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Estimating the improvement of longer texts : Can we trust subjective judgements?[1].

Liesbeth Degand
Yves Bestgen
Université catholique de Louvain, Louvain-la-Neuve, Belgium

Address for Correspondence

Département d'Etudes germaniques
Unité LIGE
Place B. Pascal, 1
B-1348 Louvain-la-Neuve
e-mail : degand@lige.ucl.ac.be

Abstract

This paper tackles the question how the improvement of longer texts, involving an important number of modifications in the original versions, could be estimated. After considering various solutions to this problem, we test a common procedure to measure the readability of texts: subjective judgements. Is this procedure also reliable to measure the improvement of longer texts? To try to answer this question we conducted a case study. Forty eight participants read, evaluated, used and finally re-evaluated one of two versions of an official brochure made by the "Fund for Work Accidents" to inform victims of work accidents about their rights. Results show that the modified version is more favourably evaluated than the original one, but that this advantage is a lot weaker with respect to its comprehension. Actual use of the text seemed to reduce the advantage of the modified version in terms of its evaluation.

1. The Problem

Readability of texts may be affected by an important number of factors, including layout, structure, syntax and vocabulary. Since the early twenties, numerous studies have tried to determine the importance and weight of these factors with the aim of establishing reliable measures of text readability, but also to try to improve the quality of texts. While research in this domain frequently results in conflicting positions due to diverging theoretical schools, e.g. classical readability *vs.* textual readability (for an overview, see Chall, 1996), concrete endeavours to improve texts tend to adopt a more heuristic approach including all levels of a text (Britton et al., 1991). The extracts from a brochure displayed in Figure 1 are an obvious illustration of such a methodology. These short extracts come from an official brochure made by the Belgian "Fund for Work Accidents" to inform victims of work accidents about their rights. The original version (in the left column) was written by members of the Fund itself, and the new version (right column) was rewritten by the Fund on the basis of advice by the Bureau for

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Legibility Advice of the Belgian Federal Ministry of Public Service. It appears that even on such short extracts modifications can be observed on all four text levels mentioned above (see Table 1).INSERT FIGURE 1 approximatively here

INSERT TABLE 1 approximatively here

This type of approach including modifications of many different kinds makes, of course, sense from a practitioner's point of view, whose goal is to provide a global improvement of the text. The problem, however, is that such kind of revisions are not always beneficial to the reader (Britton et al., 1991). The question, then, arises as to how the quality of such improvements could be estimated.

At first glance, several ways of proceeding seem to be possible. A first approach which comes to mind is to make use of research studies that would have shown which are the factors to take into account in improving text. Unfortunately, there are not that many studies on this matter. Classical work on readability is not directed towards text improvement (Chall & Dale, 1985). Text based approaches (Britton & Gülgoz, 1991; Kintsch & Vipond, 1979) are directed towards improvement but they lack practical applicability and they are developed for specific text types (in general long paragraphs). More generally speaking, these studies also very often focus on one isolated factor. Individual simplifications may, however, lead to difficulties elsewhere. For instance, making implicit relations or inferable elements explicit also makes the text longer.

