



Contents lists available at ScienceDirect

## Organizational Behavior and Human Decision Processes

journal homepage: [www.elsevier.com/locate/obhdp](http://www.elsevier.com/locate/obhdp)

## Performance pay or redistribution? Cultural differences in just-world beliefs and preferences for wage inequality

Douglas H. Frank<sup>a,\*</sup>, Klaus Wertenbroch<sup>b</sup>, William W. Maddux<sup>c</sup><sup>a</sup> School of Business and Economics, The Catholic University of America, 620 Michigan Ave., N.E., Washington, DC 20064, USA<sup>b</sup> Marketing Area, INSEAD Europe Campus, Boulevard de Constance, 77305 Fontainebleau, France<sup>c</sup> Organizational Behavior Area, INSEAD Europe Campus, Boulevard de Constance, 77305 Fontainebleau, France

## ARTICLE INFO

## Article history:

Received 5 July 2013

Revised 31 January 2015

Accepted 12 April 2015

Available online 16 June 2015

## Keywords:

Culture  
 Compensation systems  
 Incentives  
 Income inequality  
 Just-world beliefs  
 Redistribution

## ABSTRACT

We identify and test a specific psychological mechanism underlying cross-national differences in preferences for performance-based versus redistributive compensation systems. We posit that individuals' beliefs in the inherent justness and deservedness of individual outcomes (i.e., just world beliefs: JWBs) can help explain individual and culture-level variation in preferences for these compensation systems. Study 1 demonstrates a general correlation between the JWBs of a culturally diverse sample of former managers and their preferences for performance versus equal pay for an individual task. Study 2 shows that American participants exhibit stronger preferences for individual performance pay versus redistributive pay than do French participants, a difference that is mediated by cultural differences in JWBs. Study 3 holds national culture constant and replicates these effects by experimentally manipulating JWBs, demonstrating the causal nature of JWBs in determining preferences for performance-based versus redistributive compensation systems. Implications for organizational incentive systems, culture, and work motivation are discussed.

© 2015 Elsevier Inc. All rights reserved.

## 1. Introduction

As business has become more globalized, managers and business leaders have increasingly recognized that not all pay and compensation systems are equally acceptable around the world. For example, Wal-Mart's failure in Germany has been attributed in part to its unwillingness to embrace egalitarian German wage-setting practices (Knorr & Arndt, 2003). Similarly, the Lincoln Electric Company, the subject of a best-selling Harvard Business School case study, failed initially when expanding abroad from the U.S. The CEO said that executives erred in assuming that all cultures were equally receptive to the company's performance pay system (Hastings, 1999). The growing international debate about income inequality (Piketty, 2014; Plender, 2012) calls into question the cultural acceptability of very high levels of executive pay, especially of "high-powered," individual performance incentives (Lazear, 2000; Williamson, 1985). These concerns have led France, for example, to limit top executive salaries in state-controlled companies (Crumley, 2012). To date, however only limited research exists to guide executives and policy makers in gauging the cultural acceptability of different pay practices,

despite many possible reasons for cross-national variations in pay systems (e.g., Hundley & Kim, 1997, on demographic and performance factors; Siegel & Larson, 2009, on the role of egalitarian value systems; Tosi & Greckhamer, 2004, on the role of Hofstede's (1980) power-distance and individualism).

In this paper, we are interested in whether and why the acceptability of compensation systems may vary when implemented across individuals from different national cultures. We identify a distinct individual-level cognitive mechanism—the operation of fundamental beliefs about the inherent justness of the world—that we hypothesize underlies cultural variations in preferences for more redistributive (egalitarian) versus less redistributive (performance-based) compensation schemes. Building on economic research on societal attitudes toward fiscal redistribution (e.g., Alesina, Glaeser, & Sacerdote, 2001), we propose that cultural differences in preferences for individual-level compensation schemes are at least partly driven by cultural differences in "just-world beliefs" (JWBs, e.g., Furnham, 1993; Lerner, 1980; Lerner & Miller, 1978). JWBs refer to individuals' general beliefs about whether the world is a fair place where people largely get what they deserve (Lerner, 1980). In cultures where JWBs are strong and the typical individual is seen to generally get what s/he deserves, employees should see performance-based compensation as fair, motivating, and desirable. Thus, Lincoln Electric's incentive system in the United States, a country relatively high in

\* Corresponding author.

E-mail addresses: [frankd@cua.edu](mailto:frankd@cua.edu) (D.H. Frank), [klaus.wertenbroch@insead.edu](mailto:klaus.wertenbroch@insead.edu) (K. Wertenbroch), [william.maddux@insead.edu](mailto:william.maddux@insead.edu) (W.W. Maddux).

JWBs, (e.g., [Alesina et al., 2001](#)), reflects James Lincoln's philosophy that each worker "must have a reward that he feels is commensurate with his contribution" ([Lincoln, 1951, p. 33](#)), which is consistent with the country's dominant cultural ethos. In contrast, in cultures where JWBs are weaker, more redistributive, equal payment schemes should be seen as fairer and thus more preferred. For example, in continental Europe, where JWBs are weaker overall and where Lincoln stumbled, the company's performance-based compensation system was less successful.

Overall, then, we expected that individual and culture-level differences in JWBs would have a significant impact on individual preferences for compensation schemes—a question of great practical relevance as illustrated at the outset, yet one that has not yet been explored in the literature. Although recent work in economics and psychology has shown a link between JWBs and abstract attitudes towards societal levels of fiscal redistribution in the context of taxation and social spending (e.g., [Alesina & Angeletos, 2005](#); [Bryan, Dweck, Ross, Kay, & Mislavsky, 2009](#); [Bénabou & Tirole, 2006](#)), no work has yet examined the impact of JWBs on preferences for more concrete, individual-level compensation schemes and incentive systems. This distinction between abstract attitudes toward fiscal redistribution at the societal level versus preferences for individual compensation schemes is important in light of the large body of work in psychology which documents that general, abstract attitudes are often disconnected from specific behaviors in a given context (e.g., [Ajzen, 1991](#); [Ajzen & Fishbein, 1980](#)). Similarly, in a recent review of the just-world literature, [Hafer and Bègue \(2005, p. 135\)](#) noted a striking absence of research examining reactions and behaviors regarding one's own fate. Instead, most previous work has examined reactions to events happening to third parties, particularly regarding victimization. Finally, because most previous work is correlational in nature, it remains to be demonstrated whether JWBs are a true, underlying causal mechanism explaining cultural differences in economic preferences, either at the individual or cultural level. Given the increasingly globalized nature of the business world, it is important to explore (a) the impact of JWBs on individuals' preferences for performance-based compensation systems, (b) whether there are cross-national differences in these preferences, and (c) whether JWBs act as a causal mechanism determining such differences.

## 2. Culture, just-world beliefs, and preferences for economic redistribution

### 2.1. Historically determined beliefs about the deservedness of economic success

Countries vary in how their societies allocate and distribute resources to individuals, both via fiscal regimes and also via individual pay systems, differences that are likely at least partly due to the different historical and social structures that gave rise to modern economies (e.g., [Gelfand et al., 2011](#)). For example, for centuries across most of Europe, feudal, aristocratic, and/or monarchical social systems with strict hierarchies were the norm, with relatively impermeable class divisions and very little social mobility ([Davies, 1996](#); [Fromm, 1941](#); [Goubert, 1988](#); [Tawney, 1926](#)). [Fromm \(1941, p. 40\)](#) notes that "what characterizes mediaeval in contrast to modern (Europe) is its lack of individual freedom. Everybody in the earlier period was chained to the social order. A man had little chance to move socially from one class to another. . . With few exceptions, he had to stay where he was born." Thus, for centuries, individuals in many European countries with aristocratic systems likely did not perceive a meaningful link between effort and reward.

By contrast, America's frontier-based origins and more explicit rejection of aristocracy and social entitlements upon its founding

have meant that, with the exception of slavery, class divisions or material inequality are perceived more as resulting from individual effort than from birth-based entitlements (e.g., [de Tocqueville, 1835/2004](#); [Kitayama, Conway, Pietromonaco, Park, & Plaut, 2010](#)). [De Tocqueville \(1835, p. 58\)](#) noted that "In America, the aristocratic element has been feeble from its birth." Although hierarchy, class, and birth-related privileges have always existed in America, the perception—if not the reality—has been a greater likelihood that the upper classes worked for, rather than inherited, their fortunes ([Williams, 1968](#)). Thus, because class divisions or material inequality were seen to be the result of individual effort rather than birth-based entitlements, a stronger psychological association between effort and reward was established in America compared to Europe. Indeed, quintessential to the "American Dream" is the belief that individuals can achieve anything provided they work hard enough.

