Article

Future Orientation as a Universal Feature of Wellbeing: Leveraging Big Data for Cross-cultural Research

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Abstract | Future-oriented thought has been found to be positively related to health and well-being. However, this research has primarily been conducted in WEIRD populations, leaving open the question whether this relation holds for non-WEIRD populations. We conducted three studies using big data methods to test whether the relation between future-oriented thought and well-being generalizes to non-WEIRD cultures. We found evidence that the relation between future-oriented thought and well-being was robust across cultures, including when analyzing a general trend across 64 countries (Study 1) and when examining specific cultural contrasts (Study 2 and Study 3). Taken together these three studies provide evidence that the relation between future-oriented thought and well-being is robust across cultures. This research also provides an example of how big data can be leveraged for cross-cultural research.

Thinking about the future has been found to be positively related to health and well-being, including physical health (Adams, 2012; Kahana, Kahana, & Zhang, 2005; Whaley, 2003; Zimbardo & Boyd, 1999), life satisfaction (Dwivedi & Rastogi, 2017; Prenda & Lachman, 2001; Nie, Shepard, Choi, Copley, & Wolff, 2015), mental health (Holman & Silver, 2006; Holman, Silver, Moogle, & Scott, 2016; Zimbardo, Sword, & Sword, 2012), and financial well-being (Preis, Moat, Stanley, & Bishop, 2012). However, like most psychological research, this research has been conducted primarily with WEIRD cultures (Western Educated Industrialized Rich Democratic cultures; Henrich, Heine, & Norenzayan, 2010). However, psychologists—including those studying the relation between future-oriented thought and well-being—are not typically interested in the psychology of WEIRD people; they are interested in the psychology of people. In other words,

most psychological claims are offered as generalizable facts about our psychology, yet the findings on which these claims are made only been demonstrated in a small subset of the world's population—a subset that is very different from the majority of the world's population. We now know that many thought-to-be-universal phenomena have turned out to be sensitive to culture and environment, including visual illusions such as the Muller-Lyer illusion (see Henrich et al., 2010, for a review). It is currently an open question whether the relation between future-oriented thought also holds for non-WEIRD cultures.

It is possible that the relation between future-orientated thought and well-being holds across cultures. If so, this would provide evidence that the relation between future-orientated thought and well-being is a generalizable fact about our psychology. However, there are reasons to think that the relation between

future-oriented thought and well-being may be moderated by culture, specifically by the extent to which a culture is individualistic (e.g., most WEIRD cultures) or collectivistic (e.g., many Eastern Asian cultures). The first is that cultures and individuals high on collectivism tend to focus less on the future (Seginer, 1988, 2008), and, in particular, cultures and people high on collectivism tend to think less about their own hopes (Seginer, 2008). Resiliency and well-being are positively related to thoughts about one's own hopes (Seginer, 2008). Second, when thinking about the future, individualistic cultures tend to focus more on personal agency and goals, whereas collectivistic cultures tend to focus more on concerns about the community (Hofstede, Hofstede, & Minkov, 2010; Markus & Kitayama, 1991). If the link between future-orientated thought and well-being is driven by thoughts of personal agency—which is supported by the current literature (Holman & Silver, 2005; Shepard, 2017; Taylor & Brown, 1988)—the relation between future-orientated thought and well-being may differ between individualistic and collectivistic cultures.

In order to test whether the relation between future-oriented thought and well-being differs by culture, we conducted three studies: The first study that tests whether the relation between future-oriented thought and well-being holds across cultures. The second study and third study tests whether the relation is robust across specific cultural contrasts. Specifically, Study 2 tests whether the relation between future-oriented thought and well-being differs between WEIRD and non-WEIRD cultures. Study 3 tests whether the relation between future-oriented thought and well-being is moderated by the individualistic-collectivistic divide. Each study leverages big data, in particular information about internet search behaviors, to gain insight into whether the relation between future-oriented thought and well-being is cross-cultural.

Study 1

The purpose of study 1 was to test whether future-oriented thought and well-being holds across cultures.

