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Text Topic Interest, Willingness to Read and the Level of Reading Comprehension among Adults – the Role of Gender and Education Level

Abstract

The aim of the study was to examine the relations between variables connected with the reader (interest in the text topic and willingness to read it) and the level of reading comprehension among adults, after controlling for text difficulty. The study involved 1549 users of Polish aged from 18 to 87. Open-ended questions were used to measure reading comprehension. It was proved that the model taking into account variables related to the reader better predicted reading comprehension than the model only taking into account text difficulty. Moderation analysis showed a little stronger relation between text topic interest and reading comprehension in the group of women than in the group of men. It was also noted that among adults with lower levels of education text topic interest and willingness to read it were more strongly related to the level of comprehension than among better educated people. The discussion focuses on the role of psychological factors in reading comprehension.

Keywords: *reading comprehension, text difficulty, text topic interest, motivation, readability*

Introduction

Reading comprehension is a basic ability of a human being, one of key importance for their everyday functioning. Deficiencies in reading and comprehension

of a text have negative consequences both for the individual and for the whole society (OECD, 2013).

The RAND Reading Study Group (2002, p. 11) defines comprehension as "the process of simultaneously extracting and constructing meaning through inter-action and involvement with written language". It is affected by factors such as: surface and deeper characteristics of a text, characteristics of the reader and the reading task, and the socio-cultural context.

Surface characteristics of a text include lexical or semantic characteristics and sentence (or syntactic) complexity. These features were taken into account in the Polish formula of text difficulty drawn up by Pisarek (1969, 2007). It involves two elements: syntax difficulty (the average sentence length in words), and vocabulary difficulty (the percentage of "difficult" – four-syllable and longer – words).

Out of the characteristics connected with the reader, text topic interest is an important factor affecting the process of reading and its effectiveness. For instance, Schiefale (1996) proved that college students who demonstrated greater interest in the texts used in the study showed deeper comprehension of these texts, even after controlling for previous knowledge and general intelligence. These results can be explained as follows: texts which are regarded as interesting arouse the processes of attention, emotional engagement and personal meaning to a greater degree than texts that are estimated to be uninteresting (Bray & Brandon, 2004), which contributes to the improvement of results in reading comprehension tests.

Another important factor influencing reading accomplishments is motivation (Oldfather & Wigfield, 1996). Readers with higher motivation are more willing to make some effort to create the meaning of the text they are reading and more engaged in this action than less motivated ones (Guthrie, 2004).

What cannot be ignored when studying the issue of reading comprehension are gender differences. Many studies confirm that girls read more and have bet-ter results in reading comprehension tests than boys do (Gambell & Hunter, 2000; OECD, 2010). They also have a more positive attitude to reading, including higher motivation and pleasure from this activity (Marinak & Gambrel, 2010; Clark & Foster, 2005; Ünal, 2010).

It is noteworthy that studies concerning reading comprehension have mostly been carried out among children and adolescents. This tendency is confirmed by the literature review made by Morrison et al. (2011), showing that only 0.4% of the articles of the Association of Literacy Educators and Researchers and 2.2% of the Literacy Research Organisation concerned adults. The scarcity of available study reports makes it impossible to find out whether the relations found in reading habits and reading comprehension are also typical of adults.

Study Aim

The main aim of the study was to explore the relations between text topic interest, willingness to read it and the level of reading comprehension among adults. Apart from studying the relations between the variables connected with the reader and the level of reading comprehension, a variable connected with the text – its difficulty calculated on the basis of Pisarek's formula (1969, 2007) – was also taken into consideration. Including both types of variables (linguistic and psychological) in the hierarchical regression model made it possible to examine whether psychological variables connected with the reader significantly increased the percentage of explained variance of reading comprehension over the contribution of text difficulty. This solution allowed for deeper insights into the nature of interaction between factors of different types which may affect reading comprehension.

The second purpose of the study was to examine whether the strength of relations between text topic interest and willingness to read it depended on a) the gender, or b) the education level of the readers. As regards gender, some studies conducted among children and adolescents indicated stronger relations between text topic interest and reading comprehension among boys (which led to the suggestion that providing boys with texts concerning topics interesting for them should have a positive impact on reading accomplishments; Asher & Markell, 1974; Oakhill & Petrides, 2007). Some studies, however, gave different results (Bray & Brandon, 2004).