This perspective on explaining the origins of values, norms, beliefs and behaviors is consistent with psychologists' recent emphasis on the "socio-ecological" foundations of culture, whereby different types of factors in the environment can help explain cultural differences in modern psychological phenomena ([Oishi & Graham, 2010](#)). For example, recent work has shown that population densities from the Middle Ages predict modern-day orientations towards rigid or "tight" social norms ([Gelfand et al., 2011](#)). Other work demonstrates that, within ancient China, rice-farming practices led to a more collectivistic culture that persists in modern-day southern China, whereas wheat farming created a more individualistic culture that continues to predominate in northern China ([Talhelm et al., 2014](#)). These historical, ecological, and economic factors subsequently create, reinforce, and perpetuate the values, norms, and beliefs about how to survive and thrive in a given cultural context (e.g., [Gelfand et al., 2011](#); [Nisbett & Cohen, 1996](#); [Oishi & Graham, 2010](#)). The interplay between social structures on the one hand and values, attitudes, and beliefs on the other is also a major theme of "new institutionalism" in sociology (e.g., [Scott, 1995](#)) and economics (e.g., [Ostrom, 2005](#)).

Although there is currently a debate among cultural psychologists as to whether culture is more inherently driven by values (e.g., [Hofstede, 1980](#)), norms (e.g., [Xou et al., 2009](#)), or other psychological constructs, for the purposes of the current work, we argue that historically determined *beliefs* about whether to attribute a person's economic success to individual effort or deservedness may help to explain modern-day differences in attitudes toward income inequality and economic redistribution. According to the 1999 World Values Survey, only 30% of Americans believe that luck plays a bigger role than effort in determining income, whereas 54% of Europeans believe that luck is more important ([Alesina et al., 2001](#)). This may also explain why larger income inequality is tolerated in the U.S. than in Europe, where it is seen as less fair and less just. To illustrate, U.S. chief executives' compensation was 325 times the average worker's pay in 2010; for European companies listed on the London Stock Exchange, the ratio of CEO to average worker pay was 115 times ([Plender, 2012](#)). Aggregate differences are also reflected in the fact that the "Gini coefficient," a broadly used measure of income inequality, is considerably higher in the United States (Gini = 45) than across Western Europe (European Union average: Gini = 30.4; [Central Intelligence Agency, 2012](#)).

### 2.2. Belief in a just world, fiscal redistribution, and compensation systems

As noted earlier, we argue that attitudes toward general societal-level redistribution policies and wage inequality may be rooted in fundamental psychological beliefs about the

inherent fairness of the world, which psychologists have termed “just-world beliefs” (JWBs). A wealth of research over the last several decades supports the idea that JWBs operate as a universal positive functional illusion of fundamental motivational value (Lerner, 1980). Believing that the world is just and therefore predictable allows individuals to psychologically make sense of the world, protect their identity and self-concept, and commit to long-term goal pursuit. Researchers have studied different aspects of the concept of belief in a just world, including (a) the notion of deservedness in determining life outcomes, (b) the difference between believing in the world’s justness versus its unjustness, (c) the need to believe in a just world (as opposed to simply believing in the existence of a just or unjust world) and motives and coping strategies used to protect such beliefs, and (d) various context-dependent aspects of the JWB construct such as personal, interpersonal, and socio-political factors (Furnham, 2003; Hafer & Bègue, 2005; Lerner, 1980). Thus, the JWB concept is complex and multifaceted, both in terms of its conceptualization and also in terms of the methodologies used to study it. Whereas some researchers view JWBs as a stable and fundamental motivational force (Lerner, 1980), seeing it as an individual difference variable and developing scales for its measurement (Lipkus, 1991; Rubin & Peplau, 1975; Whatley, 1992), others have demonstrated the ability to experimentally prime such beliefs (for a review, see Hafer & Bègue, 2005).

In this paper we focus on the deservedness aspect of the JWB concept that reflects the general fairness of the world at large, which we believe is likely to be the most closely related to cross-national differences in preferences for performance-based compensation systems. JWBs as the idea of general fairness or deservedness encompass beliefs that individuals do, or do not, control their own outcomes and success by varying the effort they put into a task. In line with the use of the JWB concept in economics (Alesina & Angeletos, 2005; Bénabou & Tirole, 2006), we view JWBs as follows: Strong JWBs imply that people see a strong positive relationship between effort and success, whereas weak JWBs imply that people do not see a clear relationship between effort and success.

Scholars in marketing and management have done much to examine the links between JWBs and consumers’ responses to marketplace threats and fair-trade products (White, MacDonnell, & Ellard, 2012; Wilson & Darke, 2012), ethical evaluations and behavior (Ashkanasy, Windsor, & Treviño, 2006), organizational citizenship behavior (Ball, Treviño, & Sims, 1994), and alliance formation (Luo, 2005). Other research has studied how perceptions of justice at the *organizational* level are related to employee behavior and firm outcomes (Deery & Iverson, 2005; Fryxell & Gordon, 1989; Hartman, Yrle, & Galle, 1999). In addition, psychological research on distributive justice has examined people’s perceptions of income inequality and fairness (e.g., Mellers, 1986; Mitchell, Tetlock, Mellers, & Ordóñez, 1993; Norton & Ariely, 2011; see Jost & Kay, 2010, for a review). However, this work does not speak to employees’ broader justice beliefs as determinants of these fairness perceptions, nor to our knowledge does it relate justice beliefs of any kind to employees’ pay preferences.

In addition, recent research in economics has linked JWBs (in particular the idea of fairness or deservedness) to international differences in attitudes toward public policy issues, primarily taxation and income redistribution (e.g., Alesina & Angeletos, 2005; Alesina et al., 2001; Bénabou & Tirole, 2006; Corneo, 2001; Eugster, Lalive, Steinhauer, & Zweimüller, 2011; Fong, 2001). For example, Alesina et al. (2001) observe that a country’s social spending relative to GDP is increasing in the degree to which its citizens believe that luck determines income, whereas in a 12-country survey, Corneo and Grüner (2002) show a negative correlation between the belief that hard work is important for getting

ahead in life and individual preferences for governmental income redistribution.

Given that international differences in attitudes toward societal-level fiscal redistribution are a function of whether people attribute income inequality to effort or to luck, such attributions may also drive cultural differences in attitudes toward more self-relevant forms of redistribution. This offers a potential belief-based, rather than a values- or norms-based, explanation (e.g., Siegel & Larson, 2009; Tosi & Greckhamer, 2004; Xou et al., 2009), for why pay-for-performance systems may not be equally acceptable across countries. Compensation systems can be characterized by the extent to which workers in a group (e.g., employees in a firm) are paid based on their individual performance versus more equally and more independently of performance (e.g., Gibbons, 2005). The latter systems are inherently redistributive because, unless employees make contributions of literally identical monetary value, more-productive employees implicitly subsidize the less-productive ones. Examples of performance-based, individualistic schemes are “piece rate” (Lazear, 2000), commission (Holmstrom & Milgrom, 1994), and winner-take-all “tournament” (Lazear & Rosen, 1981) systems; examples of more equal, redistributive schemes are team-based incentive systems (Knez & Simester, 2001) and professional partnerships (Levin & Tadelis, 2005). Thus, wage compression from widespread collective bargaining in Europe (e.g., Card, 1996; Flanagan, 1999; Kahn, 2000; Lemieux, 1998) makes compensation inherently more redistributive across the members of the group to which it applies than does a system that aims to match wages and individual productivity. Like fiscal redistribution, such a reduction of variance in wages for a given variance in performance implies economic redistribution from higher to lower performers. Higher (lower) performers receive less (more) compensation for their performance than they would in a more performance-oriented system.

It is important to note that no work has examined how people’s JWBs may affect individual-level preferences for their own compensation systems, nor how such beliefs may explain cross-cultural variation in pay preferences. As noted above, the vast majority of work on JWBs in the psychology literature has examined the role of JWBs in derogating and blaming victims (e.g., of diseases, accidents, or crimes) and in psychological coping processes for interpreting such tragic events (for recent reviews, see Furnham, 2003; Hafer & Bègue, 2005). Indeed, Hafer and Bègue (2005, p. 135) have noted that most previous work has examined reactions to events happening to third parties, with a striking absence of research examining reactions and behaviors regarding one’s own fate. In addition, previous work in the economics and psychology literatures that has linked JWBs to fiscal redistribution has examined only general, abstract, societal-level policy attitudes, and not individual-level, self-relevant behavior (e.g., Alesina et al., 2001; Bryan et al., 2009). Furthermore, research on incentive systems has not yet examined the role of JWBs or cultural variation in such beliefs as potentially driving country-level differences in pay preferences.

Thus, in the current paper, we sought to address three different gaps in the literature. First, because research on cultural variations in labor market institutions (e.g., Siegel & Larson, 2009) and on evaluations of incentive-based compensation schemes (e.g., Burson, Faro, & Rottenstreich, 2010) has not accounted for possible effects of JWBs on individuals’ preferences for their compensation schemes (e.g., participants’ preferences for how to be paid for performing an experimental task), we sought to provide the first evidence for this link.

