

Lay perceptions of health and environmental inequalities and their associations to mental health

Percepções leigas sobre as desigualdades na saúde e no ambiente e suas associações com a saúde mental

Percepciones laicas sobre las desigualdades en la salud y medioambiente y su relación con la salud mental

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Abstract

Health inequalities are very well documented in epidemiological research: rich people live longer and have fewer diseases than poor people. Recently, a growing amount of evidence from environmental sciences confirms that poor people are also more exposed to pollution and other environmental threats. However, research in the social sciences has shown a broad lack of awareness about health inequalities. In this paper, based on data collected in Portugal, we will analyze the consciousness of both health and environmental injustices and test one hypothesis for this social blindness. The results show, even more clearly than before, that public opinion tends to see rich and poor people as being equally susceptible to health and environmental events. Furthermore, those who have this equal view of the world present lower levels of depression and anxiety. Following cognitive adaptation theory, this "belief in an equal world" can be interpreted as a protective positive illusion about social justice, particularly relevant in one of the most unequal countries in Europe.

Health Inequalities; Social Inequity; Environment

Resumo

As desigualdades na saúde estão bem documentadas na investigação epidemiológica: as pessoas ricas vivem mais e têm menos doenças que as pessoas pobres. Uma quantidade crescente de evidência das ciências ambientais confirma também que os pobres estão mais expostos à poluição e a outras ameaças ambientais. No entanto, a pesquisa nas ciências sociais tem mostrado que existe uma grande falta de consciência sobre as desigualdades na saúde. Neste trabalho, com base em dados coletados em Portugal, analisamos a consciência das injustiças na saúde e no ambiente e testamos uma hipótese explicativa para a cegueira social. Os resultados mostram, mais do que antes, que a opinião pública tende a ver as pessoas ricas e pobres como igualmente suscetíveis a problemas de saúde e ambientais, e que aqueles que têm uma visão de mundo mais igual apresentam menores níveis de depressão e ansiedade. Seguindo a teoria de adaptação cognitiva, essa "crença num mundo igual" pode ser interpretada como uma ilusão positiva de proteção, particularmente relevante em um dos países mais desiguais da Europa.

Desigualdade em Saúde; Iniquidade Social; Meio Ambiente

Introduction

There is no doubt that rich people and those living in rich countries have longer and healthier lives than poor people and those in poor countries. The work carried out by the World Health Organization's (WHO) Commission on Social Determinants of Health ¹, the *Marmot Report* on health inequalities in England ² and the European Parliament resolution, *Reducing Health Inequalities in the European Union (EU)* ³, all share the same evidence that had already been identified in the *Black Report* of 1980 ⁴: higher socioeconomic position in society is associated with longer and healthier lives. Although the mediating variables that promote this social effect and the actions to be undertaken in order to reduce this social gap are not consensual, this difference is widely accepted in the scientific community and in the health policy agencies. Research has also consistently shown, however, that public opinion is not clearly aware of this fact. The social position is rarely mentioned when asked open-ended questions about the causes of ill health ⁵ or even on direct questions comparing the health of rich people with that of poor people ⁶. For example, in one study ⁶, 80% of respondents estimated that rich and poor people had the same chances of getting cancer. This lack of awareness of the social determinants of health is, in some studies, associated with the recognition of more individual factors such as a healthy lifestyle ⁵. Besides, most of the studies show that participants from a higher social position recognize health inequity more easily than those from lower socio-economic status ^{5,6,7,8}. Only in some specific contexts do those from disadvantaged backgrounds also accept the existence of health inequalities. For example, Lillie-Blanton et al. ⁹ showed the traditional unawareness patterns regarding the difference between African and white Americans in general health risks (life expectancy and child mortality) but, at the same time, a clear acknowledgment of the differences on the way the health system treats people. Davidson et al. ¹⁰ created a collective context for data collection (focus groups, with members of pre-existing social networks); under this condition they could witness the recognition of health inequalities. However, these results are exceptions and most of the studies using surveys report a lack of public awareness of health inequalities.

