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Beyond God and Government: The Role of Personal Control in Supporting Citizens' Well-Being in the Face of Changing Economy and Rising Inequality

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Supplementary Materials: Data, Materials [see Index of Supplementary Materials]

Abstract

Based on previous theoretical models, the present research investigated three different psychological constructs (religious belief, trust in government, and the experience of personal control) as moderators of the link between country's economic growth (i.e., Gross Domestic Product) and income inequality (i.e., Gini) on health, happiness, and life satisfaction. Using a large cross-national data set (N = 490,579), we found that personal control predicted health, happiness, and life satisfaction above and beyond reliance on God and trust in government. Religious belief predicted greater health and buffered the negative effect of income inequality on health only in wealthy economies, but yielded negative correlations with health in poor economies. The associations between personal control and trust in government with well-being outcomes were consistently positive across different levels of countries' GDP and Gini. Further, personal control also served a compensatory function by buffering the negative effect of income inequality in wealthy economies.

Keywords

personal control, religion, system justification, self-determination, well-being

> "Everything can be taken from a man but one thing: the last of human freedoms
> – to choose one's attitude in any given set of circumstances, to choose one's
> own way."
> From *Man's Search for Meaning* by Viktor E. Frankl

Income inequality has become an increasing problem since the early 1980s (OECD, 2015) and is predicted to continue growing as globalization increases and promotes more rapid economic growth—growth which benefits only a small portion of the wealthiest citizens (Dreher, 2006). Using the Gross Domestic Product (GDP) to index nations' economic growth and Gini coefficients to assess income inequality, one study has shown that rising income inequality might complicate the well-documented link between country's GDP and well-being (Oishi & Kesebir, 2015). This paradox, named after the economist Richard Easterlin who documented it, has been used to explain why citizens of even the most economically well-off countries, such as the United States and United Kingdom, will gradually cease to benefit psychologically from their nations' wealth (Easterlin, 1974). If country's wealth becomes a less reliable predictor of citizens' well-being, this calls into question how citizens across the world sustain their well-being in face of a nations' rise and fall.

The Roles of Religion and Government

Throughout human history, people turn to God or governments to gain control over their life (Kay et al., 2010) especially during hard times when personal control is threatened (Kay, Whitson, Gaucher, & Galinsky, 2009). System justification theory suggests that, in dealing with an unfair system, citizens boost their trust in the government to prevent the adverse social conditions over which they lack control from affecting their subjective well-being (Jost & Andrews, 2011; Jost, Banaji, & Nosek, 2004; van der Toorn et al., 2015). Meanwhile, the compensatory control model (Kay et al., 2009) posits that when people experience adversity, they bolster their belief in God. Both models were built on the premise that individuals are motivated to regain personal control through endorsing an external system, either God or government, to "defend against perceptions of randomness and chaos" in their life (p. 19, Diener, Tay, & Myers, 2011; Gray & Wegner, 2010; Kay et al., 2010; Norris & Inglehart, 2004; Snoep, 2008; Zuckerman, Li, & Diener, 2018).

The Role of Personal Control

It can be inferred from numerous theories that perceived personal control is a resource that can be drawn from *within* to deal with stressful situations without relying on God and governments. Personal control is broadly defined as the extent to which one feels that he or she has a say in deciding or changing the outcomes of events that happen in their daily lives; experiencing personal control helps us perceive the world as not random (Kay et al., 2009). Outside the system justification theory and compensatory control models, personal control has been studied as a phenomenon that can be gained through

reattributing sources of control internally. For example, self-determination theory (Ryan & Deci, 2017) holds that the ability to perform behaviors effectively and the freedom to behave congruently with one's personal values are universal needs. Satisfaction of those needs, one concerning competence and the other concerning autonomy, predicts psychological well-being in both individualistic and collectivistic cultures (Chen et al., 2015; Chirkov & Ryan, 2001; Chirkov, Ryan, & Willness, 2005). In the work contexts, gaining an internal locus of control (Rotter, 1990) through attributing one's achievement to internal causes like efforts and ability is linked to lower levels of stress (Ganster & Fusilier, 1989; Spector, 1986; Spector & O'Connell, 1994); this evidence has been observed in countries other than the United States (Sadri, 1996; Siu & Cooper, 1998). Similarly, experiencing high self-efficacy (Bandura, 1977) – the belief that one has the ability and control to carry out behaviors that are linked to desired outcomes – has also been linked to general well-being (Karademas, 2006; Magaletta & Oliver, 1999), and well-being in the workplace (Liu, Siu, & Shi, 2010). In earlier experimental work, personal control could be superficially manipulated through allowing individuals to change the outcomes of certain events or environments or reinterpret stressful events through a different lens (see review by Averill, 1973). Those points were made to demonstrate that individuals could maintain personal control through other strategies in face of stress and uncertainty, besides boosting their belief in god and trust in government.

Aims of the Present Research

Question 1: Does Personal Control Matter Beyond God and Governments?