**Hypothesis 1.** Individual differences in just-world beliefs predict differences in individuals’ own preferences for performance pay versus redistributive pay.



Second, this link may also hold when aggregating individual beliefs at the cultural level, thereby helping to explain country-level differences in pay preferences based on the predominant beliefs in that culture. In hypothesizing these effects, we provide a theoretical link between the literature on cultural differences in compensation systems and previous analyses of effects of cultural variations in JWBs on preferences for fiscal redistribution (e.g., [Alesina et al., 2001](#); [Fong, 2001](#)), by extending these effects to preferences for individual compensation schemes. Given the common discrepancy between general attitudes and specific, context-dependent behaviors (e.g., [Ajzen & Fishbein, 1980](#)), it is important to empirically verify this new link. This would provide the first test of the effect of cross-national differences in JWBs on preferences for individual-level redistributive compensation schemes.

**Hypothesis 2a.** Aggregated differences in just-world beliefs at the level of national culture predict preferences for performance pay versus redistributive pay.

**Hypothesis 2b.** Just-world beliefs mediate national culture-level differences in preferences for performance pay versus redistributive pay.

Finally, the existing empirical research on preferences for fiscal redistribution provides only correlational evidence from survey or secondary data. We explore the underlying psychological process that links cultural differences in preferences for redistribution to JWBs by offering experimental evidence of a causal effect of individual-level JWBs on preferences for redistributive compensation systems.

**Hypothesis 3.** Experimentally priming JWBs will replicate observed national culture-level differences in preferences for performance pay versus redistributive pay.

We conducted three studies to test these hypotheses. Across all studies, participants performed an individual problem-solving task and then indicated their preferences for how they wanted to be compensated for subsequent rounds of this task—based on their individual performance or based on the group's collective (average) performance. To ensure that participants revealed their true payoff preferences in consequential choices ([Werthebroch & Skiera, 2002](#)), we told them that we would take their preferences into account when deciding how to reward them subsequently.

Study 1 used a group of professionally experienced MBA participants from 30 different countries to examine whether their endorsement of JWBs predicted their individual preferences for different compensation policies (H1). Study 2 compared cultural differences between two specific countries that we expected to differ in overall levels of JWBs ([Alesina et al., 2001](#)). We asked French and American undergraduate participants about their compensation preferences for performing a problem-solving task. We predicted that French participants would prefer more redistributive payments than American participants (H2a) and that this effect would be mediated by JWBs (H2b). Study 3 conceptually replicated this cultural effect by holding culture constant and experimentally manipulating JWBs, providing experimental evidence that JWBs cause cultural preferences for economic redistribution (H3). Thus, our studies seek to explain the culturally dependent relationship between JWBs and individual-level payment preferences by first looking at the link between JWBs and pay preferences in a culturally diverse sample (Study 1), examining specific cross-cultural differences in pay preferences that are mediated by JWBs (Study 2),

and finally demonstrating that this mediation mechanism underlying the cultural differences is truly causal (Study 3).

### 3. Study 1: Do JWBs predict variation in preferences for redistributive compensation systems?

Given our hypothesis that JWBs can help explain compensation system preferences across cultures, it is important to first determine that our measure of JWBs has predictive validity for individuals from a variety of different cultures. Thus, Study 1 measured JWBs in a culturally diverse sample of professionals prior to having them perform an individual problem-solving task. We then elicited their preferences for how they wanted to be paid for working on the task again at a later time: either based on their individual performance or equally, based on participants' average performance. We tested whether participants' JWBs predicted their pay preferences.

Study 1 had three additional objectives. First, we wanted to explore whether the hypothesized correlations between JWBs and pay preferences would be observed even when controlling for other proxies for participants' national culture of origin. This would indicate that (a) JWBs operate independently of values-based measures of cultural differences (e.g., power distance and collectivism versus individualism; [Hofstede, 1980](#)) and (b) that JWBs are a possible mediating mechanism for specific national culture-level differences in payment preferences, to be examined more closely in Study 2. The second objective of Study 1 was to test that using a problem-solving task as our experimental paradigm actually induced variance in participants' performance; without such variance, equal pay based on average performance would lose its redistributive character of under-rewarding high performers and over-rewarding low performers. Third, we wanted to rule out that participants' pay preferences resulted purely from strategic, self-interested sorting ([Lazear, 2000](#)): those with higher performance expectations might exhibit stronger preferences for performance pay, whereas those with lower performance expectations might prefer more equal pay. We therefore also measured and controlled for the effect of participants' actual and self-assessed performance on their pay preferences.

We measured JWBs with a selected subset of four questions from [Rubin and Peplau's \(1975\)](#) just-world belief scale as part of a broader survey. While [Rubin and Peplau's \(1975\)](#) scale is the most popular instrument for the measurement of JWBs and its items have strong face validity ([Hafer & Bègue, 2005](#)), we used only this limited set of questions because past research has noted that the JWB scale includes both general and domain-specific beliefs ([Furnham, 2003](#); [Hafer & Bègue, 2005](#)) and because the JWB scale has an unstable and multidimensional rather than unidimensional factor structure, including items measuring the belief that the world is deliberately and systematically unjust ([Furnham, 2003](#); [Hafer & Bègue, 2005](#); [Loo, 2002](#); [Whatley, 1992](#)). We therefore chose items from the full scale that captured only general beliefs about whether the world is just or not, that is, whether individual personal outcomes are deserved or not, in line with our conceptualization of JWBs taken from the economics literature on JWBs and fiscal redistribution ([Alesina & Angeletos, 2005](#); [Bénabou & Tirole, 2006](#)), which emphasizes beliefs about whether individuals' income differences are deserved or due to luck.

#### 3.1. Method

Seventy-eight Masters of Business Administration (MBA) students (25 female) at a large international business school in France took part in the study. Students represented 30 different nationalities. The average age was 29.3 years, and students had

an average of five and a half years of professional experience. The study was conducted as part of a class exercise in an elective course on strategy and incentives.

We measured JWBs with the following four items: “By and large, people deserve what they get,” “people who get ‘lucky breaks’ have usually earned their good fortune,” “people who meet with misfortune have often brought it on themselves,” and “many people suffer through no fault of their own” (reverse coded). Responses were assessed on 7-point, bipolar Likert scales, with response options ranging from ‘1’ (= “strongly disagree”) to ‘7’ (= “strongly agree”) with ‘4’ as a neutral midpoint. In line with other studies on JWB (e.g., Loo, 2002) and perhaps also as a result of comprising only four items, the scale had relatively low yet acceptable reliability (Cronbach’s  $\alpha = .64$ ); all items loaded on the same factor. We computed individual JWBs by averaging the ratings of the four JWB scale items for each participant.

Subjects also reported the country whose culture they most strongly identified with. We matched these countries to the corresponding Hofstede (1980) scores for each of the following dimensions: power distance, individualism, masculinity, and uncertainty avoidance. In addition, we assigned countries to culturally similar groups: Anglo-Saxon (Australia, Canada, Great Britain, English-speaking South Africa, and the US), European (continental Europe and South America), and “Rest of World”. These groups were used as controls for unobservable, region-specific influences on participants’ choices. Finally, we elicited subjects’ individual risk aversion on a six-point scale through a series of choices between two hypothetical jobs: one with a guaranteed wage and one whose wage was determined by a progressively riskier lottery.

After providing the foregoing information, participants performed a timed, 30-item pattern-matching task. Each item consisted of a grid of symbols, a key (a subset of the symbols in the grid), and five possible responses (each one also a subset of symbols in the grid). Participants had to find the unique response whose symbols were arranged in the grid according to the pattern implied by the key. This task was designed to be novel, so that participants could not rely on preconceptions of their skill to infer likely performance. Further, successful performance in the task relied on effort rather than intellectual ability. After participants had completed the task, we asked them to choose how they would want to be paid for working on the task again in a subsequent class meeting, either based on their individual performance score (0.50€ for each correct match) or equally based on the class’s average score (0.50€ times the average number of correct matches across all participants). Finally, participants estimated the number of correct matches they had achieved in the practice task. After participants had chosen their preferred pay scheme, we debriefed them of the purpose of the study and revealed that they would not have to perform the task again. Note that, given the study design, it was in participants’ interest to report their true preferences.

