

# Belief in a Zero-Sum Game as a Social Axiom: A 37-Nation Study

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## Abstract

This article introduces a novel concept, Belief in a Zero-Sum Game (BZSG), proposed as another belief dimension in the family of social axioms. We conceptualize BZSG as a belief system about the antagonistic nature of social relations—that one person’s gain is possible only at the expense of other persons. It appears on a level of personal convictions and as a cultural worldview ideology. We found that persons or nations who believe in a zero-sum game engage in win-lose social exchanges over limited resources. Psychometric evidence for the universality of the BZSG scale in a large pancultural project of 37 nations is presented, where individual and cultural-level predictors of BZSG were tested, followed by their multilevel analyses. BZSG, which shows a conceptual and empirical affinity with societal cynicism, is moderated by previously described cultural dimensions and by objective socio-economic indices.

## Keywords

Belief in a Zero-Sum Game, social axioms, cross-cultural psychology

The exploration and identification of universal dimensions of human cultures are the basis of cross-cultural psychology. Values have served as the most popular units of measurement and outcomes in cross-cultural psychology research (Gelfand et al., 2011; Hofstede, 1980; House, Hanges, Javidan, Dorfman, & Gupta, 2004; Inglehart, 1997; Schwartz, 1992; Van de Vliert, 2011). To explain cross-cultural differences and their psychological manifestations, Leung and Bond identified five social axioms at the individual level (Bond, Leung, Au, Tong, & Chemonges-Nielson, 2004; Leung, Au, Huang, Kurman, Nitt, & Nitt, 2007; Leung & Bond, 2004; Leung et al., 2002), which were later reduced to two axioms at the cultural level (Bond, Leung, Au, Tong, De Carrasquel et al., 2004; Leung & Bond, 2008, 2009).

However, Leung and Bond suggest that some dimensions of axioms may have been overlooked (Leung et al., 2002). Thus, in this article, we introduce a novel concept, Belief in a Zero-Sum Game (BZSG), which exhibits all the features of an axiomatic belief system, though it has not been found among the five dimensions outlined by the cited authors. We treat the BZSG as

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Apart from the three main authors mentioned above, other authors have also contributed to this article by collecting data in different countries. Their details are appearing under “Authors’ Note” in the end of this article.

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an independently discovered dimension (which is not a factor in Leung and Bond's model and measurement inventory, SAS) and tested it on a cross-cultural sample of 37 nations.

## The Concept of Social Axioms

The field of social axioms refers to the epistemological aspect of culture, in contrast to the axiological issue inherent in values (Boski, 2009a). Social axioms have been defined as "generalized beliefs about oneself, the social and physical environment, or the spiritual world, which form an assertion about the relationship between two entities or concepts" (Bond, Leung, Au, Tong, De Carrasquel et al., 2004, p. 553; Leung et al., 2002, p. 289). A typical social axiom has the structure "A is related to B," where the relationship may be causal or functional. The concept of a social axiom is different from individual belief domains, which are very specific and applicable only to a narrow range of situations and actors. In contrast, social axioms may be viewed as "generalized expectancies," which are highly abstract and related to social behavior across a variety of contexts, targets, and time periods. As Boski and his colleagues have demonstrated, social axioms do indeed possess a structure of general rather than specific or situationally constrained beliefs: People endorse belief statements of unrestricted character more readily than those confined to specific classes of relationships (Boski, Henne, & Więckowska, 2009).

General beliefs were labeled axiomatic because they are often assumed to be true as a result of personal and culturally shared experiences and are transferred through socialization without being questioned (Leung et al., 2002). They serve four major functions: goal attainment (instrumental), ego defense, value expression, and understanding of the world (Leung & Bond, 2004). Similarly diverse are the domain characteristics of social axioms: psychological attributes (expressing characteristics of individuals), orientation toward the social world (characteristics of groups, organizations, and societies), social interactions (declaring how people interact with each other), and the environment (describing aspects of the environment that have implications for social behavior; Leung et al., 2002). Because research has reported five individual-level axiom dimensions (*social cynicism*, *reward for application*, *social complexity*, *fate control*, and *religiosity*) and two societal-level dimensions (*dynamic externality* and *societal cynicism*), our goal is to propose another one.

## BZSG

It's not a question of enough, pal. It's a zero-sum game, somebody wins, and somebody loses. Money itself isn't lost or made; it's simply transferred from one person to another. (Gordon Gekko, *Wall Street*, 1987)

BZSG is a general belief system about the antagonistic nature of social relations, shared by people in a society or culture and based on the implicit assumption that a finite amount of goods exists in the world, in which one person's winning makes others the losers, and vice versa.

The main inspiration for BZSG comes from classic game theory (Von Neumann & Morgenstern, 1944), which claims that human behavior is driven by the interplay of self-interests and other-interest. Logically, these two classes of interests are orthogonal: whether an action in question serves the interests of other people is independent of whether it serves the interests of the self (Gerbasi & Prentice, 2013). Behaviors can serve self-interests but dwarf the interests of other people (selfishness or competition), maximize interests of both the self and others (mutuality or cooperation), maximize interests of others at the expense of the self (altruism or accommodation), and minimize interests of both the self and others (spite), but the latter is most likely infrequent and short-lived because it is hard to see any mechanism that would instigate and maintain such behaviors. The orthogonal nature of self- and other-interest is universally recognized in various areas of

psychology, such as interdependence and social value orientations (Rusbult & Van Lange, 2003), individual differences (Gerbasí & Prentice, 2013), social dominance orientation (Pratto, Sidanius, Stallworth, & Malle, 1994), egocentric bias or attribution egotism (Boski, 1983; Epley & Caruso, 2004), and evolutionary analysis of social interactions (Barrett, Dunbar, & Lycett, 2002).

Nevertheless, there are several classes of circumstances where the assumption of orthogonality ceases to be true or requires caveats. The most prominent case is a conflict over scarce resources, which has the structure of a zero-sum game (my win is your loss; your win is my loss). In such a situation, self- and other-interests become incompatible. Instead of constituting independent dimensions, self- and other-interests collapse into opposite poles of a single dimension. The main difference is that in classic game theories, people's interests are interdependent, whereas BZSG conceptualizes zero-sum game in broader, more generalized terms of beliefs about the nature of social relations rather than using situational fluctuating matrices.

Before the concept of BZSG was outlined by Wojciszke (Wojciszke, Baryła, & Różycka, 2009), other researchers proposed similar constructs. Bar-Tal (2007) used the idea of zero-sum game in the context of intergroup strife as an attitude that occurs in intractable conflicts, where both sides insist on their incompatible aspirations. Next, in a double-interest analysis of conflict situations (Esses, Jackson, & Armstrong, 1998), zero-sum game was presented as a cognitive mechanism for perceiving group interests as antagonistic, where others' gain is perceived as a personal loss and where feelings of uneasiness and fear are the emotions typical for this biased orientation. An antagonistic perception of interest also appeared in the theory of cooperation and competition, which was based on the idea of target dependence on people involved in the situation (Deutsch, 2005).

