in Turkey partially repeating the Value of Children survey over a 30-year time span (Kağıtçibaşi & Atagi, 2005). The Turkish study was a component of a much larger multinational study. The initial samples in the late 1970s and 1980s were drawn in nine countries – Indonesia, Korea, the Philippines, Singapore, Taiwan, Thailand, Turkey, the United States, and Germany. Initial data in Turkey were collected in 1975; the second wave of data collection took place in 2003, 28 years later. The researchers note the significant changes that had taken place in Turkish society in that period: the rise of the urban population from 36% to 65% of the population, increased levels of education, and a shift from an agricultural economy to an industrial economy.

In line with Kağitçibaşi's model of family change and my theory of social change and human development, the value of children shifted in this 28-year period from economic/utilitarian values adaptive in an agricultural economy, where children have to help their parents with subsistence needs, to psychological values. Hence, values such as “pleasure in watching children grow” and “fun to have young children around” became significantly more important over the decades; in contrast, the economic value of a child helping around the house and helping the family became significantly less important. In this same period of time, the value of child obedience declined and the value of child independence increased (Kağıtçıbaşı & Ataca, 2005), just as it did in Beijing (Zhou et al., 2017) as both societies moved in the Gesellschaft direction.

Kağıtçıbaşı and Ataca's (2005) diachronic findings were buttressed by their synchronic cross-generational design: Grandmothers in 2003 regarded the utilitarian value of children as significantly more important than did mothers or adolescents in their sample. Mothers placed a higher value on child independence than did grandmothers. The similarity of findings with diachronic and synchronic designs, addressing the same basic issues and populations, reinforces the idea that these are both valid designs for investigating the effects of social change.

Research procedures with universal applicability

Cultures and human development are in a state of flux; this is now the norm in our globalized world. The culture of our participants becomes a moving target (Greenfield, 2017). We therefore need research procedures that are fair to participants coming from a variety of ecologies, from almost purely Gemeinschaft to ultra-Gesellschaft. There are a few procedures that work very well because of their universalism; yet they can pinpoint cultural differences and cultural change. The three that I will describe here are (1) conversational format (2) story format, and (3) crossover design. They are as useful for cross-cultural comparison as they are for studying the developmental and cultural implications of social change.

Conversational format: Luria's use of the clinical method to study cognitive development in Uzbekistan after the Russian revolution

At its foundation, this method makes use of the universality of conversation. Violations of conversational conventions, such as asking questions when the interlocutor already knows the answer (very common in school) cause problems for participants who have grown up in a Gemeinschaft world with only or mainly informal education (Greenfield, 1997). A method that is very respectful of universal conversational conventions (although this point has not heretofore been made explicit) is the “clinical method” of interviewing, used by both Piaget and Luria (Mayer, 2005). This method involves going deep into the reasoning of each individual, but in a natural conversational manner.

Whereas Piaget invented the clinical method, Luria (1976) is unique in using it to explore cultural issues. Because psychological science in the United States has always favored totally uniform procedures, this method was dismissed out of hand. However, a cultural analysis indicates the very great value of Luria's version of the clinical method as a procedure that utilizes the universality of conversation and therefore is culture-fair across the whole spectrum of Gemeinschaft to Gesellschaft environments. Although I have abbreviated the conversations below for lack of space, the examples still show that the method goes much deeper into the reasoning of each individual than do standardized interviews.

What happened in the countryside of Central Asia, part of the Soviet Union, after the Russian Revolution and the Communist takeover, is what Luria studied: Peasant farmers, living in a prototypical Gemeinschaft world had to undergo monumental changes in age-old cultural patterns. One of the major changes that the Russian Revolution brought about was the introduction of formal education; another was exposure to urban life. The key comparison in Luria's studies was between peasant farmers from remote villages without any school experience and those with one or two years of school or experience in an urban center – in other words a more Gesellschaft learning environment.