Another approach consists in analysing the efficiency of the text after having improved it (Steehouder & Jansen, 1992). Thus, the design principles of the improved text are based on an analysis and understanding of the users' problems, the aim of the improvement being to remediate these problems. In the first place, this kind of approach presupposes an analysis of the **goal** of the underlying text, i.e. user problems are identified with respect to the goal the text means to achieve. According to us, this is without doubt the best solution, but it is subject to a number of practical difficulties: The method of analysing the efficiency of a text applies in the first place to action-based texts (such as form filling), which efficiency is easily testable (if the people succeed in performing the action correctly, the text goal is fulfilled). The method is, however, a lot less easy to apply to informative, expository, or explicative texts. The methodology is also confronted with a number of ethical and ecological problems. The reliability of the method indeed drops radically when performed in the classroom (Steehouder & Jansen, 1992), but ethical questions arise when participants are chosen among "real people": How do you contact the persons?, On what basis do you select them?, What do you tell them? Nevertheless, the analysis and understanding of the text goal is an essential one for the improvement of any type of text (Jansen & Steehouder, 1984).Finally, a third approach consists in asking participants to evaluate different text versions. Schriver (1989) distinguishes three main evaluation methods. First, there are *text-focused* methods, that operate by asking a person to examine a text by paying attention to specific linguistic features. This procedure is fairly frequent to determine the readability of a text (Britton et al., 1991; Chall & Dale, 1985; Préfontaine & Lecavalier, 1992, 1996). Second, *expert-judgment-focused* methods make use of the judgements of experts, i.e. persons with an extensive knowledge about the subject matter, the audience or about writing techniques themselves. The method applies to different types of reviews (peer, expert, technical, …). And finally, *reader-focused* methods rely on feedback from the intended audience. They include concurrent tests while the text is being read or used, and retrospective tests that elicit feedback after reading has been completed. According to Shriver, document designers should concentrate on this latter methodology because this gives them the best information about their texts. In our

view, an additional advantage of this method is that it is easy to implement. However, we also agree with Lentz and Pander Maat (1992), who plead for the development of text-focused methods, that reader-focused methods are not the panacea. "Readers generally cannot detect all of the inadequacies of a text, especially when the correctness of their responses cannot be determined, and readers cannot provide the correct diagnosis for many problems. The general reader often lacks the metalinguistic and metatextual knowledge to enable him to provide this kind of feedback." (Lentz & Pander Maat, 1992:105). That is why reader-focused methods are best used to collect general information about reader's reactions and 'global' aspects of text quality (Shriver, 1989:252). But are these 'global' impressions really predictive of the quality of an (improved) text? Do globally positive reactions about the quality of a text also mean that the text will be easy to use and read? In other words, is the method efficient to evaluate the quality of (improved) texts? According to Britton et al. (1991) who used it to evaluate the improvement of short expository texts the methodology is efficient. A study by Degand, Lefèvre, and Bestgen (1999), however, did not reveal any sensitivity of the readers to the manipulation of targeted factors (connectives and anaphora).

In the following, we report on a case study meant to measure subjective readability including several dimensions. We compare it to comprehension performances and work with a long text with constant text goals. Although the two texts differ considerably in length (see below), the aim, function and audience of the two text versions remain the same. We also consider the impact of the effective use of a text on its evaluation by the readers/users.

2. Experiment

Partipants read, evaluated, used and finally reevaluated one of two versions of an official brochure. One of the versions was a rewritten and supposedly improved version of the original one.

2.1. Method

2.1.1. Participants

Forty eight participants, all second year Psychology students (+/- 20 years old) at the University of Louvain (Louvain-la-Neuve) and native speakers of French, took part in the experiment for course credit; 25 in the NEW condition and 23 in the OLD condition.

2.1.2. Materials

The materials consisted of two versions of an official brochure made by the Belgian "Fund for Work Accidents" to inform victims of work accidents about their rights. The original version was written by members of the Fund, while the new version was rewritten by the Fund on the basis of advice by the Bureau for Legibility Advice (Service Conseil en Lisibilité) of the Belgian Ministry of Public Service. The aim of the Bureau is to provide suggestions and guidelines to the state employees in order to improve the comprehensibility of administrative texts. The advice the Bureau gives is almost exclusively based on their own experience and native speaker intuitions. Table 1, above, illustrates the type of modifications that are suggested[2]. The rewritten version is a

[2] A complete overview of all modifications between the two versions of the brochure is given in the project report (Degand and Bestgen, 2001).

lot longer (7745 words) than the original one (3416 words), and, according to a classical readability formula (Gunning), it is also a lot more readable (new: 9.6 / old: 13.5). The result of the Gunning formula is the minimum grade level at which the writing is easily read. According to this scale, the old text version requires almost 4 additional grade levels, which is a fairly important difference between the two readability levels. It should also be added that the "ideal" index level is 7 or 8, and that a level above 12 indicates the writing sample is too hard for most people to read. This confirms that the old brochure version puts high demands on the reader, but it also indicates that even the new brochure version is fairly difficult (level above 7/8).