Another area where social position has increasingly been recognized to have an important impact is the exposition to environmental threats. Evidence suggests that poor people, from underprivileged minorities, are the ones who

mostly end up living in the most industrialized and polluted places ^{11,12,13,14,15}. For instance, a recent study conducted in England ¹⁶ showed an unequal distribution of industrial sites, with these installations disproportionately located in deprived areas and near deprived populations. In a similar vein, other evidence showed that industrial and hazardous areas in the United States are disproportionately occupied by Blacks and Hispanics ¹⁷, and that low socio-economic populations are more exposed to water contamination ¹⁸. Besides the health risks associated, the exposure to toxic environments increases economic and psychosocial risks (residential stigma ¹⁹ and environmental concerns ²⁰). To enhance their vulnerability, people with less education and lower socio-economic status are usually less informed about the risks they are exposed to, they have less means to protect themselves (e.g. with insurance ²¹) and to influence environmental decision processes ²². A recent WHO report ²³ is a first step towards a systematic and worldwide collection of reliable data on this important topic, which reinforces health inequalities.

In the case of environmental justice we do not know any study concerning the public awareness of the different exposure of poor people to threatening environmental conditions. On the contrary, we can suppose that there is the idea that we all breathe the same air, and that natural disasters do not choose their victims – or as Beck ²⁴ (p. 36) puts it “*poverty is hierarchy, smog is democratic*”. One main goal of this paper is then to analyze the levels of awareness related to environmental inequalities, and compare them to the conceptions about health inequalities. This is the first study to approach this issue in Portugal, a country with high levels of inequality in terms of environmental health conditions ²⁵ and the third most unequal EU country in terms of the inequality of income distribution (measured by the Gini coefficient; Portugal is after Latvia and Bulgaria, according to the Eurostat data for 2012). The experience of inequalities is thus, in this country, a very important issue.

An equal world as a positive illusion?

The research reviewed above describes a generalized lack of acknowledgement of health inequalities, but it does not present a mechanism to explain it. Blaxter ⁵ (p. 754) proposes that this “denial” can be associated to a need to preserve self-image from potential stigma: “[to] acknowledge ‘inequality’ would be to admit an inferior moral status for oneself or one’s peers”. This interpretation was never tested and points to a pos-

sible link to the social psychological literature on self-preservation and self-enhancement.

Following Taylor & Brown's proposal²⁶, research has produced strong evidence that certain forms of self-enhancement or positive illusions are highly prevalent in normal thought and they are even predictive of criteria traditionally associated with good mental health. In particular, it is known that people usually hold unrealistic positive self-images, they overestimate the levels of control about the world around them, and they expect unrealistic positive events for the future. As Taylor & Brown²⁶ (p. 193) put it: "*a set of inter-related positive illusions can serve a wide variety of cognitive, affective, and social functions*". As research on the favourable consequences of these positive biases for mental health has grown²⁷, a parallel line of research has also been advanced: the one on "depressive realism". As depressed individuals are characterized by a general negativity bias (negative construction of reality and negative view of themselves²⁸), they usually perform better than non-depressive persons when it concerns the accuracy of self-perceptions²⁹, self-relevant recall³⁰ and the evaluation of health risks³¹. Overall, depressed individuals offer self-evaluations that coincide more closely with evaluations by objective observers³². Meta-analytical studies have also found that the attributional positive bias is far less common in psychopathological samples³³.

Although the evidence on this positive enhancement is quite strong, most of the studies refer to personal and not so much to societal beliefs. However, there is also some research on positive illusions about social issues or about the association of mental health to more unrealistic views of the world. Some authors^{34,35} have shown that perceiving the social system through rose-colored glasses may reflect a form of self-deception that allows the adaptation to unwelcome realities. For example, the "belief in a just world" was proposed as a form of positive illusion, positively associated with higher levels of subjective well-being^{36,37,38}. This paper will also address this research question: is the belief in an equal world (in terms of the distribution of health or environmental conditions) also a positive illusion? Given the prevalence of results that clearly stress the objective unequal distribution of health and good environmental conditions and the subjective idea that it is equally distributed, we will approach this gap as a form of self-deception, a positive illusion associated with the preservation of mental health.