The question put forth in this paper is simple: if God and governments are theorized to be the universal protective systems on which people can rely (Kay et al., 2010; Zuckerman, Li, & Diener, 2018), is there still room for subjectively perceiving that one has personal control over one's life decisions to sustain one's own well-being? Statistically, we aimed to test whether personal control yields independent predictive value for well-being outcomes once we controlled for the variance in well-being explained by belief in God and trust in government. To pursue this question, the present research revisited the roles of religious belief, trust in government, and personal control, including all three in the same model that predicted citizens' well-being around the world.

> H1. We predicted that personal control will correlate positively with well-being outcomes, including levels of happiness, perceived health, life satisfaction, above and beyond religious belief and trust in government.

Question 2: Does Personal Control Only Matter in Wealthy, Developed Countries?

Social researchers do not always agree that people everywhere around the world practice personal control or need it. Some argue that personal control is a phenomenon more

highly valued in Western, individualistic world, and psychological well-being would be derived less from having high personal control for those in collectivistic cultures (O'Connor & Shimizu, 2002). It is also arguably possible that personal control might be important only in countries that are more well-resourced and where resources are distributed more equally, because only in those places can individuals afford personal control (through access to those resources) to make their lives better. Essentially, these above-mentioned perspectives proposed that the means of personal control in Western, individualistic countries, or richer and fairer countries, would be higher than other countries that do not fit into those categories. This is indeed supported by research showing that poverty correlates with one's perception of their life as happening based on luck and chance versus feeling that they have control over their life (Lachman & Weaver, 1998).

If one predicts that personal control is only linked to well-being in countries that are wealthier and lower in inequality, we refer to this as the *enhancing hypothesis,* where greater personal control is linked to greater psychological well-being only in wealthy countries (i.e., high GDP) or countries with less inequality (i.e., low Gini).

Yet, the importance of personal control has been emphasized and supported by many theories (Bandura, 1977; Rotter, 1990; Ryan & Deci, 2017). Personal control has been showed to moderate the link between low income and poor well-being, such that personal control plays a more important role for those who are low income, boosting their well-being to the levels comparable to those who are high income (Lachman & Weaver, 1998). As such, we predicted a hypothesis opposite to the enhancing hypothesis. We expected that, although those living in less optimal conditions, like in countries with low Gross Domestic Products (GDP) or a higher income inequality index (Gini) might experience less personal control, the importance of personal control for citizens' well-being could be stronger in those countries. When dealing with hardship, the perception of having control over one's life could prevent the individual from becoming a passive victim of destitution. As such, this *compensatory hypothesis* suggests that personal control would compensate for poor life conditions much like religiosity and government have previously been found to do (e.g. Kay et al., 2010). With the data from World Bank and the World Value Survey, we had the information to directly test that question. Using multilevel modeling analyses, we were able to observe correlations between personal control and well-being outcomes within each country, depending on the country's GDP and Gini.

H2. We predicted that personal control would correlate more strongly with well-being outcomes at lower levels of GDP and higher levels of inequality.

Method

Sample

Our analyses comprise data collected from 104 countries and were compiled into 6 quadrennial periods: 1981-1985, 1990-1994, 1995-1998, 1999-2004, 2005-2009, 2010-2014. This provided us data from 490,579 individuals with data on at least one of the variables of interest between 1981 and 2014[1].

Procedure

To ensure that we will include data from a broad sample of countries and citizens around the world, we obtained individual-level data from the longitudinal data set collected between 1981 and 2014 from the World Value Survey (WVS) and between 1981 and 2008 from the European Value Survey (EVS) (Inglehart et al., 2014).

Two researchers went through the questions included in the WVS and EVS and identified items to measure religious belief, trust in government, personal control, and items that assess well-being outcomes. Once items were identified, only items that both researchers agreed represented the concepts of interest were used in the calculations of the variables. Overall, the researchers agreed 100% on items that represent religious belief, personal control, perceived happiness, health, and life satisfaction. For the items that measure trust in government, final decisions were made by choosing items that have the strongest face validity, and with the least missing data across countries and waves. See items and available data in Table 1.

Measures

Religious Beliefs

We conceptualized religious belief as the extent to which religion is important and salient in one's daily life such as through religious attendance or prayers. To capture this conceptualization, we used five items from the WVS and EVS that were similar to the items used to measure religious beliefs in previous studies. The first item asked the participants to indicate how important religion is in their lives, and the responses ranged from 1 = "*very important*" to 4 = "*not at all important*". The second item asked whether the participants would consider themselves 1 = "*a religious person*", 2 = "*not a religious person*", or 3 = "*a (convinced) atheist*". The third item asked, "How important is God in your life?", and the participants were asked to indicate their responses within the range from 1 = "*not at all important*" to 10 = "*very important*". We also included two items that

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1) Eight countries (WVS/EVS country codes: RS, TW, ME, GB-NIR, CS, PS, BOS, CY-TCC) in the WVS and EVS data sets were not included in our analyses because they did not provide any data on all our variables of interest across 6 waves.

asked about the participants' religious practices; one was "How often do you pray?" (1 = "*practically never*"; 8 = "*several times a day*"), and the other was "How often do you attend religious services?" (1 = "*practically never*"; 8 = "*once a week*"). We recoded the items so that higher scores indicated greater religious beliefs, and then standardized and averaged them into the religious belief composite score (α = .79).