Luria adapted his methods to the culture. He found that tests developed in other cultures did not work. Therefore, he developed procedures that the participants found meaningful. He started with long conversations in the relaxed atmosphere of a tea house or in camps in the fields and mountain pastures. In line with collectivistic culture, talks were frequently held in groups (cf. Greenfield, 1997). To report his research, he combined the qualitative methods of the clinical interview with quantitative summary, thus utilizing mixed methods (qualitative + quantitative). His data often came from the dialogue between participants or dialogue with the researcher, rather than from a single individual. In the extracts to be presented, the conversational partner is Luria himself.

In the clinical interview, a participant’s responses stimulate further questions or debate. For example: In one of his cognitive experiments, Luria showed participants drawings of a hammer, saw, log, and hatchet. He then asked “”Which ones are alike?”

Here is the interview with Rakmat, who has never been to school. He groups items by their use in a practical context (Luria, 1976, p. 56):

Rakmat: "They're all alike. I think all of them have to be here…"
Luria then gives him a counter suggestion; this probe tests the limits of his conviction concerning his first answer and is an important aspect of the clinical method, as applied to cognition. He resists the countersuggestion.
Luria: "But one fellow picked three things – the hammer, saw, and hatchet – and said they were alike."
Rakmat: "A saw, a hammer, and hatchet all have to work together. But the log has to be here too!"
Luria: "Why do you think he picked these three things and not the log?"
Rakmat: "Probably he's got a lot of firewood, but if we'll be left without firewood, we won't be able to do anything."

Thus, Rakmat constructs a practical situation in which all the items are necessary.

Another participant, Sult, age 20, had lived in the capital city of Tashkent for a short time; thus, he has some experience in a Gesellschaft environment. When faced with the same set of objects, he is more detached from a practical situation, using more abstract categorical thinking most of the time (Luria, 1976, p. 75):

Sult: "The wood doesn't fit here. Wood just lies on the ground, whereas the other three are used for different kinds of work."
….
Luria: "What one word could you use for these three things?"
Sult: "You could call them tools."

The difference between these two participants held for the sample as a whole: unschooled participants formed significantly more groupings based on a practical context; schooled participants formed significantly more abstract groupings based on a category label. This example shows the comfort participants with no or little schooling felt with this conversational procedure. The richness of the responses indicates that the procedure was meaningful to them.

Story formats: their usefulness in multiple cultures

Stories are universal (Bruner, 1986); hence their potential usefulness as research tools for people growing up in a range of ecological conditions. In Chiapas, Mexico, Manago developed stories in order to study the impact of intergenerational social change on individual values in the Maya community of Zinacantan. Study design was described earlier; here I focus on materials and procedure.

In this study, each story had two characters expressing opposing points of view, a Gesellschaft-adapted point of view and a Gemeinschaft-adapted point of view. In the example that follows, one character advocates for gender equality (a Gesellschaft-adapted value), whereas the other advocates for gender hierarchy (a Gemeinschaft-adapted value):

A young man named Chepil has a grandmother who insists on walking behind him, but Chepil says, "No grandmother, let's walk side by side, we are equal." But the grandmother doesn't want to because she says she is embarrassed and that men should walk in front of and lead women.

After hearing the story, participants choose between the grandmother's Gemeinschaft-adapted value (gender hierarchy) and her grandson's Gesellschaft-adapted value (gender equality); then they give the reason for their choice. Quantitative analysis is based on the choice of character. Qualitative analysis is based on the reasons. As noted above, quantitative analysis revealed an intergenerational shift, based on eight such stories, toward a more Gesellschaft-adapted perspective.

The universality of the story format, as well as the potential universality of the two cultural perspectives, was affirmed by a new study done in a very different part of the world with a very different ethnic group: Arab citizens of Israel. Like the Zinacantecs, their environments had undergone rapid social change in the Gesellschaft direction over three generations. Our research was carried out by a team that included two graduate students from the study communities. With extremely minor changes, the stories rang true to them and their pilot participants. The pattern of findings, moreover, replicated the results in Maya Chiapas: Values transitioned from more Gemeinschaft- to more Gesellschaft-adapted over the generations (Weinstock, Ganayiem, Igbariya, Manago, & Greenfield, 2014).

