Revista de Saúde Pública

Journal of Public Health

Causal attributions in Brazilian children's reasoning about health and illness

Atribuições de causalidade referentes à saúde e à doença de crianças brasileiras

Evely Boruchovitch[a] **and Birgitte R Mednick**[b]

[a]*Departamento de Psicologia Educacional da Universidade Estadual de Campinas (Unicamp). Campinas, SP, Brasil.* [b]*Department of Educational Psychology University of Southern California, Los Angeles, USA*

Causal attributions in Brazilian children's reasoning about health and illness*
Atribuições de causalidade referentes à saúde e à doença de crianças brasileiras

Evely Boruchovitch[a] and Birgitte R Mednick[b]

[a]*Departamento de Psicologia Educacional da Universidade Estadual de Campinas (Unicamp). Campinas, SP, Brasil.* [b]*Department of Educational Psychology University of Southern California, Los Angeles, USA*

Keywords

Abstract

Introduction
At a time when a great number of diseases can be prevented by changing one's habits and life style, investigations have focused on understanding what adults and children believe to be desirable health practices and uncovering the factors associated with successful adherence to such practices. For these, causal attributions for health and illness were investigated among 96 Brazilian elementary school students.

Methods
Ninety six subjects, aged 6 to 14, were interviewed individually and their causal attributions were assessed through 14 true-false items (e.g. people stay well [healthy] because they are lucky). The relationship between the children's causal attributions and demographic characteristics were also examined.

Results
Overall, the results were consistent with previous researches. "Taking care of oneself" was considered the most important cause of good health. "Viruses and germs" and "lack of self-care" were the most selected causes of illness. Analyses revealed significant relationship between subjects' causal attribution and their age, school grade level, socioeconomic status and gender.

Conclusions
The study findings suggest that there may be more cross-cultural similarities than differences in children's causal attributions for health and illness. Finding ways to help individuals engage in appropriate preventive-maintenance health practices without developing an exaggerated notion that the individuals can control their own health and illness is a challenge which remains to be addressed by further research.

Descritores

Resumo

Introdução
Num momento histórico no qual um grande número de doenças podem ser prevenidas pelas mudanças de hábitos e comportamentos, investigações vêm se desenvolvendo no sentido de, não só compreender o que adultos e crianças consideram como práticas saudáveis desejáveis, mas também na tentativa de identificar fatores associados ao engajamento em comportamentos saudáveis por parte do indivíduo. Assim sendo, objetivou-se investigar atribuições de causalidade para saúde e doença entre alunos do ensino fundamental.

Correspondence to:
Evely Boruchovitch
Rua Coronel Quirino, 910, apto. 24, Cambuí
13.025-001 Campinas, SP, Brasil
E-mail: evely@obelix.unicamp.br

Métodos

Foi estudada uma amostra de 96 estudantes de 6 a 14 anos de idade de duas escolas de ensino fundamental, uma pública e outra privada, do Município do Rio de Janeiro, RJ. Os sujeitos foram entrevistados individualmente, e as atribuições de causalidade foram medidas por meio de 14 itens do tipo-verdadeiro (e.g., pessoas são saudáveis porque elas têm sorte). Relações entre as atribuições de causalidade e variáveis demográficas foram também examinadas.

Resultados

Os resultados encontrados foram consistentes com a literatura da área. Enquanto cuidar de si mesmo foi considerada como a causa mais importante da saúde, vírus e falta de cuidado consigo mesmo foram as atribuições de causalidade mais freqüentes para doença. Foram encontradas relações significativas entre as atribuições de causalidade e as variáveis demográficas.

Conclusões

O estudo aponta para a existência de semelhanças culturais nas atribuições de saúde e doença de crianças e enfatiza a importância de que pesquisas futuras se voltem para a busca de maneiras de se promover o engajamento da criança em práticas saudáveis sem, contudo, despertar sentido irrealista de controle sobre sua própria saúde.

INTRODUCTION

The tendency for individuals to seek and provide explanations for the events that happen in their lives has been investigated by causal attribution theorists (Heider,[4] 1944; Weiner,[14,15] 1985, 1993). For the most part, evidence indicates that individuals are more likely to accept responsibility for a positive event and less prone to blame themselves for negative outcomes (Whitley & Frieze,[16] 1985). Causal attributions are important mediators of future behavior because once a cause is assigned, a commensurate action can be taken. In attribution theory, causality is conceptualized as having three dimensions: locus, stability and controllability. In terms of its locus, a cause can be considered internal or external (involving factors within a person or in the environment). Controllability refers to the degree a cause is perceived as being under the individuals' control. Stability relates to the perceived permanence of a cause (i.e., whether or not it is subject to change). Though most research based on causal attribution theory has been related to academic achievement domain (Weiner,[14,15] 1985,1993), this theoretical framework has also been used in investigations of health behaviors (Green & Bird,[6] 1986; Weiner,[14] 1993).

