The Paradox of Educational Fairness in China[*]

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Neoclassical economics is founded on a narrow notion of the rational human being, with self-interest and material well-being as the basis of judgment and decision making. This stands in stark contrast to long held views, in philosophy and psychology, that maintain that human reason is motivated in part by emotions and, in particular, by social comparison. The social psychologist Festinger found that much judgment and decision making are the results of social comparison which may or may not reflect the actual reality of individuals. We tested Festinger's notion in Chinese cultural contexts by investigating public discussions of educational fairness. We found that while educational spending has been increasing steadily, sentiments about educational fairness have been deteriorating. Time series analysis shows that these phenomena were not due to price inflation, availability of opinion outlets, or regional difference, but to the psychological process of social comparison. The implications of such a paradox are discussed.

Key Words: Educational spending; Educational fairness; Social comparison; Paradox.

JEL Classification Numbers: E62, H41, J78.

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1. INTRODUCTION

There is a growing interest among the Chinese in the potential implications of increasing public resentment about educational unfairness, by voicing their opinions through internet discussions, newspaper editorials, and academic forums. This interest is partly due to evidence showing that students from the richest provinces have received more government support than students from the poorest provinces, and the education in Chinese rural areas has had lower quality.

In this paper we explore, via content analysis and time series analysis, issues pertaining to the presence of an intrinsic psychological process of social comparison as a motive force in judgments of educational fairness. Specifically, searching internet public discussion forums with educational fairness as "key subjects" in their titles, we looked for evidence of public sentiments about educational fairness each year, and then correlated a measure of what we found with the actual educational spending of the government. We also examined the discussion forums in different provinces, and then correlated their content with the educational spending in different provinces. By checking public sentiments and actual educational spending, we should be able to find out: 1) whether the public opinions on educational fairness reflect actual educational spending in different areas; 2) what are the bases of individual judgments of educational fairness; and 3) what derives public opinions of educational fairness.

2. EDUCATIONAL FAIRNESS IN CHINA

Educational fairness issues have become more and more important in China. In his landmark review of the problem, Yang Dongping (2004) identified four problems with the fairness of Chinese education system. One of the biggest problems is education in Chinese rural areas. The results of nine-year compulsory education in the rural areas of China have been felling behind the cities and urban areas. Due to insufficient resource available to education, especially lowest government spending in compulsory education, the rural areas of Chinese suffered the most in education in the decades of social and economic changes.

Another source of contention about Chinese educational fairness comes from the allocation of education funds which is inappropriate and most of them are given to higher education. According to one investigation conducted by the Development Research Center of the State Council, of the total input in compulsory education in China, 78% are from township, 9% from county treasury, 11% from province or prefecture finance and only 2% from the state treasury (China Education Daily, October 27, 2000). Wang Shanmai, a pedagogical economist, points out, as for the budgetary

funds for education, money input in higher education accounts for 20% and middle and junior education 80%. For higher education, 80% of the expenditure comes from the government funding. However, only 60% is allocated for compulsory education (Mass Speech, Issue 7 of 2000).

The third source of educational fairness complaints comes from the difference between private schools and public schools. Private schools still have not acquired the right to compete fairly with their public counterparts in development although great achievements have been made in higher education. The private colleges cannot independently confer certificates or diplomas. Furthermore, their students do not have the right to half-price train tickets and are not eligible to obtain study-aid loans from banks. Therefore, the educational administration system should be reformed because it was formed in a highly centralized planned economy and cannot adapt to the current situation in China.

The fourth source of educational fairness problems comes from uneven acceptance of students with different college entrance examination scores. Cheating on college entrance examinations and other educational and academic corruption make us aware of the fact that it is necessary to maintain educational fairness and accelerate construction and innovation of the educational system. Taking the system of supervision and quality assurance for the college entrance examination as an example, one important reason for more serious cheating nowadays is that the laws and regulations related to cheating are not good enough and punishment is too light.

One of the conditions for maintaining educational fairness in China is to comprehend public sentiments about educational fairness. Understanding individual psychology and the ways they understand fairness would make educators and policy makers develop more rational and reasonable ways to understand public opinions and designed better strategies to solve the educational fairness problems in China. Changes in perception and social values have made Chinese societies to be more pluralistic, so should the policy makers consider the pluralistic natures of public sentiments hence to understand the modern features in the Chinese education systems implemented for a long time.