To summarize, this paper has the following objectives: (1) to analyze public perceptions of health and environmental inequalities in Portu-

gal; (2) to compare the perceptions of health and environmental inequality; (3) to test the impact of social class in these perceptions and; (4) to analyze the adaptive value of the "belief in an equal world", testing the association between the perception of health and environmental inequalities and mental health.

Method

Participants

429 participants were interviewed, and voluntarily participated in this study as part of a bigger study on environmental quality, associated with the monitoring of an industrial facility in the North of Portugal^{15,20}. The respondents were part of a panel that was originally a random sample of residents close to the industrial site and from other comparison locations, and data was collected in 2007.

Procedure and measures

Due to the low level of education of the participants, the answers to the survey were collected by a face to face interview. The interviews were conducted by trained interviewers, and took place in the resident's house, at the end of the day or during the weekend. Besides the variables described below, the survey included information about the demographic characteristics of the respondent, perceived environmental changes, local identity and sense of community.

Social class index

The indicator of social class was created combining the two most commonly used predictors³⁹: participants' education and occupation. All participants that worked as white collar professionals or those who were non-active (retired, students, unemployed) but had a university degree or had completed secondary education were coded as *higher social class*. Participants were coded as *lower social class* if they were an unskilled worker or if they were non-active and had a very low level of education (complete or incomplete elementary school or no education at all). The code *medium social class* was assigned to all the other participants – specialized workers or non-active with a medium level of education (5th to 11th grade).

Social inequality measures

In order to allow direct comparison of the results with previous research, the research paradigm used by Macintyre et al.⁶ was used. Participants were asked: “Who do you think is more likely to have the following experiences (cancer, heart disease, being fitter, mental illness and live longer): rich people, poor people or both about the same?”. As the phrasing “experience of accidents” in the previous study seemed a bit vague, two types of accidents were proposed – car accidents and work-related accidents. Stress and “being happy” were also included to tap a broader view of health. The same question was made about environmental experiences (air pollution, lack of water, noise and traffic jams). Overall, 13 items (4 about the environment and 9 about health) were considered. The response scale was a three point scale with 1 indicating rich, 2 indicating both equally and 3 indicating poor.

Mental health

The indicators of psychological symptoms included anxiety and depression. It was assessed using a short version of the *Hospital Anxiety and Depression Scale* (HADS)⁴⁰. HADS was first developed to assess the psychological state of clinical samples in a hospital setting, but is considered as quite appropriate for community surveys in which there is no intention of producing a clinical individual diagnosis⁴¹. The six item short version used in this study was developed from a previous test conducted with a different sample, in which the short form showed a very good association with the total score and an adequate convergent and discriminant validity²⁰. The results for the internal consistency are not very high (anxiety: $\alpha = 0.76$; depression: $\alpha = 0.61$), but this indicator is very sensitive to the number of items of the subscales⁴², which were 3 in this case.

Data analysis

The statistical analysis performed included basic descriptive statistics (such as frequencies, proportions, means and standard deviations). The associations between the variables were tested using inferential statistics. Chi-square tests were performed to test the association of awareness of inequalities with social class. The inferential statistics on the associations of the awareness of inequalities with mental health will be described (means comparison between groups using independent samples t tests). IBM SPSS Statistics 19 software (IBM Corp., Armonk, USA) was used for all statistical analysis.

Results

The sample (Table 1) comprised 211 males (49.2%) and 218 females (50.8%) aged between 18 and 94 years ($M = 54.73$, $SD = 17.27$). All the participants live near Oporto, and almost half of these participants had completed primary school (48.3%) and were retired (41.3%). The majority (68.3%) were married.

Table 1

Description of the sample by social class, education, occupation, marital status and income.