We have had similar results from a study in Bedouin communities of Israel, carried out by a Bedouin Ph.D. student, Turky Abu Aleon (Abu Aleon et al., in press). While universality can never be empirically proved, the applicability in three such different cultural settings – all of which are undergoing rapid social change in the Gesellschaft direction – with the same pattern of results is extremely encouraging.

Study the development of skills that are important in the study site

This is a basic point, but difficult for researchers (who, by virtue of their high level of formal education, are, by definition, part of a Gesellschaft ecology) to implement for populations living in a Gemeinschaft environment. Our study of the cognitive effects of weaving and learning to weave in the Zinacantec Maya community of Nabenchauk, described earlier, is an example of this strategy (Greenfield & Childs, 1977; Childs & Greenfield, 1980). The studies were based on the observation that, when we arrived in the community in the late 1960s, the most complex cognitive skills that Zinacantec girls were acquiring were the various processes that comprised learning to weave; at the same time, girls did not go to school. So we initially tried to focus on studying the effects of what they were doing (weaving) rather than what they were not doing (going to school) (Greenfield & Childs, 1977).

But we felt, nonetheless, that this study was assessing cognitive skills out of context; yet, our participants were in a Gemeinschaft

culture where everything was tied to a concrete context. So, at that point, we decided to study how girls learn to weave *in situ* and carried out the video study of weaving apprenticeship described earlier (Childs & Greenfield, 1980). Here we were exploring the learning environment that had the greatest cultural importance in their community because of its connection with weaving.

Making a video record of the naturally occurring learning process has turned out to be invaluable for studying social change. As new elements appear in the apprenticeship of each generation of weaving learners, we have been able to go back to the videos of the prior generation or generations and code these new elements, thus enabling sensitive quantitative assessment of the effects of social change over three generations and 42 years on the learning process. Hence, naturalistic recording is, for this reason, particularly valuable for historical or diachronic analysis of culture and development.

However, one reason it is so hard for researchers raised in a Gesellschaft environment to study skills that are important in a particular Gemeinschaft environment is that it is not possible to assess skills that you do not yourself possess. For example, my lack of skill in backstrap weaving makes it impossible for me to identify learner errors on the weaving videos. And that is why the coding of the weaving videotapes is all done by my research collaborators, Carla Childs and Ashley Maynard, who have learned how to weave on the Maya backstrap loom. Learning the skills of a culture in which one wants to study cognitive skill development is essential to culture-fair methodology.

Note that both research design and data collection methods for this research program involved interdisciplinary integration. The studies of weaving apprenticeship and cognitive development utilized techniques from developmental psychology. The study of textiles is closely related to the archeological study of material culture. The sociodemographic analysis utilizes a sociological approach. Family tree cards for each participant, a technique from anthropology, were used to locate descendants of prior generations.

Using the language of your participants

This is a very basic idea. But how to implement it varies from situation to situation. I learned and used the language of my participants for my first two cultural research projects – the Wolof language in Senegal and the Tzotzil language in Chiapas, Mexico. These were, for the native speakers, oral (not written) languages, and, in doing this, I was acting more like an anthropologist than a psychologist. But it was an extremely worthwhile investment.

In Senegal, knowing Wolof enabled me to be fair to the schooled participants by doing cognitive tests in their first language (Wolof) rather than their second language, which was French, learned in school. In addition, knowing Wolof enabled me to test village children who did not go to school (who spoke only Wolof) and compare them with children who did. While the school children were learning French in school, I tested them in their first language, Wolof, for comparison with unschooled children, thus leveling the playing field from the point of view of language. From the point of view of research design, working in Wolof enabled me to do one of the first comparisons of schooled and unschooled children, thus separating out the influence of schooling from the influence of chronological development (Greenfield, 1966; Greenfield, Reich, & Olver, 1966).