3. SOCIAL COMPARISON THEORY

The basic theoretical framework of our predictions is the famous work by the social psychologist Festinger (Festinger, 1954). His idea was that individuals use outside images to evaluate their own opinions and their situations. These images may be a reference to physical reality or a comparison to other people. People take the images portrayed by others to be obtainable and realistic, and subsequently, make comparisons among themselves, others and the idealized images. In his initial theory, Festinger

hypothesizs several things. First, he states that humans have a drive to evaluate themselves by examining their opinions and abilities in comparison with others. He adds that the tendency to compare oneself with other persons decreases as the difference between that person's opinion or ability and one's own becomes larger.

He continues with the idea that to cease comparison between one's self and others causes hostility and deprecation of opinions. His hypotheses also state that an increase in the importance of a comparison group will increase pressure towards uniformity with that group. However, if the person, image or comparison group is too divergent from the evaluator, the tendency to narrow the range of comparability becomes stronger (Festinger, 1954). To this he adds that people who are similar to an individual are especially good in generating accurate evaluations of abilities and opinions (Suls, Lemos, & Stewart, 2002). Lastly, he hypothesizs that the distance from the mode of the comparison group will affect the tendencies of those comparing; that those who are closer will have stronger tendencies to change than those who are further away (Festinger, 1954).

Since its introduction to psychology in 1950s, research has shown that social comparisons are more complex than initially thought, and that mechanism of social comparision involved much broader psychological motives (Suls, Lemos, & Stewart, 2002). A number of revisions, including new domains for comparison and motives, have also been made since 1954. Motives that are relevant to comparison include self-enhancement, perceptions of relative standing, maintenance of a positive self-evaluation, closure, components of attributes and the avoidance of closure (Kruglanski & Mayseless, 1988; Suls, Martin, & Wheeler, 2002).

However, such theories have never been tested in China in the Chinese cultural contexts. More specifically, looking into social comparison with regard to Chinese educational fairness will not just provide a new dimension to the psychological theory but also provide a tool to look into the psychology of Chinese people.

4. METHOD

Our method of studying the relation between the perception and the reality is similar to that of the work by Morris & Peng (1994). In their studies, Morris and Peng examined the newspaper reports of mass murder events and then compared them with subjects understanding and analysis of the same events. They found that there was some parallel between individual perceptions and media discussion, but not much. Our method has a similar, but more rigorous, approach: we would check the number of discussions posted on line on educational fairness, and then try to find the "net correlation" between this number and the actual educational spending. By

"net correlation", we mean that we will also take into consideration other factors, which may also affect the number of on line posts on educational fairness. In other words, we will use a multiple regression model, with the perception of educational fairness as the dependent variable, and all the other contributing factors as independent variables.

5. RESULTS FROM TIME SERIES ANALYSES

We obtained two sets of data, one on educational spending and another on public sentiments in China. The information on educational spending was obtained from the China Educational Finance Statistical Yearbook 2007, published by the Ministry of Education of the People's Republic of China. There were two pieces of information in this data set: one was the annual education spending from 1978-2007 (denoted by "Annual Spending"); the other was the annual educational spending in 2006 for different provinces in China (denoted by "Provincial Spending"). Both information sets represent actual educational spending situation in China. Based on classic economic assumptions, with the increase of spending in the country as a whole every year, the satisfaction with educational fairness should increase gradually. Another economic-theory-based prediction would be the higher the educational spending of each province, the higher the public satisfaction with education policy.

Public opinions about educational spending were measured by two indexes. One was the number of academic articles with educational fairness in their title (denoted by "Articles"); the other was the number of public posts having educational fairness as their subject (denoted by "Posts"). The first piece of information was obtained from the Chinese National Knowledge Infrastructure (Please see http://epub.cnki.net/Grid2008/index.aspx). We searched the network for articles with "educational fairness" or "educational unfairness" in their title. We believe such articles reflect public interest in this topic, the more such articles, the more society is concerned about the problem. The second information set were obtained from Chinese public discussion forums. We searched the internet using Google China, looking for posts with the subject "Educational Fairness" or "Educational Unfairness". By the same rationale, we believe that neoclassic economic theories would predict that the more educational spending by individual province, the more satisfaction among the public. Table 1 lists annual spending on education at the national level from 1978-2007 as well as academic articles that are about educational fairness.

In this section, we will examine the relation between public sentiment on educational fairness and educational spending using the time series data, that is, the data of "Articles" and "Annual Spending" from 1978-2007. The cross-sectional analyses are in the next section.

