# The National Index of Functional Literacy - 2001: examining the differences between men and women\*

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#### **Abstract**

This work is part of a group of studies in the educational field that investigate the differences in the results obtained by men and women in educational researches. The National Index of Functional Literacy is composed from a test of 20 questions of varying difficulty that measure how people make use of reading and writing in their daily activities. It was developed by the Paulo Montenegro Institute (IBOPE) and Educative Action (Ação Educativa), and applied to a stratified sample of the Brazilian population comprised of 2000 people (from 15 to 64 years of age). The results indicate that women perform better in every question of the test. Making use of the concept of gender and moving away from the man-woman dichotomy, we have worked with three occupational groups: working men, working women, and housewives. The inferential analysis carried out indicates that the differences in the average rate of right answers between the three occupational groups are significant, after accounting for the five predictive variables (schooling, age, color, Brazil Criterion, and reading habit). This suggests that the differences encountered between the groups are not dependent on the predictive variables. In a question by question analysis, it was observed that in nine of the questions the average performance of working women was superior to both working men and housewives. More surprisingly, in three of the questions housewives achieved significantly better results than working men.

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## Keywords

Literacy – Sex and gender.

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The material analyzed in this article is constituted by the results of the INAF - the National Index of Functional Literacy (in Portuguese: Indicador Nacional de Alfabetismo Funcional), which is based on a questionnaire characterizing the participants, and by a 20question test. The INAF, an initiative of the Paulo Montenegro Institute (IBOPE) and of the NGO Ação Educativa (Educative Action), has as its purpose to periodically divulge information concerning the literacy<sup>1</sup> of young people and adults. It assesses the skills of reading and writing (in odd years) and mathematics (in even years), trying to evaluate the insertion of the population in literary culture, in other words, to evaluate their literacy skills. The data examined here refer to the year 2001.

The objective is to bring elements to the understanding of the different results obtained by men and women in a sample study, seeing this difference as a socially constructed cultural product, since men and women occupy different social spaces.

Given that the preliminary results supplied by the organizers indicated that women did better in the test, we set out in this study to answer the following questions:

- If we take each question of the literacy test separately, is there any difference in results, that is, are there questions at which women do better than men?
- Is there any difference in results if we separate working women from housewives?

The INAF is part of a worldwide trend in educational assessment, whose studies can be divided into three groups: demographic censuses, school contexts, and sampling studies.

Demographic censuses present macroregional data that can be analyzed according to various criteria. In Brazil, authors such as Alceu Ferraro (2002) and Fulvia Rosemberg (2001) work with these data analyzing the Brazilian educational situation.

Studies of school context are characterized by evaluation systems, a worldwide trend of the

latest years known for the practice of evaluating students in their literacy skills associated to schooling. In Brazil, the SAEB (Basic Education Assessment System – in Portuguese, Sistema de Avaliação da Educação Básica) administered by the Ministry for Education, aims at presenting information about the quality, equity, and efficiency of our Basic Education. Internationally, the PISA (Programme for International Student Assessment), organized by the Organisation for Economic Co-operation and Development (OECD), seeks to verify, in its member states, to what extent students near the completion of their mandatory schooling have acquired knowledges and abilities essential to participate in society.

INAF belongs to the category of sampling studies. In some countries, the concern with testing the literacy level of the population has been a reality for decades (in the USA, for instance, these studies go back to the 1970s), focusing not only on whether or not people can read and write, but also on how they make use of their reading and writing abilities to insert themselves socially, since the problem of absolute illiteracy is now almost restricted to the poorer nations. In Brazil, sampling studies with these characteristics are rare, therefore highlighting the importance of the data gathered by the INAF.

### Literacy and gender

In developing the analysis, we have made use of two central concepts: literacy and gender. We might say that they are recent concepts, for they go back only to the mid 20th century, and that they were built according to different fields of knowledge.

In an important work published in 2002 under the title of Letramento: um tema em três gêneros [Literacy: a theme in three genres], Magda Soares discusses the emergence of these concepts associated to the perception of new phenomena in society:

[...] new words always appear in language when new phenomena occur, when a new

idea, a new fact, a new object emerge, are invented, and then it is necessary to have a name for that. (Soares, 2002a, p. 34)

The author stresses that for a long time the term analfabetismo was used, a noun that indicates negation (a[n] + alfabetismo = privation of literacy). The same happens in the English language, where the term illiteracy (absence of literacy) appears in dictionaries since 1660, according to the Oxford English Dictionary (1979), whereas the affirmative term, literacy, was only recorded in the 19th century (Soares, 2002a).

The word letramento (literacy) appeared in Brazilian dictionaries only in 2001, in the Dicionário Houaiss under the topic of pedagogy, and is defined therein as "the same as alphabetization (the process), group of practices that denote the ability to use different kinds of written material" (Houaiss, 2001). Despite the tardiness, the term had already been in use for some time in texts of the field of Education (Kato, 1986; Tfouni, 1988; Soares, 2002b).

To Soares, literacy is characterized as a multifarious social practice, that is, it can develop in various spaces, including the school one, and in several ways: a child is making "social use of reading" when playing that he or she reads a book; an adult with little schooling can be seen as literate by reciting parts of the Bible at a religious ceremony. Her definition of literacy, proposed in 2002, became a reference for the studies dealing with this issue:

Literacy is thus the result of the action of teaching or learning to read and write: the state or situation acquired by a social group or individual as a consequence of having incorporated writing. (Soares, 2002a, p. 18)

In the present article, still following Soares (2004), we make use of literacy in its sociological perspective, which includes the practices of reading and writing as cultural products, directly influenced by the different demographic characteristics, such as schooling,

profession, and gender. Thus, it is important not just to explore the results obtained in a literacy test, but also to raise hypotheses about the motivations people have for reading, the symbolic value that reading has in different social contexts, and its place in the hierarchy of cultural assets.