Apart from gender, the role of education was also taken into account in the study, which is something new in studies in this field. On the basis of the results of the studies conducted by the National Library of Poland in cooperation with TNS Polska, developed by Chymkowski et al. (2012), which showed a higher reading rate among better educated people, it was hypothesized that in the group of people with lower levels of education, less frequently engaging in reading, the perception of a text as interesting and the resultant willingness to read it would be more significant factors influencing the level of reading comprehension than in the group of better educated people.

Research Methodology

Research Sample

The study comprised 1549 persons, including 898 women (58%) and 651 men (42%). Polish was the mother tongue of all the participants. The sample consisted

of persons living in 14 regions in Poland. The sociodemographic characteristics of the studied sample with gender division are presented in Table 1. The participants' mean age was 35.92 years, SD=14.90, $min.$=18, $max.$=87. The studied groups were not significantly different, either, in terms of age (U=274551; z=-0.953; p>0.05) or education level (U=294061; z=-1.248; p>0.05).

Table 1. Sociodemographic characteristics of the studied sample by gender

	Women		Men	
	n = 898	**%**	**n = 651**	**%**
Age (in years)				
18–21	145	16.1	78	12.0
22–32	295	32.9	247	37.9
33–43	152	16.9	123	18.9
44–54	154	17.1	94	14.4
55–65	76	8.5	52	8.0
66–76	29	3.2	27	4.1
77–87	7	0.8	5	0.8
N/A	40	4.5	25	3.8
Education level				
Elementary	14	1.5	14	2.1
Lower secondary	24	2.7	13	2.0
Vocational	76	8.5	78	12.0
Secondary school student	37	4.1	20	3.0
Secondary	323	36.0	222	34.1
University student	108	12.0	63	9.7
Higher	315	35.1	238	36.6
N/A	1	0.1	3	0.5
Place of residence				
Village	180	20.0%	134	20.6%
Town up to 100 thousand residents	266	29.7%	184	28.3%
Town between 100 and 500 thousand residents	239	26.6%	207	31.8%
Town over 500 thousand residents	198	22.0%	122	18.7%
N/A	15	1.7%	4	0.6%

Instruments

35 texts in Polish, each about 300-word long, were used in the study. The texts were selected by a team of experts (5 linguists and a psychologist). The text selection was based on text diversity in terms of type, subject and the level of difficulty. The set included very easy and easy texts (children's stories, texts from teen maga-

zines, guides), texts with average difficulty (fragments of school textbooks, articles from adult magazines and newspapers, passages from popular science books), as well as difficult and very difficult ones (scientific texts concerning the humanities and natural science, legal commentaries).

So as to measure comprehension, the research team prepared 5 open-ended questions to each text. A correct answer gave the respondent 1 point, so the maximum number of points was 5. Each participant received a study set consisting of the demographics section and two texts. The demographics section contained questions concerning gender, age, education and the place of residence. Each text was preceded by a short piece of information about its subject and two questions: whether in the respondent's opinion the text may be interesting for him or her (response categories: 1 – "definitely not", 2 – "no", 3 – "rather not", 4 – "hard to say", 5 – "rather yes", 6 – "yes", 7 – "definitely yes") and whether the respondent felt like reading this text (response categories: 1 – "definitely not", 2 – "no", 3 – "rather not", 4 – "hard to say", 5 – "rather yes", 6 – "yes", 7 – "definitely yes"). Each text was followed by a test including open-ended questions.

The sets were created randomly. If the same text was drawn, the drawing was repeated. The answers to open-ended questions were checked by a team of 3 persons, other than the team preparing the test questions.

Procedure

The paper-and-pencil questionnaires were distributed with the snowball method by the research team. They were handed to 80 persons coming from different environments and having different education levels, who were asked to conduct the study among possibly varied groups of people. Hence, although the studied sample was not fully representative of the population of Polish adults, the external validity of the research can be regarded as fairly satisfactory.

The supervisors informed the respondents of the objective of the study, as well as of its anonymous and voluntary nature. The time of doing all the tests was, on average, 20–30 minutes.

Research Results

Table 2 presents a short description of all the texts used in the study, their difficulty level, the results of the open-ended questions and the level of interest in each text and willingness to read it, with division into sexes.