Socio-demographic variables	%
Social class	
High	14.9
Medium	33.8
Low	51.3
Education	
University graduation	7.5
Middle school	11.4
9th grade	10.0
6th grade	11.7
Complete elementary school	48.3
Incomplete elementary school	6.3
No education	4.9
Occupation	
Retired	41.3
Operator	13.8
Employed	11.2
Housewife	7.7
Technical job	7.0
Unskilled work	7.0
Unemployed	6.5
Higher technical jobs	4.0
Student	1.4
Other	0.2
Marital status	
Married	68.3
Single	14.9
Widowed	13.1
Divorced	3.7
Income (Euros)	
Up to 350	7.0
Between 351 and 600	15.2
Between 601 and 750	12.4
Between 751 and 1,200	13.1
Between 1,251 and 2,000	3.5
More than 2,000	0.9
Not given	48.0

Firstly results will be presented about the levels of awareness of health inequalities directly comparable with those shared by Macintyre et al.⁶ (Table 2), then other health experiences (Table 3) and finally environmental inequalities (Table 4).

The perceived distribution of health experiences in society is given in Table 2, presenting the same topics as the Macintyre et al.⁶ study. Overall, the most common response by far was that rich and poor people were perceived as equally prone to cancer, heart disease and mental illness, and were equally fit and likely to live longer. In fact, even when this answer was less common it corresponds to 80% of responses (for living longer) and attains 98% for cancer. These values are much higher than the ones reported in the Scottish study, although the trend is the same: the lowest is 31% for living longer and the highest 80% for cancer.

There were statistically significant differences between social classes in perception of unequal experience of heart disease. Both individuals from high and low social classes have low awareness of existing inequalities in relation to the experience of a heart attack, yet their perceptions are opposed. The adjusted residual values show that while the participants from a higher social class think that richer people are more susceptible to heart disease (12.5%, adjusted residual = 2.7), those from a lower social class more frequently attribute this experience to poor people (5.5%, adjusted residual = 1.9). Contrary to the results found by Macintyre et al.⁶, no differences by social status were found in the perceptions of health inequalities regarding cancer, being fitter, living longer or mental illness.

Table 3 shows the results for other health experiences, not directly comparable with Macintyre et al.'s⁶ results. The experience of accidents was split into car- and work-related accidents. This latter experience is only seen as equally experienced by rich and poor people by 53% of respondents and 46% think that they more frequently occur to poor people. All the other experiences (car accidents, being happy and stress) were considered by a large majority of respondents (77-88%) as equally experienced by rich and poor people.

Table 3 shows that the only statistically significant difference between social classes was in the perception of whether rich and poor people are likely to have work related accidents. In fact, the adjusted residual values show that those with medium social status tend to over-estimate the equality of the experience of work-related accidents (63%, adjusted residual = 3.1) and to underestimate the experience of these accidents among

the poor (37%, adjusted residual = -2.9). The reversed pattern was found in the low social class group: the equality is underestimated (48%, adjusted residual = -2.1) and the experience by poor people is stressed (51%, adjusted residual = 1.9).

The descriptive statistics of the variables concerning the perception of social inequalities to the exposure to environmental threats present a similar pattern. Most respondents are unaware of the environmental injustice: the experience of lack of water is perceived by 80% of the participants as similar to rich and poor people, and noise, traffic jams and air pollution are even more consensually perceived as equitable (88, 89 and 95%, see Table 4). Only for lack of water do 19% of participants accept it as a problem that particularly afflicts poor people.

Table 4 shows two statistically significant differences between social classes in the perceptions of whether rich and poor people are likely to be vulnerable to environmental threats: air pollution and noise. The adjusted residual values show an association between participants belonging to a higher social class and the consideration of rich people as more susceptible to be vulnerable to air pollution (3%, adjusted residual = 3.4) and equity to be less probable (89%, adjusted residual = -2.1). A similar pattern was found for noise. In this case, respondents from higher social backgrounds rated equality lower (78%, adjusted residual = -2.6) but considered poor people as being more frequently exposed to noise (20%, adjusted residual = 2.3)