Another construct close to BZSG is a decision bias orientation called the "fixed pie bias" in the domain of negotiations. The assumption of a "fixed pie" (Bazerman, 1983) is rooted in social norms and leads people to interpret most conflicts as win-lose situations. Negotiators who tend to assume that negotiation tasks are fixed-sum (the mythical fixed pie) tend to miss opportunities for mutually beneficial trade-offs between parties; to escalate commitment to a previously selected course of action when it is no longer the most reasonable alternative; to overlook valuable, available information by failing to consider the opponent's perspective; and to retroactively devalue any concession made by one's opponent (Ross & Stillinger, 1991). As a result of such beliefs, most negotiators implicitly or explicitly assume that the opponent's gain is their own loss, and vice versa. This bias can also manifest itself in the inability of conflicted parties to detect common interests (Paese, Yonker, & Louis, 2001; Thompson & Hrebec, 1996) and in the hostile media phenomenon where impartial representations of conflict are accused of being biased by all parties involved (Vallone, Ross, & Lepper, 1985). Much research has shown that the perception of a certain situation can be biased by firm convictions of the involved parties (Brycz, 2011; Nisbett & Ross, 1980).

What is even more interesting is that perceptions of the ultimatum game situation are heavily influenced by culture, as shown by a cross-cultural study of behavior in ultimatums, public good, and dictator games in 15 small-scale agriculturalist societies (Henrich et al., 2001). This sample consisted of three foraging societies, six societies that practiced slash-and-burn horticulture, four herding nomad groups, and three sedentary, small-scale societies. The large variations found across these different cultural groups suggest that economic preferences or expectations are affected by group-specific conditions, such as social institutions or cultural fairness norms. For example, striking differences were revealed between the Lamalera, who make very generous offers in the ultimatum game, and the Tsimane and the Machigenga, who make very low offers. The reason seems to lie in different perceptions of money exchange. The Lamalera, being collective hunters, tend to see money as a good jointly owned by the proposer and the recipient. In contrast, the Tsimane and the Machigenga, who are solitary horticulturalists, see money as their individual property and therefore feel entitled to keep it. In addition to their own material

payoffs, many participants appeared to care about fairness and reciprocity. They were willing not only to change the distribution of material outcomes at a personal cost and to reward those who acted in a cooperative manner but also to punish those who did not cooperate, even when punishment was costly to them. Recent work has revealed this tendency for “hyper-fair rejections,” which were not previously observed in WEIRD (Western Educated Industrialized Rich Democratic) populations (Henrich, Heine, & Norenzayan, 2010). In all, the canonical assumption held by economists that individuals are entirely self-interested received no support. Analogously, BZSG seems to be influenced by culture, that is, people who believe that life goes like zero-sum game (my interest is opposite to the interest of others) appears in different socio-economic and cultural conditions.

Zero-sum game beliefs can also be understood from the perspective of climbing up or down the social stratification ladder. Societies are hierarchical in terms of stable positions and dynamic aspirations, and sociologists investigate objective stratification and its mechanisms, which may assume zero-sum game characteristics (e.g., Marxist theories). Social scientists are also interested in popular attributions of wealth and poverty at the societal level. This is particularly important and interesting in periods of deep societal changes, such as the post-communist transformation, when new classes of rich and poor emerged. Studying post-communist societies, Stephenson (2000) and Kreidl (2000) found that the rich perceived wealth as a fruit of their own labor and attributed success to internal factors (ability, talent, hard work), whereas the poor attributed their lot to external factors, such as the rich, the system, society, or bad luck, and considered themselves victims of these evil forces. Attributing one's own losses to external factors (such as the success of another person) obviously protects self-esteem because it helps one to avoid accepting responsibility for his or her own inadequacies and failures.

The present work addresses the possibility of a relatively permanent and general conviction that social relations are like a zero-sum game. People who share this conviction believe that success, especially economic success, is possible only at the expense of other people's failures. We hypothesize that both individuals and cultures differ widely in their shared beliefs that social interactions, social networks, and even life in general have a zero-sum game structure.

## BZSG Scale Construction

To measure the belief that life is conceived as a zero-sum game, the *BZSG scale* was developed (Wojciszke et al., 2009). The BZSG scale, which emerged from that study, is presented in Table 1. This scale was first used in the study on a Polish national sample ( $N = 1,133$ ), where a principal components analysis revealed one dominant factor that loaded on all 12 items, and the scores revealed a normal distribution.<sup>1</sup> To test the validity and reliability of the BZSG scale, several experimental and correlational studies were conducted on different Polish samples. Those initial studies found that BZSG correlated with a host of behavioral, emotional, and judgmental variables, as listed in Table 2. To test whether zero-sum game belief is not merely an indigenous Polish phenomenon but also holds across other countries, we decided to test BZSG as an individual and cultural dimension in a large pancultural project of 37 nations.

## A 37-Nation Study

Our idea for running the large comparative study was to introduce BZSG as a pancultural social axiom, analyzing relations between BZSG and other variables, also between and within cultures in multilevel modeling.

In the study, we measured zero-sum game beliefs in a sample of students from 37 countries. We introduced four additional individual variables: *social trust*, *balance of social exchange* (perceived satisfaction from social exchange), *self-esteem* and subjective *socio-economic status (SES)* to assess the zero-sum game beliefs across different countries.

**Table 1.** Items of the BZSG Scale.

## Item Zero-Sum Game Belief Scale

1. Successes of some people are usually failures of others.
2. If someone gets richer, it means that somebody else gets poorer
3. Life is so devised that when somebody gains, others have to lose.
4. In most situations, interests of different people are inconsistent.
5. Life is like tennis game—A person wins only when others lose.
6. When some people are getting poorer, it means that other people are getting richer
7. When someone does much for others, he or she loses.
8. The wealth of a few is acquired at the expense of many.
9. When a person does much for the good of others, he or she profits as well.<sup>a</sup>
10. Those who give much to others receive much from them.<sup>a</sup>
11. People who do much for their own good frequently benefit others as well.<sup>a</sup>
12. When the number of rich people increases in the country, the poorer people benefit as well.<sup>a</sup>

Note. BZSG = Belief in a Zero-Sum Game; MCFA = multilevel confirmatory factor analysis.

<sup>a</sup>Negative items are inverse scored; as these four negatively worded items created independent factor (see: MCFA), only eight positively framed items of the scale were used in cross-cultural comparisons

**Table 2.** Social Consequences and Correlates of BZSG (Polish Samples).

Negative vision of the social world (Wojciszke, Baryła, & Różycka, 2009)  
 Belief in the injustice of the social world (Wojciszke et al., 2009)  
 Sadness, anxiety, and a tendency to rumination (Wojciszke et al., 2009)  
 Pessimism and distrust (Różycka, 2008)  
 Withdrawing from social exchange and cooperation avoidance (Różycka, 2008)  
 Negative but not positive reciprocity norm (Różycka, 2008)  
 Delegitimization of the social system (Wojciszke et al., 2009)  
 Perception of antagonism in interests (Różycka & Wojciszke, 2009)  
 External locus of control and dependence on others (Różycka & Wojciszke, 2010)  
 Perceived imbalance between help given and help received from others (Wojciszke, 2010)  
 Feeling a loser in social exchange (Wojciszke, 2010)  
 Interpersonal conflicts and low life satisfaction (Różycka, 2012)  
 Entitlement attitudes (Żemojtel-Piotrowska & Piotrowski, 2012)

Note. BZSG = Belief in a Zero-Sum Game.

Social trust is the belief that most people are fair, helpful, and trustworthy. Research shows that social trust is an important component of social capital, defined as social connectedness based on dense networks of engagement and reciprocity (Putnam, 2000). Social capital, in turn, is viewed as a basic precondition of the development of modern societies (Fukuyama, 1995). Social trust invites cooperation and mutual confidences beyond a circle of close others, and it appears to be a major asset for facilitating social and economic development. As evidenced by survey data, high social trust is accompanied by enhanced social participation and altruistic activities, such as registering to vote, working on community projects, giving to charity, volunteering, and even having more close friends and confidants (Putnam, 2000).