Trust in Government

Trust in government is measured using items that reflect a confidence in one's government and the belief that the government is doing a good job at governing the country. Both the WVS and the EVS included items that asked how much confidence the individuals have in different organizations in their countries (e.g., the churches, the armed forces, the labor unions, etc.). To measure individuals' overall trust in their government, we used two general items capturing confidence in the Parliament and in the government. These two items were rated on 4-point scale (1 = "A great deal"; 4 = "None at all"), and were reverse coded so that higher scores indicate greater confidence. We also identified a third item, which asked participants to rate how well or poorly they perceived their political system has governed their countries. The three items were standardized and averaged into a composite score (α = .64) with higher scores representing more trust.

Personal Control

Finally, drawing on previous theoretical descriptions of self-efficacy, autonomy, and competence (e.g. Bandura, 1977; Rotter, 1990; Ryan & Deci, 2017), we conceptualized personal control as the freedom to choose and take control over one's life. There is only one item used in both the WVS and EVS that capture this construct: "indicate how much freedom of choice and control you feel you have over the way your life turns out" on a 10-point scale from 1 = "*none at all*" to 10 = "*a great deal.*"

Well-Being

We retrieved three items from the WVS and EVS to capture participants' happiness (i.e., Taking all things together, would you say you are...; 1 = "*very happy*" to 4 = "*not at all happy*"), satisfaction with life (i.e., All things considered, how satisfied are you with your life as a whole these days?; 1 = "*dissatisfied*" to 10 = "*satisfied*"), and state of health (i.e., All in all, how would you describe your state of health these days?; 1 = "*very good*" to 4 = "*very poor*"). Items for happiness and health were reverse coded so that higher scores indicate greater happiness and health.

Control Variables

We also retrieved the following variables to use as controls in our analyses: gender (0 = male, 1 = female), age, marital status (0 = non-married, 1 = married), and social class. For social class, we picked the item that included 5 categories, including upper class,

upper middle class, lower middle class, working class, and lower class, and this item was recoded so that a higher score indicates higher social class.

GDP and Gini

To capture countries' economic performance, we retrieved countries' GDP and Gini from the World Bank for every year from 1981 to 2014. We grouped the years into the same waves as those in the WVS and EVS. To address missing values, we performed multiple imputations (m = 20) using the regression method with the following indices as covariates (because these variables were already obtained in a dataset): government expenditure on education, total (% of GDP), health expenditure, total (% of GDP), average expected years of education, the literacy rate (% of population), infant mortality rate (per 1,000 live births), number of physicians (per 1,000 people), urban population (% of total). Because those are national indices where negative values would not be meaningful, a minimum value of 0 was imposed on all imputed values. Finally, we calculated the pooled averages for GDP and Gini from the imputed data and log-transformed GDP values. In the final country-level data, each country had 6 rows of data; each row is made up of data from one quadrennial period.

Analytical Approaches

To observe each independent main effect of religious belief, trust in government, and personal control on three well-being indices, including health, happiness, and life satisfaction, we conducted 3-level multi-level models using HLM7, in which individuals were nested within period, which were nested within countries. Being sensitive to the fact that those countries also belong to different continents, which might contribute into shaping the social, economic, and political structures of the countries due to their proximity to one another (being in the same continents), in both models, we controlled for the continents to which the countries are classified. We did this by entering five dummy codes that compared countries in Africa (DUM1), Asia (DUM2), Australia (DUM3), North America (DUM4), South America (DUM5) to those in Europe. These dummy codes were entered at level 3 and served to account for the fact that countries in close geographical proximity to one another are likely to share similar culture or affect each other's economic growth compared to countries that are located in different continents (see Syntax file named Level3.sps provided in the Supplementary Materials for list of countries and how they are coded).

　　The first model investigated the links of religious belief, trust in government, and personal control to health, happiness, and life satisfaction. The model was constructed as follows:

Level 1:

$\text{Outcome}_{ijk} = \pi_{0jk} + \pi_{1jk}(\text{GENDER}_{ijk}) + \pi_{2jk}(\text{AGE}_{ijk}) + \pi_{3jk}(\text{MARITAL}_{ijk}) + \pi_{4jk}(\text{CLASS}_{ijk}) + \pi_{5jk}(\text{RELIGION}_{ijk}) + \pi_{6jk}(\text{GOVERNMENT}_{ijk}) + \pi_{7jk}(\text{PERSONAL CONTROL}_{ijk}) + e_{ijk}$

Level 2:

$\pi_{0jk} = \beta_{00k} + \beta_{01k}(\text{GDP}) + \beta_{02k}(\text{GINI}) + \beta_{03k}(\text{GDP} \times \text{GINI}) + r_{0jk}$
$\pi_{1jk} = \beta_{10k}$
...
$\pi_{7jk} = \beta_{70k}$

Level 3:

$\beta_{00k} = \gamma_{001} + \gamma_{003}(\text{DUM1}) + \gamma_{004}(\text{DUM2}) + \gamma_{005}(\text{DUM3}) + \gamma_{006}(\text{DUM4}) + \gamma_{007}(\text{DUM5}) + u_{00k}$
$\beta_{01k} = \gamma_{010}$
...
$\beta_{73k} = \gamma_{730}$

All continuous variables were standardized (*z*-scored), and the main predictors (religious beliefs, trust in government, and personal control) were entered in level-1 model as group-centered variables. That means, π_{5jk}, π_{6jk}, π_{7jk} represent the degree to which fluctuation in religious belief, trust in government, and personal control around each country's average during a specific period predict levels of happiness, life satisfaction, and health during that time.

Following the practices of the most recent study on the interaction of GDP and Gini on well-being (Oishi & Kesebir, 2015), GDP and Gini were standardized around the country's average across six five-year periods between 1981 and 2014. This allowed us to look at the effect of country's GDP and Gini based on the rise and fall of country's economy and inequality around each country's general development trajectory rather than the world' general trajectory. As such, β_{01k}, β_{02k}, β_{03k} represent the degree to which fluctuation by standard deviation around the country's average GDP and Gini at a specific time covaried with the fluctuation in well-being of that country's residents at that time. By investigating the effect of countries' levels of GDP and Gini at a specific five-year period on individuals' well-being during that same period, this approached provided a more sensitive test of how people's well-being fluctuates along with their countries' economic growth and income inequality. The interaction between GDP and Gini was also included into the intercept equation because previous research suggested that income inequality affected citizens' well-being differently in wealthy and poor countries (Oishi & Kesebir, 2015).

In a second HLM, we considered the interactions between personal control with country's GDP, Gini, and the interaction of GDP and Gini with well-being outcomes in separate models. The second model was as follows:

Level 1:

$Outcome_{ijk} = \pi_{0jk} + \pi_{1jk}(GENDER_{ijk}) + \pi_{2jk}(AGE_{ijk}) + \pi_{3jk}(MARITAL_{ijk}) + \pi_{4jk}(CLASS_{ijk}) + \pi_{5jk}(PERSONAL\ CONTROL_{ijk}) + e_{ijk}$

Level 2:

$\pi_{0jk} = \beta_{00k} + \beta_{01k}(GDP) + \beta_{02k}(GINI) + \beta_{03k}(GDP \times GINI) + r_{0jk}$
$\pi_{1jk} = \beta_{10k}$
...
$\pi_{5jk} = \beta_{50k} + \beta_{51k}(GDP) + \beta_{52k}(GINI) + \beta_{53k}(GDP \times GINI) + r_{0jk}$

Level 3:

$\beta_{00k} = \gamma_{001} + \gamma_{003}(DUM1) + \gamma_{004}(DUM2) + \gamma_{005}(DUM3) + \gamma_{006}(DUM4) + \gamma_{007}(DUM5) + u_{00k}$
$\beta_{01k} = \gamma_{010}$
...
$\beta_{53k} = \gamma_{530}$

Personal control was entered at Level 1, controlling for demographic variables. Standardized GDP and Gini (around country's average) again were entered into the formula to predict the slope of personal control. For example, in the second model presented above, β_{51k} tells us the interaction between personal control and country's GDP, and β_{52k} represents the interaction between personal control and country's Gini. We expected that the slope for personal control would be larger at lower levels of country's GDP, and at higher levels of country's Gini. Finally, because previous study suggested that GDP and Gini interacted in predicting citizens' life satisfaction (Oishi & Kesebir, 2015), we also looked at the interaction between personal control with the interaction of country's GDP and Gini. We planned to interpret the significant three-way interaction (if any) by breaking them down to two-way interactions of personal control and Gini at different levels of GDP. So, this would allow us to see whether personal control serves as more important predictor of well-being when income inequality is higher or lower, and whether the patterns of prediction are the same for growing or declining economies.

Results

Descriptive Statistics

All items are normally distributed. Because items were rated on different scales, all items were standardized before they were combined into composites (see *M*s and *SD*s in Table 1).