Therefore, literacy shall not be considered as neutral, free from power, but will be put into context as the set of socially constructed practices — involving reading and writing — engendered by wide sociohistorical processes, which are also responsible for reaffirming or otherwise questioning values, traditions and forms of distribution of power within our social structure. Among these power relations, gender relations shall be focused on in the present study.

In the educational field there are not many studies analyzing the differences in school test results between girls/women and boys/men, making the sampling study proposed here an original analysis.

The concept of gender appeared within feminist studies as part of the effort to move away from an explanation of the differences between men and women based on nature towards a sociological viewpoint, according to which the places of the masculine and feminine in society are produced by social and historical relations.

Like the term literacy, the concept of gender is recent, still under construction, and is subjected to various approaches. Joan Scott (1995) emphasizes the need to pay attention to the languages and to the meanings of the differences observed between the genders in the creation of all symbolic system, which permeates power relations in society. In the article Gênero, uma categoria útil de análise histórica [Gender, a useful category of historical analysis] the author says that

[...] the use of 'gender' emphasizes a whole system of relations that can include sex, but that is not directly determined by sex, neither does it directly determine sexuality. (p. 7)

This separation between gender and sex is central to understand the very concept of gender, in which the social, political and cultural elements become determinant of the interpretation that one makes of what it means to be a man or a woman. According to French researcher Christine Delphy, gender must be understood as a social product that constructs sex:

If gender relations did not exist, what we know as sex would be deprived of meaning, and would not be perceived as important. It could be just a physical difference among others. (Delphy apud Auad, 2004, p. 28)

In the present article, gender shall then be understood as

[...] not just a concept describing the relations between men and women, but as a theoretical category referred to a group of meanings and symbols constructed upon the basis of the perception of sexual difference. (Carvalho, 1999a, p. 34)

In this sense, the concept of gender can be useful to explain the differences statistically observed through the variable sex, by allowing us to raise hypotheses about the cultural meanings involved in the literacy process for women.

It becomes clear that gender is not synonymous with sex: the subjects — men and women — are one thing, and another thing are the meanings and symbols that masculine and feminine occupy historically and socially, implying power relations and hierarchies at different levels. The respondents to the INAF are men and women, and shall be taken according to these categories, without questioning, however, the masculine or feminine place that they may hypothetically occupy, a procedure that would not fit within a quantitative category of this scale.

During the last decades, the issue of the differentiated appropriation of reading by men and women has been dealt with in various research

areas. In the case of boys and girls, particularly inside the school space, there are numerous authors that have pointed out the discrepancies (Corrêa, 2004; Gilbert; Gilbert, 1998), always showing that girls have more affinity toward the practices of reading and perform better in the literacy tests. However, gender studies on the issue of literacy in adult life could not be found.

Elaine Millard (1998), in an article published in the Gender and Education journal says that boys incorporate the practice of reading based on their gender identities. For her, these differences are directly associated to a feminine identity characterized by passivity, more akin to the attitude required of an assiduous reader.

Similar results have been described in the 1990s by Luke (1993) and Gilbert and Gilbert (1998). The latter dealt with the issue of literacy tests conducted in Australia, highlighting the different results obtained for boys and girls. The authors raised doubts about how the tests had been developed, and also about the contents they covered and valued, indicating a possible incompatibility between the masculinity valued by those boys and the curriculum area valued by the school. In this interpretation, whenever reading is seen as a feminized behavior, boys will tend to reject it (Gilbert and Gilber, 1998).

There has been little research in Brazil exploring the appropriation of reading from the perspective of the sex variable. A qualitative research conducted by Maria Celeste Arantes Corrêa (2004), in which she tried to examine the reading preferences of boys and girls in school age, indicates that, compared to boys, girls read more and more widely.

Starting from the idea that reading is a cultural and historical practice or, as put by Roger Chartier (1996), that it "has the status of a creative, inventive and productive practice, influenced by the spirit of the readers" (p. 78), we must consider in the analysis of literacy practices, amongst other things, the gender relations.

# The National Index of Functional Literacy - INAF

The INAF is inscribed into the context of a graphocentric society, in which the command of writing and reading is deemed as determinant of social inclusion or exclusion. The objective of the INAF assessment is:

[...] to create a national index of functional literacy whose results can be periodically divulged to the general population, serving as a reference for the debate over what should be one of the main outcomes of basic schooling: the preparation of individuals to participate in the literary culture in an autonomous, flexible, and creative way. (Ribeiro, 2003, p. 50)

By the second half of the year 2005, five assessments had been carried out: the INAF 2001, which evaluated reading skills and is the object of the present article; the INAFs 2002 and 2004, which focused on mathematical skills; and the INAFs 2003 and 2005, again dealing with reading skills.

The report on the INAF 2001 presented here is largely based on the article by Vera Masagão Ribeiro (2001) and on Ribeiro, Vóvio and Moura (2003), which describe in detail the path leading to the construction of the index.

With the purpose of stimulating public debate on this issue, and to help building the index, the NGO Ação Educativa and the Paulo Montenegro Institute organized a seminar in September 2001. The event brought together specialists such as managers of educational programs and professional journalists to discuss the social interest and relevance of the creation of an index of this type.

In order to guide the elaboration of data-gathering instruments, matrices were set up associated to the different spheres of literacy practices.

For each sphere, were listed the writing auxiliaries, the textual genres, the functions that characterize the reading and writing practices, and the general and specific

competencies related to these practices. From this analysis two instruments resulted: a questionnaire and a reading test.