Health and environment inequalities and its associations to mental health

Significant differences were found in the reported levels of depression between the participants that consider rich and poor people to be equally prone to have some health and environmental experiences and those that do not. The participants that consider rich and poor people were not equally likely to be healthy ($M = 1.74$, $SD = 0.62$), be exposed to air pollution ($M = 1.86$, $SD = 0.77$), to experience lack of water ($M = 1.69$, $SD = 0.63$) and exposure to noise ($M = 1.73$, $SD = 0.75$), report superior levels of depression than the participants that consider rich and poor people as equally likely to have the same experiences ($M_{\text{healthier}} = 1.54$, $SD_{\text{healthier}} = 0.58$, $t(427) = -2.23$, $p = 0.026$; $M_{\text{air pollution}} = 1.55$, $SD_{\text{air pollution}} = 0.57$, $t(427) = -2.45$, $p = 0.015$; $M_{\text{lack of water}} = 1.54$, $SD_{\text{lack of water}} = 0.56$, $t(427) = -2.172$, $p = 0.030$; $M_{\text{noise}} = 1.54$, $SD_{\text{noise}} = 0.56$, $t(427) = -2.26$, $p = 0.024$).

Similar results were found for anxiety. We found significant differences in reported anxiety between the participants that consider rich

Table 2

Number (%) reporting that rich or poor are more likely to have certain health experiences – questions directly comparable with those of Macintyre et al. ⁶.

	Are rich or poor people more likely to have the following experiences?							
	Rich		Both equally		Poor		Total	
	n	%	n	%	n	%	n	%
Cancer								
High social class	1	1.6	62	96.9	1	1.6	64	100.0
Medium social class			141	97.2	4	2.8	145	100.0
Low social class			217	98.6	3	1.4	220	100.0
Total	1	0.2	420	97.9	8	1.9	429	100.0
% in Macintyre et al. ⁶		1.3		79.7		19.0		
		$\chi^2 = 6.68$; d.f. = 4; $p = 0.154$						
Fitter								
High social class	8	12.5	56	87.5			64	100.0
Medium social class	9	6.2	134	92.4	2	1.4	145	100.0
Low social class	25	11.4	191	86.8	4	1.8	220	100.0
Total	42	9.8	381	88.8	6	1.4	429	100.0
% in Macintyre et al. ⁶		53.6		42.4		4.0		
		$\chi^2 = 4.43$; d.f. = 4; $p = 0.351$ *						
Heart disease								
High social class	8	12.5	55	85.9	1	1.6	64	100.0
Medium social class	5	3.4	137	94.5	3	2.1	145	100.0
Low social class	10	4.5	198	90.0	12	5.5	220	100.0
Total	23	5.4	390	90.9	16	3.7	429	100.0
% in Macintyre et al. ⁶		6.6		48.8		44.5		
		$\chi^2 = 11.38$; d.f. = 4; $p = 0.023$						
Live longer								
High social class	8	12.5	53	82.5	3	4.7	64	100.0
Medium social class	15	10.3	121	83.4	9	6.2	145	100.0
Low social class	41	18.6	168	76.4	11	5.0	220	100.0
Total	64	14.9	342	79.7	23	5.4	429	100.0
% in Macintyre et al. ⁶		67.6		30.5		1.9		
		$\chi^2 = 5.26$; d.f. = 4; $p = 0.261$						
Mental illness								
High social class	3	4.7	60	93.6	1	1.6	64	100.0
Medium social class	1	0.7	138	95.2	6	4.1	145	100.0
Low social class	4	1.8	213	96.8	3	1.4	220	100.0
Total	8	1.9	411	95.8	10	2.3	429	100.0
% in Macintyre et al. ⁶		6.4		63.9		29.7		
		$\chi^2 = 6.95$; d.f. = 4; $p = 0.139$ *						

* More than 20% of the cells have an expected count of less than 5.