At a time when a great number of diseases can be prevented by changing one's habits and lifestyle (Matarazzo et al,[8] 1984), individuals are not only thinking and making more decisions about their health and illness states, but are also becoming more aware of the active role each person plays in his/her own health maintenance (Tróccoli et al,[12] 1991). Under this light, studies have concentrated their efforts on understanding not only what adults and children believe to be desirable health practices, but also on uncovering the factors associated with successful adherence to such practices (Boruchovitch et al,[3] 1991).

Evidence suggests that children attribute health to health-maintenance practices, such as eating, personal hygiene, sleeping, resting, and exercising, to name a few (Rashkis,[10] 1965; Boruchovitch et al,[3]1991). Moreover, studies with children have found a developmental trend in children's causal attributions for both health and illness. Though children as young as six years of age are beginning to believe that they are personally responsible for keeping themselves healthy, causal attributions for health tend to become increasingly more internal and controllable in older age groups. The younger the children, the greater is their tendency to attribute health to powerful others, e.g., doctors, extra-human factors and chance factors (Rashkis,[10] 1965; Green & Bird,[6] 1986; Boruchovitch,[2] 1994).

Studies examining children's reasons for getting sick have indicated that, whereas young children show a tendency to perceive themselves as responsible for their illnesses and to see illness as a punishment for their wrong-doing, such attributions are less often observed in older groups. Thus, the evidence suggests that a less internal, more accurate understanding of the etiological agents involved in illness causation develops as a function of age and cognitive development (Peters,[9] 1975; Gratz & Piliavian,[5] 1984; Wood,[17] 1984; Walsh & Bibace,[13] 1990).

In addition to the age-related differences, some studies have also found gender and socioeconomic status (SES) related differences in children's causal attributions for health and illness. Regarding gender differences, the studies of both Peters[9] (1975) and Green &

Bird[6] (1986) revealed that boys were more likely to attribute illness to external factors than were girls. However, Wood[17] (1984) found that irrespective of the fact that no gender differences were observed in children's understanding of germs as causes of illness, boys were more inclined to choose self-attributions to explain illness than were girls. Research examining socioeconomic status as a potential influence on children's health attributions has shown that, for the most part, children from more affluent families demonstrated a more accurate understanding of illness causality than did their peers of low socioeconomic status (Gratz & Piliavian,[5] 1984). No gender and socioeconomic status-related differences emerged in other investigations (MacCann-Sanford et al,[7] 1982). Thus, although there is accumulating evidence that causal attributions for health and illness evolve as a function of age, research is less conclusive regarding the influence of gender and socioeconomic status on such attributions.

Research efforts aimed at deepening our understanding of children's causal attributions for both health and illness and identifying variables which exert impact on such attributions have been considered essential for the design and implementation of appropriate preventive intervention programs in the health field (Green & Bird,[6] 1986). Notwithstanding the above cited findings, the literature regarding children's causal attributions for health and illness is not extensive (Green & Bird,[6] 1986); in particular issues such as how children of different ages relate causes of health to causes of illness, and the differential role such attributions play for health maintenance and illness prevention need specific research attention. Moreover, investigations in this area have predominantly involved children of developed countries. Thus, as pointed out by Skelton & Croyle[11] (1991), studies addressing these issues in samples of children from developing countries can offer an important contribution toward the development of a more comprehensive theory of health cognition and behavior. The present research represents an addition to the literature by analyzing causal attributions for health and illness simultaneously in a sample of Brazilian children. The children's attributions are analyzed in relation to the following child's characteristics: age, school grade level, socioeconomic status and gender. This study further contributes by providing data for cross-cultural comparisons with previously reported findings based on samples from developed countries.

METHODS

Subjects

The sample consisted of 96 randomly selected students from 32 classes in two Brazilian schools (one public and one private) from the northern area of Rio de Janeiro. The sample was selected to include approximately equal numbers of children in the following three age groups: six to seven years old (33%), eight to 11 years old (35%), and 12 to 14 years old (32%). Fifty percent of the sample was male. To ensure representativeness of both low socioeconomic status and middle socioeconomic status background in the sample, the subjects were selected from two school settings. The sub-sample (53%) drawn from a public school was of low socioeconomic status background. The school serves poor areas such as "Macacos, São João" and "Pau Bandeira" slums. The private school subsample was from middle socioeconomic background. "Tijuca" and "Rio Comprido" are among the neighborhoods served by the private school.