The operational definition of literacy employed in the research is the same as that presented by Magda Soares (2002a).

The survey was carried out by IBOPE in September 2001, making use of a national sample of 2000 people between the ages of 15 and 64 years. IBOPE's technical team defined this sample based on a wide set of information available to the Institute about the target population, also taking into account the specificity of the study.

The questionnaire is composed of 68 questions that try to encompass the different spheres of literacy practices. It investigates book, newspapers and magazine reading habits in the various social spaces, seeking to identify which uses of writing, text genres and auxiliaries are present in each one of these spaces. The followup of children's school tasks and their reading habits are assessed, and also the importance that written materials have in the life of the respondents, both to obtain and secure a job, and in the spheres of leisure, recreation, and political participation. There are items that collect information about the interviewee's family of origin, with the goal of understanding how the literacy conditions are reproduced or otherwise altered across generations. The questionnaire also asks for information on the strategies people adopt when, for instance, looking up a telephone number, reading a street or road sign, or reading and writing a personal letter. The access to, and use of, computers is also assessed.

The test that comprises INAF is the part of the study that seeks to measure the level of literacy of the Brazilian population. The questionnaire is a supplement of the utmost importance, for it allows expanding the information that helps understand this rather complex phenomenon. It is fair to say that the questionnaire helps in the construction of the picture of literacy, since it contributes to understand the social practices of the use of reading and writing. The test, by its turn, measures the levels of literacy displayed by the population associated to the skill levels demonstrated in it. Thus, when speaking about the test, we follow the organizers of the index, and make use of the term literacy (alfabetismo).

Comprised of twenty items, the test covers a reduced number of literacy social practices, from among the many existent, which can then be transformed into questions. According to the organizers, it was necessary to adjust the duration of the test and its complexity to the conditions of its application to a large sample of individuals. It is worth noting that the test is applied at the persons' residence, not always under ideal conditions or with the availability of adequate time.

In constructing the test, the organizers opted for assessing the more recurrent skills at the various literacy practices, attempting to bring the texts and tasks of the test the closest possible to those more frequently found in daily life. The twenty tasks proposed to respondents were organized into a magazine especially created for the research. Item 7 is the only one that required consulting other materials: an envelope to address, and a copy of an identity document.

The twenty items of the test were presented to the interviewees in four different manners:

- for the simplest items from 1 to 6 the interviewer read the question and the two options for answer for each question, writing down the answers given orally by the interviewee:
- for item 7, the interviewee filled out an address form from information given in an identity document;
- for items 8 to 10, the instructions were read aloud by the interviewer, but filled out by the interviewee;
- for items 11 to 20, the interviewee him/ herself read the instructions and wrote down the answers in the corresponding spaces.

For every item the interviewer was allowed to help in locating the corresponding text inside the magazine.

### Men and women at the INAF

As presented in the INAF 2001 final report, there are differences in women's performances when compared to those of men. Carvalho e Moura (2003) point out that schooling and current employment situation (domestic for housewives, external for men and women) interfere in reading practices. However, they soon observe that those variables do not account for the differences found in the results, for the difference persists even when the model of statistical analysis controls for them. The authors also note that men and women have diverging reading practices: men prefer reading newspapers, whereas women prefer magazines.

We therefore start from the observation already presented by the INAF 2001 report about this difference between men's and women's performances to try to characterize these discrepancies.

In analyzing the results, the organizers of the Index attributed a score to each of the 2000 subjects, according to the number of items correctly answered. Table 1 (showed in the Appendix) indicate the total number of

Table 1: Total number of right answers by sex.

	Mai	n	Wor	nan	To	tal
Right answers	freq	%	freq	%	freq	%
0	39	4,0	26	2,5	65	3,3
1	33	3,4	27	2,6	60	3,0
2	32	3,3	25	2,4	57	2,9
3	43	4,4	28	2,7	71	3,6
4	39	4,0	30	2,9	69	3,5
5	64	6,6	36	3,5	100	5,0
6	34	3,5	39	3,8	73	3,7
7	52	5,3	54	5,3	106	5,3
8	46	4,7	58	5,7	104	5,2
9	53	5,4	51	5,0	104	5,2
10	42	4,3	47	4,6	89	4,5
11	54	5,5	56	5,5	110	5,5
12	48	4,9	57	5,6	105	5,2
13	48	4,9	69	6,7	117	5,8
14	48	4,9	59	5,8	107	5,3
15	62	6,4	76	7,4	138	6,9
16	68	7,1	81	8,0	149	7,4
17	63	6,5	72	7,0	135	6,7
18	55	5,6	67	6,5	122	6,1
19	35	3,6	46	4,5	81	4,0
20	17	1,7	21	2,0	38	1,9
Total	975	100	1025	100	200	100

Source: Ação Educativa, Internal Report, 2001.

correct answers for each sex.

The distribution of total correct answers indicates that women displayed better performance than men. Considering the tier up to 10 correct answers (half the test), we find 48.9% of men and 41% of women. Above 16 correct answers (4th quartile) we find 24.4% of men and 27.9% of women.

Although the performance in the test is a continuous variable, it was necessary to establish ranges of performance in order to characterize the types of tasks each group of people is capable of performing. Setting up these ranges is a complex task, since the skills manifested in the test are not linear, in the sense that a person can get wrong some items that are regarded as easy, and answer correctly others regarded as more difficult, and this for a number of reasons, such as greater familiarity with one subject or another.

