

Emotioncy: A Potential Measure of Readability

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Abstract

Given the deficiencies of readability formulae as reliable tools for measuring text readability in educational settings, this study aims to offer a new measure to improve the current methods of testing the readability levels of texts through the incorporation of the newly-developed concept of emotioncy. To this end, a group of 221 students were selected from the 2nd to 4th grades of an elementary school. They were given a passage from a 5th grade textbook whose readability was measured by Flesch and Fog indices. The students were asked to fill out an 8-item emotioncy scale along with a difficulty-finding item. One-way ANOVA and correlational analysis were used to analyze the data. Findings indicated that learners' comprehension increases as a result of an increase in their emotioncy levels. In the end, the results were discussed and some suggestions were made to employ emotioncy in measuring readability.

Keywords: Readability, emotioncy, exvovement, avovement.

Introduction

The twentieth century was marked with the advent of readability formulae, which made a considerable difference in the design of textbook materials in educational settings. Since comprehension is the most fundamental target of written materials, many textbook writers and test designers regarded these formulae as appropriate and objective measures for matching readers' language abilities to text difficulty levels (e.g., El-Haddad, Spooner, Faruqi, Denney-Wilson, & Harris, 2016; Instone, 2011; Raj, Sharma, Singh, & Goel, 2016). However, despite their popularity, these formulae received a lot of criticism (Pichert & Elam, 1985; Schriver, 2000). Researchers realized that, by focusing on linguistic factors, these formulae disregard human interests, background knowledge, and motivation, and hence fail to provide an exact estimate of human comprehensibility (Schriver, 2000). To transcend the linguistic measure of readability and to take the emotional factors into account, it seems that the newly designed concept of emotioncy can shed more light on the nature of readability (Pishghadam, Tabatabaeyan & Navari, 2013).

Emotioncy is defined as the emotions evoked by the senses from which we receive inputs (Pishghadam, Jajarmi, & Shayesteh, 2016). Pishghadam (2015) is of the view that sense-related emotions can affect our comprehension. In fact, senses and emotions are so

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intertwined that separating them from each other can hamper our understanding of the true nature of learning. Emotioncy, ranging from avolvement (null) and exvolvement (auditory, visual, and kinesthetic) to involvement (inner and arch), is believed to be tied to learning (Pishghadam, 2015). As Pishghadam and Shayesteh (in press) have shown, individuals with high levels of emotioncy for words in their first language can learn similar words in a second language faster. Therefore, emotioncy with a focus on the integration of senses and emotions has the potential to be utilized as a measure of comprehension.

Given the significance of readability in devising textbooks and reliable tests (Oakland & Lane, 2004) and considering the shortcomings of readability formulae (Davison & Kantor, 1982; Lenzner, 2014), it is our belief that emotioncy can be employed as a complementary source of measuring readability. In sum, the major objective of this study is to propose a new measure of readability, which takes the readers' background knowledge and emotions into account. Thus, it is hypothesized that by having emotioncy measures along with the results of readability formulae, one can have a more accurate estimate of the comprehensibility of a text.

Theoretical Framework

Readability formulae

Interest in the readability of texts emerged in the 20th century (Davison & Bolt, 1981), when the most popular readability formulae were created and published (e.g., Dale & Chall, 1948; Flesch, 1951; Fry, 1968; Gunning, 1968; Spache, 1953). Readability has been defined as the level of ease with which one can understand and comprehend a piece of writing (Richards, Platt, & Platt, 1992). Since these formulae were built upon two quantitative variables, namely word length/frequency and sentence length, they were considered to be objective measures of language difficulty (Lenzner, 2014). Therefore, they were widely used by writers, textbook publishers, and test reviewers as reliable indices to match the difficulty level of a text to readers' language abilities (Dreyer, 1984; Oakland & Lane, 2004; Sattler, 2002; Zakaluk & Samuels, 1988). Not long after the introduction of readability formulae, their reliability and validity were questioned by researchers (e.g., Rygiel, 1982; Wheeler & Sherman, 1983).

First and foremost, it is safe to state that the very features upon which the formulae were written are faulty. Regarding word length, which is the basic component of FOG, FRE and FKG formulae (Flesch, 1948; Flesch, 1979; Gunning, 1968), it is commonly conceived that the number of polysyllabic words makes a text difficult to perceive, a statement proven wrong on more than one occasion (Bailin & Grafstein, 2001; Dreyer, 1984). Since derivation is the most common way of word coinage in English (Yule, 2014), there are numerous derived words that hint to their meanings because they are made up of affixes whose meanings are already known to most readers. For instance, it is easier to understand the meaning of the term unemployment than to comprehend the meaning of the word dearth. The case is also true when it comes to compound words. Usually, because readers know the meaning of word parts, they can easily guess the meaning of the overall word, e.g., playground (Lenzner, 2014).