Balance of social exchange is a subjective assessment of the gains and costs involved in interactions with others. The more positive the interpersonal balance, the more gains are perceived as prevailing over the costs. Although both trust and balance refer to global attitudes toward people, trust is more universal because it refers to others in general (including strangers to be met in the future), whereas interpersonal balance is more specific because it refers to individuals personally met in the past and the effects of interacting with them.

We also used a self-esteem scale as a diagnostic tool to link BZSG to personality and find out if the construct served as protection against lower self-esteem by justifying one's own awkwardness and liberating oneself from the liability for failure.

Measuring the subjective SES, we wanted to see the relation between BZSG and the perceived comparative economic status and also to diagnose the discrepancy between subjective and objective economic status.

### *Assumptions and Hypotheses*

Our main assumption is that BZSG functions as a universal social axiom. Specific hypotheses concern the universal nature of BZSG and its relations with other individual and cultural variables.

Because we previously found (with Polish samples) that people who believed in the zero-sum game did not trust others, we expected social trust to be a negative predictor of BZSG at the individual level. People who view life as a zero-sum game should focus on costs rather than rewards associated with interpersonal relationships; thus, we expected interpersonal balance and self-esteem to be negative predictors of BZSG. We also predicted that people who believe in the zero-sum game would subjectively perceive themselves as being in a worse economic situation than others; thus, we expected SES to be negative predictor across samples from different cultures.

Next, we formulated hypotheses about cultural-level relationships. We expected BZSG to be related to cultural dimensions such as individualism (because individualistic societies are more disposed to egoistic and materialistic competition for resources) and socio-economic indices such as gross domestic product (GDP) or income disparity (conditions conducive to competition). We hypothesized that GDP, the Gini Index, and individualism would be significant predictors of BZSG at a cultural level. We also expected two-way interactions between the individual (Level 1) and cultural (Level 2) predictors. If significant, the interaction effects would indicate moderation effects of the cultural variables (such as individualism or GDP) on relations between BZSG and trust, interpersonal balance, self-esteem, and SES.

Of all the axioms identified so far, societal cynicism seems to be especially close to BZSG. Whereas societal cynicism arises from political conditions as a discrepancy between propaganda (promises, ideologies, etc.) and actions (Boski et al., 2009), BZSG appears to be the result of social interactions shaped by the economic situation of limited resources—but both axioms represent a negative vision of the social world, as a response to a fundamental requirement for survival and adaptation in the society; therefore, we predicted that societal cynicism is a positive predictor of BZSG at the cultural level.

## **Method**

### *Participants*

University students were recruited from 37 countries from all continents ( $N = 6,138$ ), 62.5% of whom were women. The mean age was 21.57,  $SD = 3.80$ . Most participants studied psychology (35%) or other social and humanities fields (14%), 7% studied business and management, 3% studied law and 20% were from other disciplines. Information on the samples is given in Table 3 along with the basic psychometric properties of the scales used in the different countries.

### *Measures*

The *BZSG scale* was the basic measure (see Table 1), but we also used three additional scales. The *Interpersonal Trust Scale*, which consists of 7 items that attribute prosocial orientations to people in general and promote such expectations upon contact with strangers (e.g., "Most people

**Table 3.** Sample Information in 37 Countries, Subjective Socio-Economic Status (SES) and BZSG.

	Sample size	Female %	Age M	Language of research	SES <sub>subjective</sub> M	GDP <sup>a</sup> US\$	BZSG M
Angola	219	46	23.47	Portuguese	3.52	2.758	4.90
Argentina	98	60	24.72	Spanish	5.06	4.730	3.60
Belgium	260	92	18.42	French	4.51	35.590	3.22
Brazil	119	29	24.88	Portuguese	4.19	4.288	3.40
Bulgaria	100	80	22.14	Bulgarian	4.43	3.419	3.83
Canada	84	24	22.86	English	5.01	38.951	3.61
Chile	131	63	20.87	English	5.59	6.832	3.63
China	300	50	21.79	Chinese	3.88	1.532	3.85
Czech	124	63	21.99	Czech	4.59	11.971	3.02
Dominican	100	48	22.65	Spanish	4.05	3.271	4.13
Finland	105	85	23.44	English	4.54	36.798	3.36
Georgia	100	79	20.01	Russian	4.09	1.450	3.65
Germany	303	83	22.30	German	4.49	33.799	3.31
Greece	115	92	20.22	Greek	4.59	20.252	3.99
Honduras	118	82	22.77	Spanish	4.02	1.213	3.89
Hungary	116	68	21.60	Hungarian	4.07	10.818	3.57
India	104	40	23.01	English	5.75	725	3.83
Israel	125	75	24.02	English	5.06	19.279	2.93
Japan	212	51	20.82	Japanese	3.13	35.593	3.89
Lithuania	113	91	20.27	Lithuanian	4.43	3.030	3.95
Mexico	236	49	24.39	Spanish	4.31	7.179	4.05
Norway	109	62	23.33	Norwegian	4.69	63.960	3.79
Philippines	108	65	20.75	English	4.28	1.175	3.88
Poland	198	60	21.48	Polish	4.34	7.526	3.27
Portugal	73	33	19.30	Portuguese	4.25	17.466	3.99
Russia	221	86	19.61	Russian	4.45	5.348	3.09
Serbia	200	50	—	Serbian	3.99	4.220	3.64
Singapore	108	57	20.97	English	4.23	26.996	3.99
Slovakia	186	72	21.42	Slovak	4.30	8.594	3.51
South Africa	190	25	19.67	English	5.01	1.809	3.61
Spain	141	78	19.22	Spanish	4.27	26.114	3.90
Taiwan	298	32	21.55	Chinese	4.38	15.482	4.34
Turkey	103	46	20.51	Turkish	5.70	4.954	3.48
United Kingdom	163	81	20.10	English	4.68	44.149	3.52
Ukraine	311	68	18.75	Ukrainian	4.14	1.757	4.17
United States	454	66	23.04	English	5.29	41.768	3.31
Vietnam	93	59	20.37	Vietnamese	4.34	630	4.23
M	166	62.5	21.57		4.48	15.011	3.61

Note. BZSG = Belief in a Zero-Sum Game; GDP = gross domestic product.

<sup>a</sup>GDP per capita in \$ (United Nations Statistics Division, 2006).

can be trusted” and “Most people are able to selflessly help a person in need”). The *Balance of Social Exchange Scale* was used to measure satisfaction with social exchange and consists of 12 items that refer to gains and costs that result from personal interactions with others (e.g., “I benefit from most of my social contacts” and “My friends want to take more from me than they are willing to give to me”—and the reverse). The *Self-Esteem Scale* (Rosenberg, 1965), used to

measure general self-esteem, consists of 10 items that refer to self-esteem as a personal trait (e.g., “I feel that I’m a person of worth, at least on an equal plane with others” and “I take a positive attitude toward myself”). In addition, we measured subjective SES with a single question: “How would you describe your family’s economic status?” Answers ranged from 1 (*much below average*) to 7 (*much above average*).

### Procedure

A questionnaire called the *Questionnaire of Opinions on the Social World*, which consists of a BZSG scale and other scales, was first translated from Polish into nine languages, including English (10 countries), Spanish (6 countries), Portuguese (2 countries), Russian (2 countries), and French, Greek, Vietnamese, German, and Ukrainian (1 country each). The questionnaires were translated by bilingual individuals who work in the field of psychology or at the university level. Participants filled out all scales in one package, and answers to all questions ranged from 1 (*definitely disagree*) to 7 (*definitely agree*). The participants also reported their economic status, age, and sex.