Table 1

Descriptive Statistics of WVS/EVS Items

Variable / Item	Item from WVS/EVS	N	Min	Max	M	SD
Religious belief (α = .79)						
A006	Important in life: Religion	462774	1	4	2.07	1.076
F028	How often do you attend religious services	479012	1	8	4.62	2.570
F028B	How often to you pray	79469	1	8	3.79	2.717
F034	Religious person	465467	1	3	1.35	0.571
F063	How important is God in your life	476305	1	10	7.21	3.182
Trust in Government (α = .64)						
E069_07	Confidence: Parliament	462211	1	4	2.70	0.902
E069_11	Confidence: The Government	352850	1	4	2.62	0.935
E111	Rate political system for governing country	192918	1	10	4.67	2.337
Personal control						
A173	How much freedom of choice and control	481323	1	10	6.81	2.371
Age						
X003	Age	501451	13	108	42.13	16.710
Marital						
X007	Marital status	500488	1	7	2.69	2.184
Social class						
X045	Social class (subjective)	285180	1	5	3.32	0.989
Happy						
A008	Feeling of happiness	493770	1	4	1.95	0.737
Health						
A009	State of health (subjective)	453510	1	5	2.21	0.910
Satisfaction						
A170	Satisfaction with your life	499406	1	10	6.73	2.404

Correlations

Zero-order correlations between variables taken from WVS/EVS are showed in Table 2. Our control variables showed small to moderation correlations with religious belief, trust in government, personal control, as well as well-being outcomes. Therefore, we controlled for them in our analyses to account for how individual differences in life situations like being old, being married, or being from lower social classes could relate to citizens' religious belief, trust in their government, and subjective perceptions of personal control, which could in turn affects their levels of happiness, health, and life satisfaction.

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Table 2

Correlations Between Main Variables at Level 1

Main variable	1	2	3	4	5	6	7	8	9
1. Religious belief	–								
2. Trust in government	.075**	–							
3. Personal control	.017**	.077**	–						
4. Age	.026**	.005**	-.042**	–					
5. Marital	.045**	.042**	-.020**	.236**	–				
6. Social class	-.028**	.026**	.138**	-.059**	.025**	–			
7. Happy	.058**	.121**	.245**	-.089**	.067**	.186**	–		
8. Health	-.001	.069**	.192**	-.311**	-.044**	.178**	.378**	–	
9. Satisfaction	.010**	.118**	.396**	-.023**	.031**	.224**	.492**	.311**	–

$^{**}p < .001$.

HLM Analyses

When entered into the HLMs, all control variables showed noticeable independent effects on well-being outcomes. Consistent with past literature, being married is associated with greater happiness, health, and life satisfaction, while older ages showed the opposite effects. Women reported greater happiness and life satisfaction, but lower health. The more important control variable was social class as one's status in society could have different meanings in different contexts, and thus an important third variable to account for. Therefore, by including social class into the model, we were able to tease out the variance in well-being, religious belief, trust in government, and personal control that is explained by the social class that an individual is ascribed to.

Also, there appear to be links between where people live relatively around the world with their levels of well-being, as evidenced in the differences between different continents. Overall, countries in Australia, North America, and South America reported greater happiness, health and life satisfaction than those in Europe. Compared to countries in Europe, those in Africa reported significantly lower life satisfaction (see Table 3). By controlling for continents, we aimed to account for the political and cultural climates that people share by living in countries on the same continent.

Country-Level Predictors

When observed at Level 2, analyses of within-country standardized GDP allowed us to observe whether fluctuation in each country's economic growth over time would be associated with fluctuations in citizens' well-being. The findings showed that during the time when a country's GDP went up (compared to its general average), that country's citizens also reported higher states of health, happiness, and life satisfaction. As a country's income inequality rose, citizens' life satisfaction decreased. Happiness and health

did not show significant association with country's income inequality. We did not find significant interactions of GDP and Gini on those outcomes.

Table 3

Main Effects of Religious Belief, Trust in Government, and Personal Control on Well-Being Outcomes

	Happiness			Health			Life satisfaction		
Predictor	ß	t	p	ß	t	p	ß	t	p
Level-1									
Age	-.10	-48.45	< .001	-.29	-144.32	< .001	-.05	-24.64	< .001
Marital status	.21	51.57	< .001	.08	20.76	< .001	.12	31.01	< .001
Gender	.03	8.03	< .001	-.10	-29.56	< .001	.03	8.69	< .001
Social class	.14	73.92	< .001	.13	69.50	< .001	.16	87.78	< .001
Religious belief	.07	26.16	< .001	.00	1.67	.094	.06	24.16	< .001
Trust in government	.07	36.33	< .001	.04	21.75	< .001	.07	39.51	< .001
Personal control	.16	81.28	< .001	.11	59.12	< .001	.29	156.16	< .001
Level-2									
GDP	.08	3.42	< .001	.09	5.97	< .001	.12	6.88	< .001
GINI	-.04	-1.58	.115	-.03	-1.86	.065	-.05	-2.42	.016
GDP x GINI	.02	0.77	.443	.02	1.52	.130	.01	0.60	.553
Level-3									
DUM 1	.08	0.93	.356	.14	0.14	.056	-.32	-4.06	< .001
DUM 2	.06	0.80	.423	-.03	-0.03	.644	-.11	-1.72	.088
DUM 3	.44	2.30	.023	.40	0.40	.014	.33	1.90	.061
DUM 4	.44	3.74	< .001	.18	0.18	.059	.35	3.35	.001
DUM 5	.34	3.07	.003	.11	0.11	.208	.29	2.98	.004

Main Effect of Personal Control

Religious belief, trust in government, and personal control independently predicted greater happiness and life satisfaction. Citizens' general state of health was also predicted by trust in government and personal control, but not by religious belief (see Table 3). More importantly, not only did personal control yield significant and independent predictive value above and beyond religious belief and trust in government, but personal control was consistently the strongest predictor of all three well-being indices.