The comparison of reading comprehension with the use of Mann-Whitney U test did not show gender differences ($U=297427.50$; $z=-1.036$; $p>0.05$). In the group of women, there was a higher level of text topic interest ($U=248825$;

z=-4.957; p<0.001) and willingness to read the text (U=244057.50; z=-5.083; p<0.001) than in the group of men.

A positive correlation between the text topic interest and willingness to read it was noted (rho=0.642; p<0.001). Both among the women and men the level of comprehension was positively related to the interest in the text topic (women: rho=0.212; p<0.001; men: rho=0.144; p<0.001) and the willingness to read it (women: rho=0.170; p<0.001; men: rho=0.143; p<0.001).

At the next stage of the analyses, two hierarchical regressions were conducted: the 1st step involved the entrance of text difficulty, and the 2nd step, one of the psychological variables: text topic interest or willingness to read it. The assumptions of regression analysis were checked before doing the calculations.

The results of hierarchical regression analysis are presented in Tables 3 and 4. Introducing "text topic interest" in step 2 increased the percentage of explained variance of reading comprehension from 65.1% to 69.3%. The observed change proved to be statistically significant (F(1, 32)=4.396; p=0.044). Similar results were obtained for the regression model in which "willingness to read the text" was introduced in step 2. This model explained 70.6% of the dependent variable. The change of $R2$ in relation to the model which only included "text difficulty" as a predictor was statistically significant (F(1, 32)=6.069; p=0.019).

The last step of the calculations involved moderation analysis. In this way it was examined whether the strength of relations between text topic interest/willingness to read it and the level of comprehension depends on the gender and education level. Quantitative independent variables were centred, i.e. the arithmetic mean was subtracted from their values. Gender and education were coded with the binary method (woman: 0, man: 1; secondary or lower education: 0; higher education or student: 1). A bootstrapping method was used to calculate the interaction effect, applying Hayes' macro (2013) for SPSS. 5000 random samples were carried out for each analysis, adopting 95% confidence interval.

Interest in the subject of the text was significantly related to comprehension (b=0.265; SE=0.036; p<0.001), whereas no significant relation was found between gender and comprehension (b=0.006; SE=0.080; p>0.05). The effect of the interaction of gender and text topic interest on its comprehension proved to be significant (b=-0.112; p=0.046; CI 95% [0.003–0.010]). Conditional effect of text topic interest on reading comprehension was stronger among the women (p<0.001; CI 95% [0.194–0.436]) than the men (p<0.001; CI 95% [0.090–0.248]), although the differences were not great.

Willingness to read the text was significantly related to its comprehension (b=0.226; SE=0.040; p<0.001), whereas no significant relation was found between

gender and the dependent variable (b=0.010; SE=0.081; p>0.05). No significant effect of the interaction of gender and willingness to read the text on the level of its comprehension was found, either (b =-0.037; SE=0.058; p>0.05; CI 95% [-0.151–0.080]).

Both education (b=0.455; SE=0.078; p<0.001) and text topic interest (b=0.296; SE=0.036; p<0.001) were significantly related to reading comprehension. A significant interaction effect was also noted (b=-0.179; SE=0.053; p<0.001; CI 95% [-0.282 – -0.075]). The positive relation between text topic interest and reading comprehension was stronger among the people with poorer education (p<0.001; CI 95% [0.225–0.366]) in comparison with the better educated ones (p<0.01; CI 95% [0.041–0.193]).

Likewise, the education level (b=0.468; SE=0.078; p<0.001), the willingness to read the text (b=0.268; SE=0.038; p<0.001) and the interaction effect (b=-0.195; SE=0.057; p<0.001; CI 95% [-0.308 – -0.082]) were significantly related to the comprehension level. The positive relation between willingness to read the text and its comprehension was stronger among the people with secondary or lower education (p<0.001; CI 95% [0.212–0.360]) than among those with higher education or students (p<0.05; CI 95% [0.060–0.176]).