### 3.2. Results

Descriptive statistics are shown in Table 1. As predicted, we found a significant relationship between individual JWB scores and preferences for redistribution as implied by the different compensation schemes. Table 2 reports the results of a logit analysis of participants’ choices of individual performance-based pay (versus equal pay) as a function of JWBs. Column 1 shows that the raw relationship (without controls) is significant at  $p = 0.011$ . Column 2 shows that the results are qualitatively unchanged when the region and Hofstede variables are added as controls. These results suggest that JWBs are a distinct mechanism from other correlates of culture—in particular the values-based Hofstede measures, which contrast with the beliefs-based JWB scale. Column 3 shows that the positive relationship between JWBs and payment choice is

**Table 1**  
Descriptive statistics for Study 1.

Variable	Obs	Mean	Std. Dev.	Min	Max
Prefers individual incentives	78	0.83	0.38	0	1
JWB scale	78	3.79	0.95	1	6
Male	78	0.680	0.470	0	1
Risk aversion	78	3.79	1.44	1	6
Estimated score	78	18.5	5.52	4	30
Actual score	78	19.9	5.39	7	30
Anglo Saxon culture	78	0.218	0.416	0	1
European culture	78	0.359	0.483	0	1
Rest of world culture	78	0.410	0.495	0	1
Power distance	70	58.75	22.97	11	104
Individuality	70	56.61	24.02	6	91
Masculinity	70	53.51	10.91	14	79
Uncertainty avoidance	70	59.19	21.62	8	104

**Table 2**  
Determinants of choice of individual performance-based compensation scheme.

	Coefficients from logistic regression			
	(1)	(2)	(3)	(4)
JWB index	0.895 <sup>*</sup> (0.350)	1.286 <sup>*</sup> (0.536)	1.931 <sup>*</sup> (0.765)	1.852 <sup>*</sup> (0.768)
Gender = male			2.860 <sup>*</sup> (1.287)	2.483 <sup>*</sup> (1.232)
Risk aversion			0.185 (0.367)	0.206 (0.371)
Estimated performance score			0.292 <sup>*</sup> (0.118)	
Actual performance score				0.211 <sup>*</sup> (0.102)
Anglo Saxon culture		0.502 (1.806)	2.107 (2.481)	1.084 (2.147)
European culture		−2.711 (2.161)	−4.413 (3.032)	−4.049 (2.818)
Power distance		−0.023 (0.032)	−0.035 (0.039)	−0.028 (0.036)
Individuality		−0.045 (0.036)	−0.089 (0.050)	−0.070 (0.044)
Masculinity		−0.054 (0.063)	−0.060 (0.068)	−0.028 (0.057)
Uncertainty avoidance		0.048 (0.050)	0.105 (0.067)	0.093 (0.061)
Constant	−1.564 (1.214)	2.350 (7.557)	−6.552 (8.808)	−7.583 (8.389)
N	78	70	70	70
Likelihood ratio $\chi^2$	7.44	14.57	26.87	23.39
Degrees of freedom	1	7	10	10
$\chi^2$ p-value	0.006	0.042	0.003	0.009

Notes: The omitted culture category is “Rest of World”.

\* Significance levels:  $p < .05$ .

robust to the inclusion of gender, risk aversion, and subjects’ perceived performance on the task. We note in passing that men are more likely to choose the individual reward; however, in unreported results we find no interaction of gender with JWBs, nor does our theory suggest one.<sup>1</sup> Finally, column 4 shows that the results in column 3 are qualitatively unchanged when we replace subjects’ perceived performance with their actual performance. Because estimated and actual performance are highly correlated ( $r = 0.86$ ), the two effects cannot be separately estimated in the same regression (multicollinearity). Because column 4 includes subjects’ actual performance—information that they did not have when making their payment choice—our preferred specification is instead column 3. This column shows that stronger JWBs predicted stronger preferences for performance-based pay ( $\beta_{\text{JWB}} = 1.931$ ,  $p = .012$ ). The log likelihood for the regression was  $-17.01$  ( $\chi^2$  (10) = 26.87,

<sup>1</sup> Muriel Niederle has studied gender differences in economic preferences in a series of papers, beginning with Gneezy, Niederle, and Rustichini (2003).

$p = 0.003$ ). The choice of individual performance-based pay is positively correlated with perceived performance on the task, as expected. Finally, we note that, although the Anglo Saxon and European culture indicators are not significantly different from zero, they are significantly different from each other ( $\chi^2(1) = 4.68$ ,  $p = 0.03$ ). Subjects from European cultures are less likely to prefer the individual reward.

Using a culturally diverse sample of participants, Study 1 thus provides initial evidence in support of our hypothesis, showing a negative relationship between JWBs and preferences for redistribution at the level of individual compensation, even when controlling for individual task performance expectations or for actual task performance. This suggests that preferences for individual compensation systems are not merely strategically driven by people's beliefs about their individual expectations to perform well in the task (Lazear, 2000). Rather, our participants' preferences were also predicted by their JWBs across a variety of cultural backgrounds, even when controlling for other possible culture-related factors of influence. The next study explicitly examined these effects within two specific cultures to test whether an effect of cultural differences is mediated by JWBs.

#### 4. Study 2: Do JWBs mediate an effect of culture on preferences for redistributive compensation systems?

Study 2 sought to provide a controlled, theory-driven comparison of two specific countries: France and the United States. Because of historical, cultural, and ideological differences (e.g., Alesina et al., 2001; Senik, 2014), we expected French participants to have weaker JWBs that would drive stronger preferences for redistributive compensation systems than Americans. That is, we predicted a cross-cultural effect on preferences for redistributive compensation systems that would be mediated by JWBs.

##### 4.1. Method

###### 4.1.1. Participants

One hundred forty-two undergraduates of U.S. citizenship (73 male, 74 female, one gender undisclosed, average age: 21.2 years) at a large, urban university in the Northeastern U.S. and 102 undergraduates of French citizenship at a large, urban university in France (44 males, 56 females, six gender undisclosed, average age: 22.0 years) were recruited as participants. They were told that they would earn \$5 (5€) each in exchange for their participation plus an unspecified bonus.

###### 4.1.2. Procedure and materials

Materials were originally developed in English and then translated into French for our French participants. Accuracy was verified via back-translation. Original English materials were used in our U.S. sample.

Participants arrived at a lab at their respective university and were told that they would be performing a study on pattern matching. They were first presented with an ambiguous task taken from the Intelligence Structure Test (Amthauer, Brocke, Liepmann, & Beauducel, 1999; see also Mussweiler, Rüter, & Epstude, 2004, p. 838). As in Study 1, the task was chosen to be perceived as novel, so participants could not rely on preconceptions of their skill to infer likely performance. We showed participants five intact geometrical figures as well as various sets of figure fragments, and told them that the purpose of the task was to match each set of fragments to the correct intact figure. To illustrate the task, we also presented participants with four sets of figure fragments; the answers were provided immediately below the examples. Participants then had

to solve ten sample problems in a practice round with a four-minute time limit.

Following the practice round, participants were asked to move on to the main round, which would involve more problems like the sample tasks. Before starting the main round, participants stated how they preferred to be paid for their work in that round. To induce participants to state their true preferences as in Study 1, we explicitly told them that we would take these preferences into account when deciding on the payment scheme for their work, which would constitute the bonus payment they expected after the conclusion of the experiment.

Participants then answered a series of questions designed to measure individual compensation system preferences. Participants first indicated their payment preference on a 10-point Likert scale where '1' represented a preference for completely equal payments for all participants in the study and '10' represented a winner-take-all payment scheme, under which the best performer in the study would receive all of the experimental-subject compensation available for the bonus payment in the study. Next, participants indicated how many dollars (euros) out of a budget of \$25 (25€) should be given to the best and worst performers in a randomly drawn pool of five participants (including themselves). Finally, participants indicated the percentage (range: 0–100%) of a bonus payment that they preferred to be variable (i.e., based on performance).

Following these questions, participants responded to the four questions from the just-world belief scale used in Study 1. The scale had acceptable reliability in both cultures: France  $\alpha = .66$ ; U.S.  $\alpha = .61$ . Participants also provided demographic information. Finally, we fully debriefed them and paid them \$10 (10€) for their participation; we did not ask participants to solve the additional problems we had earlier announced as the main round of the pattern-matching task.