The definition of performance ranges is based on the analysis of the items that most people with a given score get right. The organizers of the INAF established a level of 70% of correct answers to consider that a given group get a certain item right frequently, and decided that would be considered as illiterate only the interviewees that got right up to two items, recalling that some of the items required just the recognition of written parts and not the decoding of the letterings. The choice of that term by those in charge of the index aimed at calling attention to a fraction of the population which, for lack of basic abilities to deal with written materials, find themselves in a situation of severe social exclusion. The three levels of literacy are described in the book Letramento no Brasil [Literacy in Brazil] as:

- Level 1 literacy: corresponds to the ability to locate explicit information in very short texts. Three to nine right answers.
- Level 2 literacy: corresponds to those people that can locate information in short and middle length texts. Ten to fifteen right answers.

• Level 3 literacy: corresponds to the ability to read longer texts, being able to orient themselves using the texts headings, and locate more than one piece of information, according to established conditions. Sixteen to 20 right answers. (Ribeiro, 2003, p. 18-19)

Table 2 (in the Appendix) present the ranges of performance at the test, according to sex.

We have observed that women display better results than men in the test, with higher concentration of results in Literacy Levels 2 and 3.

Table 2: Performance bracket by sex.

		S	Sex			
Performance bracket	m	ale	fen	nale	Total	
	freq.	%	freq.	%	freq.	%
Up to 2 right answers - illiterate	104	10,7	78	7,6	182	9,1
3 to 9 right answers - level 1 literacy	331	33,9	296	28,9	627	31,3
10 to 15 right answers - level 2 literacy	302	31,0	364	35,5	666	33,3
16 to 20 right answers - level 3 literacy	238	24,4	287	28,0	525	26,3
Total	975	100	1025	100	2000	100

Source: Descriptive analysis based on the INAF 2001 database

# Working women and housewives

Since the first analyses made, we observed that the group of women could not be treated as homogeneous. Part of the recent effort and of the debates within the realm of gender studies have been directed precisely at revealing the plurality of social places that the different groups of men and women occupy, trying to avoid bipolar approaches that pit men against women (Carvalho, 1999a; Bruschini, 1992).

After an argument presented by Ribeiro (1999) referring to literacy studies, the group of women can be divided into at least two smaller units: working women and housewives. We thus decided to split the group of women following this criterion (27% of the sample are housewives and 50% are working women) and compare their results with those of the group of working men (77% of the sample of men). This left out the unemployed, students, retired workers, and other people of both sexes, because of the plurality of occupations.

After this choice, results were separated into the three occupational groups. We then analyzed the results obtained by each group,

both with respect to the total number of right answers and on a question-by-question basis. We noticed that women displayed better overall results in the test than men; observing the data by occupational group, the difference between working men and working women increases in favor of women. On a question-by-question basis, working women present significantly better results than the two other groups in many of the questions. In some items, housewives performed better than working men.

To understand these differences, we have chosen to build a statistical model conceived by a professional statistician1. The objective in building this model was to verify if the differences observed in the average number of right answers for the three occupational groups were statistically significant, that is, if the differences could be due just to sampling error. It was not enough to compare the average results of the groups, since there are several variables, such as level of schooling, age, income and color that can influence the results. In the statistical model it is possible to compare the different groups controlling for the influence of the variables selected, and therefore the difference, if observed, will be due to characteristics internal to the groups.

The choice of work as the distinguishing feature in the group of women has long been present in the discussions of sociology of work. Several authors, among them Daniele Kergoat (1986), Helena Hirata and Daniele Kergoat (1994) and, in Brazil, Elizabeth Souza Lobo (1991) and Cristina Bruschini (1990; 1992; 1994; 1998) have dealt with the place occupied by working women in the capitalist society. Broadly speaking, they highlight the fact that the difference between the sexes work wise is often denied in order to hide the exploitation suffered by women, for example, leaving aside the precarious and undervalued jobs they do in parallel to their domestic chores.

It is important to stress that the separation of occupational groups – working men, working women, and housewives – was prompted by an item of the questionnaire that asked "What is your current work situation?" The interviewee had to choose only one of the following options:

- (1) Employed
- (2) Unemployed
- (3) Retired
- (4) Looking for a first job
- (5) Never worked and not looking for work
- (6) Housewife
- (7) Other situation (living on income, alimony, disability allowance etc)
- (8) Does not know/did not answer

One can argued for the fragility of building an analysis based on the answer to a single item of the questionnaire, since some of these choices could be superposed: the person lives on income and is a housewife, or is retired and is a housewife etc. In these two examples it is conceivable that women that declared to be housewives, despite the hypothetical possibility of choosing another option, are describing the social place they see themselves at. And it is exactly to bring this social place into evidence that we have privileged this occupational group.

Table 3 (in the Appendix) show the performance at the test according to occupational group.

Table 3: Performance by occupation

	Wor	Working Working			Housewife	
	m	man		man		
	freq.	%	freq.	%	freq.	%
Up to 2 right answers - illiterate	85	11	27	5	35	13
3 to 9 right answers - level 1 literacy	262	35	142	28	98	36
10 to 15 right answers - level 2 literacy	233	31	175	34	98	36
16 to 20 right answers - level 3 literacy	169	23	166	33	42	15
Total	749	100	510	100	274	100

Source: Descriptive analysis based on the INAF 2001 database.

Analysis of table 3 demonstrates that working women perform better than working men. The inferential analysis presented next confirms this information. In the case of housewives the overall performance lies mostly

**<sup>1.</sup>** Rinaldo Artes, a PhD in Statistics from the University of São Paulo, helped voluntarily in this research by building the statistical model.

in literacy levels 1 (3 to 9 right answers) and 2 (10 to 15 right answers).

The observation of the existence of a significant difference when individuals are similar in all selected variables, except for the occupational groups, was made after adjusting a statistical model. The choice of explicative variables was based on quantitative researches previously conducted in the educational area (Ribeiro, 1999), which indicated that part of the performance at a proficiency test can be explained by this set of characteristics of the population, as in the results of the analyses already carried out after the INAF and described in the book Letramento no Brasil [Literacy in Brazil].