Table 2. Characteristics of the texts and the readers: text difficulty, comprehension level, topic interest and willingness to read

No. of text	Text description	Text difficulty	Comprehension (Me)		Topic interest (Me)		Willingness to read (Me)	
			women	men	women	men	women	men
1.	Story about dragons	4.13	5.00	4.00	5.00	4.00	5.00	5.00
2.	Story about a cat	4.76	5.00	5.00	4.00	4.00	5.00	5.00
3.	Story about a pillow	4.99	5.00	5.00	4.00	4.00	5.00	4.00
4.	Story about a dog	5.25	4.50	5.00	6.00	4.00	5.00	4.00
5.	Family situation	5.25	5.00	5.00	4.00	4.00	5.00	5.00
6.	Story about three boys	5.36	4.00	4.50	4.00	4.00	5.00	5.00
7.	Greek gods	6.18	4.00	4.50	4.00	4.00	5.00	4.00
8.	Tips on memory improvement	6.30	5.00	5.00	5.00	4.00	6.00	4.00
9.	Work at an animal shelter	6.60	4.00	4.00	5.00	4.00	5.00	5.00
10.	Animal habits	6.74	4.00	4.00	5.00	4.00	6.00	5.00
11.	School situation	6.94	5.00	5.00	5.00	4.00	6.00	5.00
12.	Poetry by Jan Kasprowicz	7.07	5.00	4.00	5.00	4.00	5.00	4.00
13.	Advantages and disadvantages of alcohol	7.46	5.00	5.00	5.50	6.00	5.00	5.00

No. of text	Text description	Text difficulty	Comprehension (Me)		Topic interest (Me)		Willingness to read (Me)	
			women	men	women	men	women	men
14.	About a village boy	7.55	5.00	4.50	5.00	5.00	5.00	5.00
15.	Teen problems	8.69	4.50	4.00	6.00	5.00	6.00	5.00
16.	Diet principles	8.75	3.00	3.00	5.00	5.00	5.00	5.00
17.	Google Glass	9.04	3.50	4.00	4.00	4.50	5.00	5.00
18.	Conflict in Syria	9.09	4.00	4.00	4.00	4.00	5.00	4.00
19.	A psychological principle	9.37	4.00	4.00	6.00	5.00	5.00	5.00
20.	Journalist circle	10.03	1.00	2.00	4.00	3.50	5.00	5.00
21.	Power station problems	10.11	4.00	4.00	3.00	4.00	4.00	5.00
22.	The artistic path of S. Bareja	10.15	4.00	2.00	5.00	4.00	5.00	5.00
23.	Mass culture	10.22	4.00	1.50	4.00	5.00	5.00	4.00
24.	Body Mass Index	10.25	4.00	4.00	5.00	4.00	5.00	4.50
25.	Survey procedure	10.58	3.00	3.00	4.00	4.00	4.00	4.00
26.	Woody Allen's film	10.60	4.00	3.00	5.00	4.00	5.00	4.00
27.	Melting and freezing processes	10.95	2.00	2.50	4.00	4.00	4.00	5.00
28.	Models of fatherhood	11.22	4.00	3.50	5.50	5.00	5.50	5.00
29.	A linguistic phenomenon	11.55	3.00	3.50	5.00	5.00	4.50	5.00
30.	Dust pollution	11.85	2.00	2.00	4.00	4.00	5.00	5.00
31.	Court enforcement	13.73	2.00	2.00	4.00	4.00	4.00	5.00
32.	Concept connected with culture	14.65	1.00	0.50	5.00	4.00	5.00	4.00
33.	Visualizations in mathematics	15.50	3.00	3.50	4.00	4.00	5.00	4.00
34.	Oldest dictionaries	17.12	3.00	2.50	5.00	4.00	5.00	4.50
35.	The essence of symbol	17.28	2.00	1.50	4.00	4.50	5.00	4.00

Notes: Text difficulty was calculated with the use of the Jasnopis application (Broda et al., 2014), on the basis of Pisarek's formula (1969, 2007):

$$T = \frac{\sqrt{T_s^2 + T_w^2}}{2},$$

where T = text difficulty, Ts = syntax difficulty index, Tw = vocabulary difficulty index.