Data collection and data analysis procedures

Subjects were interviewed individually by the first author. Questions about their causal attributions for health and illness were adapted and based on Green and Bird's[6] (1986) study and consisted of 14 statements: seven about causes of health, and seven about causes of illness, written in a true-false format (Appendix).

Causal attributions for health and illness were scored dichotomously as follows: a score of zero was assigned to each false answer and a score of one was given to each true answer.

RESULTS

Tables 1 and 2 display the results of the total sample's causal attributions for health and illness, respectively. "Taking care of oneself" was considered the most important cause of health followed by "family care" and "doctor care"; "viruses and germs" and "lack of self-care" were the most selected causes of illness, followed by "bad weather", "luck" and "lack of luck" (31.3% and 31.3%, respectively); "born that way" were the least chosen attributions for both health and illness, respectively.

Table 1 - True/false percentage of total sample's causal attributions for health.

Variable	True (%)	False (%)
Self-care	96.9	3.1
Family care	80.2	19.8
Doctor care	68.8	31.2
Weather	46.9	53.1
Obedience	45.8	54.2
Born that way	37.5	62.5
Luck	31.3	68.7

Table 2 - True/false percentage of total sample's causal attributions for illness.

Variable	True (%)	False (%)
Virus	89.6	10.4
Lack self-care	85.4	14.6
Lack family care	60.4	39.6
Bad weather	66.7	33.3
Disobedience	39.6	60.4
Born that way	31.3	68.7
Lack of luck	31.3	68.7

Causal attributions for health and child characteristics

Individual chi-square analyses were carried out by age, school grade level, SES and gender for each of the seven causal attributions for health and for illness. The percentages of children in each group endorsing each attribution are presented in Table 3. The youngest age and the beginning grade level subjects attributed health significantly more to uncontrollable factors such as: "luck", χ^2 (2, N=96) for age = 26.83 and for grade level 29.55; "born that way", χ^2 (2, N=96) for age = 39.32 and for grade level 35.49; and "weather", χ^2 (2, N=96) for age = 10.46 and for grade level 6.72, than did participants who were older and more advanced in school. Subjects who were youngest and in the first grade levels were also significantly more inclined to believe that health is a matter of individuals' "obedience", χ^2 (2, N=96) for age = 20.16 and for grade level = 19.98, than did their older and more advanced in school counterparts. Moreover, subjects in beginning grade levels were significantly more prone to attribute health to powerful others such as "doctor care", χ^2 (2, N=96) = 15.79, "family care", χ^2 (2, N=96) = 7.94, than did subjects at intermediate and advanced school grade levels.

Low SES subjects not only attributed health significantly more to uncontrollable factors such as "luck" χ^2 (1, N=96) = 15.99 and "born that way", χ^2 (1, N=96) =

4.24, but also to "doctor care", χ^2 (1, N=96) = 15.55, when compared to middle class participants. No significant associations emerged between gender and each of the seven causal attributions for health. In summary, younger age, first grade levels and low SES were associated with more uncontrollable, immanent justice and powerful others type of causal attributions for health.

Causal attributions for illness and child characteristics

Table 4 presents the children's illness attributions (expressed in percentage) as a function of age, grade level, SES and gender. Subjects in the youngest age group and in the first grade levels attributed illness significantly more to uncontrollable factors such as: "lack of luck", χ^2 (2, N=96) for age = 26.57 and for grade level = 23.90, "born that way", χ^2 (2 , N=96) for age = 15.61 and for grade level = 18.88, and "bad weather", χ^2 (1, N=96) for age = 9.73 and for grade level = 8.40, than did those who were older and more advanced in school. Illness was also significantly more frequently ascribed to "disobedience", χ^2 (2, N=96) = 14.27, by participants in the first grades in comparison to children in the intermediate and more advanced grades. On the other hand, children in the higher grades showed a strong tendency to associate illness with "lack of self-care", χ^2 (1, N=96) = 9.32, than did the beginning students. While illness was attributed significantly more to "lack of luck", χ^2 (1, N=96) = 15.99 and "born that way", χ^2 (1, N=96) = 12.65, by low SES subjects, middle class participants ascribed illness significantly more to "virus and germs", χ^2 (1, N=96) = 6.09, and "lack of self-care", χ^2 (1, N=96) = 6.99. Significant gender differences were also found. Males attributed illness significantly more to "virus and germs", χ^2 (1, N=96) = 4.01, and to "lack of family care", χ^2 (1, N=96) = 4.35, than did females. For the most part, younger age, first grade levels, low SES and females were associated with the more uncontrollable and immanent justice type of causal attributions for illness.