In Chiapas, learning Tzotzil (although I am far from fluent) enabled me to relate to the participants and the community. There I relied on my fluent collaborators from the U.S., Carla Childs and Ashley Maynard, for more subtle linguistic interaction, another methodological possibility for dealing with the language issue.

Whereas one needs to learn the language for doing research in a Gemeinschaft community, social change, specifically the expansion of educational opportunity, has made it possible to use as assistants or collaborators members of fast-changing communities. Thus, in recent years we have been able to do culturally sensitive research in a Arab and Bedouin communities in Israel because of collaborations with Arab and Bedouin graduate students (Weinstock et al., 2014). I have also been able to do research in China, arguably the fastest changing society in the world, because of brilliant graduate students and collaborators (Zhou, Liu, Wu, & Greenfield, 2017; Zeng & Greenfield, 2015). Rapid social change offers wonderful opportunities for true collaboration with researchers familiar with the social change process in their own communities.

Cross-over design

Studying the development of skills that are important in a given community leads to the cross-over design, which, in essence, is a way to study cognitive skills that are important in each of two communities being compared. That is, the cross-over design is a way to achieve culture fairness in cross-cultural comparison of cognitive development. The cross-over relates both to research design and research procedures. This method targets a comparison of two groups and is the most difficult to implement. It involves designing two parallel sets of materials, one that is more familiar to one group, the other more familiar to the second group. Each set of materials has the same underlying structure, tests the same underlying pattern of cognitive development, and targets the same set of cognitive skills. The prediction is that each group will perform better with the materials that are familiar to them. The theoretical hypothesis is that patterns of cognitive development are similar in both cultures but are actualized and applied in different contexts.

Maynard and Greenfield (2003) utilized this design to study the growth of Piaget's concrete operations in Nabenchauk (the same Maya community in Chiapas, Mexico that was introduced earlier) and in Los Angeles. Because weaving was important in the Zinacantec subsistence life style and was central to the informal education of girls in Nabenchauk, mental transformation, the hallmark of Piaget's stage of concrete operations, was tested in that context (Fig. 2a). Because Piaget developed his tasks using structured play materials, a familiar context in the U.S., structurally parallel tasks of mental transformation developed by Piaget were also part of the procedure (Fig. 2b).

We found that children in both communities went through the same sequence of cognitive development, from preoperational to concrete operational thinking; but that the weaving-related tasks were mastered better and earlier in Nabenchauk, whereas the tasks

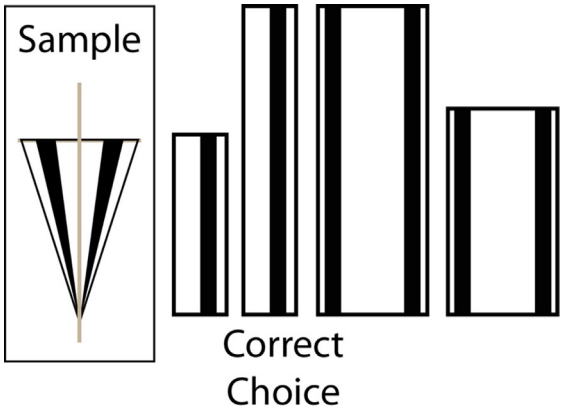

Fig. 2a. Example warp-winding item. Participants must mentally transform threads on the warping frame (the sample to the left) to select which piece of striped cloth the warp threads will become after the piece is woven. (The warp constitutes the frame threads; once stretched out on the loom, the weaver will insert weft or crosswise threads that alternate over and under every warp thread.)

with structured play materials (necklaces made of large beads) were mastered earlier and better in Los Angeles. In addition, there was a gender difference in Nabenchauk in favor of girls; this finding reflected the fact that only girls learned how to weave, so they would expect to have direct experience with the weaving process, whereas boys would not.

Using concrete materials for cross-cultural comparison

Another aspect of the procedure in this cross-over design was that it used concrete materials, thus creating its own practical context. As we saw in Luria's study, people who have grown up in a Gemeinschaft world have learned to deal with practical rather than abstract contexts. Hence, creating a practical physical context in an experiment is another element that contributes to the creation of culture-fair procedures that can be used over the full range of Gemeinschaft to Gesellschaft ecologies.