We will provide some preliminary results by simply calculating the correlations between national education spending and the number of articles on educational fairness. The results, $r(1, 25) = .94$ and $p < .05$, indicate a stunning positive correlation, suggesting that the more money spent on education, the more likely people consider the educational fairness as a national issue.

Figures 1 and 2 illustrate the annual spending and the number of publication each year on educational fairness. Although the spending increased every year, public sentiment about educational fairness became more resentful, particularly after 2004.

FIG. 1.   Annual Education Spending (in billion)
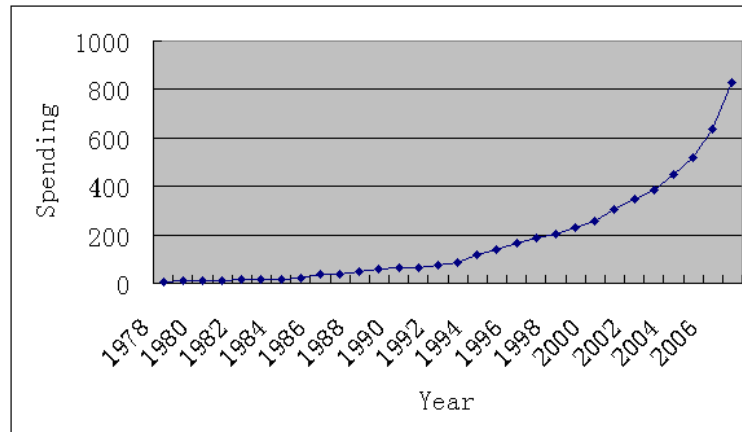
FIG. 2.   Annual Publications on Educational Fairness
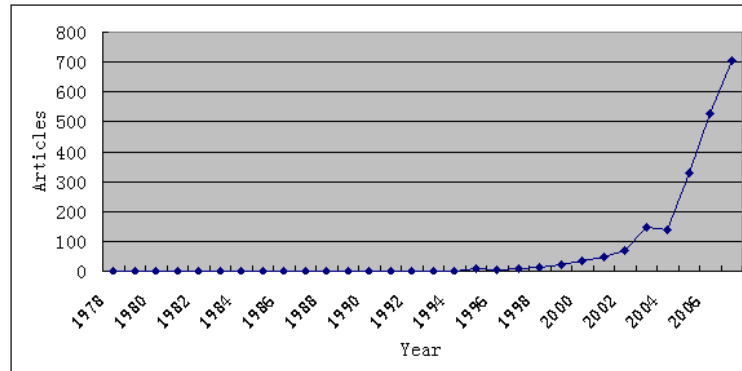
Next, we will conduct further analyses by taking other factors into consideration, as well as by employing more rigorous empirical methods.

TABLE 1.

Annual National Education Spending and Articles on Educational Fairness

Year	Spending(in billion)	Articles
1978	7.623	0
1979	9.316	0
1980	11.319	0
1981	12.222	0
1982	13.720	0
1983	15.472	0
1984	18.014	0
1985	22.489	1
1986	35.096	0
1987	37.393	0
1988	45.539	0
1989	57.826	0
1990	62.904	0
1991	61.783	0
1992	72.875	0
1993	86.776	0
1994	117.474	2
1995	141.152	7
1996	167.170	3
1997	186.254	9
1998	203.245	11
1999	228.718	20
2000	256.261	36
2001	305.701	47
2002	349.140	70
2003	385.062	148
2004	446.586	140
2005	516.108	329
2006	634.840	529
2007	828.021	706

First, since the values of educational spending for each year are all in nominal forms, variations of prices will impose a significant impact on the values of "Yearly Spending". On the other hand, such impacts only have little or no effect on the perception of educational fairness. In other words, what matters is the real education spending, instead of the nominal one. Therefore, we deflated the data of "Yearly Spending" by "Overall Retail Price Indices", which are obtained from China Statistical Yearbook 1996(for 1978-1995) and China Statistical Yearbook 2007(for 1996-2006).

TABLE 2.

The Results of ADF Test for Unit Root

	With trend and constant	With only constant	Without trend or constant
Test Statistic	3.983	4.634	4.899
Number of lags	1	1	1
Number of observations	28	28	28

Notes: The 1%, 5% and 10% critical values for this test statistic are -3.730, -2.992 and -2.626 respectively.