### Results

First, to check the structure of BZSG at the cultural level, we conducted multilevel confirmatory factor analysis (MCFA) of the BZSG scale. To establish the cultural meaning of BZSG as a societal axiom dimension, we decided to correlate it with a wide variety of country-level indices. BZSG correlations with well-known cultural dimensions should establish both the degree of its conceptual distinctiveness and its convergent validity, and correlations with other country-level indices should help elucidate the meaning of BZSG as an axiom (see Bond, Leung, Au, Tong, De Carrasquel et al., 2004; Leung et al., 2012). Those analyses served as preliminary analyses for multilevel modeling (MML). Finally, multilevel modeling of BZSG was conducted at the individual and cultural level as well as between the levels.

#### MCFA of BZSG Scale

In the MCFA of the 12 BZSG items, the total covariance matrix was decomposed into between-country matrices and pooled within-country matrices. The value of the chi-square test statistic for the multilevel one-factor MCFA model,  $\chi^2(108) = 2,180.30, p < .001$ , indicated a significant lack of fit of the model. Alternative indices of fit that were less sensitive to sample size also indicated that the one-factor model was not acceptable for the data. The comparative fit index (CFI) compares the fit of a model to a more restricted baseline model, and CFI values between .90 and .95 or larger indicate an acceptable model fit (Hu & Bentler, 1999). The root mean square error of approximation (RMSEA) reflects the degree to which a model fits the population covariance matrix; a model with an RMSEA  $< .05$  is considered a good fit and a model with an RMSEA between .05 and .08 is considered a reasonable fit (Hu & Bentler, 1999). The standardized root mean square residual (SRMR) compares the sample variances and covariances to the estimated variances and covariances; a model with an SRMR below  $< .05$  is considered a good fit and a model with an SRMR  $< .08$  is considered a reasonable fit. In one-factor model, CFI = .863 did not reach the cutoff value of .95. RMSEA = .057, SRMR (within) = .059, and SRMR (between) = 1.164, exceeding their cut off values of 0.05 for model acceptance (see Hu & Bentler, 1999). We also found too much variability in the factor loadings. Consequently, a two-factor model was considered: 8 positively worded items loaded on the first factor and 4 items that were originally negatively worded loaded on the second factor. The two-factor specification represented a significant improvement in fit over the one-factor model,  $\chi^2(106) = 1,216.67$ , and

**Table 4.** Multilevel Confirmatory Factor Analysis: Eight-Items Model Factor Loadings in Standardized Form and Item Squared Multiple Correlations.

Item	Level 1 (individuals)		Level 2 (countries)	
	Loading	R <sup>2</sup>	Loading	R <sup>2</sup>
1. Successes of some people are usually failures of others.	0.530***	.281	0.664***	.450
2. If someone gets richer, it means that somebody else gets poorer.	0.758***	.574	0.698***	.487
3. Life is so devised that when somebody gains, others have to lose.	0.756***	.571	0.902***	.814
4. In most situations, interests of different people are inconsistent. <sup>a</sup>	0.215***	.046	0.490***	.240
5. Life is like tennis game—A person wins only when others lose.	0.676***	.457	0.928***	.862
6. When some people are getting poorer, it means that other people are getting richer.	0.743***	.551	0.938***	.879
7. When someone does much for others, he or she loses.	0.387***	.150	0.447***	.200
8. The wealth of a few is acquired at the expense of many.	0.588***	.345	0.739***	.546

<sup>a</sup>Even though this item has low loading, it is still significant and theoretically important.

\*\*\* $p < .001$ .

yielded marginally acceptable values of the alternative fit indices: CFI = .927, RMSEA = .04, SRMR (within) = .04, and SRMR (between) = .145.<sup>2</sup> However, we found very low correlation between factors at the individual level ( $r = .19$ ) and zero correlation at the country level ( $r = -.03$ ), which indicates that our scale, which was originally conceived as unipolar (high and low as opposite ends of the BZSG), should instead be thought of as consisting of two separate continua.

In light of the marginally acceptable fit of the two-factor model and the relatively low correlation between the two factors, we decided to reduce the BZSG scale to 8 items (see Table 4). The complexity of the emerging factorial structure when some of the items in the measuring instrument are positively worded and other items are negatively worded is not uncommon. For example, in the area of self-esteem, Zimprich, Perren, and Hornung (2005) reviewed evidence that mixtures of positively and negatively worded items lead to method factors that may cloud the factorial structure of the measured construct. To exclude cultural response style (that the negatively worded items could be biased culturally by acquiescence bias; see Smith, 2004), we note that the 12-item BZSG scale is not significantly correlated with the acquiescence index constructed by Smith ( $r = .107$ ,  $p = .64$ ,  $n = 21$ ) nor are the 5-item ( $r = .27$ ,  $p = .23$ ) or 4-negatively worded items ( $r = -.27$ ,  $p = .23$ ) scales.

In other words, the two factors of the BZSG scale measure two different beliefs: one is the zero-sum game and the other can be called *joint profit exchange* (e.g., “Those who give much to others receive much from them” and “When the number of rich people increases in the country, the poorer people benefit as well”). Because of our theoretical interests in the zero-sum game, we decided to concentrate only on items that directly describe that construct.

Results for the one-factor MCFA model (eight items) with factor loadings freely estimated across levels indicated an acceptable fit of the model to the data. As expected with a sample size of this magnitude, the  $\chi^2 = 694.23$  with  $df = 40$  was significant ( $p < .001$ ). However, the RMSEA of .052 and the CFI of .952 indicated an acceptable overall model fit. The SRMR indices at each level indicate that the overall fit of the within-country (Level 1) part was better than the fit of the between-country (Level 2) part of the model (the SRMR = .032 at Level 1 and SRMR = .097 at Level 2). All estimates of factor loadings (in a standardized form) had the same positive sign and were statistically significant ( $p < .001$ ), as reported in Table 4.

As observed in Table 4, this model shows that individual and cultural aspects of BZSG have the same structure, suggesting that BZSG is an isomorphic scale that indicates the same psychological meaning at the individual and cultural levels (see Van de Vijver, van Hemert, & Poortinga, 2008). All subsequent multilevel analyses were conducted on the reduced (eight-item) BZSG scale.<sup>3</sup>

### *Characteristics of BZSG at the Individual and Cultural Levels*

Sample information of the data, gathered in 37 countries, can be observed in Table 3. The mean SES and mean BZSG in every country are also reported. Simple and partial correlations (controlled for GDP) between BZSG and a host of country-level dimensions were an intermediary step that led to multilevel modeling analyses. To conduct this analysis, we created citizen score indices, following the example of Schwartz (2004), Leung and Bond (2004), and Boski (2009a). Then, country-level BZSG scores were related to the well-known pancultural dimensions (cf. Gelfand et al., 2011; Hofstede, 1980; House et al., 2004; Inglehart, 1997; Leung & Bond, 2002; McCrae, 2002; Schwartz, 1992; Suh, Diener, Oishi, & Triandis, 1998; Van de Vliert, 2011). We report these results because it is common to establish the validity of new measurements when introducing them (see the appendix, Table A1).

What we found interesting was a negative correlation of BZSG with the individualism-collectivism dimension (which opposed our hypothesis) and the positive correlation with societal cynicism (as hypothesized). To test the relationships between BZSG and objective macro-societal indices, we used many different measures (see the appendix, Table A2). We found BZSG to have a negative correlation with the GDP and Human Development Index, but a positive one with the inflation rate. As for political indicators, BZSG correlated negatively with the democracy index, especially with pluralism (whether national elections are free and fair), functioning of government (whether democratically based decisions are implemented), and political participation (whether the active, freely chosen citizens participate in public life). However, all these correlations disappeared when GDP was controlled for.