Interaction Between Individual-Level Personal Control With Country-Level GDP and Gini

Of this research's main interest was the role of personal control in predicting citizens' well-being outcomes at different levels of countries' GDP and Gini. We particularly wanted to test whether personal control would *compensate* for countries' economic difficulties with low GDP and high Gini. So, we predicted that personal control would become

more important, thus showing stronger positive associations with health, happiness, and life satisfaction, when country's GDP was lower and income inequality was higher.
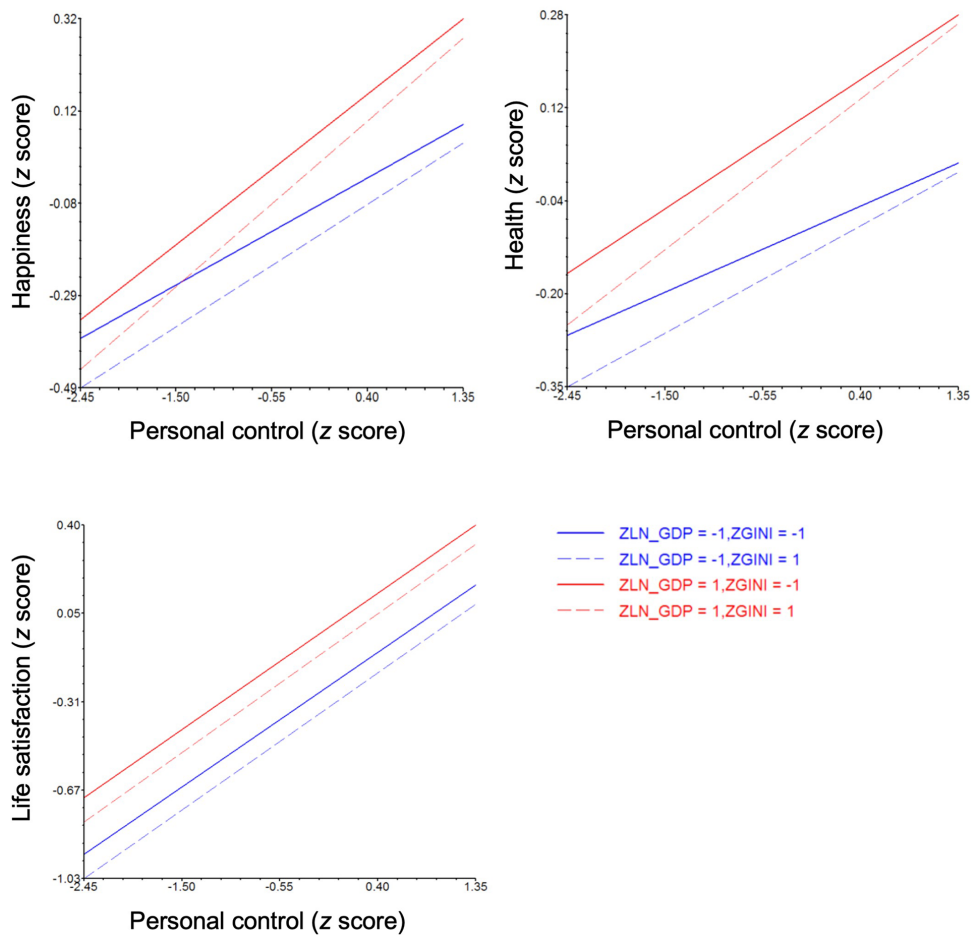
    After the interaction terms were entered into the model, personal control was still positively associated with greater health, more happiness, and higher life satisfaction. Further, the strength of the association between personal control and well-being varied as country's GDP and Gini fluctuated, and this was evidenced by a significant three-way interaction between personal control, country's GDP and Gini (see Table 4). Three graphs in Figure 1 showed similar interactions between personal control and country's GDP and Gini; although, the graph for life satisfaction showed a very small, even though statistically significant, interaction. We interpreted the results in light of the role of personal control at high and low levels of income inequality, separately when country's GDP is high compared to when country's GDP is low.