##### 4.2. Results

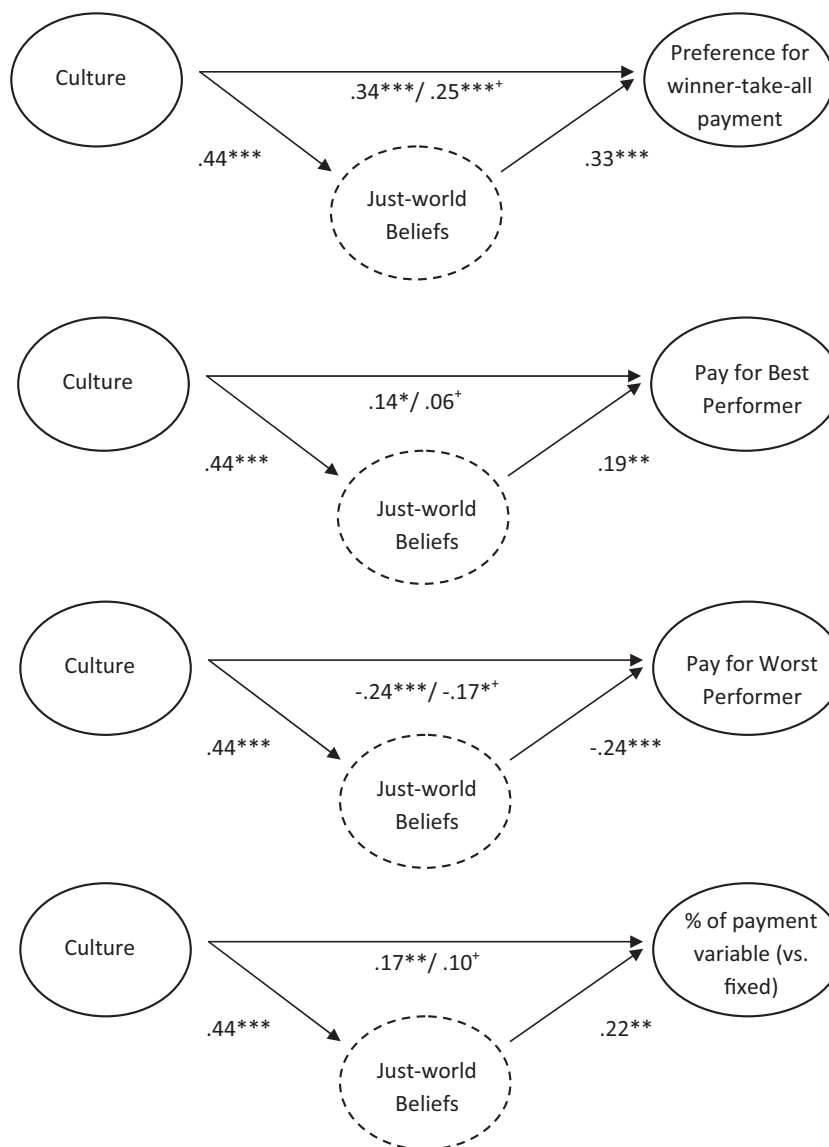
###### 4.2.1. Payment preferences

We first ran separate one-way ANCOVAs for each dependent measure with participants' actual results from the practice round as a covariate; these results did not affect payment preferences. As predicted, American participants ( $M = 3.43$ ,  $SD = 2.24$ ) had a significantly stronger preference for more performance-based, winner-take-all payments than French participants ( $M = 1.88$ ,  $SD = 1.33$ ),  $F(1,226) = 17.87$ ,  $p < .001$ ,  $d = .74$ . Americans ( $M = 8.48$ ,  $SD = 3.15$ ) also preferred to allocate a larger amount of a total compensation of \$25 (25€) to the best performer out of five compared to the French ( $M = 7.55$ ,  $SD = 3.52$ ),  $F(1,247) = 4.77$ ,  $p = .030$ ,  $d = .28$ . Conversely, Americans ( $M = 2.76$ ,  $SD = 1.65$ ) preferred to allocate significantly less money to the worst of five performers compared to the French ( $M = 3.59$ ,  $SD = 1.65$ ),  $F(1,247) = 15.19$ ,  $p < .001$ ,  $d = .51$ . Americans ( $M = 60.62\%$ ,  $SD = 22.54$ ) also preferred a significantly smaller percentage of their total (100%) payment to be fixed (with the remainder being variable) compared to the French ( $M = 68.80\%$ ,  $SD = 24.34$ ),  $F(1,238) = 6.99$ ,  $p = .009$ ,  $d = .35$ .<sup>2</sup>

###### 4.2.2. Mediation role of just-world beliefs

Americans ( $M = 3.96$ ,  $SD = 0.99$ ) scored significantly higher on the just-world scale compared to French participants ( $M = 2.96$ ,  $SD = 1.03$ ),  $F(1,247) = 59.06$ ,  $p < .001$ ,  $\eta_p^2 = .194$ . To test whether JWBs mediated the effect of culture on redistribution preferences, we followed Preacher & Hayes' (2004) bootstrapping procedure

<sup>2</sup> Consistent with previous effects in the literature, we found main effects for gender across all four main dependent variables ( $p$ 's  $< .014$ ), with males showing stronger preferences for performance-based payments than women. There were no gender  $\times$  culture interactions, however ( $p$ 's  $> .29$ ).



**Fig. 1.** Relationship structure between variables in Study 2. Numbers represent standardized beta weights. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; +standardized beta for the effect of culture when controlling for the effect of JWBs.

using 5000 iterations. In these analyses, none of the 95% confidence intervals for the mediated effect of national culture on any of the four DVs included zero (winner-take-all vs. equal pay, lower bound = .22, upper bound = .75; best performer payment, lower bound = .08, upper bound = .94; worst performer payment, lower bound = -.48, upper bound = -.049; variable payment, lower bound = 0.99, upper bound = 7.40.) Thus, the effect of JWBs significantly mediated the direct effects of national culture for all four dependent measures (see Fig. 1).

Overall, these findings show that the operation of different underlying JWBs represents a psychological mechanism that is at least partly responsible for cultural differences in preferences for economic redistribution via individual wage incentives. As predicted, we found that American participants preferred more performance-based payments than French participants and that these cultural differences were mediated by JWBs. Importantly, we measured preferences for individual compensation schemes under conditions that led participants to believe that their stated preferences were relevant to determining their own payoffs.

### 5. Study 3: Do JWBs cause preferences for redistributive compensation systems?

Our first two studies provide support for our hypothesis that cultural differences in JWBs explain preferences for redistributive compensation systems. However, both these studies were correlational rather than experimental in design. Thus, despite the mediational effects in Study 2, it is still unclear to what extent JWBs *caused* the cultural differences we found between our American and French participants or whether other, uncontrolled differences between our participant groups may also have been driving our results. Although the mediation analysis in Study 2 provides direct empirical evidence of the role of JWBs in the psychological process by which culture influences preferences for redistribution (beyond the cultural difference variables controlled for in Study 1), it is important to demonstrate the causal role of JWBs in shaping these preferences via an experimental paradigm that allows us to control for potential effects of other cultural influences. To experimentally isolate, and thus demonstrate, a causal process underlying a



psychological phenomenon, [Spencer, Zanna, and Fong \(2005\)](#) proposed moderation-of-process designs. Holding participants' national culture constant and instead experimentally manipulating JWBs as the cultural difference variable would offer strong evidence that the operation of JWBs represents a concrete psychological mechanism responsible for driving preferences for economic redistribution. Evidence from such an experimental design would imply that JWBs are *one* factor but not necessarily the *only* factor influencing redistributive preferences outside the experimental context. Other factors may also play a role, but the experimental design maximizes internal validity by controlling for these and randomly distributing any pre-existing differences across conditions.

Thus, Study 3 employs a priming procedure to experimentally manipulate JWBs and examine their effect on preferences with the same task-relevant dependent measures used in Study 2 (see [Hafer & Bègue, 2005](#), for a review of priming and JWBs). Study 3 uses a single cultural sample (United States) because our objective is to demonstrate that manipulating the cultural difference variable of interest (JWBs), while holding other aspects of culture constant, replicates the effect on our dependent measures that we observed in Study 2. This would provide evidence of the causal effect of JWBs on preferences for redistribution. This approach of first measuring a cultural difference variable across cultures (Studies 1 and 2) and then manipulating it experimentally (Study 3) is increasingly used in cross-cultural and social psychological process analyses (e.g., [Adam, Shirako, & Maddux, 2010](#); [Maddux et al., 2010](#); see also [Spencer et al., 2005](#)). In particular, previous work on JWBs has used similar methodological demonstrations, first showing JWBs as a mediating mechanism within a correlational design and then experimentally manipulating JWBs in a subsequent study ([Feinberg & Willer, 2011](#)).

Although previous work has primed JWBs and shown effects on participants' societal policy attitudes ([Bryan et al., 2009](#)), to our knowledge no previous research has experimentally manipulated JWBs directly and shown differences in individual compensation preferences, much less differences that are consistent with cultural differences in JWBs. Study 3 is therefore designed to provide the first experimental (causal) evidence of these relationships and thus to offer supporting evidence of the validity of our mediational results in Study 2.

## 5.1. Method

### 5.1.1. Participants

One hundred and twelve undergraduates (42 male, 70 female, one undisclosed) at a large Northeastern U.S. university were recruited as participants. Only U.S. citizens were eligible to participate in the study. They were told that they would earn \$5 in exchange for their participation plus an unspecified bonus.

### 5.1.2. Procedure

Participants were instructed that they would work on two separate studies. They were randomly assigned to one of two conditions: just-world prime or control prime. Participants in both conditions were first asked to perform a scrambled-sentence task (e.g., [Bargh & Chartrand, 2000](#)), which was ostensibly a test of "cognitive generation" but in actuality was the priming phase to mentally activate (or not) the concept of JWBs. Participants were shown 14 sets of five words that needed to be unscrambled into a logical sentence involving only four of the five possible words per set. An example was then presented to all participants: "Juicy are the oranges ripe," followed by two possible correct answers: "The oranges are ripe," and "the oranges are juicy." For participants in the just world prime condition, seven of the 14 sets of sentences contained words related to the concept of JWBs (e.g., "game fair the

was sky," which could be unscrambled as "the game was fair;" see [Appendix A](#) for all items used). For participants in the control condition, sentences contained words that were designed to be neutral in content (e.g., "light distribute turn the off" could be unscrambled as "turn the light off", see [Appendix B](#) for all sentences). Scrambled-sentence tasks are often used in psychology to unobtrusively or implicitly prime psychological concepts (see [Bargh & Chartrand, 2000](#)).