The cognitive essence of Piaget's stage of concrete operations is mental transformation of concrete materials. Here is how mental transformation was operationalized in the crossover study: In the weaving-related tasks, participants had to imagine how warp threads wound on a warping frame would look when they were unwound and placed on a loom. (The warp threads are the lengthwise or frame threads on a loom.) The warping frame, which was there in front of them, was U-shaped and the warp threads were wound into a U shape, usually with threads of two different colors (Fig. 2a). Each color would make a stripe in the finished cloth. Participants also had a set of pieces of woven cloths of different lengths and stripe configurations in front of them. They were asked to select the piece of cloth the U-shaped warp in front of them would make when the warp was straightened out on a loom and was woven into cloth (i.e., weaving involve inserting cross threads over and under the warp threads). In order to come up with the correct answer, they had to, in their minds, transform the U into a straight line in order to estimate the length and configuration of stripes in the woven cloth that would result from weaving the warp. This was the basic task using a context more familiar in Nabenchauk than in Los Angeles; and it was also a very practical context. Participants from both communities were tested with the materials. A sample warping frame problem is shown in Fig. 2a.

To create a task more familiar in Los Angeles, necklaces of beads, the original materials used by Piaget and Inhelder in their logically parallel task, were used (Piaget & Inhelder, latest English edition, 1997). For each test item, a necklace of beads of various colors and shapes was placed in a figure-eight shape in front of the participant, along with necklaces of different lengths and color patterns in normal oval necklace configuration. In the beads task, participants had to mentally transform the figure-eight into a necklace to figure out which necklace of beads would correspond in color pattern and length to the figure-eight shaped necklace of beads. Again, both tasks were used in both communities. A sample necklace problem is shown in Fig. 2b. As noted above, children in Los Angeles did better than children in Nabenchauk on the beads problems, whereas children in Nabenchauk did better on the weaving-related problems.

By providing culture-fair materials in each cultural community, we provided evidence in favor of the universality of Piaget's stage of concrete operations. Equally important, we demonstrated context-specificity of its acquisition - each cultural group first acquiring a concrete operational approach to the problems in a familiar task context.

While the tasks described above were developed for cross-cultural rather than historical comparison, they could be useful in the future for the study of social change in Nabenchauk, as weaving becomes less universal for girls and schooling becomes more universal. The principle of the cross-over design can be applied to cross-cultural research and the study of social change anywhere in the world; the tasks will vary, but the principle will remain the same.

The importance of concrete context

I had another experience in Nabenchauk that brought home the importance of contextualizing procedures for people growing up in a mainly Gemeinschaft world. I was having a hard time eliciting information about play weaving and play embroidery, informal

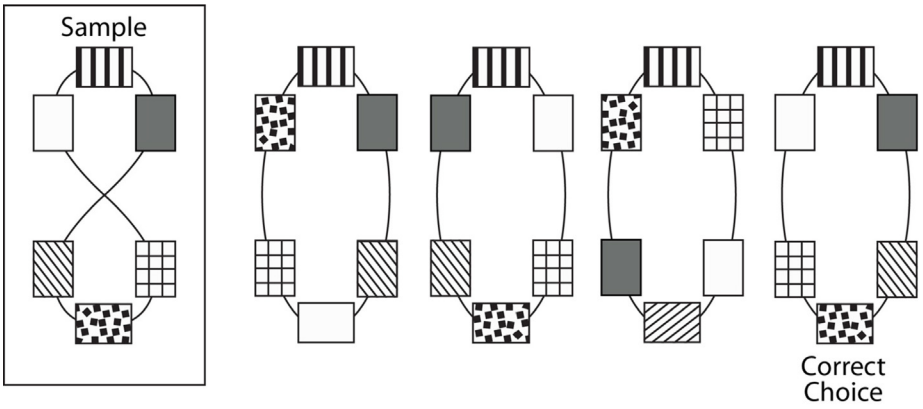

Fig. 2b. Example necklace item. Participants must mentally transform the sample into a necklace shape to figure out what the necklace will look like.

learning experiences that prepare girls for weaving apprenticeship on a real loom - until I started using play textiles as stimuli and asking participants if they had ever made such items when they were little. Comprehension and response were instantaneous. This successful communication about a relevant concrete object contrasted strongly with the lack of comprehension that greeted questions about absent objects and events (Greenfield, 1997).