Table 4

Personal Control as Moderator of the Effects of GDP and Gini on Well-Being Outcome

Predictor	Happiness			Health			Life satisfaction		
	ß	t	p	ß	t	p	ß	t	p
Level-1									
Age	-.09	-45.04	< .001	-.29	-149.10	< .001	-.04	-20.12	< .001
Marital status	.21	53.84	< .001	.08	21.53	< .001	.12	32.76	< .001
Gender	.05	12.55	< .001	-.10	-30.34	< .001	.05	13.72	< .001
Social class	.15	76.31	< .001	.13	72.04	< .001	.16	90.99	< .001
Personal control	.16	73.12	< .001	.11	52.43	< .001	.29	142.68	< .001
Personal control x GDP	.03	9.91	< .001	.02	8.21	< .001	.00	0.73	.467
Personal control x GINI	.01	3.26	< .001	.01	3.80	< .001	.00	1.17	.243
Personal control x GDP x GINI	**.01**	**3.42**	**< .001**	**.01**	**3.12**	**.002**	**.01**	**2.18**	**.030**
Level-2									
GDP	.08	3.64	< .001	.10	6.39	< .001	.12	6.79	< .001
GINI	-.03	-1.31	.192	-.02	-1.15	.250	-.04	-2.17	.031
GDP x GINI	.02	0.62	.541	.02	0.89	.373	.01	0.54	.589
Level-3									
DUM 1	.19	2.13	.035	.12	1.69	.095	-.23	-2.86	.005
DUM 2	.14	1.92	.058	-.01	-0.16	.874	-.03	-0.46	.646
DUM 3	.41	2.18	.032	.38	2.38	.019	.30	1.76	.081
DUM 4	.49	4.22	< .001	.18	1.86	.066	.39	3.80	< .001
DUM 5	.37	3.40	< .001	.10	1.06	.292	.34	3.56	< .001

Note. Bold = significant three-way interaction.

Figure 1

Personal Control Interacts With Country-Level GDP and Gini to Predict Happiness, Health, and Life Satisfaction

Note. GDP and Gini scores were standardized and the scopes are estimated at 1 standard deviation above and below around the average of each country across waves. Steeper lines represent stronger association between the variable presented on the x-axis – personal control – and the variables presented on the y-axis, including happiness, health, and life satisfaction. Personal control correlates positively with happiness, health, and life satisfaction, and this correlation is stronger when country's GDP is higher. When GDP is lower, however, the links of personal control to happiness, health, and life satisfaction are stronger when Gini is higher rather than when Gini is lower.

With GDP at 1 standard deviation above a country's average, if Gini in that year is high, personal control correlates more strongly with happiness, health, and life satisfaction at ßs = .20, .14, .30 (p < .001), compared to when Gini is low, ßs = .17, .11, .29 (p < .001). With GDP at 1 standard deviation below a country's average, when Gini is high, the correlations between personal control with happiness, health, and life satisfaction, ßs = .13, .09, .29 (p < .001), are at relatively the same magnitude as the correlations when Gini is low, ßs = .14, .09, .29 (p < .001).

Put differently, as illustrated in Figure 1, the red lines representing slopes of personal control when GDP is high are steeper than the blue lines representing slopes of personal control when GDP is low. For those at higher GDPs (illustrated by red lines), the dotted line representing slope of personal control when Gini is high is steeper than the solid line representing slope of personal control when Gini is low. It is the same case for countries at lower GDPs. Further, one can observe that, for either levels of high or low GDPs, the gaps in well-being were larger for those with lower Gini than those with higher Gini, especially at the left side of the x-axis representing low personal control. These gaps get smaller at the right side of the x-axis representing high personal control.

Generally, the graphs show that citizens experience greater happiness, health, and life satisfaction when country's GDP is higher. More importantly, to the extent that people experience greater personal control in their life, it reduces the gap in well-being outcomes as created by income inequality when GDP is high and also when GDP is low.

Discussion

The present paper aimed to test 2 hypotheses: 1) whether personal control remains a significant predictor for well-being above and beyond religious belief and trust in government, and 2) whether maintaining a sense of personal control will hold more importance for well-being in countries with less wealth and where wealth is not distributed equally.

Using data from 104 countries, we found that across all levels of GDP and Gini citizens who experience greater personal control are more likely to be healthy, happy, and have greater life satisfaction. Personal control is a significant predictor independent of religious belief and trust in government. While remaining significant, the link between personal control and well-being becomes stronger or weaker when it is considered at different levels of country's GDP and Gini.

The important finding about the interaction of personal control and country's GDP and Gini was that, for both cases when GDP is high or low, increase in personal control is associated with decrease in the well-being gap created by income inequality. More specifically, the links between personal control and well-being outcomes are stronger when GDP is high, and the strongest when income inequality is also high, whereas the strengths of the association when GDP is low are generally weaker and do not

differ much for high and low Gini. Perhaps when growing economies allow for more opportunities, those with greater personal control are more likely to take advantage of those opportunities despite the fact that mobility might be challenging due to inequality. This might not be the case for poor economies because of limited opportunities, making it difficult for even those who have more personal control to overcome inequality.