Defects of considering word length as a decisive factor were moderated by substituting word frequency for word length in some other formulae such as those of Spache (1953) and Dale-Chall (1948). This concept was taken into practice by creating word lists for the most frequent words and marking the words which do not appear on the list as "rare" (Lenzner, 2014). This was also criticized since Chall and Dall (1995) were to extend their word lists over the years. These word lists also take into account words such as cobbler and washtub which are not used by youngsters today (Bailin & Grafstein, 2001) and ignore the most frequently used words such as internet and download which have been developed in recent

decades. Therefore, the most crucial problem of word lists seems to be their negligence toward the fact that different sociocultural groups may have different vocabulary repertoires over years (Lenzner, 2014). As for sentence length, the presupposition underlying almost all readability formulae, the longer a sentence is, the more cumbersome the process of analyzing, and therefore the more difficult the comprehension will be, is also thoroughly undermined by Davison (1981) and proved to be incorrect in some cases (Davison & Kantor, 1982; Dreyer, 1984).

Furthermore, readability formulae have been sharply criticized for their heavy reliance on quantitative factors (e.g., vocabulary and syntax) and their disregard of qualitative factors (e.g., idea density and conceptual difficulty). It seems that the factors influencing text readability are not only text-oriented, but they are also reader-oriented. Background knowledge, reading fluency, motivation, and engagement are regarded as the most significant factors of the latter nature (Oakland & Lane, 2004). Basically, readability formulae are completely heedless of the interactive nature of the reading process (Meade & Smith, 1991), and therefore do not correlate with the psycholinguistic model of reading (Zamanian & Heidary, 2012). Some studies emphasized personal interest or the purpose of the reader as a potential source of comprehensibility (Davison & Kantor, 1982; Dreyer, 1984; Fry, 1975; Klare, 1976; Meade & Smith, 1991; Schriver, 1989). Meade and Smith (1991) illustrated the point by providing an example of hospital patients recovering after receiving kidney transplants who, as a result of having recently gone through an operation, might be more interested in reading medical instructions provided by the practitioners compared to other people. As another case in point, Fry (1975) pointed to students who were deeply fascinated by reading texts about animals when they were 3 years old but had a shift of interest toward texts written on the boy-girl relationship issues during puberty.

Given that the formulae are often criticized, even called unreliable and deceptive (Pichert & Elam, 1985; Schriver, 2000), it seems that there is no choice but to focus on teacher/writer's personal decisions, and regard them as the authority figure in determining text difficulty as well as taking measures to facilitate the process of reading and comprehension for students/readers (Davison & Kantor, 1982; Dreyer, 1984; Instone, 2011). This approach is, however, very subjective and rather controversial.

Emotioncy

Inspired by Greenspan's (1992) developmental, individual-differences, relationship-based (DIR) model of first language acquisition which places emphasis on the affective domain of human behavior, Pishghadam, Tabatabaeyan, et al. (2013) introduced emotioncy as the missing link in shaping human cognition. Believing that words are probably acquired in a cultural milieu and not in isolation, Pishghadam, et al. (2016) stated that people might have different degrees of emotioncy towards varied items of a language based on their sensory experiences. In order to elucidate the concept, Pishghadam (2015) proposed a hierarchical model for different kinds of emotioncy (Figure 1).