and poor people as equally prone to have some health, social and environmental experiences and the participants that do not. The participants that consider rich and poor people not equally likely to be happy ($M = 1.77$, $SD = 0.60$), healthy ($M = 1.78$, $SD = 0.59$), to have experienced work-related accidents ($M = 1.70$, $SD = 0.63$), to be exposed to air pollution ($M = 1.91$, $SD = 0.68$), to ex-

perience a lack of water ($M = 1.75$, $SD = 0.65$) or to be exposed to noise ($M = 1.88$, $SD = 0.72$), report superior levels of anxiety than the participants that consider rich and poor people as equally prone to have those same experiences ($M_{\text{be happy}} = 1.56$, $SD_{\text{be happy}} = 0.57$, $t(427) = -3.07$, $p = 0.002$; $M_{\text{healthier}} = 1.59$, $SD_{\text{healthier}} = 0.58$, $t(427) = -2.24$, $p = 0.025$; $M_{\text{work-related accidents}} = 1.52$, $SD_{\text{work-related}}$

Table 3

Number (%) reporting that rich or poor are more likely to have other health experiences (other questions).

	Are rich or poor people more likely to have the following experiences?							
	Rich		Both equally		Poor		Total	
	n	%	n	%	n	%	n	%
Automobile accidents								
High social class	5	7.8	56	87.5	3	4.7	64	100.0
Medium social class	14	9.7	126	86.9	5	3.4	145	100.0
Low social class	15	6.8	197	89.5	8	3.6	220	100.0
Total	34	7.9	379	88.3	16	3.7	429	100.0
	$\chi^2 = 1.16$; d.f. = 4; $p = 0.885$							
Work-related accidents								
High social class			30	46.9	34	53.1	64	100.0
Medium social class			92	63.4	53	36.6	145	100.0
Low social class	2	0.9	106	48.2	112	50.9	220	100.0
Total	2	0.5	228	53.1	199	46.4	429	100.0
	$\chi^2 = 10.91$; d.f. = 4; $p = 0.028$ *							
Stress								
High social class	8	12.5	50	78.1	6	9.4	64	100.0
Medium social class	12	8.3	125	86.2	8	5.5	145	100.0
Low social class	16	7.3	188	85.5	16	7.3	220	100.0
Total	36	8.4	363	84.6	30	7.0	429	100.0
	$\chi^2 = 2.99$; d.f. = 4; $p = 0.559$							
Be happy								
High social class	8	12.5	53	82.8	3	4.7	64	100.0
Medium social class	17	11.7	112	77.2	16	11.0	145	100.0
Low social class	28	12.7	166	75.5	26	11.8	220	100.0
Total	53	12.4	331	77.2	45	10.5	429	100.0
	$\chi^2 = 2.89$; d.f. = 4; $p = 0.557$							

* More than 20% of the cells have an expected count of less than 5.

accidents = 0.52, $t(427) = -3.26$, $p = 0.001$; $M_{\text{air pollution}} = 1.59$, $SD_{\text{air pollution}} = 0.57$, $t(427) = -2.60$, $p = 0.010$; $M_{\text{lack of water}} = 1.58$, $SD_{\text{lack of water}} = 0.56$, $t(427) = -2.43$, $p = 0.015$; $M_{\text{noise}} = 1.57$, $SD_{\text{noise}} = 0.55$, $t(427) = -3.62$, $p = 0.000$).

Discussion

The main goal of this paper was to analyze levels of awareness of environmental inequalities, and to compare them with the conceptions about health inequalities. Moreover, it aimed to analyze if the construction of the world as equitable (in terms of the distribution of health or environmental conditions) could be seen as a positive illusion in its association to mental health.

First of all, our study, which used a Portuguese sample, was consistent with previous research showing low levels of awareness about health

and environmental inequalities. More significantly even than in the study by Macintyre et al.⁶, our respondents view rich and poor people as equally susceptible of having certain health conditions. Differences in social position were rarely mentioned, except in respect of heart disease and work-related accidents. In a country with such a high level of inequalities as Portugal, this consensual lack of awareness seems particularly dramatic. This result was also found in other countries, but has rarely been explained. However, it is possible to associate it to a general individualistic trend⁴³ that promotes autonomy and assumes individual responsibility towards health. This ideology of health stresses the recognized link between lifestyles and illnesses⁴⁴, the opportunities for choosing healthy ways of living, and thus both the civic duty of maintaining health and the blaming of the sick for their illnesses^{45,46}. As this individualistic approach to health is interiorized,

Table 4

Number (%) reporting that rich or poor are more likely to have some environmental experiences.