After participants finished the priming phase, they were told that the first experiment was completed and that they would proceed to the second study on pattern matching. We presented participants with the same task and example problems as in Study 2, telling them that they would have to match additional patterns of the same type in return for a bonus payment at a later stage of the study. In contrast to Study 2, however, they did not complete a practice round because actual performance in the practice round had not had any effect on participants' payment preferences in Study 2 and because the experimental design in Study 3 automatically controls for possible strategic effects of self-interest (individuals' own performance should be uncorrelated with the randomly assigned experimental conditions). We then asked participants how they preferred to be paid for their subsequent work. Participants saw the same individual payment scheme questions as in Study 2 and were again explicitly told that we would take their preferences into account when deciding on the bonus payment. Finally, participants indicated their age, gender, and nationality. As in Study 2, we did not present them with any further puzzle problems. Instead, we fully debriefed them about the true purpose of the study and paid them \$10.

## 5.2. Results

As predicted and consistent with the results in Study 2, participants in the just-world condition ( $M = 3.72$ ,  $SD = 2.77$ ) more strongly preferred a performance-based, winner-take-all payment scheme compared to participants in the control condition ( $M = 2.51$ ,  $SD = 1.79$ ),  $F(1,108) = 7.39$ ,  $p = .008$ ,  $d = .52$ . Just-world-primed participants also preferred more dollars be given to the top performer out of five ( $M = 9.33$ ,  $SD = 4.15$ ) compared to participants in the control condition ( $M = 7.91$ ,  $SD = 2.78$ ),  $F(1,108) = 4.45$ ,  $p = .037$ ,  $d = .41$ , and just-world-primed participants were willing to give fewer dollars to the worst performer out of five ( $M = 2.40$ ,  $SD = 1.78$ ) compared to control participants ( $M = 3.16$ ,  $SD = 1.67$ ),  $F(1,108) = 5.35$ ,  $p = .023$ ,  $d = .61$ . Finally, just-world-primed participants preferred a marginally significantly higher percentage of variable compensation ( $M = 43.58\%$ ,  $SD = 21.36$ ) compared to control participants ( $M = 36.27\%$ ,  $SD = 17.64$ ),  $F(1,108) = 3.77$ ,  $p = .055$ ,  $d = .38$ .<sup>3</sup>

These findings confirm the effects of JWBs on preferences for redistribution in Study 2 by using an experimental moderation-of-process design that manipulates the underlying process while keeping culture constant. The experimental priming of JWBs conceptually replicates the cultural differences observed in Study 2, demonstrating that JWBs have a causal effect on preferences for redistributive individual pay systems.

## 6. General discussion

Three studies, taken together, provide empirical support for our hypothesis that just-world beliefs act as a distinct psychological

<sup>3</sup> Analyses indicated one significant effect of gender for the winner-take-all measure ( $p = .001$ ), marginal effects for the worst-performer payment ( $p = .052$ ) and variable payment ( $p = .057$ ) measures, and a non-significant effect for the top-performer payment measure ( $p = .132$ ). No gender  $\times$  culture interactions were observed ( $p$ 's  $> .19$ ).



mechanism explaining cultural differences in preferences for performance-based versus redistributive pay systems. Study 1 showed that individual preferences for performance-based compensation schemes correlated with JWBs in a culturally diverse sample of professionally experienced graduate students. Study 2 showed that American undergraduate participants had stronger preferences than French undergraduates for using performance-based metrics to determine their own individual payment for an experimental task. Importantly, cultural differences in JWBs mediated these effects. Study 3 experimentally manipulated JWBs and provided the first empirical evidence of the operation of JWBs as a psychological mechanism that causes cultural differences in preferences for economic redistribution. Following an increasingly common approach to demonstrating psychological mechanisms in cross-cultural and social psychological research, Study 3 held national culture constant and experimentally manipulated the proposed cultural mechanism (JWBs) via a moderation-of-process design (Spencer et al., 2005). This conceptually replicated the mediated effects of cultural differences between France and the U.S. in Study 2, offering further evidence of the role of JWBs in the underlying psychological process of generating preferences for more or less redistributive pay systems.

### 6.1. Theoretical contribution

These findings extend previous work on beliefs about fairness and fiscal redistribution in a number of ways (Alesina & Angeletos, 2005; Bénabou & Tirole, 2006). First, we offer evidence that JWBs affect not only societal attitudes toward redistribution at the fiscal level but also preferences for individual compensation systems like those found in typical employment contracts (Burson et al., 2010; Siegel & Larson, 2009). The literature on workplace incentives has long recognized the existence of “selection effects”—the idea that workers sort themselves into different payment schemes according to their personal characteristics (Lazear, 2000). Typically, this literature stresses individual productivity as the decisive characteristic, although recent work has begun to explore selection on other dimensions (Dohmen & Falk, 2011; Flory, Leibbrandt, & List, 2010). To this literature we add the first evidence that personal as well as cultural beliefs about the underlying fairness of the world are a potentially important determinant of selection into different workplace compensation schemes and of their cultural acceptability. Moreover, the cross-national differences in individual preferences for redistributive compensation schemes, which we have shown, suggest that institutional differences in organizational compensation systems may emerge at the national level (e.g., differences in the prevalence of collective bargaining arrangements; e.g., Kahn, 2000).

Second, as far as we are aware, our findings are the first to experimentally (and thus causally) link the economic concept of preferences for redistribution to the psychological concept of JWBs (Lerner, 1980; Rubin & Peplau, 1975). This experimental demonstration is critical not only in providing causal evidence for our hypothesis but also in allowing us to rule out potential unobserved variables as alternative explanations. Because we randomly assigned participants to experimental conditions, any pre-existing differences in other variables (i.e., political orientation, confidence, self-esteem, or other interindividual or cross-cultural difference variables) were necessarily equally distributed across conditions.

Our findings show that preferences for redistribution are driven by differences in fundamental beliefs about the relationship between effort and reward, that is, by cognitive beliefs about the determinants of social structure (Piketty, 1995), not simply by cultural differences in value systems. Note that the effect of JWBs on preferences for individual compensation schemes held even when

we controlled for expected (Study 1) as well as actual (Studies 1 and 2) individual performance, showing that our participants were not merely expressing strategic, self-interested preferences (see Alesina, Di Tella, & MacCulloch, 2004; Fong, 2001). The cognitive, belief-based nature of the effect suggests that preferences for redistribution, both at the individual level we study here (compensation policies) and the societal level studied elsewhere (taxation policies) are sticky and resistant to change. The mathematical equilibrium analyses by Alesina and Angeletos (2005) and Bénabou and Tirole (2006) offer a similar conclusion.

### 6.2. Future research

To examine the persistence of JWBs it may be useful to ask why they differ between, say, the U.S. and France, even though some empirical evidence suggests that social mobility in European countries and in the U.S. is, in fact, roughly equal (Björklund & Jäntti, 1997; Couch & Dunn, 1997). For example, some data suggest that social mobility is relatively high only for the U.S. middle class but is much lower among those high and low in socio-economic status (Isaacs, Sawhill, & Haskins, 2008). One line of reasoning comes from system justification theory, which proposes that people are motivated to defend their existing political and institutional environments as good, legitimate, and desirable (e.g., Jost & Hunyady, 2005). Similarly, Bénabou and Tirole (2006) theorize that the mechanism for persistent cross-cultural differences in JWBs is dissonance reduction among those whose JWBs are incompatible with the prevailing system. This suggests that individuals may not respond to disconfirmatory evidence (such as high unemployment) with standard belief (i.e., Bayesian) updating.

Another intriguing reason for the persistence of JWBs may have to do with the persistence of social norms and beliefs established via past socio-economic conditions (Gelfand et al., 2011; Nisbett & Cohen, 1996). Once entrenched, these norms and beliefs may perpetuate themselves via psychological mechanisms such as pluralistic ignorance and conformity pressures, even when the underlying conditions giving rise to such norms no longer exist. For example, Gelfand et al. (2011) recently demonstrated that the population densities of countries hundreds of years prior can predict modern-day endorsement of individualistic and collectivist values. Thus, it may be that cultural norms, values, and beliefs emerge and evolve for reasons that were functional in the past but which continue to persist even after the underlying conditions that generated them in the first place may have disappeared. One interesting question for future research is therefore which conditions may lead to updating of JWBs. Do deep economic crises such as the financial crisis of 2008 or the related, ongoing European debt crisis represent shocks that prompt people to question these beliefs? The ensuing debate in the U.S. and elsewhere about the fairness and legitimacy of growing income inequality may reflect such a shock.