Relationship of the theory of social change and human development to the WEIRD conceptualization

How does the theory of social change and human development map onto Heinrich and colleagues' closely related WEIRD (Western, Educated, Industrialized, Rich, and Democratic) conceptualization (Greenfield, 2009, 2016; Henrich, Heine, & Norazayan, 2010)? In the theory of social change and human development, culture is operationalized as cultural values and these values are seen as being influenced by sociodemographic factors such as formal education, technology, and wealth – a set of factors very close to referents of E(ducated), I(ndustrialized), and R(ich) in WEIRD samples. Note that the "W" in WEIRD names a location of participants – the West - in the overwhelming majority of psychology studies (Henrich, Heine, & Norazayan, 2010). But, most important, it names a population that is likely to have the EIRD characteristics and identifies locations where these characteristics first emerged: The Western World.

In essence, the Gesellschaft concept describes the environment of WEIRD (Western, Educated, Industrial, Rich, and Democratic) populations; correlatively, the Gemeinschaft concept describes the environment of non-WEIRD populations. However, the WEIRD acronym identifies only one side of the population spectrum; it leads to characterizing the other side of the spectrum in negative terms (nonWEIRD, not industrial, etc.). Gemeinschaft characteristics in contrast are all identified and labeled in positive terms (e.g., agricultural, subsistence, etc.).

Most important, the WEIRD-nonWEIRD distinction provides understanding of a static situation. In contrast, my theory not only describes static differences; it also provides a framework for understanding the cultural and developmental implications of the dynamic process of social change. This is important for two reasons: First, WEIRD populations are not themselves static. In the United States and Europe, there have been massive changes over the centuries toward higher levels of education and industrialization. Second, on a global scale, social change is turning nonWEIRD populations (W)EIRD. That is, in many locations outside the West, populations are becoming more Educated, Industrialized, and Democratic. Rozin (2010) puts it very well: "The weirdest people in the world are a harbinger of the future of the world" (p. 108)."

Conclusions

In a rapidly globalizing world, in which social change is now the norm rather than the exception, it is imperative to understand how sociodemographic shifts impact human development. The theory of social change and human development provides an interdisciplinary framework for exploring this question (Greenfield, 2009, 2016). The theory allows researchers to make testable predictions about how sociodemographic changes can affect culture, learning environments, and developmental patterns. Findings concerning social change and human development included in this article make another important point: Research should avoid methodocentrism (Greenfield, 2000); a strong theory with valid underlying concepts can be tested and enhanced by a variety of empirical methods and research designs, not only from psychology, but also from sociology and anthropology.

Having asserted that social change is an important driver of cultural and developmental change, we need to have research designs that can capture these shifts. I identify several ways to carry out cross-temporal research. Because they involve data collected at different time periods, these methods are diachronic. I then identify more indirect methods involving data collected during the same time period; these are synchronic methods. When applied to data collection in the field, they are much faster, but are also more indirect. However, available evidence indicates that they do produce parallel results.

The dominant direction of social change in the world is from rural to urban, education at home to increasing levels of formal education, from low tech to high tech, from isolated communities to extensive contact with the outside world, and from homogenous to heterogeneous. However, each of these characteristics exists on a continuum. In order to be culture-fair in our procedures to all participants, no matter where their ecology and learning environment lies on the continuum, we need procedures for studying development that work across the whole sociodemographic and, as a consequence, the whole cultural spectrum. These methods are as useful for cross-cultural comparison as they are for studying cultural and ecological change. Although this conclusion may seem like an oxymoron, we need methods that are culture fair no matter where they are used.

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