For simplicity of notation, we still denote the deflated data by "Yearly Spending".

Second, in order to avoid the problem of "spurious regression" (regression that does not make any sense), we will test whether the time series data of "Articles" are stationary by using the Augmented Dickey-Fuller test for unit root (ADF Test). Table 2 summarizes these results.

Obviously, all the test statistics in the above three regressions are larger than -2.626, the 10% critical value, indicating that the time series data of "Articles" are non-stationary even at 10% significance level. To solve this problem, we include a trend variable, denoted by T, as an independent variable. Specifically, T equals 1 for 1978, the first year of our sample, equals 2 for 1979, and so on.

Third, one may argue that the number of journals (denoted by "Journals") may also have an impact on that of the academic articles about educational fairness. In fact, it's true that there would be no such articles at all if there had been no journals, no matter how discontent people may be with the situation of educational fairness. To consider this effect, we will also use "Journals" as a regressor. The data of this variable come from China Statistical Yearbook of the year 2007(for 1978, 1980, 1985-1996), the year 1984(for 1979, 1981-1983), the year 1985(for 1984) and the year 2008(for 2007).

That is, we will run the following regression:

$$\text{Articles} = b_0 + b_1 * \text{Yearly Spending} + b_2 * T + b_3 * \text{Journals} + \varepsilon$$

Besides ordinary least squares (OLS), we also employ the method of Generalized Least Square (GLS) in order to account for auto correlation. Specifically, we will use Prais-Winsten estimation, with Cochrane-Orcutt option. The results of both methods are listed in Table 3.

We can see from Table 3 that, although the Breusch-Godfrey test indicates the existence of serial correlation in our OLS regression, the results from GLS are almost the same with those from OLS, suggesting that our regression results are highly robust. In particular, our interested variable,

TABLE 3.

The Regression Results for Articles on Educational Fairness

Articles	OLS	GLS
Yearly Spending	5.044***	4.769***
	(0.000)	(0.000)
T	−21.380***	−3.801
	(0.007)	(0.703)
Journals	0.023	−0.043
	(0.242)	(0.165)
Adjusted R^2	0.939	0.873
p value of Breusch-Godfrey test	0.001	N/A
Number of observations	30	30

Notes: p-values are in parenthesis. ***, **, and * denote 1%, 5% and 10% significance respectively. The null hypothesis for Breusch-Godfrey test is "no serial correlation".

Yearly_Spending, has a significantly positive effect on "Articles", while the suspected contributing factor, the number of journals, has no significant effect.

In sum, the multiple regression results obtained from time series data support the preliminary conclusion stated before, that is: the more money spent on education, the more likely people would consider the educational fairness as a national issue.

## 6. RESULTS FROM CROSS-SECTIONAL ANALYSES

In this section, we will use the cross-sectional data mentioned above.

Table 4 lists the annual spending on education by individual provinces from the highest to lowest provinces and the online posts that complain about educational fairness. Similar to the case of time series data, we will firstly conduct some preliminary analyses by simply calculating the correlation between the expenditure by the province and the public forum discussions about the educational fairness. Once again, we found a large correlation between the spending by province and the number of complaints by province: $r(1.30) = 0.56$, $p < 0.01$, which suggests that the more each province spends on education, the more people would complain about the educational fairness.

Figure 3 illustrates the spending by provinces in 2006 with Guangdong and Beijing leading the way. Figure 4 illustrates the public discussion of education fairness by provinces. The usual pattern was that the higher the educational spending, the more public discussion about education fairness.

The only exception is Hubei province, and the reason is still unknown to us.