### **Demographic variables**

The demographic variables described below had their possible effects controlled for in the construction of the statistical model.

#### Age

This performance predictor is also present in other researches (IALS, 2000). Part of the respondents of the INAF is in an age bracket at which school attendance is still a reality, mainly between 15 and 24 years. It is possible that the use made by these youngsters of written materials within the school space can make it easier for them to perform well in the test and in dealing with the materials employed therein.

The age brackets chosen were: from 15 to 24 years; from 25 to 34; from 35 to 49; and from 50 to 64.

Table 4 (in the Appendix) show the differences by age and occupation.

Most of the housewives are in the 25 to 34 years bracket, a period of their lives in which many women leave formal employment to take care of their children. This fact is complemented by the frequency of women in the 35 to 49 years bracket who are employed. It is worth noting that the proportion of young ladies in the

15 to 24 years bracket who declared themselves as housewives is close to 20%.

Table 4: Occupation and age

	Worki	Working man		ng woman	Housewife	
	Freq.	0/0	Freq.	%	Freq.	%
15-24 years	191	26	125	25	51	19
25-34 years	205	27	140	27	83	30
35-49 years	224	30	175	34	75	27
50-64 years	129	17	70	14	65	24
Total	749	100	510	100	274	100

Source: Descriptive analysis based on the INAF 2001 database.

#### Color

The issue of race/color was presented to the interviewee according to the categories employed by the IBGE (white, black/negro, dark, yellow and Indian). The addition of the "negro" term, which is often used in sociological studies to indicate race and not color, was probably made to facilitate the interviewee's understanding or choice. The same categories are frequently used in data collection works (Telles, 2002)<sup>2</sup>.

Data were organized as follows: 1. whites and 2. Negroes (including blacks and darks). We disregarded in these analyses the yellow (70 interviewees, corresponding to 3.5% of the sample) and Indian groups (68 interviewees, corresponding to 3.4% of the sample) due to their small representation. The denomination of Negroes, bringing together quantitative data referring to blacks and darks, is also used by Hasenbalg (1979) and Silva (1980).

Table 5 (in the Appendix) illustrate the distribution of the occupation groups by race. There is a predominance of white housewives, in contrast to a higher frequency of black women in the job market.

Table 5: Race and occupation

	Workin	ng man	Working	woman	Housewife	
	Freq.	%	Freq.	%	Freq.	%
Whites	356	47.5	245	48	154	56.4
Blacks	393	52.5	265	52	119	43.6

Source: Descriptive analysis based on the INAF 2001 database.

**<sup>2.</sup>** We should remember that the academic circles debate the difficulties and inadequacies of working with IBGE categories (Telles, 2003).

# Cultural and educational variables

#### **Schooling**

Several studies indicate that schooling is a strong predictor of performance in proficiency tests (OECD-IALS, 2000; OECD-PISA, 2000; Brasil-SAEB, 2001). According to the IALS Report, each year of schooling increases in ten points the performance score at that test.

In organizing the data for schooling, we have worked with four ranges: 1) up to completed primary education, corresponding to Fundamental Schooling 1; 2) up to completed gymnasium, corresponding to Fundamental Schooling II; 3) up to completed high school, corresponding to Secondary Education; and 4) up to completed higher education.

Table 6 (in the Appendix) display the ranges of schooling by occupational group.

Table 6: Schooling and occupation

	Worki	ng man	Workin	ng woman	Housewife	
	Freq.	%	Freq.	%	Freq.	%
Up to complete primary education	377	51	196	39	155	57
Up to complete fundamental education	189	25	139	27	81	29
Up to complete secondary education	127	17	117	23	31	11
Up to complete higher education	56	7	58	11	7	3
Total	749	100	510	100	274	100

Source: Descriptive analysis based on the INAF 2001 database.

The schooling of working women is higher when compared to working men and with housewives. This result may have influenced the general performance in the test. Housewives have lower schooling when compared to working men. These results coincide with gender studies, which point to higher schooling for women when compared to men (Carvalho, 1999b).

#### **Reading habits**

According to the IALS Report, the literacy score at the test has positive correlation

with the daily practice of reading (OECD-IALS, 2000). Analyzing the IALS results, Carvalho and Moura (2003) also note that women have a more positive and assiduous relationship with reading practices. What is the influence of this better relationship with reading in the final performance?

To investigate this aspect, a characterization question was added to the statistical model (question 17), through which the interviewee indicated if he or she "enjoys or not reading as leisure or pastime". If the reading habit, other variables controlled for, turned out to be a stronger predictor than sex (or occupational group), we could affirm that the better results in the test were not related to being a man or a woman, to working out or being a housewife, but would rather be associated to different forms of appropriation of reading. In the statistical model presented next, we observe that reading habit is a predictor variable. However, like the other variables listed, it does not explain the difference found between the occupational groups.

For the sake of the analysis, questions were organized in two groups: 1) enjoys reading (including those who answered they enjoyed much and not so much); and 2) does not enjoy reading (Table 7 in the Appendix).

Table 7: Reading habits and occupation

	Worki	ng man	Working woman		Housewife		
	freq.	%	freq. %		freq.	%	
Enjoys reading	440	60.8	388	78.5	180	69.2	
Does not enjoy reading	284	39.2	106	21.5	80	30.8	

Source: Descriptive analysis based on the INAF 2001 database.

Working women are the people who more frequently state that they enjoy reading as a pastime, followed by housewives.

# Socioeconomic situation variable

# **Brazilian Criterion of Economic Classification - Brazil Criterion**

The Brazil Criterion includes information

about material situation and level of education of the head of the family, affording a better representation of economic classes, filtering out small variations of income.