The difference in readability between the old and the new text versions is reflected on the two dimensions classically used to measure the readability of a text: (i) the length of the sentences (sentences with more than 30 words: 23% *vs.* 10%), and (ii) the percentage of non familiar words (5.7% *vs.* 4.5%). As illustrated in Figure 1 above, other modifications have also been made (text structure and layout). However, we do not know the effect of these modifications on the readability level.

Another important difference between the two brochures is the explicitness of the goal of the text. While this text goal is mentioned once on the front page of the OLD brochure in a fairly formal way, the NEW brochure develops the text goal explicitly on its first page and it is further structured in function of this mentioned goal, i.e. the brochure is organised into five sections, which each build an answer to the five questions the brochure is intended to answer (see Table 2).

INSERT TABLE 2 APPROXIMATELY HERE

2.1.3. Tasks

Judgement Task. The first task consisted in evaluating the brochure with respect to its level of quality, interest and presentation. Quality assessment was performed on the basis of twelve questions: nine questions concerned matters of readability, covering comprehensibility in general, but also the use of vocabulary, layout, structure, and examples; two questions concerned the interest of the text; and in a final question readers were asked to estimate their performance. Quality assessment was performed once after reading but before the comprehension task, and once after the comprehension task. All questions were identical apart from the one on the performance estimation. In the first case, readers had to estimate how they thought they would be answering to questions about the text, in the second case, they had to evaluate their actual performance. To answer the questions, the participants had to indicate their degree of agreement with the propositions on a four-level scale from total agreement to total disagreement.
Comprehension tasks. The goal of the second and the third task was to test the ease with which the readers could use the brochures. First, they had to answer eight specific questions with help of the text, i.e. retrieve specific information from the brochure. Second, they had to solve four individual cases involving victims of a work accident, as in example (1).

(1) Mrs K works part-time at the university. On March 2nd, 2000 she brings her children to school, drives to her office and has a car accident. After a hospitalisation of 1 month, and a revalidation of three months, it is established that she has a permanent invalidity of 10%. Establish the allowances Mrs. K should receive, and for how long?

To solve these problems, the participants had to retrieve and combine information from different places in the brochure. To realise their comprehension tasks, participants had permanent access to the text.

2.1.4. Procedure

The experiment was taken by ten participants at a time, all belonging to the same experimental condition. The participants were first informed about the full course of the experiment: The first task consisted in the reading of the brochure, that was to be evaluated with respect to its level of quality, interest and presentation. Then they had to answer the specific questions with help of the text and then to solve the 4 individual cases. Finally a last evaluation was fulfilled. They had approximately 18 minutes to read the text, 3 minutes to perform the evaluation on the basis of a questionnaire, 15 minutes to answer the questions, 30 minutes to solve the cases and 2 minutes to perform the last evaluation. The total experiment lasted approximately 75 minutes.

2.2. Analyses

The first question to answer is whether the judgements indicate a difference between the two text versions. To this end we first analyse the evaluative questions before the comprehension tasks. In all of the following analyses, the answers of two groups were compared by means of ANOVA's.

2.2.1. Subjective evaluation

Answers to the subjective evaluation (Figures 2 and 4) were recoded so that ++ ('I totally agree') has the value 1, + ('I agree') has the value 2, - ('I disagree') has the value 3, and - - ('I totally disagree') has the value 4.