	Are rich or poor people more likely to have the following experiences?							
	Rich		Both equally		Poor		Total	
	n	%	n	%	n	%	n	%
Air pollution								
High social class	2	3.1	57	89.1	5	7.8	64	100.0
Medium social class			140	96.9	5	3.4	145	100.0
Low social class			209	95.0	11	5.0	220	100.0
Total	2	0.5	406	94.6	21	4.9	429	100.0
$\chi^2 = 13.413$; d.f. = 4; $p = 0.009$ *								
Lack of water								
High social class			49	76.6	15	23.4	64	100.0
Medium social class			125	86.2	20	13.8	145	100.0
Low social class			172	78.2	48	21.8	220	100.0
Total			346	80.3	83	19.3	429	100.0
$\chi^2 = 4.41$; d.f. = 2; $p = 0.110$								
Noise								
High social class	1	1.6	50	78.1	13	20.3	64	100.0
Medium social class			129	89.0	16	11.0	145	100.0
Low social class			198	90.0	22	10.0	220	100.0
Total	1	0.2	377	87.9	51	11.9	429	100.0
$\chi^2 = 11.09$; d.f. = 4; $p = 0.025$ *								
Traffic jams								
High social class	5	7.8	57	89.1	2	3.1	64	100.0
Medium social class	9	6.2	132	91.0	4	2.8	145	100.0
Low social class	21	9.5	194	88.2	5	2.3	220	100.0
Total	35	8.2	383	89.3	11	2.6	429	100.0
$\chi^2 = 1.49$; d.f. = 4; $p = 0.834$								

* More than 20% of the cells have an expected count of less than 5.

personal control over health is valued, with an assumption of agency and freedom⁴⁷ that ignores the social determinants of health⁴⁸. To sum up, the lack of awareness of the unequal exposure to health threats for rich and poor people is consistent with this view of the individual determinants of health and illness, and this link should be explored in future research.

In this paper we also analyzed the awareness of environmental injustice, adding one more dimension to the study of the consciousness of social inequalities. The results showed the same pattern for environmental experiences and health threats. In fact, despite the strong evidence suggesting inequalities in relation to the exposure to certain environmental events^{12,13,14,15}, our results show that there is not a clear acknowledgement of that among our sample. This result is extremely interesting, as environmental threats can have very concrete expressions (dust, dirty

water, etc.), but apparently they do not seem to be linked to social divides. Research on the social representations of pollution⁴⁹ has confirmed this point, but it should be explored in the future with wider samples. In fact, the participants of our study are older and less educated than the average Portuguese population and, although there is no reason to suppose that these attributes are systematically associated with the observed variables, the external validity of the study would increase with a more diverse sample.

Another important result to be stressed has to do with the differences in the perceptions of inequalities according to the social position of the participants. Previous research has shown that the awareness of inequalities in health is stronger among higher classes. In our study, there were few significant associations with social class, and only two that were consistent with the results presented by Macintyre et al.⁶: noise and air pol-

lution. The other significant associations (heart disease, work-related accidents) suggest a different pattern: a tendency of higher classes to view poor people as being less exposed to these health conditions. This result should be interpreted with care, for different reasons. The first has to do with the operationalization of social class, which is far from perfect. The second one has to do with the low socio-economic level of the sample, which can also make it difficult to compare with other published studies. Finally the huge concentration of responses in the middle position (“equally for rich and poor people”) made it difficult to achieve the requirements for the performance of statistical tests. However, as the majority of the responses was not affected by the social class of the respondent, this result shows, once more, that we are dealing with a very consensual type of belief.