### *Multilevel Modeling of BZSG*

Multilevel analyses were conducted next to test the relationships between BZSG and other individual-level constructs, moderated by cultural level—variables selected from previous correlation analyses (HLM 7 Hierarchical Linear and Nonlinear Modeling, Scientific Software International, Inc. (c) 2000 was used; see Nezlek, 2011.) Three theoretically driven individual-level variables (interpersonal trust, satisfaction with social exchange, self-esteem<sup>4</sup>) and country-level variables that strongly correlated with BZSG in previous analyses (GDP and individualism) were chosen for this purpose.

As a preliminary step to test multilevel analyses, the “null” model was found to fit the data. The null model contains the eight-item BZSG response variable and the intercept. The results obtained for this model serve as a baseline for the evaluation of more complex models.<sup>5</sup>

The estimated between-country variance  $\hat{\tau}_{00} = .104$  in BZSG is statistically significant at the .01 level, as is the estimate of the within-country variance  $\hat{\sigma}^2 = 1.072$ . As a consequence, the estimate of the intraclass correlation is  $\hat{\rho} = .089$ , which indicates that there is a moderate amount of within-country clustering and that performing ordinary regression while ignoring the hierarchical structure of the data would yield misleading results.

*Effects of individual-level predictors.* The first model tested was a Level 1 model (persons nested within countries) in which BZSG was the dependent variable and trust and in which balance and self-esteem were the individual individual-level model. The parameter estimation of fixed effects and variance components of the model are shown in Table 5.

**Table 5.** Individual-Level (Level 1) Model of BZSG ( $n = 5,322$  Persons in 33 Countries).

Fixed effects	Coefficient	SE	<i>t</i>	<i>df</i>
Intercept	3.644	0.057	63.36***	32
Trust	-0.077	0.028	-2.67*	32
Balance	-0.331	0.029	-11.23***	32
Self-esteem	-0.139	0.023	-5.85***	32
Random effects	Variance component	SD	$\chi^2$	<i>df</i>
Intercept	0.105	0.032	684.38***	32
Trust	0.019	0.137	94.87***	32
Balance	0.013	0.114	61.60***	32
Self-esteem	0.011	0.114	68.88***	32
Residual	0.907	0.952		

Note. BZSG = Belief in a Zero-Sum Game.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 6.** Individual-Level (Level 1) Model of BZSG ( $N = 6,138$  Persons in 37 Countries).

Fixed effects	Coefficient	SE	<i>t</i>	<i>df</i>
Intercept	3.713	0.064	57.420***	36
SES	-0.051	0.017	-3.04**	36
Random effects	Variance component	SD	$\chi^2$	<i>df</i>
Intercept	0.151	0.388	1,026.30***	36
Residual	1.052	1.026		

Note. BZSG = Belief in a Zero-Sum Game.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

The upper part of Table 5 shows results for the fixed parameters of this model. As expected, all three individual-level predictors were negatively related to BZSG within countries. People who differed by 1 point in trust also differed by 0.077 points in BZSG, with higher trust scores leading to lower scores on BZSG. Analogously, people who differed by 1 point in balance (or self-esteem) differed by 0.331 (or 0.139) points in BZSG, with higher balance (or self-esteem) scores leading to lower scores on BZSG. The lower part of Table 5 provides estimates of the variances of the random effects for this model. As observed, all variance components are statistically significant, indicating that Level 2 predictors may be significant between-country variation in the intercept and slope coefficients for trust, balance, and self-esteem. Moreover, it is notable that the estimate of the individual-level within-country variance is  $\hat{\sigma}^2 = .907$ , which represents a reduction in variance or “variance explained” at the individual level equal to 15.4% (e.g.,  $[1.072 - .907] / 1.072 = .154 \times 100\%$ ). As a consequence, we can conclude that trust, balance, and self-esteem jointly explain 15.4% of the within-country variance in BZSG.

At the individual level, higher SES appeared to be a significant predictor of lower BZSG. The effect of SES was assessed in MML and showed that people who differed by 1 point in SES, differed by 0.051 points in BZSG, with higher SES leading to lower scores on BZSG (see Table 6).

*Effects of country-level predictors.* The unconditional means (null) model and the Level 1 model indicated that a between-country variability that may be explained by country-level (Level 2) variables.

**Table 7.** Country-Level (Level 2) Model of BZSG ( $n = 5,322$  persons in 33 countries).

Fixed effects	Coefficient	SE	$t$	$df$
Intercept	3.554	0.048	74.38***	24
GDP	-0.011	0.004	2.54*	24
Individualism	-0.148	0.027	4.10***	24
Random effects	Variance component	SD	$\chi^2$	$df$
Intercept	0.046	0.215	212.35***	24
Residual	1.082	0.023		

Note. GDP in thousand dollars. BZSG = Belief in a Zero-Sum Game; GDP = gross domestic product.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 8.** Country-Level (Level 2) Model of BZSG ( $n = 3,545$  Persons in 21 Countries).

Fixed effects	Coefficient	SE	$t$	$df$
Intercept	1.821	0.869	2.09*	20
Societal cynicism	0.597	0.295	2.02*	20
Random effects	Variance component	SD	$\chi^2$	$df$
Intercept	0.114	0.331	421.94***	20
Residual	1.001	1.001		

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

From all country-level variables, that is, cultural dimensions and socio-economic indices, only GDP and individualism were statistically significant predictors of BZSG. In the next step of the analysis, the country level and the moderating effects of these two variables on BZSG were assessed. The results of fitting this model are summarized in Table 7.

As observed in Table 7, the (fixed) effects of these two country level-variables are statistically significant. Countries that differ by one thousand dollars in GDP differ by 0.011 in BZSG, with lower income leading to higher scores on BZSG. BZSG is higher in poorer countries (e.g., Angola, Vietnam, Ukraine) and lower in economically advanced countries (e.g., USA, Germany, Canada). Correspondingly, countries that differ by 1 point in individualism differ by 0.148 points in BZSG, with higher individualism scores leading to lower scores on BZSG.

Furthermore, as observed from Table 7, the between-country variance of the BZSG country means (the intercept variances) is now estimated to be  $\hat{\tau}_{00} = .046$ , having diminished markedly from the estimate of this parameter ( $\hat{\tau}_{00} = .104$ ) in the null model. This drop indicates that GDP and individualism jointly explain a relatively large proportion of the country-to-country variation in BZSG scores. As indicated by Bryk and Raudenbush (1992), the drop can be gauged as  $(.104 - .046) / .104 \times 100\%$ , which gives 55.8% of the true between-country variance in BZSG accounted for by GDP and individualism country mean scores.

To test the hypothesis of the close relationship between BZSG and societal cynicism, the effect of societal cynicism was assessed in MML and showed that countries that differ by 1 point in societal cynicism differ by 0.597 points in BZSG, with higher societal cynicism leading to higher scores on BZSG (see Table 8).

**Moderating relationships.** To verify our predictions about the interaction effects that would indicate moderation effects of culture variables, we considered a full model that included trust,

**Table 9.** Moderating Relationships Model of BZSG ( $n = 5,422$  people in 34 countries).

Fixed effects	Coefficient	SE	<i>t</i>	<i>df</i>
<b>For trust</b>				
Intercept	-0.160	0.028	-5.67***	32
Gini Index	0.006	0.002	2.22*	32
<b>For self-esteem</b>				
Intercept	-0.216	0.023	-9.01***	
Gini Index	-0.003	0.001	-1.95†	32
Random effects	Variance component	SD	$\chi^2$	<i>df</i>
Intercept	0.111	0.333	675.38***	32
Trust	0.020	0.142	102.99***	32
Self-esteem	0.012	0.110	82.74***	32
Residual	0.951	0.975		

Note. BZSG = Belief in a Zero-Sum Game.