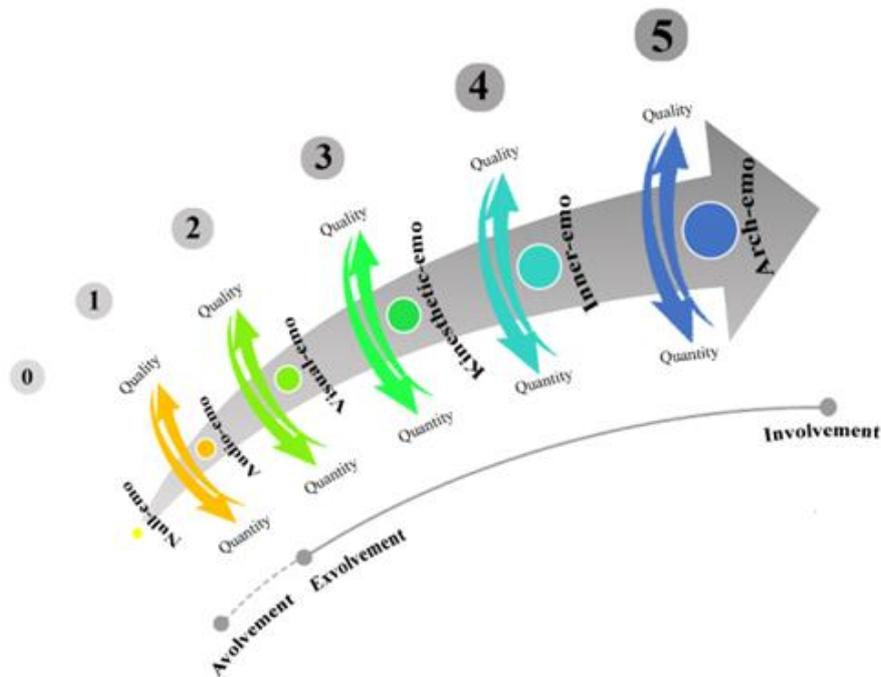


Figure 1. *Emotioncy Levels* (Adapted from “Emotioncy in Language Education: From Exvolvement to Involvement”, By R. Pishghadam, 2015, October, Paper presented at the 2nd Conference of Interdisciplinary Approaches to Language Teaching, Literature, and Translation Studies. Iran, Mashhad).

Pishghadam, et al. (2016) proclaimed that based on individuals' sensory experiences, they might have different types of emotioncies, namely: null, auditory, visual, kinesthetic, inner, and arch (see Table 1). Moreover, as depicted in Figure 1, Pishghadam (2015) categorized learners into three groups of avolved (no emotional experience), exvolved (auditory, visual, and kinesthetic emotioncies), and involved (inner and arch emotioncies). In the same vein, Pishghadam, Adamson, and Shayesteh (2013) introduced emotion-based language instruction (EBLI) as a new perspective on bilingual education, highlighting the crucial role of emotional involvement in molding individuals' worldviews. They claimed that words evoking higher levels of emotioncy in learners are acquired faster than ones they have no or less emotional experience with. Pishghadam, et al. (2016) later proposed sensory relativism as an expansion of linguistic relativism, claiming that reality can change within and across individuals, based on the sensory inputs they receive.

Drawing upon this principle, Pishghadam, Adamson, et al. (2013) suggested that individual's already-possessed knowledge should be considered to be of primary importance in language instruction and comprehension. Pishghadam, Adamson, et al. (2013) cast more light on the idea by listing two aspects for each concept: word and world, both necessary in order for the thorough understanding of a concept. McNamara, Ozuru, and Floyd, (2011) also highlighted the significance of world knowledge as a mediating gap between readers' current state of knowledge and the kind of knowledge demanded by the text. This is exactly why some researchers underscored the significance of relating new concepts to already existing concepts in the mind in order for more profound comprehensibility to be achieved (Brown, 2000; Shrum & Glisan, 1994; Van Den Broek, Kendeou, Lousberg, & Visser, 2011). Giving more salience to the idea of background knowledge in interpreting the world in Piaget's schema theory (1926), Pishghadam, Adamson, et al. (2013) switched the focus from prior knowledge to prior emotions, stating

that it is the already established emotions toward a particular concept which facilitate individuals' understanding of the world. In contrast to Krashen's input hypothesis (1982), in which comprehensible input is defined as the one which is one step beyond learner's pre-existing knowledge ($i+1$), Pishghadam, Adamson, et al. (2013) firmly laid down the idea that it is the input emotioncy level that should supersede the learner's current state in order for better comprehension to be achieved. In this light, without establishing a firm emotional relationship with the text, the reader would not be able to grasp the meaning (Pishghadam, & Shayesteh, in press). Pishghadam, Adamson, et al. (2013) elaborated on the concept by providing an example of an Iranian girl who has never experienced words such as "bar", "drinking" and "wine" in her real life. They believe that this girl would have more difficulty perceiving such words in a written text in comparison with someone whose cultural background includes these concepts.