Table 3. Text difficulty and topic interest as predictors of reading comprehension

	b	SE	β	t	p	R2
Model 1						0.651
Text difficulty	-0.208	0.027	-0.807	-7.699	<0.001	
Model 2						0.693
Text difficulty	-0.186	0.028	-0.718	-6.727	<0.001	
Topic interest	0.415	0.198	0.224	2.097	<0.05	

Table 4. Text difficulty and willingness to read as predictors of reading comprehension

	b	SE	β	t	p	R2
Model 1						0.642
Text difficulty	-0.213	0.028	-0.801	-7.699	<0.001	
Model 2						
Text difficulty	-0.174	0.029	-0.653	-6.067	<0.001	0.715
Willingness to read	0.751	0.262	0.308	2.862	<0.01	

Discussion

The study confirmed the relationship between text topic interest and willingness to read it with the results of a reading comprehension test in the group of adults. Consideration of the linguistic characteristics along with the psychological ones made it possible to avoid limitations arising from isolation of these variables. The results of regression analysis indicate that surface linguistic characteristics have a higher significance for reading comprehension than the characteristics connected with the reader, although introducing text topic interest/willingness to read the text to the models significantly improved the percentage of the explained variance of the dependent variable. The considered predictors jointly explained about 70% of the variance of reading comprehension.

The results of the comparisons of gender differences regarding the studied variables seem interesting. The men did not differ from the women in reading comprehension; yet, they had lower motivation to read and demonstrated, lower interest in the topic of the proposed text. These gender differences may be the result of men adopting a more negative attitude to reading even at the early stages of life, which results, among other things, from the perception of reading as a typically "feminine" activity, not suiting the stereotype of the male role (Millard, 1997).

Education level correlated positively with reading comprehension. This result was in accordance with the previous studies that have shown a higher level of literacy, numeracy and problem solving skills among adults with higher levels of education in comparison with people who have a low educational status (OECD, 2013). Formal education facilitates the development and maintenance of proficiency in reading comprehension. In particular, it broadens knowledge and vocabulary and has an impact on attitudes towards learning and interest in reading.

The study on the strength of the correlation of psychological variables and reading comprehension depending on the participants' gender showed that the relation between text topic interest and reading comprehension was significant and positive in both groups, although it was slightly stronger in the women than in the men, which is contrary to some studies within the same field conducted among younger groups (Asher & Markell, 1974; Oakhill & Petrides, 2007). This result shows, among other things, that tendencies and patterns in reading noted in the group of children and adolescents cannot be transferred directly to the group of adults.

As indicated by the results of the study carried out by the Organisation for Economic Co-operation and Development (OECD, 2013), in England/Northern Ireland (UK), Germany, Italy, Poland and the United States, social background has a major impact on literacy skills in adults. In these countries, more so than in others, people whose parents are worse educated have significantly lower proficiency than the children of parents with higher levels of education. The significance of socioeconomic background for the development of literacy skills and education trajectories has also been confirmed in 15-year-old adolescents (OECD, 2010). In this context, the result of the presented study is interesting, as it shows that the strength of the relation of text topic interest and willingness to read it with the level of reading comprehension was higher among the people with secondary or lower education than among those with higher education and students. This suggests the path of potential influences directed at enhancing motivation particularly among the readers with poorer education. In accordance with the self-efficacy theory (Bandura, 1997) and the expectancy-value theory of motivation (Wigfield, 1994), the difficulties some people have when learning to read contribute to the negative evaluation of their chances in this regard, which diminishes the attractiveness of reading, lowering the motivation and leading to lower accomplishments. Hence, the role of motivation in this area cannot be overestimated. This is also confirmed by the results of studies showing that motivation is a more important predictor of reading attainment than any demographic variable (e.g. socioeconomic status, family background, income, ethnicity, gender; Guthrie, 2004).

Conclusions

The first part of the Survey of Adult Skills carried out in 24 countries (including Poland) showed that in approximately 20% of the working age population in the European Union the level of literacy is low (OECD, 2013). Therefore, it is necessary

to try to influence the motivation to read by presenting people with texts that are interesting to them, strengthening the sense of self-efficacy and showing the benefits of reading.

So as to shape readers' attitudes in a positive way, it is also necessary to focus on the other aspect of interaction between text and reader, i.e. text characteristics. The success of encouraging people to read materials for their school or work depends, among other things, on the skilful choice of texts that are appropriate for the reader, which is significantly facilitated by readability formulas, also available for languages other than English (Pisarek, 1969, 2007; Hrabí et al., 2014).

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