† $p = .06$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

balance, and self-esteem as Level 1 and country-level means, treating GDP and individualism as the Level 2 variables and all two-way interaction terms between the Level 1 and Level 2 predictors. None of the two-way interactions appeared statistically significant. That is, trust, balance, and self-esteem were correlates of BZSG irrespective of the country's GDP and individualism.

We found only a marginally significant effect of income disparity (Gini Index), which seems to be an indirect macro-social indicator of the conflict over economic resources. Two-level multilevel regression models were estimated to examine the moderating role of income inequality in the relations of BZSG with trust and self-esteem (balance was not significant.) The results of fitting this model are summarized in Table 9.

As observed in Table 9, income inequality does not directly influence BZSG ( $p = .38$ ), but it significantly moderates the relation between BZSG and trust ( $p = .033$ ) and self-esteem on the tendency level ( $p = .06$ ).<sup>6</sup> If income inequality rises, then the relation between BZSG and trust becomes stronger (more negative), but the relation between BZSG and self-esteem disappears (on a tendency level).

## General Discussion

In this article, we first introduced the belief in life as a zero-sum game as a candidate for another social axiom. Next, we presented psychometric evidence for the BZSG scale as an individual- and cultural-level dimension in a large pancultural study of 37 nations. Finally, individual- and cultural-level predictors of BZSG were tested, followed by their multilevel analyses. We wish to concentrate on the final discussion on these main problems.

### Psychometric Evidence for Eight-Item BZSG Scale

When a 12-item scale, originally designed for research in Poland, was applied to our large data set, it was reduced with MCFA to an 8-item instrument. The value test statistic and other indices for a one-factor 12-item MCFA model indicated a significant lack of fit for the model. Then, a two-factor model (in addition to a one-factor model for the individual level and a two-factor model for the cultural level) was considered in which the originally negatively worded items loaded on one factor and the positively worded items loaded on the second factor. This two-factor

specification represented a significant improvement in fit over the one-factor model, yielding marginally acceptable values. However, in light of the relatively low correlation between the two factors, we decided to reduce the BZSG scale to 8 positively worded items. The fit of a one-factor model for the remaining 8 items was acceptable. This suggests that our scale, theoretically treated as unipolar, is better thought of as two separate continua that measure two different beliefs: zero-sum game versus joint profit exchange. The four items that were found to be separate from BZSG measure the beliefs of exchange actors' joint interests: It is profitable to give others because they will pay off reciprocally, or becoming better off helps others, too (cf. Table 1).

In contrast to the zero-sum game ideology, which presents an essential conflict between rival actors, the belief in joint profit exchange stresses the possibility for consensual or cooperative relations. What is essential is that the items that form the second scale are not prone to a simple reversal (in scoring and meaning) of BZSG, which is not constituted by any reversal of the joint profit orientation. We may speculate about the reasons for this to have happened. Because the reason is not acquiescence, it is likely that both beliefs may refer to separate domains of human activity. For the time being, if the four remaining items were to make up the BZSG scale (as intended), their framing should have changed from a reversal of "When the number of rich people increases in the country, the poorer people benefit as well" to an affirmative statement, such as "When the rich in the country get richer, the poor become even poorer," and so on. Our results, and those obtained with cross-cultural studies on self-esteem, clearly show that researchers should abstain from using items intended to be later reversed in the computation of their measurements. The logic of such procedures is dubious, and this long tradition in test construction was never given any serious attention. When people deny the truth of a statement "When a person does much for the good of others, he or she profits as well," it is not necessarily that they affirm a zero-sum game alternative; it may equally be a sense of moral obligation, regardless of self-interest.

In accordance with all empirical evidence, we should regard BZSG as a unipolar dimension that is different from the belief in joint profit exchange. Because MCFA showed that the eight-item BZSG has the same structure at the individual and cultural level, BZSG as a shared individual belief is isomorphic with zero-sum game cultural ideology (Van de Vijver & Leung, 1997; Van de Vijver, van Hemert, & Poortinga, 2008). This ideology is expressed in such statements as the Hobbesian *homo homini lupus est* and is present in popular, man-of-the-street philosophies.

### **BZSG at Individual and Cultural Levels of Analysis**

Results support our idea of considering BZSG as a personal belief at the individual level and as a societal axiom at the cultural level. We found that people or nations who believe in zero-sum game participate in win-lose social exchange relations over limited resources (which are perceived subjectively, depending mostly on cultural norms; see Henrich et al., 2010).

**BZSG as an individual mentality.** At the individual level (within countries), interpersonal trust, satisfaction with social exchange (balance), self-esteem, and SES were found to be negative predictors of BZSG. Previous studies showed that BZSG positively correlated with an external locus of control and dependence on others, pessimism, negative vision of the social world, delegitimization of social systems, belief in the injustice of the social world, sadness, anxiety, low satisfaction with life, and a tendency to ruminate (see Table 2). Therefore, we can conclude that game believers perceive themselves as losers in the world of social exchange and relationships. It is well known that even when gains and losses are of the same objective value, losses have a greater subjective value (Kahneman & Tversky, 1979). In general, people respond more strongly to negatives than positives, which is in line with the rule of thumb: "Bad is stronger than good"

(Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Keysar, Converse, Wang, & Epley, 2008). Thus, the zero-sum game belief provides an easy and self-serving way to explain one's own failures ("I failed because selfish others have stolen my success"), but it does not offer such a handy, self-serving explanation of one's own winnings (nobody thinks "I succeeded because I stole the successes of others"). This is consistent with the findings that personal successes are explained in internal, stable, and global terms, such as abilities (cf. Mezulis, Abramson, Hyde, & Hankin, 2004, for meta-analysis), rather than in external terms, such as good luck and when personal successes are an explanation of wealth or success but not of poverty or failure (cf. Kreidl, 2000; Stephenson, 2000).

However, some results show that these relations do not apply to economists. Data have shown that business/economy students uphold BZSG more than humanists, but do not feel like losers in social exchange relations (Różycka, 2008; Wojciszke, 2010). The same tendency was observed in the present study, but when differences between students at the individual level were examined with a multilevel modeling, results appeared insignificant. However, training students in economics reflects the assumption that "the average human being is approximately 95 percent selfish in the narrow sense of the term" (Frank, Gilovich, & Regan, 1993, p. 160). To be successful in business, one must take for granted the life-is-a-zero-sum-game belief and the accompanying vision of the social world. Indeed, an increasing amount of research shows that economists contribute less to social charity causes than those from other professions (Frank et al., 1993). Compared with other majors, students of economics show a stronger tendency toward free-riding (Marwell & Ames, 1981), exploiting others in the ultimatum bargaining game (Carter & Irons, 1991), defecting in the prisoner's dilemma game, and believing that people are dishonest (Frank et al., 1993).

It is also very likely that psychology students are brought up in an intellectual culture where "love each other" or "win-win" axioms reign and that is totally opposite of the culture of economic science and the business world, where winning against others is essential for survival. However, we must be careful with any conclusions; humanists dominated our sample, and humanists are likely to be a part of the WEIRD population (Henrich et al., 2010). Thus, more studies comparing the cultures of humanists and economists are needed in this regard.