Before answering the comprehension questions, the subjective evaluation shows a large difference between the two brochures. Figure 3 displays the mean evaluation scores of the two groups for each question.The NEW brochure is better evaluated than the OLD one on ten out of eleven scales measuring the brochure's quality, its interest and the possibility to improve it. Thus, when for the two brochures a mean score is calculated of the different scales measuring text quality, a very significant difference is observed ($t(46) = 3.41$, $p<0.001$; global quality score new = 2.12 *vs* old = 2.57). The difference is particularly striking for three aspects: (i) the use of simpler and more generally known words (question 2 : ($t(46) = 2.42$, $p<0.05$), (ii) the number of examples, while the OLD version is judged to not having enough (question 3 : ($t(46) = 3.64$, $p<0.001$), and (iii) the better layout (question 8 : ($t(46) = 2.79$, $p<0.01$). In addition, there is a nearly significant tendency for the NEW text ($p < .10$) to be evaluated as being easier to understand (question 1 : ($t(46) = 1.99$, $p=0.052$. Finally, participants think significantly more that the OLD version could be improved with respect to its comprehensibility (question 5 : ($t(46) = 3.67$, $p<0.001$), and they tend to believe more that the OLD version could be improved with respect to its interestingness (question 6 : ($t(46) = 1.93$, $p=0.06$). However, the opposite holds for the performance estimation. Participants predict that they will perform better on the comprehension tasks with the OLD version ($t(46) = 2;69$, $p<0.01$). The length of the rewritten brochure might have played a role here. The NEW brochure has indeed more than twice as many words. At the same time, readers of the NEW brochure also judge the text to sometimes provide too much information, this was not the case for the OLD brochure. It is possible that participants estimated that they had not had enough time to read the brochure thoroughly. This might have influenced their performance evaluation.

INSERT FIGURE 3 APPROXIMATELY HERE

Now, does this mean that the new brochure is actually improved with respect to the original version? We cannot make such a conclusion before considering the comprehension tasks.

2.2.2. Comprehension evaluation

All comprehension questions were scored by two independent judges. Each scoring disagreement was discussed by them until full agreement was reached.
Table 2 presents the mean scores for each of the questions in the two groups. The global score for the two groups is 75% for the NEW participants and 68% for the OLD ones, but there are important differences in function of the questions. Globally, there are no significant differences between the two groups. However, participants in the NEW condition perform better on question 3 ($F(1, 46) = 5.55$, $p=0.0228$) and on question 8 ($F(1, 46) = 8.53$, $p=0.0054$).

INSERT TABLE 2 APPROXIMATELY HERE

There are no significant differences for the case solving, for which the global score for the two groups is fairly low (45%). However, there is a difference between the two groups with respect to the time course in solving the different cases. Figure 3 shows that the NEW participants proceed with increasing speed in solving the scenarios, while the OLD group takes more and more time[3]. The time to solve the cases was submitted to an mixed analysis of variance with text type as a two-level between factor and problem as a three-level within factor. Only the 39 participants who at least produced an answer for the first three cases could be analysed. There was no main effect of the version nor of the problem, but the interaction between the text type and the problem was significant ($F(2, 74) = 3.96$; $p=0.0232$).

INSERT FIGURE 3 APPROXIMATELY HERE

Hence, there are a number of differences in comprehension performance but they are weak. In any case, the difference in length between the two brochures does not seem to affect the performances negatively as might have been expected from the subjective evaluation. To the contrary, participants reading the NEW brochure even performed slightly better than the readers of the OLD brochure.

[3] To measure the time, we asked the participants to indicate the digits presented on a screen in front of them, each time they had finished one of the scenarios. Only the tree first scenarios could be taken into account for the time analysis since only few subjects indicated the time needed to fulfil the fourth scenario. Either because they forgot to do it, either because they didn't finish in time.

We now would like to know whether the actual use of the brochure affects the subjective evaluation of the brochures. In other words, do the participant take into account their performance to re-evaluate the brochures in one sense or another?