Method

Sample: Countries with an internet penetration rate below 25% (International Telecommunication Union, 2015) were excluded from all analysis. Internet penetration rate is the percent of people who had access to the internet in a year. We included all other countries for which we had data from the World Value Survey (World Value Survey, 2014), resulting in the inclusion of 64 countries. Countries from every region of the world were represented and include a diverse range of cultures. See Appendix A for all countries included in the sample.

Materials and procedure: For our measurement of future-oriented thought, we used the future-orientation index developed by Preis et al. (2012). Using Google Trends, which is a Google service that calculates the relative frequency of search terms, we measured future orientation of a country by calculating a ratio of how often people in a country searched for a future year (e.g., searches for 2016 in 2015) and how often people searched for a past year (e.g., searches for 2014 in 2015). Scores above one indicate that the people of a country thought more about the future relative to the past, while scores below one indicate that the people of a country thought more about the past relative to the future. We computed the future-orientation index for each country for the years 2013, 2014, and 2015.

For our measure of health and well-being, we used data from the World Values Survey (WVS, 2014), which contains information about health and well-being, among other information, from countries from every region of the world. Specifically, we used data from questions about health, happiness, life satisfaction, and financial well-being. The questions we used were: "All in all, how would you describe your state of health these days?" (Health), "Taking all things together, how happy are you?" (Happiness), "All things considered, how satisfied are you with your life?" (Life satisfaction), and "How satisfied are you with the financial situation of your household?" (Financial well-being). Responses to health and happiness were on a 4-point scale. Responses to life satisfaction and financial well-being were on a 10-point scale.

Results

To test whether the relation between future-oriented thought and well-being generally holds across cultures, we calculated correlations between the future orientation-index for each year and the measures of health and well-being. Across all countries, there was a positive relation between each of the future-orientation indexes and each of the measures of health and well-being, rs > .355, ps < .01. See Table 1 for a summary of the results. See Figure 1 for a scatterplot of the relation between future orientation and life satisfaction.

Table 1: *Correlations between future-oriented thought and well-being (n = 64)*

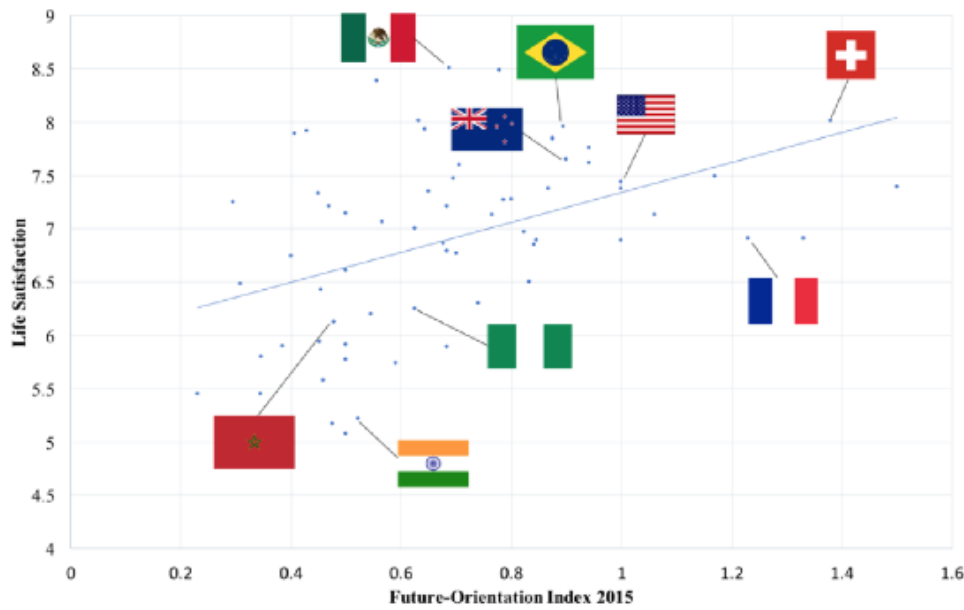|	Future Orientation 2013	Future Orientation 2013	Future Orientation 2013	Health	Happiness	Life Satisfaction	Financial Well-Being
Future Orientation 2013	1	.900***	.911***	.482**	.453**	.482**	.545**
Future Orientation 2013	-	1	.916***	.475**	.415**	.450**	.557**
Future Orientation 2013	-	-	1	.406**	.355**	.446**	.577**
Health	-	-	-	1	.636***	.476**	.624**
Happiness	-	-	-	-	1	.831**	.675**
Life Satisfaction	-	-	-	-	-	1	.803**
Financial Well-Being	-	-	-	-	-	-	1