Table 3 - Percentage of children endorsing causal attributions for health by age, grade and SES.

Variable		Luck	Self-care	Doctor care	Family care	Obedience	Weather	Born
Age	6-7	65.6**	100.0	81.3	93.8	78.1**	68.8	81.3**
	8-11	17.6	94.1	61.8	76.5	29.4	29.4	17.6
	12-14	10.0	96.7	63.3	70.2	30.0	43.3	13.3
Grade	Begin	64.7**	97.1	82.4**	94.1*	76.5**	64.7 *	76.5*
	Intermidiate	18.6	97.7	74.4	76.7	30.2	37.2	20.9
	Advanced	0.0	94.7	31.6	63.2	26.3	36.8	5.3
SES	Middle	11.1**	97.8	48.9**	75.6	37.8	42.2	26.7*
	Low	49.0	96.1	86.3	84.3	52.9	51.0	47.1

*p<.05
**p<.01
SES – Socioeconomic status

Intercorrelations between causal attributions for health and illness

Causal attributions for health and illness were intercorrelated to examine whether subjects ascribed the same cause similarly to the two states. Table 5 reveals that five of the six pairs of attributions were significantly intercorrelated. Intercorrelations were moderate-to-low, and higher for the more external, uncontrollable and immanent justice type of attributions.

DISCUSSION

The findings of this study provided evidence that overall, "taking care of oneself" was considered the most important cause of health, followed by "family care" and "doctor care". "Virus and germs" and "lack of self-care" were the most selected causes of illness, followed by "bad weather". "Luck" and "lack of luck", as well as "born that way" were the least chosen attributions for both health and illness. Although Brazilian culture probably may be described as having a considerable degree of fatalistic thinking, it is interesting to note that the majority of subjects, even at the younger ages, were able both to acknowledge the importance of "taking care of oneself" for health maintenance, and to identify "virus and germs" and "lack of self-care" as the most relevant causes of illness.

Younger children and children in lower school grade levels as well as children from low socioeconomic status attributed health and illness significantly more to uncontrollable events (luck/lack of luck), to immanent justice (e.g., obedience/disobedience) and to powerful others (e.g., doctor) than did their respective counterparts. Overall, these findings are in agreement with earlier studies in this field. (Rashkis,[10] 1965; Green & Bird,[6] 1986). Also consistent with the previous research (Green & Bird,[6] 1986), males were more likely to attribute illness to external factors than were females.

Furthermore, it is worth commenting that "self-care" was more attributed to health than "lack of self-care" was attributed to illness. Such finding is consistent with the results of Green & Bird[6] (1986) and confirms the trend mentioned by Whitley & Frieze[16] (1985) that individuals are more likely to accept responsibility for a positive outcome such as health, but they are less prone to blame themselves for a negative event like illness. Though most of the causes for health and illness were intercorrelated, correlations were not high, which lends support to the notion that children tend to see health and illness as caused by different forces.

In conclusion, the overall similarity of the results of the present investigation to the research literature suggests that there may be more cross-cultural similarities than differences in children's causal attribu-

Table 4 - Percentage of children endorsing causal attributions for illness by age, grade, SES and gender.

Variable		Lack luck	Lack self	Virus germs	L. family care	Disobed	Bad weather	Born
Age	6-7	65.6**	71.9	90.6	65.6	65.6	87.5 **	81.3**
	8-11	11.8	94.1	85.3	61.8	26.5	52.9	17.6
	12-14	16.7	90.0	93.3	53.3	26.7	60.0	13.3
Grade	Begin	61.8**	70.6**	91.2	67.6	64.7**	85.3*	55.9**
	Intermideate	18.6	93.0	83.7	58.1	23.3	58.1	25.6
	Advanced	5.3	94.7	100.0	52.6	31.6	52.6	0.0
SES	Middle	11.1**	95.6**	97.8*	60.8	35.6	57.8	13.3**
	Low	49.0	76.5	82.4	60.8	43.1	74.5	47.1
Gender	Female	31.3	81.3	83.3*	50.0	43.8	64.6	27.1
	Male	31.3	89.6	95.8	70.8	35.4	68.8	35.4

*p<.05
**p<.01

Table 5 - Intercorrelations between causal attributions for health and illness.