2.2.3. Subjective (re-)evaluation

After answering the comprehension questions, the difference with respect to the quality remains in favour of the NEW brochure as shown in Figure 5 and by a significant difference between the two versions for the global quality score($t(46)=2.71$ $p<0.01$; mean quality score new/old: 2.47 *vs.* 2.83). However, there is clearly no difference anymore for the interestingness. In addition, the *a posteriori* evaluation of the participants' performances drops drastically for the two groups: from 2.28 to 3.04 for the NEW group, and from 1.96 to 3.04 for the OLD group, on a scale from 1 to 4; 1 being highest. As a matter of fact, the performance estimation of the two groups has been levelled down to the same point, with the largest decrease for the OLD group.

Figure 4 displays the mean evaluation scores of the two groups after answering the comprehension questions. An important decrease of the advantage of the NEW version is to be noted. Two factors could account for these observed divergences. On the one hand, participants spent more time with the brochure and could actually test its usability. As a matter of fact, this lead to a levelling down of the NEW brochure towards the OLD one. Apparently, using the brochure participants came to the conclusion that it is not that easy. The levelling down of the NEW brochure is caused primarily by questions 2, 5 and 6. Question 2 concerns the vocabulary difficulty. Participants tend to find it less easy than they had first evaluated it ($F(1, 46) = 3.12$, $p=0.0843$). Question 5 concerns the improvability of the text. While the participants first judged that the text did not really need improvement, this opinion dramatically changes when they actually have made use of the text ($F(1, 46) = 9.14$, $p=0.0041$). Question 6 concerns the interestingness of the text. Here too, the NEW text is judged to be more improvable with respect to its interestingness after having used it than before ($F(1, 46) = 4.38$, $p=0.042$). On the other hand, the rewriting of the NEW brochure mainly concerns aspects of form, not of content. The actual use of the brochure probably has drawn the attention of the readers more specifically to its content. As a consequence, the lack of comprehensibility of the two brochures could simply be the result of a too complex content. The readability indexes of the two texts (see Section 2.1.2.) do indeed indicate that the two texts put fairly high demands on the reader. Another explanation, however, could be that the participants give low quality judgments because they believe they have performed poorly on the comprehension tasks. Question 12 reveals that the participants' estimation of their performances is rather low for the two groups (3.04 on a scale from 1 to 4). It is possible that the participants prefer to "blame the text" rather than "blaming" themselves for their poor performances. It follows from this that they would indicate that the text is poorly written, rather than admitting that they did not understand it. This phenomenon would be at play only for the NEW brochure, since the OLD one had already been judged as being qualitatively poor.

3. Conclusions

Very clearly, before using the texts participants noted a qualitative difference between the two brochures in favour of the revised one. This advantage, however, decreases seriously once the brochure has actually been put to the test of its use, although its evaluation remains globally positive. The differences between the two brochures with respect to their efficiency follow the same line, but they are few and weak.

A first important point to discuss is the fact that readers/users tend to overestimate the quality of the new brochure. The quality rate is indeed not reflected in the actual comprehension performances of the brochures. This result supports Lentz and Pander Maat's view that "[t]he general reader often lacks the metalinguistic and metatextual knowledge to enable him to provide this kind of feedback." (Lentz & Pander Maat, 1992:105). Even though further research remains necessary, our study also suggests that if one wants to have recourse to (naïve) judges to evaluate the readability/comprehensibility of a text, one has to have them really use the text to evaluate it. Simply reading it does not enable them to build a motivated opinion concerning the readability of the text.

This case study also questions the mere possibility to improve texts, and longer texts in particular.

First, in terms of classical readability, the new version is more readable than the original one. This is marked on the level of the vocabulary and the length of the sentences. But the impact of this enhanced readability on the text's comprehension is very limited. This corroborates the view that classical readability formulae rate symptoms rather than real difficulty causes (Davison & Kantor, 1982). At constant content, shortening sentences and simplifying the vocabulary will probably not harm, but, in any case, it does not guarantee a better comprehension.