In addition, individuals whose JWBs do not match the prevailing economic system may have the option of “voting with their feet” by emigrating to a country whose system suits them better. Recent popular writing advances the idea that highly skilled immigrants—drawn by the meritocratic economic system in the U.S.—contribute disproportionately to the country's economic growth (e.g., Wadhwa, 2007). Future research might examine whether immigrants' JWBs differ more from those prevailing in their country of origin than from those in their host country and whether any such differences are predictive of international migration flows.

Finally, we note that the methods we use in this paper have both strengths and limitations. On the one hand, laboratory and experimental studies allow us to investigate exactly the mechanisms of interest in a highly controlled environment. As in all such studies, this comes at the potential cost of external validity. Future work might seek to replicate or extend our findings in actual

organizational contexts. Similarly, we should recognize that actual pay practices lie at the intersection of workers' and employers' preferences. Future research might investigate how JWBs influence employers' pay setting preferences, wage negotiations, and employees' performance under the resulting wage regime.

Our findings suggest that cultural and international differences in redistributive institutional arrangements, whether at the microeconomic level (compensation and incentive systems, collective bargaining) or the macroeconomic one (taxation), may not only reflect different economic conditions or different value systems as might be implied by extant cross-cultural research (Hofstede, 1980). Cultural and international variation in preferences for these institutional arrangements may also result from deeper cognitive differences in fundamental assumptions and beliefs about how the world works (e.g., Nisbett, 2003). These imply very different conceptions of economic fairness, suggesting why policy and ideological debates among employers and employees, politicians, media, and voters about social justice may be particularly difficult to resolve.

### Acknowledgment

The authors acknowledge financial support from INSEAD and the INSEAD-Wharton Alliance.

### Appendix A

Unscrambled sentences, just-world belief condition, Study 3 (JWB synonyms noted in italics)

1	cloudy	seems	drink	this	looks
2	much	pencil	<i>earns</i>	she	praise
3	somewhat	prepared	was	I	told
4	game	<i>fair</i>	the	was	sky
5	apartment	they	the	Windex	cleaned
6	<i>deserve</i>	I	run	grade	that
7	<i>effort</i>	paper	store	ripped	the
8	<i>effort</i>	expended	his	he	hungry
9	misses	John	family	his	sunlight
10	truly	<i>worthy</i>	was	she	computer
11	light	distribute	turn	the	off
12	decision	<i>just</i>	the	camera	was
13	book	author	wrote	the	Mary
14	<i>merit</i>	broken	computer	is	my

### Appendix B

Unscrambled sentences, control condition, Study 3

1	cloudy	seems	drink	this	looks
2	talked	we	her	the	with
3	somewhat	prepared	was	I	told
4	apartment	they	the	Windex	cleaned
5	wildly	shopper	the	he	waved
6	easily	paper	store	ripped	the
7	ongoing	story	the	is	it
8	misses	John	family	his	sunlight
9	dirty	the	is	dog	cat
10	light	distribute	turn	the	off
11	big	chairs	the	box	are

12	player	caught	the	football	it
13	broken	computer	is	my	new
14	tires	squealed	loudly	the	baby

### References

- Adam, H., Shirako, A., & Maddux, W. W. (2010). Cultural variance in the interpersonal effects of anger in negotiations. *Psychological Science*, 21(6), 882–889.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Alesina, A., & Angeletos, G. M. (2005). Fairness and redistribution: US versus Europe. *American Economic Review*, 95(4), 960–980.
- Alesina, A., Di Tella, R., & MacCulloch, R. (2004). Inequality and happiness: Are Europeans and Americans different? *Journal of Public Economics*, 88(August), 2009–2042.
- Alesina, A., Glaeser, E., & Sacerdote, B. (2001). Why doesn't the United States have a European-style welfare system? *Brookings Papers on Economic Activity* (No. 2) (pp. 187–277).
- Amthauer, R., Brocke, B., Liepmann, D., & Beauducel, A. (1999). *Intelligenz-Struktur-Test 2000 [Intelligence structure test 2000]*. Göttingen, Germany: Hogrefe.
- Ashkanasy, N. M., Windsor, C. A., & Treviño, L. K. (2006). Bad apples in bad barrels revisited: Cognitive moral development, just world beliefs, rewards, and ethical decision-making. *Business Ethics Quarterly*, 16(4), 449–473.
- Ball, G. A., Treviño, L. K., & Sims, H. P. Jr., (1994). Just and unjust punishment: Influences on subordinate performance and citizenship. *Academy of Management Journal*, 37(2), 299–322.
- Bargh, J. A., & Chartrand, T. L. (2000). The mind in the middle: A practical guide to priming and automaticity research. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 253–285). New York: Cambridge University Press.
- Bénabou, R., & Tirole, J. (2006). Belief in a just world and redistributive politics. *Quarterly Journal of Economics*, 121(2), 699–746.
- Björklund, A., & Jäntti, M. (1997). Intergenerational income mobility in Sweden compared to the United States. *American Economic Review*, 87(5), 1009–1018.
- Bryan, C. J., Dweck, C. S., Ross, L., Kay, A. C., & Mislavsky, N. O. (2009). Political mindset: Effects of schema priming on liberal-conservative political positions. *Journal of Experimental Social Psychology*, 45, 890–895.
- Burson, K. A., Faro, D., & Rottenstreich, Y. (2010). ABCs of principal-agent interactions: Accurate predictions, biased processes, and contrasts between working and delegating. *Organizational Behavior and Human Decision Processes*, 113(1), 1–12.
- Card, D. (1996). The effect of unions on the structure of wages: A longitudinal analysis. *Econometrica*, 64(July), 957–979.
- Central Intelligence Agency (2012). *The World Factbook*. <<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2172rank.html>>. Accessed 10.05.12.
- Corneo, G. (2001). Inequality and the state: Comparing US and German preferences. *Annales d'Economie et de Statistique*, 63–64, 283–296.
- Corneo, G., & Grüner, H. P. (2002). Individual preferences for political redistribution. *Journal of Public Economics*, 83(1), 83–107.
- Couch, K. A., & Dunn, T. A. (1997). Intergenerational correlations in labor market status: A comparison of the United States and Germany. *Journal of Human Resources*, 32(1), 210–232.
- Crumley, B. (2012). Hollande's justice: France's leftist leaders seek to cut public sector CEO salaries. *Time*, <<http://world.time.com/2012/05/31/hollandes-justice-frances-leftist-leaders-seek-to-cut-public-sector-ceo-salaries/#ixzz2GkoAAH8>>. Accessed 26.05.13.
- Davies, N. (1996). *Europe: A history*. New York, NY: Oxford.
- de Tocqueville, A. (1835/2004). *Democracy in America*. New York, NY: Bantam.
- Deery, S. J., & Iverson, R. D. (2005). Labor-management cooperation: Antecedents and impact on organizational performance. *Industrial and Labor Relations Review*, 58(4), 588–609.
- Dohmen, T., & Falk, A. (2011). Performance pay and multidimensional sorting: Productivity, preferences, and gender. *American Economic Review*, 101(2), 556–590.
- Eugster, B., Lalive, R., Steinhauer, A., & Zweimüller, J. (2011). The demand for social insurance: Does culture matter? *The Economic Journal*, 121(556), F413–F448.
- Feinberg, M., & Willer, R. (2011). Apocalypse soon? Dire messages reduce belief in global warming by contradicting just-world beliefs. *Psychological Science*, 22(1), 34–38.
- Flanagan, R. J. (1999). Macroeconomic performance and collective bargaining: An international perspective. *Journal of Economic Literature*, 37(September), 1150–1175.
- Flory, J. A., Leibbrandt, A., & List, J. A. (2010). Do competitive work places deter female workers? A large-scale natural field experiment on gender differences in job-entry decisions. *NBER Working Paper No. 16546*.