The levels used in the statistical model are: A/B Class; C Class; D/E Class (Table 8 in the Appendix).

Table: 8: Criterion Brazil and occupation.

	Worki	ng man	Workir	ng woman	Housewife	
	freq.	%	freq.	%	freq.	%
A/B Class	119	15.9	76	14.9	28	10.3
C Class	228	30.4	172	33.7	97	35.5
D/E Class	402	53.7	262	51.4	148	54.2

Source: Descriptive analysis based on the INAF 2001 database.

It can be noted that there is no difference in the distributions of the groups.

In the construction of the statistical model it was necessary to include the possible first-order interactions between the factors (group, schooling, age, reading habits, Brazil Criterion, and color) in the main model. We say that there is a first-order interaction between two factors when the difference between the averages of one of the factors varies according with the value of the second factor. For example: we may have similar results for men and women when we take illiterate people, but different results when we consider people with better schooling. In this case we say that there is interaction between sex and schooling. Once the main model is adjusted, the non-significant effects (adopting a level of significance of 5%) will have been removed, thereby producing reduced models. That is what was done until there remained no non-significant interaction effects.

The construction of the model allows us to conclude that, once the factors have been controlled, there is statistically significant difference between the three occupational groups considered (P=0.009).

The next step consisted in comparing the averages of the three groups with each other. This was done through Turkey's multiple comparisons test (see Neter *et al.*, 1990), allowing us to conclude that working women

have better average performance than working men (P<0.001) and housewives (P<0.001). On the other hand, no significant difference was found between the average performance (average proportion of right answers) of working men and housewives (P=0.342).

Another relevant finding is that the interactions involving the groups were not significant. This suggests that the differences observed between the three occupational groups are independent of the level of schooling, age, reading habits, economic class and color of the participant.

### **Question-by-question analysis**

The interest in analyzing the questions of the test by occupational group is due to the inexistence of other studies that analyze the test from this angle, splitting the test into smaller units, namely, on a question-by-question basis. If there are differences in the whole of the test, when the overall number of right answers or the levels of literacy are considered, in which specific point, that is, in which item of the test can this difference be found? According to the organizers of the INAF, the test covers a reduced number of social literacy practices from among the various existent, and which could be transformed in questions. Adding to this the idea that the social reading practices are appropriated differently by men and women, it is worth asking in which specific questions the differences are found.

An internal analysis of the questions of the test would require a linguistic study exploring the construction of the questions and the set of abilities each one of them measures. This aspect alone could entail a new work. Thus, we want to carry out an initial exploration of the set of questions of the test, trying to analyze general aspects of the items in which differences were observed between the occupational groups.

Given that working women performed better in the test as a whole, does this

difference hold for every question? Are there questions in which housewives do better than working men? What are the characteristics of these questions? Table 9 (in the Appendix) present the level of right answers by question and occupation. For example, the first question was answered correctly by 87% of working women, by 81% of the housewives, and by 80% of working men, and so on. On the whole, working women showed a higher level of right answers at every question when compared to working men and to housewives.

Table 9: Frequency and percentage of right answers by question and occupation

QUESTION	Working	woman	House	wife	rife   Working ma	
dozsnon	freq.	%	freq.	%	freq.	%
01	443	87	222	81	597	80
02	394	77	195	71	542	72
03	408	80	192	70	512	68
04	454	89	221	81	619	83
05	464	91	224	82	633	85
06	418	82	193	71	532	71
07	260	51	107	40	316	42
08	263	52	105	38	305	41
09	293	57	121	44	310	41
10	397	78	185	68	488	65
11	335	66	149	55	377	50
12	250	49	79	29	272	36
13	202	40	81	30	254	34
14	223	44	63	23	244	33
15	284	56	102	38	299	40
16	141	27	40	15	147	20
17	275	54	109	40	351	47
18	273	54	99	36	330	44
19	221	43	90	33	280	37
20	110	22	35	13	123	16

Source: Descriptive analysis based on the INAF 2001 database.

At a first analysis, some of the questions stand out and deserve attention. Question 5, for example, asked the interviewee to inform "At what day and month does vaccination begin?" This was the question with the highest level of right answers for all groups. It is a question whose answer is immediate and represents a daily situation: localizing explicit information in an announcement. The same can be said of question 4 which, given the same announcement, asked "From what age are people entitled to free vaccine?"

The level of right answers for question 7, in which the interviewee was asked to fill a form collecting the necessary information from an identification document and an addressed envelope, falls dramatically to below 50% for every group, except for working women, who scored 51%. The task of filling a form does not seem to be extraneous to people's daily lives, but the level of difficulty exhibited by an

activity such as this, which requires dealing with different materials and filling correctly the requested information, may have contributed to its low level of right answers.

Questions 16 and 20 were those with the lowest levels of right answers for all groups, remaining below 30%. In question 16, after reading a popular short story involving a rustic, a priest, a student, and a baggage handler, in which the rustic turns out to be the smartest of them all, the interviewee must answer in writing the following questions: "Does the person with more study always do better in life? Does the story confirm this idea? Why?" In an article published in the collection Letramento no Brasil [Literacy in Brazil], Ângela Kleiman (2003) criticizes this item of the test, which runs counter to the common sense that sees education as a possibility of social ascent, since in the story it is the cleverness of the rustic, who probably has lower education, that is essential for his victory. This double message probably reduced the level of right answers.

Question 20 had the lowest level of right answers, probably for being the last one in the test, and for requiring that the interviewee localize non-explicit information in a news text dealing with consumers' rights.