Finally, this study shows that more unrealistic views of the world with respect to health and environmental experiences are associated with mental health. Specifically, those who were aware of the existence of inequalities in the distribution of health and environmental quality in our society reported higher levels of depression and anxiety. Although the instruments to tap mental health are not the ideal ones, our results are extremely interesting and deserve to be explored further in future research with more solid measurements. In parallel with results in other areas, our data suggests that the construction of the world as equitable (in terms of the distribution of health or environmental conditions) can be a positive illusion. This result would extend for the societal domain evidence collected in the interpersonal area, and is congruent with the research supporting the belief in a just world hypothesis³⁴. In fact, research has shown that the belief that “we get what we deserve” is associated with higher levels of well-being and life satisfaction⁵⁰ and lower levels of negative affect³⁸. There is even experimental evidence that this is a causal

association³⁷. Along the same lines, our research suggests that it would be conceivable that this illusory “belief in an equal world” could have the same functions, in terms of cognitive adaptation^{26,51} and social reproduction and justification³⁵.

Overall, our results are very challenging. They support previous results showing a shared unrealistic view of an equitable distribution of health and environmental risks in society, that is more commonly interiorized by those with fewer resources. Given the consensual character of these results, its maintenance mechanisms should be investigated in order to guide future interventions. In this paper we explored one individual path for this social reproduction and pointed to a more ideological one. The more ideological interpretation defends a hypothesis of a connection between an individualistic view of health and an unawareness of social inequalities^{45,47}. The test of this proposal could open the way to interventions that would unmask the health and environmental discourses that maintain the illusion of equality in such an unequal world. The individual explanation extends the literature on self-serving positive illusion to what could be called a “belief in an equal world”: this unrealistic belief would be maintained due to a system justification motive to defend the status quo and to bolster the legitimacy of the existing social order, a motive that is not unique to members of dominant groups^{35,52}.

The consensual character of these beliefs indicates that they will not be easy to change, but recent research⁵³ points to some intervention guidelines: to give information about health inequalities is not enough. In order to promote change, interventions should also focus on the contextual variables that protect the system (promoting personal control, enhancing the independence towards the system or normalizing change) or self-image (creating collective contexts or priming social identity).

Resumen

Las desigualdades en salud están muy bien documentadas en la investigación epidemiológica: los ricos viven más tiempo y tienen menos enfermedades que las personas pobres. Recientemente, evidencias procedentes de las ciencias ambientales confirman que también los pobres están más expuestos a amenazas ambientales. No obstante, la investigación en las ciencias sociales ha demostrado una falta de conciencia sobre las desigualdades en salud. En este trabajo, basado en los datos recogidos en Portugal, analizamos la conciencia de ambas injusticias ambientales y de salud, y probamos una hipótesis para esta ceguera social. Los resultados muestran, incluso más que antes, que la opinión pública tiende a ver a las personas ricas y pobres igualmente susceptibles ante eventos de salud y ambientales, y quienes tienen esta visión de igualdad presentan niveles más bajos de depresión y ansiedad. Siguiendo la teoría de la adaptación cognitiva, esta "creencia en un mundo de igualdad" puede ser vista como una ilusión positiva protectora sobre la justicia social, de especial relevancia en uno de los países más desiguales de Europa.

Desigualdades em la Salud; Inequidad Social; Ambiente

Contributors

M. L. Lima participated on the definition of the research question, design of the study, supervision of the collection and analysis of the data and article write-up. R. Morais contributed on the literature review, data analysis and article write-up.

Acknowledgments

The data presented in this paper is part of the External Environmental Monitoring of LIPORII, coordinated by the Instituto do Ambiente e Desenvolvimento (IDAD) and funded by the Serviço Intermunicipalizado de Gestão de Resíduos do Grande Porto (LIPOR). This paper was written as part of a stay of the first author as Visiting Researcher at the Fondation Maison des Sciences de l'Homme, Ecole des Hautes Etudes en Sciences Sociales, Paris.

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Submitted on 11/Jul/2014

Final version resubmitted on 02/Jun/2015

Approved on 10/Jun/2015