- Fong, C. (2001). Social preferences, self-interest and the demand for redistribution. *Journal of Public Economics*, 82(2), 225–246.
- Fromm, E. (1941). *Escape from freedom*. New York, NY: Henry Holt and Company.
- Fryxell, G. E., & Gordon, M. E. (1989). Workplace justice and job satisfaction as predictors of satisfaction with union and management. *Academy of Management Journal*, 32(4), 851–866.
- Furnham, A. (1993). Just world beliefs in twelve societies. *The Journal of Social Psychology*, 133(3), 317–329.
- Furnham, A. (2003). Belief in a just world: Research progress over the past decade. *Personality and Individual Differences*, 34(5), 795–817.
- Gelfand, M., Raver, J., Nishii, L., Leslie, L., Lun, J., et al. (2011). Differences between tight and loose societies: A 33-nation study. *Science*, 332(6033), 1100–1104.
- Gibbons, R. (2005). Incentives between firms (and within). *Management Science*, 51(January), 2–17.
- Gneezy, U., Niederle, M., & Rustichini, A. (2003). Performance in competitive environments: Gender differences. *Quarterly Journal of Economics*, 118(3), 1049–1074.
- Goubert, P. (1988). *The course of French history*. New York, NY: Watts.
- Hafer, C. L., & Bègue, L. (2005). Experimental research on just-world theory: Problems, developments, and future challenges. *Psychological Bulletin*, 131(1), 128–167.
- Hartman, S. J., Yrle, A. C., & Galle, W. P. Jr., (1999). Procedural and distributive justice: Examining equity in a university setting. *Journal of Business Ethics*, 20(4), 337–351.
- Hastings, D. F. (1999). Lincoln Electric's harsh lessons from international expansion. *Harvard Business Review* (May–June), 162–178.
- Hofstede, G. H. (1980). *Culture's consequences: International differences in work-related values*. Newbury Park, CA: Sage.
- Holmstrom, B., & Milgrom, P. (1994). The firm as an incentive system. *American Economic Review*, 84(4), 972–991.
- Hundley, G., & Kim, J. (1997). National culture and the factors affecting perceptions of pay fairness in Korea and the United States. *International Journal of Organizational Analysis*, 5, 325–341.
- Isaacs, J. B., Sawhill, I. V., & Haskins, R. (2008). *Getting ahead or losing ground: Economic mobility in America*. Washington, D.C.: Brookings Institution.
- Jost, J. T., & Hunyady, O. (2005). Antecedents and consequences of system-justifying ideologies. *Current Directions in Psychological Science*, 14, 260–265.
- Jost, J. T., & Kay, A. C. (2010). Social justice: History, theory, and research. In S. T. Fiske, D. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology* (Vol. 2, 5th ed., pp. 1122–1165). Hoboken, NJ: Wiley.
- Kahn, L. M. (2000). Wage inequality, collective bargaining, and relative employment from 1985 to 1994: Evidence from fifteen OECD countries. *Review of Economics and Statistics*, 82(4), 564–579.
- Kitayama, S., Conway, L., Pietromonaco, P. R., Park, H., & Plaut, V. C. (2010). Ethos of independence across regions in the United States: The production-adoption model of cultural change. *American Psychologist*, 65(6), 559–574.
- Knez, M., & Simester, D. (2001). Firm-wide incentives and mutual monitoring at Continental Airlines. *Journal of Labor Economics*, 19(4), 743–772.
- Knorr, A., & Arndt, A. (2003). *Why did Wal-Mart fail in Germany? Materialien des Wissenschaftsschwerpunktes "Globalisierung der Weltwirtschaft," 24*. Institute for World Economics and International Management, University of Bremen.
- Lazear, E. P. (2000). The power of incentives. *American Economic Review*, 90(2), 410–414.
- Lazear, E. P., & Rosen, S. (1981). Rank-order tournaments as optimum labor contracts. *Journal of Political Economy*, 89(5), 841–864.
- Lemieux, T. (1998). Estimating the effects of unions on wage inequality in a panel data model with comparative advantage and nonrandom selection. *Journal of Labor Economics*, 16(April), 261–291.
- Lerner, M. (1980). *The belief in a just world: A fundamental delusion*. New York, NY: Plenum Press.
- Lerner, M., & Miller, D. T. (1978). Just world research and the attribution process: Looking back and ahead. *Psychological Bulletin*, 85(5), 1030–1051.
- Levin, J., & Tadelis, S. (2005). Profit sharing and the role of professional partnerships. *Quarterly Journal of Economics*, 120(1), 131–171.
- Lincoln, J. F. (1951). *Incentive management*. Cleveland: The Lincoln Electric Company.
- Lipkus, I. (1991). The construction and preliminary validation of a global belief in a just world scale and the exploratory analysis of the multidimensional belief in a just world scale. *Personality and Individual Differences*, 12(11), 1171–1178.
- Loo, R. (2002). Belief in a just world: Support for independent just world and unjust world dimensions. *Personality and Individual Differences*, 33(5), 703–711.
- Luo, Y. (2005). How important are shared perceptions of procedural justice in cooperative alliances? *Academy of Management Journal*, 48(4), 695–709.
- Maddux, W. W., Yang, H., Falk, C., Adam, H., Adair, W., Endo, Y., et al. (2010). For whom is parting with possessions more painful? Cultural differences in the endowment effect. *Psychological Science*, 21(12), 1910–1917.
- Mellers, B. A. (1986). "Fair" allocations of salaries and taxes. *Journal of Experimental Psychology: Human Perception and Performance*, 12, 80–91.
- Mitchell, G., Tetlock, P., Mellers, B. A., & Ordóñez, L. (1993). Judgments of social justice: Compromise between equality and efficiency. *Journal of Personality and Social Psychology*, 65, 629–639.
- Mussweiler, T., Rüter, K., & Epstude, K. (2004). The ups and downs of social comparison: Mechanisms of assimilation and contrast. *Journal of Personality and Social Psychology*, 87(6), 832–844.
- Nisbett, R. E. (2003). *The geography of thought*. New York: Free Press.
- Nisbett, R. E., & Cohen, D. (1996). *The culture of honor*. Boulder, CO: Westview Press.
- Norton, M. I., & Ariely, D. (2011). Building a better America—One wealth quintile at a time. *Perspectives on Psychological Science*, 6(1), 9–12.
- Oishi, S., & Graham, J. (2010). Social Ecology: Lost and Found in Psychological Science. *Perspectives on Psychological Science*, 5(4), 356–377.
- Ostrom, E. (2005). *Understanding institutional diversity*. Princeton: Princeton University Press.
- Piketty, T. (1995). Social mobility and redistributive politics. *Quarterly Journal of Economics*, 110(3), 551–584.
- Piketty, T. (2014). *Capital in the twenty-first century*. Cambridge, MA: Harvard University Press.
- Plender, J. (2012). The code that forms a bar to harmony: Capitalism in crisis. *Financial Times*, January 9, p. 5.
- Preacher, K. J., & Hayes, A. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36(4), 717–731.
- Rubin, Z., & Peplau, L. A. (1975). Who believes in a just world? *Journal of Social Issues*, 31, 65–89.
- Scott, W. R. (1995). *Institutions and organizations*. Thousand Oaks, CA: Sage.
- Senik, C. (2014). Why are the French so unhappy? The cultural dimension of happiness. *Journal of Economic Behavior and Organization*, 106, 379–401.
- Siegel, J. I., & Larson, B. Z. (2009). Labor market institutions and global strategic adaptation: Evidence from Lincoln Electric. *Management Science*, 55(9), 1527–1546.
- Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89(December), 845–851.
- Talhelm, T., Zhang, X., Oishi, S., Chen, S., Duan, D., Lan, X., et al. (2014). Discovery of large-scale psychological differences within China explained by rice vs. wheat agriculture. *Science*, 344(6184), 603–608.
- Tawney, R. H. (1926/1954). *Religion and the rise of capitalism*. New York, NY: Mentor.
- Tosi, H. L., & Greckhamer, T. (2004). Culture and CEO compensation. *Organization Science*, 15, 657–670.
- Wadhwa, V. (2007). Open doors wider for skilled immigrants. *Business Week (online edition)*, <[http://www.businessweek.com/smallbiz/content/jan2007/sb20070103\\_187304.htm](http://www.businessweek.com/smallbiz/content/jan2007/sb20070103_187304.htm)>, January 3. Accessed 05.04.12.
- Werthenbroch, K., & Skiera, B. (2002). Measuring consumer willingness to pay at the point of purchase. *Journal of Marketing Research*, 39(May), 228–241.
- Whatley, M. (1992). Belief in a just world: Unidimensional or multidimensional? *Journal of Social Psychology*, 133, 547–551.
- White, K., MacDonnell, R., & Ellard, J. H. (2012). Belief in a just world: Consumer intentions and behaviors toward ethical products. *Journal of Marketing*, 76(1), 103–118.
- Williams, D. A. (1968). The Virginia gentry and the democratic myth. In H. H. Quint, D. Albertson, & M. Cantor (Eds.), *Main problems in American history* (Vol. 1, pp. 25–43). Homewood, IL: The Dorsey Press.
- Williamson, O. (1985). *The economic institution of capitalism*. New York: Free Press.
- Wilson, A. E., & Darke, P. R. (2012). The optimistic trust effect: Use of belief in a just world to cope with decision generated threat. *Journal of Consumer Research*, 39(3), 615–628.
- Xou, X., Tam, K.-p., Morris, M. W., Lee, S.-I., Lau, I. Y.-m., & Chiu, C.-y. (2009). Culture as common sense: Perceived consensus versus personal beliefs as mechanisms of cultural influence. *Journal of Personality and Social Psychology*, 97(4), 579–597.