Table 10 presents the conclusions from the logistic regression conducted separately for each question of the test. Column 2 indicates in which questions there are differences in the chance of a right answer depending on the occupational group. This information is presented through the values of the significance level, after controlling for the possible influence of other variables, for example, comparing hypothetically a working woman with a working man with the same schooling, color, age, reading habits and Criterion Brazil. The only difference between the two would be the occupational group they belong to. The last five columns indicate the questions in which there is significant difference depending on the variable analyzed in the question.

 Table 10: Question-by-question analysis of the competence test: competence, chance of right answer, and description.

Question	Competence assessed	Chance of right answer in the comparison	Descripti	on of variables	– significant diffe	rence – best r	esult
Question	competence assessed	between occupational groups	Higher schooling	Likes to read	Higher CCEB level	Younger age	White race
01	Locate specific information on the magazine cover.		P<0.001	P<0.001	P<0.001	-	
02	Associate illustration with title.		P<0.001	P<0.001	P<0.001		
03	Decode words and sentences, associating		P<0.001	P<0.001	C in relation to D/E		
04	graphemes to phonemes.  Locate specific information in announcement.		P<0.001	P<0.001	P<0.001 C in relation to D/E P<0.001		
05	Locate specific information in announcement.		P<0.001	P<0.001	P=0.049	P=0.012 falls from 35 years onwards	
06	Locate specific information in letter (short and simple text).		P<0.001	P<0.001	A/B P=0.028- ;C P<0.001 in relation to D/E		P=0.05
07	Locate specific information in document and bill; use legible handwriting in answer; adequately position handwriting on the medium, according to the type of form.		P<0.001	P<0.026	C in relation to D/E P<0.001	P=0.001	P=0.03
08	Identify the function of a text (table of contents).	Working woman (P<0,006) and housewife (P<0,030) with secondary education score higher than working man with secondary education.	P<0.001	P<0.001	A/B P<0.001- ;C P<0.001 in relation to D/E		
09	Locate specific information in the prescribed text (simple text of medium length).	Working woman (P<0,001) and housewife (P<0.013) score higher than working man.	P<0.001	P<0.001	P=0.019	P<0.001	
10	Establish relation between two or more pieces of information (before and after).	Working woman scores higher than working man (P=0.002).	P<0.001	P<0.001	P<0.001	P<0.001	P=0.08
11	Locate specific information in a news text (text of medium length).	Working woman (P<0.006) and housewife (P<0.020) score higher than working man.	P<0.001	P<0.001	C in relation to D/E P=0.001	P=0.033	P=0.033
12	Establish relation between fact and opinion in news text (text of medium length).	Working woman scores higher than housewife (P=0.002) and than working man (P=0,013).	P<0.001	P<0.001	P=0.061	P=0.048	
13	Locate specific information using titles, subtitles and other elements to locate part of text of interest.		P<0.001	P=0.096	P<0.001		
14	Locate specific information using titles, subtitles and other elements to locate the part of text of interest; compare two or more pieces of information; infer implicit information.	Working man (P=0.042) and working woman (P<0.001) score higher than housewife; working woman (P=0.031) scores higher than working man.	P<0.001	P=0.002	P<0.001		
15	Infer implicit information in narrative (text of medium length).	Working woman scores higher than housewife (P=0.013) and than working man (P=0.001).	P<0.001	P<0.001	P=0.002		

16	Relate textual information to previous knowledge in narrative (text of medium length); identify the central theme of narrative.	Working woman scores higher than housewife (P=0.095). Level of significance leaves room to doubt.	P<0.001	P=0.001	P<0.001	P=0.042	
17	Locate specific information in double-entry table using organizing elements to locate the information of interest; compare information across two tables.		P<0.001	P<0.001	P=0.021	P=0.001	P=0.047
18	Locate specific information in news article using organizing elements to locate the part of the text of interest; establish relation between text and image.	Working man (P<0.001) and working woman (P=0.004) with higher education score higher than housewife.		P<0.001	P<0.001	P<0.001	
19	Locate specific information in prescriptive text using organizing elements to locate information of interest.		P<0.001	P<0.001		P<0.001	
20	Locate specific information using titles, subtitles and other elements to locate the part of the news article of interest; establish relation between parts of the text, and between two or more pieces of information.		P<0.001	P=0.002	P=0.001		

Source: Ação Educativa, Internal Report, 2001.

Analyzing the chance of right answers we observe that in nine questions there is significant difference in the average proportion of right answers, after controlling for the other variables, always in favor of working women when compared with working men and housewives (questions 8, 9, 10, 11, 12, 14, 15, 16, and 18). Most importantly, however, we notice that from question 8 onwards the respondent had to write answers down in the INAF booklet, a task which from question 11 onwards was compounded with the task of reading the instructions for each question. How are we to understand this result? To what extent the better performance by working women can be credited to higher proficiency in each question or, alternatively, just to a better disposition towards the task at hand?

When we compare the average proportion of right answers by housewives to that of working men, controlling for other variables, we see that in three of the questions (8, 9, and 11) the difference is significant in favor of the women. It is worth analyzing each one of them separately.

Presenting the respondent with a magazine table of contents, question 8 asks about its use: "what is the purpose of this part of the magazine?" According to the test organizers this item:

Was included in the test as an indicator of the familiarity of the reader with resources for locating the texts that he or she wishes to read, or to know the contents of a publication without having to flick through it. Although that is an alternative means of seeking texts of interest, it is a resource that helps organization and reveals the familiarity of the respondent with various written materials. (INAF, 2001, p. 9)

As previously described women read magazines more often than men, who prefer to read newspapers (Carvalho; Moura, 2003). The importance of the table of contents for each of these kinds of texts is different: in magazines it helps to locate interesting parts, whereas in newspapers, when existent, it is of little

relevance and seldom used. To what extent the result in favor of housewives is due to the kind of material used?