Regardless, we found consistent evidence that across any levels of GDP, personal control yields strong positive associations with health, happiness, and life satisfaction. Further, the associations between personal control and well-being outcomes become stronger when income inequality rises. Aside from the interactions that our research found, personal control is important for benefiting individuals even after we accounted for different levels of economic growth and inequality. This suggests that having personal control is not simply a function of living in wealthy countries or countries where wealth is more equally distributed[2]. Even in poorer countries or countries where income inequality is high, being able to afford the perception of personal control in one's life can be a meaningful resource for psychological well-being. This finding has important implications because inequality has been showed to relate to increasing health and social problems around the world and in the United States (Wilkinson & Pickett, 2009), affecting well-being and health of those with lower power statuses like women and children. In this research, we looked at inequality at the country level, but it would be interesting for future research to investigate further whether personal control moderates the link between variables associated with power statuses, such as gender and social class, with psychological well-being.

Limitations, Strengths, and Conclusions

Because the WVS and EVS are lengthy surveys that aim to collect large samples and include many different measures, the use of single-item measures is a common and practical decision. In our study, personal control and well-being outcomes were measured with single items, which posed limitations to assess the reliability and validity of those measures. For example, it would be impossible to determine whether the item of

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2) Although this is not central to this paper, we would like to note that in this study, we found a smaller main effect of Gini on citizens' well-being outcomes compared to the main effects of GDP. In fact, the main effects of Gini are only notable for life satisfaction item across all multilevel models, which is consistent with the findings reported by Oishi and Kesebir (2015). Our analysis is similar to the analysis they did in Study 2, where they used respondent-level data instead of using country-level aggregates. In Study 2 of Oishi and Kesebir's (2015) paper, the main effect of Gini was smaller than the main effect of GDP on life satisfaction, which is the same with what we found in our study. We also did not replicate their GDP x Gini interaction. This interaction did not show up even when we did not include personal control, religious belief, or trust in government and other variables in the models. Because the interaction effects that Oishi and Kesebir (2015) reported were small, considering their large samples, and p-values were within the .015 and .034 range, it is difficult to judge whether this is truly a failure to replicate or whether our study's inclusion of more countries could have added nuance into the relation between GDP and Gini with well-being outcomes.

personal control might touch onto other constructs related, but not identical, to personal control, such as self-efficacy (the ability to carry out behaviors that produce desired outcomes; Bandura, 1977) or autonomy (the extent to which one can act in ways that are self-endorsed: Ryan & Deci, 2017). The conceptualization of self-efficacy includes the ability to have control over how a certain behavioral outcome turns out, and part of being autonomous is to be able to make life choices that are self-endorsed instead of determined by other people. Because we could not find another comparable item related to the ability to take control over one's life, we decided to focus on what the item most appropriately represents, which is personal control. With respect to general well-being outcomes, for the purpose of obtaining as many data as possible for this study, we chose the three items that were administered consistently in all 6 waves of data collection.

Despite the above-mentioned limitation, using the WVS and EVS data, we afforded great statistical power to investigate the relationships between religious belief, trust in government, and personal control. Due to the exhausted list of items available on WVS and EVS data base, we took the approach of deciding on those three variables of interest rather than testing all possible drivers of well-being. Religious belief and trust in government were decided because they were the two well-researched protective systems that have been linked to world citizens' well-being. However, there are many other protective factors that can be studied. For example, previous research has showed that individuals' identification with a social group can serve as a protective mechanism to bolster the perception of personal control (Greenaway et al., 2015; Jetten et al., 2017).

An important take-home message from these findings is that, the experience of personal control comes from internal resources, and is not dependent or contingent upon external control-bolstering systems like religion or government. In this research, we demonstrated that the experience of personal control has the strongest positive relations to citizens' wellness over and above reliance on God and government, regardless of countries' economic growth or income inequality. Again, this research showed further evidence that the freedom to make decisions and having control over one's life is a viable psychological resource, and one that people from any walk of life can rely on, even those living in poor conditions where life is difficult.

Supplementary Materials

The following Supplementary Materials are available (for access see Index of Supplementary Materials below):

- Via the OSF repository: Anonymized data for this article
- Via the PsychArchives repository: Further results: We reported findings concerning the interactions between Religious belief and Trust in government with GDP and Gini. This helps addressing previous literature suggesting that these two variables could predict better happiness, health, and life satisfaction for those in countries with declining GDP or rising Gini.

Index of Supplementary Materials

Nguyen, T.-v., McPhetres, J., & Deci, E. L. (2019). *Research data to "Beyond God and government: The role of personal control in supporting citizens' well-being in the face of changing economy and rising inequality".* OSF. https://osf.io/ckzg5/?view_only=6a5f54f7961b4292aaefc740fe7e9372

Nguyen, T.-v., McPhetres, J., & Deci, E. L. (2020). *Supplementary materials to "Beyond God and government: The role of personal control in supporting citizens' well-being in the face of changing economy and rising inequality"* [Further results]. PsychOpen. https://doi.org/10.23668/psycharchives.2881

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