	Weather	Luck	Self-care	Born	Family care	Obedience
Bad weather	.37*					
Lack of luck		.63*				
Lack of self			.26*			
Born				.41*		
Lack of family					.13	
Disobedience						.47*

*p<.05

tions for health and illness. However, in the view of the scarce cross-cultural literature, definite conclusions in this area are quite premature. This study also showed that age, school grade level, and socioeconomic status proved to be good predictors of children's attributions of health and illness.

At a time when prevention of a great number of diseases may be achieved by an individual's adherence to a healthy life style, an important goal of health education is to help children develop a sense of self-care and self-responsibility towards their own health

(Balog,[1] 1981). It seems, however, that a cautionary note must be sounded here regarding the potential unwanted inferences that might result from a too one-sided emphasis on lack of self-care as an etiological factor. Finding ways to help individuals engage in appropriate health preventive-maintenance practices without developing an exaggerated notion of an individual's own control is a challenge which remains to be addressed by further research. An overemphasis on self-causation may have unwanted side effects evoking increased guilt in the victims of illness and a tendency toward blaming the victim in general.

REFERENCES

1. Balog JE. The concept of health and the role of health education. *J School Health* 1981;9:462-4.

2. Boruchovitch E. Causal attributions for health and illness: some predictor variables. [Poster presented at the 102th Annual Convention of the American Psychological Association. Los Angeles, CA; 1994 Aug.].

3. Boruchovitch E, Felix-Sousa IC, Schall VT. Health concept and health prevention in a sample of teachers and students: a contribution for health education. *Rev Saúde Pública* 1991;25:418-25.

4. Heider. Social perception and phenomenal causality. *Psychol Review* 1944;51:358-74.

5. Gratz RR, Piliavin JA. What makes kids sick: children's beliefs about the causative factors of illness. *Child Health Care* 1984;12:156-62.

6. Green KE, Bird E. The structure of children's beliefs about health and illness. *J School Health* 1986;8:325-8.

7. MacCann-Sanford T, Spencer MJ, Hendrick A, Mayer EE. Knowledge of upper respiratory tract infection in elementary school children. *J School Health* 1982;52:525-8.

8. Matarazzo JD, Weiss SM, Herd J, Miller NE, Weiss SM. *A handbook of health enhancement and disease prevention.* New Yourk (NY): John Wiley and Sons; 1984.

9. Peters BM. Concepts of hospitalized children about causality of illness and intent of treatment. [Dissertation]. Pittsburg: University of Pittsburgh; 1975.

10. Rashkis SR. Child's understanding of health. *Arch Gen Psychiatry* 1965;12:10-7.

11. Skelton JA, Croyle RT. *Mental representation in health and illness.* New York: Springer-Verlag; 1991.

12. Tróccoli BT, Keller ML, Andrade WSG, Nobrega RC. Representações da doença e sintomas em pessoas leigas. *Psicol Teor Pesq* 1991;6:281-93.

13. Walsh ME, Bibace R. Children's conceptions of AIDS: a developmental analysis. *J Pediat Psychol* 1990;16:273-85.

14. Weiner B. On sin versus sickness: a theory of perceived responsibility and social motivation. *Am Psychol* 1993;48:957-65.

15. Weiner B. A theory of achievement motivation and emotion. *Psychol Rev* 1985;92:548-73.

16. Whitley Jr. BE, Frieze IH. Children's causal attribution for success and failure in achievement settings: a meta analysis. *J Educ Psychol* 1985;77:608-16.

17. Wood SP. School aged children's perceptions of the causes of illness. *Pediatr Nurs* 1984;3:101-4.

APPENDIX

Health attributions

I am going to read for you now some ideas about why people stay well (healthy). For each idea presented, please tell me whether you think it is true or not true.

a. People stay well because they are lucky.
b. People stay well because they take good care of themselves.
c. People stay well because they go to the doctor.
d. People stay well because they were born that way.
e. People stay well because their family takes good care of them.
f. People stay well because they are obedient to their parents.
g. People stay well because of the warm weather.

Illness attributions

Now I am going to read to you some ideas about why people get sick. For each idea presented, please tell me whether you think it is true or not true.

a. People get sick because of germs and viruses.
b. People get sick because they are unlucky.
c. People get sick because they were born that way.
d. People get sick because their family did not look after them very well.
e. People get sick because they do not look after themselves very well.
f. People get sick because they are not obedient to their parents.
g. People get sick because of bad whether