In item 9, the test required the respondents to read a piece of text on how to clean the house water reservoir, and indicate "all the materials you need to clean the water reservoir". According to the organizers of the research:

The major difficulty of this item can be attributed to the fact that it required locating five pieces of information (the materials needed to clean the water reservoir). Since it was not possible to memorize the five items at a first reading, the reader had to go back to the text to make sure that he or she had listed all the necessary items (INAF, 2001, p. 8).

It is not possible to analyze the influence of the contents of the question upon the result achieved, but we can say that cleaning, and also the house water reservoir, is more present in the domestic universe, which is of greater concern to housewives, than in the male universe. Also, what is the influence of the precision needed of the items listed to the correct answering of the question?

Lastly, in question 11 it was asked, on the basis of a report of a landslide, "How many people died as a result of the landslide?" Some inference was necessary, because the news mentioned just the names of the victims. For this question in particular, it was difficult to raise hypotheses to justify the difference in results, further elements being needed to understand it.

The conclusions drawn from the analysis of the five columns that describe the result by question and variable reinforce what has already been described here. Schooling and reading habit are determinant of the result achieved in all questions of the test: the higher the schooling, the better the performance; a liking for reading also helps in the test. The

Criterion Brazil variable is also a determinant in nineteen questions, favoring the upper classes. Nevertheless, for some questions the number of respondents per class is insufficient to ascertain that the difference is statistically significant. In these cases, only the statistically significant comparisons are presented. The age variable then becomes a determinant as questions become more and more difficult. The relationship is such that the younger the age (recalling that the respondents are at least 15 years old) the higher the proportion of right answers. The race variable shows influence only in questions 6, 7, 10, and 17, in favor of whites. A specific analysis would be needed to understand these results.

In fact, as already argued here, understanding all the differences pointed out above would entail a linguistic analysis of each question going beyond the competences assessed: which abilities are measured in each question? To what extent the contents of each question are closer to the male or female universes? A whole series of questions could be formulated that would necessitate specific studies for their solution.

# **Concluding remarks**: the gender approach in a literacy research

To begin with, we must underline the relevance of a research such as the INAF to measure the levels of literacy of the Brazilian population, making it possible to build a picture showing the way in which reading is appropriated and used by the people in this country. It is also important to underscore that the conclusions presented were made possible only after a more careful statistical analysis of the data, carried out by a professional of this area. It seems to us to be essential that the field of Education should form alliances to allow data analysis beyond the simple comparison of averages or descriptive presentation of information.

Secondly, through the different results for men and women we tried to emphasize the

importance of considering the gender perspective as a tool to understand the different cultural practices, and more specifically the issue of literacy. The initial result already indicated that there is difference - in favor of women - in the performances of women and men at the INAF when the twenty questions of the test are considered. Such difference, however, is not exactly a novelty and has been described both in the literature analyzing the Index, and in other educational studies (Millard, 1998; INAF 2001; Gilbert; Gilbert, 1998; Corrêa, 2004). What the present work allowed to bring forth was, first of all, the inexistence of homogeneity in the group of women, thereby breaking away from the man-woman dichotomy, so frequent in gender studies, and particularly in quantitative works; secondly, this study proposed the individual's work status as a differentiating factor. Thus, we moved a step further from the sex of the respondent, by recognizing the importance of the social place occupied by women, split into working women and house wives.

After this partition, the results remained roughly as expected: working women scored higher when compared to working men and to housewives; but the similarity of the results achieved by men and by housewives calls attentions. The lack of bibliography with information about housewives, and the absence of this group in separate form in the statistics produced by the major research institutes, leaves us with few elements to analyze this similarity. Our insistence on separating the group of housewives and its performance stems, among other reasons, from that deficiency, in an effort to begin to fill this gap.

In addition to the overall performance in the test, we also sought to explore more deeply the performance on a question-by-question basis. The results found indicated that in nine of the twenty questions the average number of right answers of working women is superior to those of one or both of the other two groups. There are no significant differences in the first questions, deemed to be the simplest, and also in the last questions, considered to be the hardest ones.

Even without a more thorough analysis of these questions in their linguistic construction aspect, we were able to raise hypotheses about the influence that the content asked in each question may have in the final result displayed by each group. This has the main consequence of drawing attention to the need to consider if there are elements that may be closer to previous knowledges or specific interests of men and women, a consideration that should be present both in the preparation of the test and in the analysis of its results. If the universe pertaining to a given question is more familiar to any of the sexes, this would imply hypothetically in a small advantage to one of the groups.

The objective of constructing a statistical model was that of guaranteeing safer conclusions and, in so doing, to verify the influence of a set of predictors, already discussed in the bibliography on the theme, which could explain the results found. The literature informs us that schooling is the main predictor of the results found in a literacy test, and also reports on the influence of age, income, and social class. We have added to this list the color and reading habits as explicative variables.

The final result is, we might say, challenging: after controlling for this set of variables, we observed that the difference in favor of working women remains in the comparison with working men and housewives. There is something beyond schooling, age, income, color and reading habits that influences the performance of men and women at the Index. Although the statistical analyses have allowed us to reach this conclusion, they offer little help in explaining it, a task for the Social Sciences. What are then the differences found between the working women and the other two groups due to?

We know in principle that it is essential to look for support in gender analyses. Men and

women incorporate reading differently as social and cultural practices, which have, among others, meanings linked to gender. Such differentiated appropriation — which normally begins in the school space, but is not limited to it, being present also in communal, social, religious and

other activities — produces the differences observed. Qualitative studies about reading practices and literacy processes, considering in greater depth gender as a category of analysis, may help to pave the way to the explanations that must remain here as questionings.

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