*Note: *p < .05. **p < .01.*

Figure 1: *The correlation between future orientation and life satisfaction for the year 2015.*

Study 2

Study 1 provided evidence that the relation between future-oriented thought and well-being generally holds across cultures. This provides initial support for the claim that the relation between future-oriented thought and well-being is a generalizable fact about our psychology. However, observing that a relation holds in general does not mean it holds across specific cultural contrasts. In study 2 we tested whether the relation between future-oriented thought and well-being differs between WEIRD and non-WEIRD cultures.

Method

Sample. All countries from Study 1 were included in this study. See Appendix A for all countries included in the sample. Countries were classified as being WEIRD based on the classification used by Arnett (2008; see also Henrich et al., 2010). According to

Arnett's classification, countries considered WEIRD are all North American and European countries and Australia and Israel. We also included New Zealand and territories of the United States and United Kingdom as WEIRD countries.

Materials and procedure. Our measurements of future-orientated thought and well-being were the same as used in study 1.

Results

In order to test whether the extent to whether the relation between future-oriented thought and well-being differs between WEIRD and non-WEIRD countries, we conducted a hierarchical regression in which we entered future-orientated thought and WEIRD classification in the first step and the interaction between future-orientated thought and WEIRD classification in the second step. As can be seen in Table 2, future-orientated thought continued to predict health, happiness, life satisfaction, and financial

well-being even when controlling for WEIRD classification and that the interaction between future-orientated thought and WEIRD classification was not a significant predictor of any of the measures of health and well-being, indicating that the relation between future-orientated thought and well-being is not moderated by whether a culture is WEIRD, providing support for the hypothesis that the relation between future-orientated thought and well-being is a generalizable fact about our psychology.

Study 3

While the relation between future-oriented thought and well-being did not differ depending on the WEIRD classification of a culture, there are reasons to believe that the relation between future-oriented thought and well-being may be moderated by the extent that a country is individualistic or collectivistic. The basic reason is that individualistic and collectivistic cultures tend to think about the future differently (see Intro for more detailed discussion).

Method

Sample. Countries with an internet penetration rate below 25% (International Telecommunication Union, 2015) were excluded. We included all other countries for which we had data from the World Value Survey (World Value Survey, 2014: see below) and we had data from the individualism-collectivism scale (Hofestede, Hofestede, & Minkov, 2010), resulting in

the inclusion of 48 countries. Countries from every region of the world were represented and include a diverse range of cultures. See Appendix B for all countries included in the sample.

Materials and procedure. Our measurements of future-orientated thought and well-being were the same as used in studies 1 and 2. For our measure of individualism-collectivism we used scores from the individualism scale (Hofestede, et al., 2010).

Results

In order to test whether the extent to which a country is individualistic moderates the relation between future-orientated thought and well-being, we conducted a hierarchical regression in which we entered future-orientated thought and individualism scores in the first step and the interaction between future-orientated thought and individualism scores in the second step. As can be seen in Table 3, future-orientated thought continued to predict health, happiness, life satisfaction, and financial well-being even when controlling for individualism and that the interaction between future-orientated thought and individualism was not a significant predictor of any of the measures of health and well-being, indicating that the relation between future-orientated thought and well-being is not moderated by the extent that a country is individualistic, which provides additional support for the hypothesis that the relation between future-orientated thought and well-being is a generalizable fact about our psychology.