**BZSG as a cultural variable.** At the cultural level, BZSG showed some relations with both other cultural dimensions and with socio-economic indicators. Because only individualism and GDP survived as significant predictors within MML, we will concentrate on these relations.

The most notable finding seems to be the negative relation between BZSG and GDP. The belief in zero-sum game seems to arise in countries with lower income, where resources are scarce. Similar results were found in the analysis of values (in the context of Schwartz's theory), based on the data of European Social Survey from 31 European countries (Magun & Rudnev, 2012). These authors report a very high negative correlation ( $r = -.81$ ) between GDP and the self-enhancement values of personal success, power, and wealth. Thus, relatively poor societies (e.g., in post-communist Europe) are more inclined to make wealth their life priority and to present their social world as an arena for a fierce fight for that wealth. Economically deprived countries are thus more economically minded.

**Culture-biased perception of limited resources.** The most surprising result was the reversal of the hypothesized relation between BZSG and individualism. It was collectivism that was found to be a strong predictor of BZSG. Some explanations can be extrapolated from studies on the ultimatum game (Henrich et al., 2001; Henrich et al., 2010), which clearly show that in traditional, poverty ridden societies, there is a tendency to minimize the shares offered to partners, and such offers are accepted. This suggests not only the win-lose strategy but also an acceptance

of such an “order of the social world.” Henrich et al. (2001) found in a regression that both *payoffs to cooperation* (How important and how large is a group’s payoff from cooperation in economic production?) and *market integration* (How much do people rely on market exchange in their daily lives?) were highly significant predictors of generous offers in the ultimatum game—their (positive) normalized regression coefficients were large in magnitude (approximately 0.3), jointly explaining 68% of the variance (Henrich et al., 2001). This indicates that with little cooperative production, there is little necessity to share returns and that those whose livelihood depends on large-scale cooperation must develop ways of sharing the joint surplus (just to survive). In addition, the more frequently people experience market transactions, the more they will also experience sharing principles concerning behaviors toward strangers. Collectivist societies rely much more on social interdependence networks than individualistic societies, where a group’s payoff from cooperation in economic production is much higher and people rely more on market exchanges in their daily life. Drastically skewed distributions of monetary rewards in traditional, isolated societies reported by ultimatum game researchers suggest that in conditions of extremely low resources, there is a tendency not only to maximize self-interests but also to accept anything that has a survival value.

Another possible explanation is the positive link between collectivism and power distance, which clearly defines the “pecking order” in traditional, less affluent societies. The BZSG can be interpreted, then, as an axiomatic worldview where groups rather than individuals are actors of win-lose social relations. These groups can be based on ethnic, religious, seniority, or social class criteria, each of which would be sufficient to create in-group favoritism in social competition.

*Climate, affluence, and collectivism.* The negative relationship found between BZSG and both GDP and collectivism is consistent with the theory of *in-group favoritism* (Van de Vliert, 2011). In-group favoritism is conceived as a cultural orientation of advantageous treatment of own-group members compared with outsiders. It is a combined measure of compatriotism (favoritism shown to fellow nationals by giving them easier access to scarce jobs), nepotism (favoritism shown to relatives by giving them organizational positions because of their relationship rather than on their merits), and familism (favoritism shown to one’s nuclear family members through mutually beneficial exchanges of time, effort, and feelings of pride). An economic analysis has led to the conclusion that national baselines of in-group favoritism are higher in lower income countries with more demanding climates, which evolve as “survival cultures.” In addition, in-group favoritism is lower when natural demands occur in high-income countries. Greater demands coupled with unavailable or inadequate economic resources to meet the demands impair psycho-social functioning because the actors cannot control the threatening and stressful situations. If the climatic demands are negligible, economics are also of less importance for psycho-social functioning. Greater mismatches of climate-based demands by wealth-based resources in lower income countries appear to come with more life stress, more egoistic enculturation of children, more destructive leadership, and stronger rejection of out-groups. In contrast, greater national wealth provides more individual resources for inhabitants to create cultural solutions for the demands of a harsh climate (Van de Vliert, 2011). It is not a new idea that most collectivist countries have colder- or hotter-than-temperate climates. This makes collectivist and poorer countries in inhospitable climates fertile ground for a zero-sum game belief.

*Distrust, competition, and collectivism.* Other studies have also shown that economic disparity in social relations produces biased self-perception (Loughnan et al., 2011) and interpersonal distrust, especially among groups. A negative correlation between collectivism and trust (Allik

& Realo, 2004; Gheorghiu, Vignoles, & Smith, 2009; Yamagishi, Nobuhito, & Miller, 1998) explains why people in collectivist cultures perceive the social world as an antagonistic arena of between-group conflicts. The problem, of course, remains as to whether BZSG controls only intergroup competition or it also affects in-group exchanges, breaking collective cohesion and harmony. After all, in a concentric system of social entities, the in- versus out-group distinction is relative, not an absolute. It depends on context whether a particular group will be regarded as an outer or inner unit of hierarchical social life (e.g., a neighboring commune may be an out-group when competing for local resources but becomes part of the in-group in a broader clash with another tribe).

All in all, our results belong to the growing body of findings that question such psycho-social benefits of collectivism as harmony, communal feelings, and prosocial involvement. Schwartz (1992) long ago disputed the sense of this broad cultural dichotomy, which confounds conservatism with self-transcendence. This argument returns, suggesting an interpretation of collectivism as conservative life priorities, but it is not only that; rather, the essence is the hierarchical nature of a collectivist society, a combination of collectivism and power distance. There, exclusive ethnic, religious, political, and territorial groups fight over limited resources in a zero-sum game-like fashion.

Although the multilevel model confirmed significant predictors of BZSG both on the individual and cultural levels, there were no interactions between the levels (and the between-level model did not show an improvement over simpler models). The lack of interactions and moderations between levels suggests isomorphism of the BZSG construct, as tested with MCFA. This interpretation is strengthened by an isomorphic relationship with other variables, where BZSG was negatively predicted by subjective SES at the individual level and by objective GDP at the macro level. Thus, BZSG is isomorphic on two counts: It has the same psychological meaning on the individual and cultural levels, and it shows similar relations with other variables on both levels.

Taking into account these results, we can conclude that cultural BZSG emerges in hierarchical collectivist societies with an economic disparity of scarce resources. Whereas at the individual level, people fight over limited resources, similar phenomena are encountered at cultural level between groups and nations.

### *BZSG and Soci(et)al Cynicism: How Similar and Different Are They?*

Our findings confirmed the hypothesis that BZSG would have a conceptual and empirical affinity with soci(et)al cynicism at both the individual<sup>7</sup> and cultural levels. However, despite their many similarities, BZSG and societal cynicism as social axioms differ in the economic and political conditions that shape them. Both axioms describe negative beliefs about the social world, where social interactions are accompanied by minimal trust as a response to a fundamental requirement for survival and adaptation in a social world. However, social cynicism (corruption by power, a biased view against some groups of people, a mistrust of social institutions) and societal cynicism (reflecting the perceived hostility of the social system toward its members) have a more political background, whereas BZSG describes the economic domain (struggle for limited resources). Societal cynicism is an important characteristic of the post-communist mentality (Boski, 2009b), whereas BZSG depends more on the subjective perception of limited resources and economy. Recent developments in Schwartz's value theory (Schwartz et al., 2012), where the initial structure of 10 value types has been expanded to 19 more specific domains, serve as an example. Thus, we propose that the set of social axioms may also be enlarged so that soci(et)al cynicism and BZSG are accommodated as sober beliefs about non-idealistic motives.