FIG. 3. Educational Spending in 2006 by Provinces
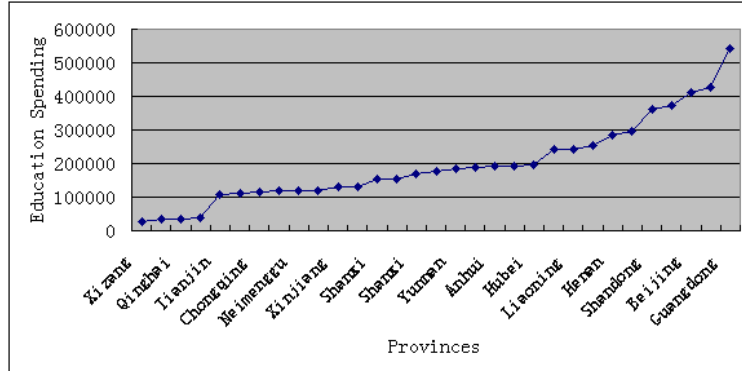
FIG. 4. Number of Posts on Educational Fairness Online by Provinces
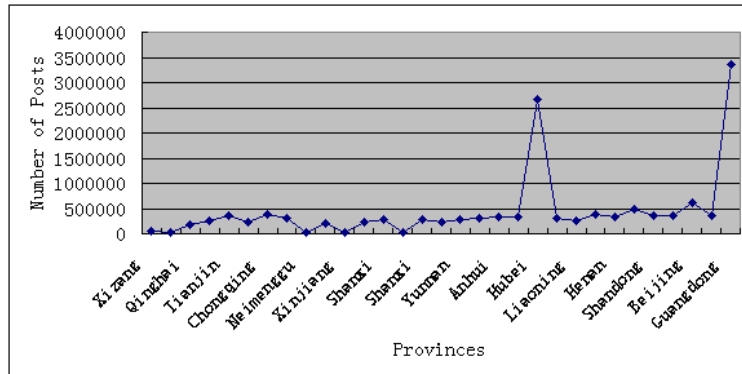
Next, to make our analyses more rigorous, we will again consider the effects of other contributing factors by doing a multiple regression.

First, since the number of people in each region may affect that of posts on educational fairness, we include the provincial population as a regressor. Among the various indicators of population in China Statistical Yearbook 2007, we choose "Population Aged between 15 and 64", believing that this indicator fits our need best.

Second, to consider the effects of different internet coverage levels, we also include the variable of "Internet" as an independent variable. The data of this variable are obtained from China Statistical Yearbook 2007 (see "Broad Band Subscribers Port of Internet" in Section 41 of Chapter 16).

TABLE 4.

Educational Spending in 2006 by Provinces and Numbers of Posts on Educational Fairness

Provinces	Educational Spending(in thousand)	Number of Posts
Xizang	26342.21	56400
Ningxia	32755.13	28900
Qinghai	33112.94	181000
Hainan	39222.78	244000
Tianjin	106800.87	352000
Gansu	110836.52	224000
Chongqing	115835.23	375000
Jiangxi	118018.03	307000
Neimenggu	118816.91	24100
Guizhou	118851.36	215000
Xinjiang	129203.32	32700
Jilin	131882.99	237000
Shanxi	154115.48	279000
Guangxi	154957.69	33300
Shanxi	168985.24	273000
Heilongjiang	176493.37	224000
Yunnan	183330.58	283000
Fujian	187555.57	311000
Anhui	190960.27	340000
Hunan	194114.85	321000
Hubei	195394.86	2670000
Hebei	240690.06	303000
Liaoning	242079.91	262000
Sichuan	255440.15	387000
Henan	284839.47	330000
Shanghai	295119.58	488000
Shandong	362599.79	366000
Zhejiang	371442.79	359000
Beijing	410454.01	611000
Jiangsu	425068.76	349000
Guangdong	543044.03	3370000

Finally, we will filter our data. As shown by Figure 4, Hubei and Beijing have "abnormal" numbers of posts, which are far more than the average level of all provinces. Mathematically, the data of the two observations are beyond the range of $[\text{Mean} - 3 * \text{Standard\_Deviation}, \text{Mean} + 3 * \text{Standard\_Deviation}]$, a widely-used range by which to judge an outlier. In order not to be affected by these outliers, we exclude them from our follow-

TABLE 5.

Descriptive Statistical Information for Posts and the Regressors

	Mean	SD	Mean − 3 ∗ SD	Mean + 3 ∗ SD
Posts	446335.5	705543.9	−1670296	2562967
Provincial_Spending	197366.6	124137.6	−175046	569779.4
Population	27828.71	17977.61	−26104.1	81761.54
Internet	203.9926	174.7137	−320.149	728.1337

ing regressions. All the other variables are within the corresponding ranges, as can be seen in Table 5, where "SD" stands for Standard Deviation.

In other words, we will do the following multiple regression with our filtered cross-sectional data:

$$\text{Posts} = b_0 + b_1 * \text{Provincial Spending} + b_2 * \text{Population} + b_3 * \text{Internet} + \varepsilon$$

Besides OLS, we also employ GLS to account for the possibility of heteroskedasticity, a common problem in cross-sectional analyses. The results of both methods are in Table 6.

TABLE 6.