Table 2: *Summary of hierarchical regression analysis for whether future orientation, WEIRD classification, and the interaction of the two predicted measures of well-being (n = 64)*

Variable	Health			Happiness		
	B	SE B	β	B	SE B	β
Model 1 Variable						
Future Orientation	0.331	0.158	0.362*	0.348	0.144	0.412*
Individualism	0.001	0.002	0.144	0.002	0.002	0.176
Model 2 Variable						
Future Orientation x Individualism	-0.001	0.007	-0.011	0.001	0.007	0.036
Variable	**Life Satisfaction**			**Financial Wellbeing**		
	B	SE B	β	B	SE B	β
Model 1 Variable						
Future Orientation	1.583	0.497	0.519**	1.908	0.463	0.623**
Individualism	-0.006	0.005	-0.176	-0.004	0.005	-0.134
Model 2 Variable						
Future Orientation x Individualism	0.016	0.023	0.112	0.010	0.021	0.073

*Note: *p < .05. **p < .01 ^p < .10*

Table 3: *Summary of hierarchical regression analysis for whether future orientation, individualism, and the interaction of the two predicted measures of well-being (n = 48)*

Variable	Health			Happiness		
	B	SE B	β	B	SE B	β
Model 1 Variable						
Future Orientation	0.470	0.118	.503**	0.353	0.120	.389**
WEIRD	0.120	0.068	.224^	0.040	0.069	0.077
Model 2 Variable						
Future Orientation x WEIRD	0.068	0.239	0.118	0.042	0.243	0.076

Variable	Life Satisfaction			Financial Wellbeing		
	B	SE B	β	B	SE B	β
Model 1 Variable						
Future Orientation	1.335	0.401	.423**	2.016	0.391	.598**
WEIRD	0.095	0.230	0.053	-0.094	0.224	-0.048
Model 2 Variable						
Future Orientation x WEIRD	0.409	0.808	0.210	0.687	0.784	0.331

Note: *p < .05. **p < .01.

Discussion

We found that future-orientated thought and well-being were positively related across countries (Study 1) and we found no evidence of a difference in the relation between future-oriented thought and well-being based on WEIRD classification (Study 2) or along the individualism-collectivism divide (Study 3). Together these studies provide support for the claim that the relation between future-orientated thought and well-being is a generalizable fact about our psychology.

This research also provides an example of how big data can be leveraged for cross-cultural research. While we used Google Trends for this project, there exist other sources of big data that could be leveraged for cross-cultural research. For example, previous research has examined large corpus of online text, including social media posts produced by WEIRD populations. The approaches used in the research on social media could readily be expanded to analyze text produced by non-WEIRD populations. Analysis of text produced by WEIRD and non-WEIRD populations could be compared for differences and similarities. These approaches hold great promise to open up a new avenue for cross-cultural research that is much less prohibitive than more traditional ways of doing cross-cultural research. While we believe these methods are powerful methods that hold a lot of promise for how future research be done, we do not want to suggest that these methods can fully *replace* more traditional methods of cross-cultural research. The best-case scenario is one in which converging evidence can be obtained from big data analysis and research in the field.

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Appendix A

Countries included in studies 1 and 2 listed in alphabetical order.

Albania
Algeria
Andorra
Argentina
Australia
Azerbaijan
Bahrain
Belarus
Bosnia and Herzegovina
Brazil
Bulgaria
Canada
Chile
China
Colombia
Cyprus
Ecuador
Egypt
Estonia
Finland
France
Georgia
Germany
Guatemala
Hong Kong
Hungary
India
Iran
Italy
Japan
Kazakhstan
Kuwait
Kyrgyzstan
Lebanon
Malaysia
Mexico
Moldova
Morocco
Netherlands
New Zealand
Nigeria
Norway
Peru
Philippines

Poland
Puerto Rico
Qatar
Russia
Saudi Arabia
Singapore
Slovenia
South Korea
Spain
Sweden
Switzerland
Taiwan
Thailand
Trinidad and Tobago
Tunisia
Ukraine
United States
Uruguay
Uzbekistan
Yemen

Appendix B

Countries included in Study 2 listed in order from most individualistic to most collectivistic.

United States
Australia
Canada
Hungary
Netherlands
New Zealand
Italy
France
Sweden
Norway
Switzerland
Germany
Finland
Estonia
Poland
Spain
India
Argentina
Japan
Iran
Lebanon
Russia
Brazil

Uruguay

Philippines

Bulgaria

Mexico

Nigeria

Slovenia

Malaysia

Egypt

Hong Kong

Kuwait

Morocco

Saudi Arabia

Ukraine

Chile

Albania

China

Singapore

Thailand

South Korea

Taiwan

Peru

Trinidad and Tobago

Colombia

Ecuador

Guatemala