Second, as indicated in the introduction, the revised brochure operates an important number of modifications at all readability levels: vocabulary, syntax, text structure and lay-out. However, the benefit of these modifications in terms of comprehensibility does not come up to the expectations.

Nevertheless, readers clearly prefer the new version as appears from the global scores before and after the comprehension task. In our view, this preference is not totally without interest. Making this kind of brochures more attractive to their readers, giving them the impression that they are able to cope with its (complex) content will probably encourage them to read it through to the end. For an administrative document this is already a successful achievement!

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	Old version	***New version***
Vocabulary	**4.** *tierce personne* (third party) **5.** *la victime peut prétendre à une allocation* (the victim may lay claim to an allowance)	**4.** *une autre personne* (another person) **5.** *une allocation vous est versée* (an allowance is payed to you)
Syntax	**6.** *Dans la fixation de ce taux interviennent des facteurs ...* (In the fixing of the rate, factors (…) play a part …) **7.** *Lorsque les lésions sont à ce point graves que ...* (When the lesions are that serious that…)	**6.** *Le taux (...) est fixé par le médecin (...). Il tient compte de ...* (The rate is fixed by the doctor… He takes into account…) **7.** *Si pour accomplir ..., votre état exige ...* (If to accomplish…, your condition requires …
Text structure		**8.** Use of connectives: *non seulement..., mais aussi* (not only, but also) **9.** Use of structure markers: *en d'autres termes* (in other words) **10.** temporal restructuring **11.** Explicitation of information (cf. incapacité totale vs. incapacité partielle)
Layout	- Sober layout (paragraphing, underlining)	- Complex layout (paragraphing, bold face, indentation, numbering, …)

Table 1: Modifications in vocabulary, syntax, text structure and layout between the two text versions

Old version

INDEMNISATION DE L'INCAPACITE PERMANENTE DE TRAVAIL

Si la victime n'a pas retrouvé la capacité de travail qui était la sienne avant l'accident, elle a droit à une allocation pour incapacité permanente de travail.

Cette allocation prend cours à partir du moment où les lésions n'évoluent plus (consolidation).

Le taux d'incapacité permanente est fixée par le médecin conseil de l'assureur. Dans la fixation de ce taux, interviennent les facteurs socio-économiques tels l'âge de la victime, sa scolarité, son expérience professionnelle... L'incapacité permanente de travail peut être complète (100%) si la victime a perdu toute possibilité de retrouver du travail.

Lorsque les lésions sont à ce point graves que l'aide d'une tierce personne, dans la vie courante, s'avère nécessaire, la victime peut prétendre à une allocation complémentaire. Le montant maximum annuel de cette allocation est égal à 12 fois le salaire moyen minimum garanti.

New version

4.3. L'INCAPACITE PERMANENTE DE TRAVAIL

4.3.1. Lorsque vos lésions n'évoluent plus, le médecin-conseil de l'assureur-loi constate la **consolidation**.

4.3.2. Si vous n'avez pas retrouvé la capacité de travail qui était la vôtre avant l'accident, vous êtes atteint d'une **incapacité permanente de travail** (I.P.).

Elle est **totale** lorsque vous avez perdu toute possibilité de vous procurer des revenus réguliers par votre travail.

Elle est **partielle** lorsque, malgré vos lésions, vous disposez toujours d'une certaine capacité sur le marché de l'emploi (I.P.P.).

Le taux d'incapacité permanente est fixé par le médecin-conseil de l'assureur. Il tient compte non seulement de vos **lésions** mais aussi de votre **âge**, de votre **qualification professionnelle**, de vos **possibilités d'adaptation** et de **recyclage professionnel**...

En d'autres termes, il évalue votre **perte de capacité concurrentielle sur le marché général du travail**.

...

4.3.5. L'allocation pour aide de tiers

Si pour accomplir les **gestes courants de la vie** (faire votre toilette, vous nourrir, vous déplacer.....), votre état exige **l'aide d'une autre personne**, une allocation complémentaire vous est versée: **l'allocation pour aide de tiers**.