The Regression Results for Online Posts on Educational Fairness

Posts	OLS	WLS
Provincial Spending	11.396***	10.130***
	(0.005)	(0.000)
Population	−94.442***	−80.226***
	(0.000)	(0.000)
Internet	3569.825*	2797.504**
	(0.081)	(0.022)
Adjusted R^2	0.761	0.683
p value of Breusch-Pagan test	0.000	N/A
Number of observations	30	30

Notes: p-values are in parenthesis. ***, **, and * denote 1%, 5% and 10% significance respectively. The null hypothesis for Breusch-Pagan test is "constant variance".

The p value of Breusch-Pagan test in Table 6 shows that the problem of heteroskedasticity is serious, so the OLS may well meet our requirements. But even after considering the slight heteroskedasticity, the results of GLS are also consistent with those of OLS, that is: the provincial education spending has a significantly positive effect on the number of posts, while the population and internet coverage levels of each region have no significant effect.

In sum, the multiple regression results obtained from cross-sectional data support the previous preliminary conclusion, that is: the higher the educational spending of each region, the more public discussion of education fairness in that region.

7. DISCUSSION

The results of this study suggest that perception of educational fairness does not reflect how much the government spends on education. In fact, the more the central government and the provincial governments spend on education, the more we are likely to see public sentiment focus on educational fairness. This paradoxical result we believe was generated by the social comparison processes.

Social psychology has much to offer the broader field of educational economics. Although social psychology has a long history of studying social comparison, the field has focused largely on personal issues rather than social issues (Fiske, 1998; Tajfel & Turner, 1979). We, however, with our emphasis on education, have advanced the social comparison research in a domain that is important in Chinese contemporary life. The results have provided insight into how Chinese people perceived educational fairness as a result of comparing with close others in their communities than actual spending by the governments

Despite many decades of studying the educational fairness in China, we still know little about how psychology plays a role in social perception of educational fairness. For instance, relatively little is known about provincial variation in either perception processes of the educational fairness, or their correlations with actual spending at different provinces. The present study addresses such issues, making a novel contribution to the study of educational fairness problems in China. Based on the present study, we reason that, in the absence of moderating contextual information, people rely on their beliefs about the situations of other people in their community when making educational fairness judgments. This is often the state of affairs in everyday social perception: People frequently must make quick and imperfect social judgments without access to contextual information. In China and other highly collectivist cultures, these beliefs emphasize the well-being of the closest groups (Bond, 1972; Triandis, 1990). This study has demonstrated that Chinese people view educational fairness as reflections of the situations of other people in their own communities than the actual spending of the societies since the spending information tends to be less available to them.

7.1.   Implications for Future Research

Because a common pattern was found across different provinces, the cross-sectional differences in perception of fairness may be important for further study. Much of the complaints of educational fairness come more from the middle classes in China than the poor, although no actual evidence has been provided. Of course, other variables are likely to contribute to the differences in judgment processes. For example, motivational factors may come into play, some people derive impressions of the reality from media and may possess stronger belief about educational fairness than those who are not exposed to the media discussion about the issues. A comparison study between these two groups may be interesting.

7.2.   Concluding Remarks

At the first glance, our results may appear to only show whatever the actual spending on education is, and people would still judge the effort to be insufficient. We believe, however, that these findings actually help to clarify the circumstances under which misconceptions in perception might be found. When social category membership is available, people might be more likely to make a fair judgment, as a consequence of relying on a group-based judgment rather than a close-other-based judgment. For instance, a middle class member may judge the situation to be unfair by comparison with other middle class members in his or her group, but he or she may perceive the situation to be fair if he or she compares with the lower-class members.

Chinese society is also increasingly showing that although there are clearly important differences in the manifestation of various social phenomena, many basic psychological processes appear to be the same. For example, the tendency to compare oneself to social groups, and to rely upon social group membership as prediction bases are common across various social groups. Likewise, the perception of individual realities associated them with the perception of group realities seems to be a universal mechanism with group variations. The desire to enhance individual judgments seems to also be common among individuals. The problem is that they tend to rely more on the wrong information when they make their judgments.

This study also illustrates the importance of uniting psychology and economics. Individual behavior should underlie and inform economics, much as physics informs chemistry; archaeology informs anthropology; or neuroscience informs cognitive psychology. Some of the social economic phenoma may not be understood by economic models alone, with the help of psychology, we may have more realistic understand how the models actually work across times, domains, individuals and cultures.

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