In our opinion, BZSG is a pancultural dimension that may be used to compare individuals and cultures within and across societies. This possibility is exciting because cultural dimensions using psychological constructs are currently based mainly on values. A number of BZSG's characteristics would allow it to be considered a pancultural social axiom: Its isomorphic structure and reliability were confirmed in many cultures, and so were its predictors on both the individual and cultural levels. A study on the nature of the relations between the societal mentality (social axioms) and economy is also of paramount importance because it reveals that certain beliefs are conducive to economic growth and that others may impair it. The century-old analyses by Max Weber (1904) of the growth of capitalism in terms of Protestant ethics need to be restored with new evidence from our times.

## **Limitations and Future Research**

The first and most important limitation of the present study is that the samples consist of students and are not representative of any society as a whole. Moreover, students of psychology and other social sciences and humanities were overrepresented in all samples (49%); consequently, there were more female (63%) than male participants. However, reliance on student samples is typical for many international projects, such as Schwartz (1992), Bond and Leung (2004), or Inglehart (1997). Future research should endeavor to create other non-student samples that include sex and field equality. More studies comparing the cultures of humanists and economists are also needed in this regard because these domains generate opposite theories and implicit beliefs about human nature.

Although the strength of the present research is the large number of countries it encompasses, investigating all types of cultures is also a limitation. In addition, it goes without saying that not every country in the world took part in our project. We wanted to collect data from all continents, but we did not give sufficient attention to the climatic criterion, especially to compare rich and poor countries within the harsh climate zone.

In modern cross-cultural psychology, using individual-level aggregates to describe cultures, where within-country variance dominates between-country variance (and present measure in no exception) is questionable. But such situations often happens for a new measure or scale aspires as a cultural variable about which data are collected.

A further opportunity for study would be research with an international scope. The results obtained indicate that BZSG influences thinking and behavior on a national level. An important avenue for future research would be to verify the hypothesis of BZSG's negative influence on international cooperation (in countries without equal economic status of citizens). Further research could help clarify the reasons why some countries become involved in arms races, despite their danger to the entire planet, and establish the cause of numerous international conflicts.

## Appendix

**Table A1.** Correlations ( $r$  Pearson) Between Eight-Item BZSG (Citizen Scores) and Other Cultural Dimensions, Also With GDP as Controlling Variable (for Citizen Scores), in  $n$  Countries.

Dimensions	BZSG	$n$	GDP controlled
Hofstede (1980)			
Power distance	.270	29	.060
Individualism-collectivism	<b>-.515**</b>	29	<b>-.531*</b>
Suh, Diener, Oishi, and Triandis (1998)			
Individualism	<b>-.539**</b>	27	<b>-.711*</b>
Van de Vliert (2011)			
In-group favoritism	<b>.34*</b>	37	-.017
Schwartz (2004)			
Harmony	.204	32	.376
Embeddedness	<b>.339**</b>	32	-.180
Hierarchy	.149	32	-.258
Mastery	.156	32	.244
Affective autonomy	<b>-.377*</b>	32	-.238
Intellectual autonomy	-.271	32	-.318
Egalitarianism	-.083	32	.325
Inglehart (1997)			
Traditional/secular-rational	-.094	33	.002
Survival/self-expression	-.237	33	.120
Leung and Bond (2002)			
Social cynicism	<b>.380*</b>	22	.252
Social complexity	.289	24	-.053
Reward for application	.173	24	.201
Religiosity/spirituality	.086	24	.118
Fate control	.005	24	-.286
Dynamic externality	.291	23	.226
Societal cynicism	<b>.341*</b>	23	.128
House, Hanges, Javidan, Dorfman, and Gupta (2004)			
Performance orientation	.269	24	-.011
Future orientation	.165	24	.212
Uncertainty avoidance	.158	24	.184
Power distance	.149	24	.257
Family collectivism	<b>.468*</b>	24	<b>.524*</b>
Institution collectivism	.105	24	.096
Assertiveness	-.203	24	-.399
Gender equality	-.112	24	-.291
Human orientation	.205	24	.153
McCrae (2002), McCrae and Terracciano (2005)			
Neuroticism	-.353	21	.192
Extraversion	.029	21	.175
Openness to experiences	-.031	21	-.162
Agreeableness	<b>-.431*</b>	21	.147
Conscientiousness	.197	21	.257
Gelfand et al. (2011)			
Tightness-Looseness	.287	19	.301

Note. BZSG = Belief in a Zero-Sum Game; GDP = gross domestic product per capita (United Nations Statistics Division, 2006).

\* $p < .05$ . \*\* $p < .01$ .

**Table A2.** Correlates of BZSG (Citizen Scores) With Socio-Economic-Political Indicators, Also With GDP as a Controlled Variable, in *n* Countries.

	BZSG	<i>n</i>	GDP controlled
GDP	-.432**	35	—
Inflation rate	.371**	37	-.037
Corruption level	-.188	35	.214
Income disparity	.127	34	-.184
Human Development Index	-.556**	35	.078
Democracy index	-.451*	36	.061
Pluralism	-.455*	36	-.060
Functioning of government	-.352*	36	.053
Political participation	-.513***	36	-.201
Political culture	-.260	36	.285
Civil liberty	-.287*	36	.223
Subjective well-being	-.412*	29	-.146

Note. GDP = gross domestic product per capita in purchasing power parity terms in U.S. dollars divided by mid-year population (United Nations Statistics Division, 2006); *Inflation rate* (The World Factbook, 2006); *Corruption level*, which ranges from 0 (high public-sector corruption) to 10 (no public-sector corruption; Transparency International, 2006); Gini index as measure of *income disparity* (the extent to which the distribution of income among individuals or households within a country deviates from a perfectly equal distribution, where a value of 0 represents absolute equality and 100 absolute inequality, that is, where one person owns everything with the remainder having no income at all; Human Development Report, 2006); *Human Development Index* which measures average achievement in three basic dimensions of human development: a long and healthy life, access to knowledge, and a decent standard of living (Human Development Report, 2006); *Democracy index*, based on five categories: electoral process and pluralism, civil liberties, the functioning of government, political participation, and political culture (Kecic, 2007); an index of life satisfaction and the *subjective well-being* which measures people's cognitive and effective evaluations of their lives (using national samples; Diener, Diener, & Diener, 1995; Veenhoven, 2006). BZSG = Belief in a Zero-Sum Game.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

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## Notes

1. The Belief in a Zero-Sum Game (BZSG) scale construction procedure and other psychometric characteristics of the scale are described in detail in another article (Różycka & Wojciszke, 2010).
2. A model with one factor on the individual level but two factors on the cultural level was tested, but it significantly lacked fit to the model.
3. The structural equivalence of BZSG eight-item scale (Tucker  $\phi$ ) showed that all of 37 samples have very high coefficients (only 1 was below .95 and 33 were .98 or above). The reliability indices (Cronbach's  $\alpha$ ) were acceptable for all cases (26 of the  $\alpha$ s were above .80 and 5 were above .85).
4. Sex was also included, but it was not significant ( $p = .13$ ).
5. The individual-level (Level 1) covariates were expressed in deviation form from its respective country means, and the country-level (Level 2) covariates were expressed in deviation form from its respective grand means. This type of centering has been recommended by Enders & Tofghi, 2007.
6. The comparison of this estimate to the estimated within-country variance obtained for the Level 1 model and Level 2 model indicates that this model with interactions does not represent an improvement over simpler random-coefficient models.
7. A separate study was conducted on a Polish sample of students ( $N = 118$ ) who completed both the Belief in Zero-Sum Game Scale and the Social Cynicism Scale,  $r(118) = .47, p < .001$ .

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