Le montant **maximum** annuel de cette allocation est égal à 12 fois le salaire minimum mensuel moyen garanti. Celui-ci est fixé par décision (convention collective de travail) du Conseil national du travail.
(Au 1/6/1999, le montant du salaire mensuel garanti était de 45.428 F).

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Figure 1 : Extracts from the OLD and the NEW brochures

OLD	NEW
Cette brochure a été conçue pour répondre aux questions des victimes et ayants droits d'accidents du travail en donnant un aperçu du règlement d'accidents du travail dans le secteur privé. 'This brochure was written to answer the questions of victims of working accidents and their eligible parties by giving an overview of the working accidents regulation in the private sector'	***Vous êtes victime d'un accident du travail ou vous êtes ayant droit, c'est-à-dire que l'accident mortel d'un proche vous donne droit à une indemnisation.*** 'You are a victim of a working accident or you are an eligible party, i.e. the fatal accident of a parent entitles you to a compensation Cette brochure vous est destinée. 'This brochure is for you.' Elle a pour objectif de vous faire connaître la législation sur les accidents du travail dans le secteur privé (loi du 10 avril 1971) et ainsi vous aider à obtenir la réparation à laquelle vous avez droit. 'Its aim is to inform you about the legislation of working accidents in the private sector (law of 10 April 1971) and thus to help you obtaining the compensation you are entitled to. Elle a été conçue pour répondre à cinq questions que vous pouvez vous poser: 'It has been written to answer five questions you might have:' ***1. Suis - je concerné par la loi sur les accidents du travail dans le secteur privé ?*** 'Am I concerned by the law on working accidents in the private sector?' ***2. Quand suis - je victime d'un accident du travail ou d'un accident sur le chemin du travail ?*** 'In which cases am I a victim of a working accident or of an accident on the way to work?' ***3. Que faire en cas d'accident du travail ?*** 'What to do in case of a working accident?' ***4. A quoi ai - je droit en cas d'accident du travail ?*** 'What am I entitled to in case of a working accident?' ***5. Comment est indemnisé un accident mortel du travail ?*** 'How is a working accident compensated for?'

Figure 2: Comparison of the OLD and the NEW brochure with respect to the explicitness of the text goal of the two brochures

1. I found the text easy to understand. (p<.08)
2. I think the words used in this text are easy and generally known (p < .05)
3. I think there are enough examples. (p < .002)
4. For me, the content of this text is interesting.
5. I think it would be possible to make this text easier to understand. (p < .003)
6. I think it would be possible to make this text more interesting to read. (p<.08)
7. I believe this text can be understood by a large audience.
8. According to me, the lay out, the way the text is presented, is good. (p < .01)
9. I think this text is well structured.
10. I think this text sometimes provides too much information.
11. I believe the authors of this text have well highlighted the important points.
12. I think that I will be able using this text to answer questions about the indemnities of work accidents. (p < .01)

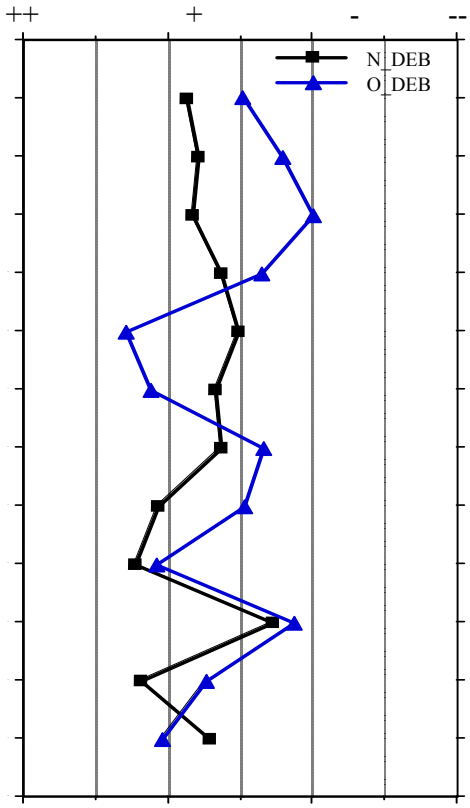

Figure 3: Subjective evaluation of the two text versions before answering the questions QUID DES VALEURS de P? ON LES LAISSE COMME CA?

	Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Total**
OLD	.51	.72	.28	1.0	.83	.78	.67	.59	.68
NEW	.51	.74	.48	.96	.60	.86	.78	.92	.75

Table 2: Mean scores for the comprehension questions in the two conditions

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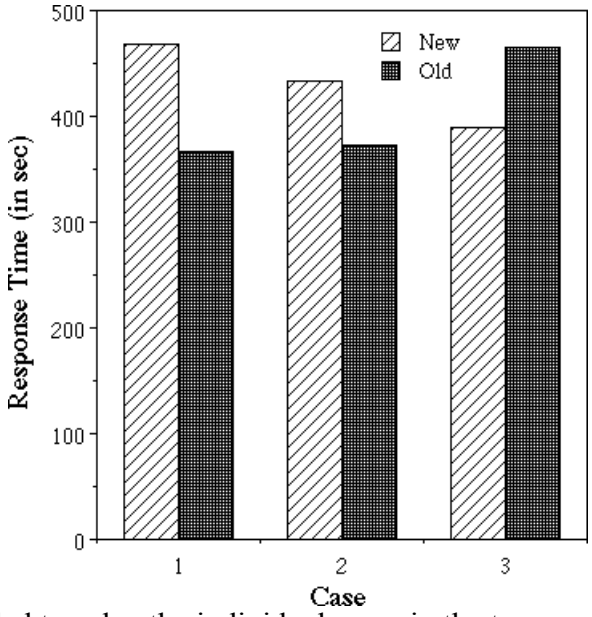
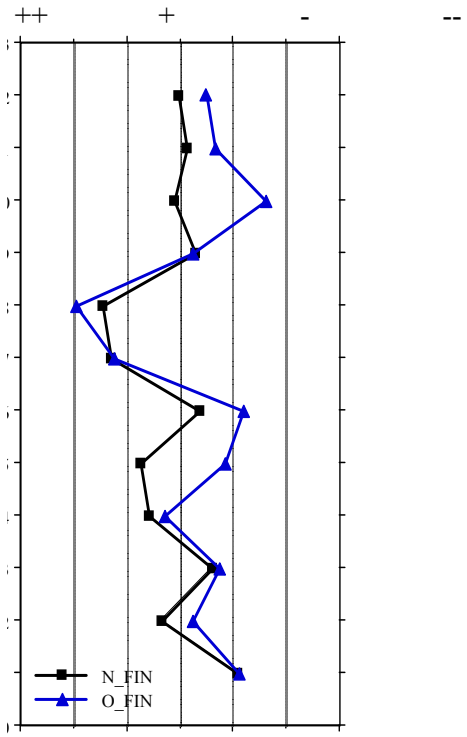


Figure 4: Mean time needed to solve the individual cases in the two versions



1. I found the text easy to understand.
2. I think the words used in this text are easy and generally known
3. I think there are enough examples. ($p<.001$)
4. For me, the content of this text is interesting.
5. I think it would be possible to make this text easier to understand.
6. I think it would be possible to make this text more interesting to read.
7. I believe this text can be understood by a large audience.
8. According to me, the lay out, the way the text is presented, is good.($p<.007$)
9. I think this text is well structured.
10. I think this text sometimes provides too much information..
11. I believe the authors of this text have well highlighted the important points.
12. I think that I have well answered the questions about the indemnities of work accidents.

Figure 5: Subjective evaluation of the two text versions after answering the questions