Table 1. *Emotioncy Kinds*

Type	Experience
Null emotioncy	When an individual has not heard about, seen, or experienced an object or a concept.
Auditory emotioncy	When an individual has merely heard about a word/concept.
Visual emotioncy	When an individual has both heard about and seen the item.
Kinesthetic emotioncy	When an individual has touched, worked, or played with the real object.
Inner emotioncy	When an individual has directly experienced the word/concept.
Arch emotioncy	When an individual has done research to get additional information.

(Adapted from "Conceptualizing Sensory Relativism in Light of Emotioncy: A Movement beyond Linguistic Relativism", By R. Pishghadam, H. Jajarmi, and Sh. Shayesteh, 2016, International Journal of Society, Culture & Language. Copyright 2015 by IJSCL).

In a similar vein, people coming from various regional, religious, and socio-cultural backgrounds would have quite different vocabulary repertoires (Lenzner, 2014). Consequently, they would have a better comprehension of terms associated with their socio-economic status (Pishghadam, et al., 2016). In order to delineate the point, Pishghadam, Baghaei, and Seyednozadi (in press) provided an example within the geographical boundaries of Iran, stating that people from western parts of the country have a better familiarity with words such as snow and mountain compared to those living in northern parts, who are more emotionally engaged with words such as rain and jungle. This view emphasizing localization highlights the significance of emotionalization in figuring out the world (Pishghadam, et al., in press). Therefore, emotionalization should definitely be taken into account when it comes to language teaching and testing (Pishghadam, et al., in press). Each sense stimulates a specific part of the brain (Wagner, et al., 1998); readers who are emotionally engaged in the text; therefore, put less burden on their working memories and so would have less cognitive overloads. Consequently, it would be easier for them to process the input and analyze the meaning (Pishghadam, 2016b).

On the whole, due to the fact that readability formulae were proved unreliable, even invalid in some cases, the current study attempts to introduce a new criterion for measuring the readability of a text. Given that "emotional engagement provides meaningfulness" (Pishghadam & Shayesteh, in press, p.4), emotioncy may be a helpful cognitive joint to invest on. With that in mind, this study intends to answer the following research questions:

1. Do readability formulae measure the difficulty levels of texts accurately?

2. Are there any significant differences among different groups of students with respect to emotioncy and difficulty levels?

Method

Participants

The sample used in this study comprised 221 school boys, 8 ($N= 66$), 9 ($N= 70$) and 10 ($N= 85$) years of age (2nd, 3rd & 4th grades), studying in an elementary school in Mashhad, Iran. They were middle class learners who were selected through convenience sampling. They engaged in the study as a result of their enthusiasm and their parents' and teachers' permission. Moreover, due to the fact that schools in Iran are gender-segregated, the participants were only male ones. Therefore, great care was taken to select a text which seems to be neutral to both genders.

Instruments

To conduct this study, the following instruments were utilized by researchers: A sample of a reading passage chosen from the Persian reading textbook of Iranian students studying at the 5th grade (Appendix 1) and an eight-item emotioncy scale (Appendix 2) plus a Likert-type item to determine the text difficulty level based on students' opinions (Appendix 3). The reading passage was selected in a way to include both concrete words and abstract entities at the same time.

It should be kept in mind that since the educational system in Iran is centralized, that is to say, the government is absolutely in charge and textbooks are written to be taught to all intended students in the whole country, designing appropriate textbooks is of high importance. That is why, we selected a text from the Persian book of the 5th graders and designed an 8-item emotioncy scale to check students' familiarity with the words in the paragraph. The metric (Figure 2) was comprised of two scales: frequency and emotion. The frequency aspect ranged from "a little" to "a lot". It aimed to measure the amount of individuals' exposure to a particular concept or word through his/her senses, be it visual, auditory, kinaesthetic, inner (doing it), or arch (conducting research on it). The emotion aspect of the metric measured the valence of emotions ranging from extremely negative to extremely positive. The emotioncy score ranged from 0 to 50. The students were supposed to rate the words based on whether they had just heard about it (1 point), they had heard about and seen it (2 points), they had heard, seen, and touched it (3 points), they had heard, seen, touched, and done it (4 points), and they had done research on it (5 points). Then, the total emotioncy scores were calculated by the following formula:

$$\text{emotioncy} = \text{sense} (\text{frequency} + \text{emotion})$$

Now imagine a student who has expressed his emotioncy for the word sea as follows: I have gone to sea and swum in it (sense score: 4) many times (frequency score: 5) and I feel extremely positive about sea (emotion score: 5). His total emotioncy score would be $4(5+5) = 40$, which shows that the student is completely involved with the notion of sea.

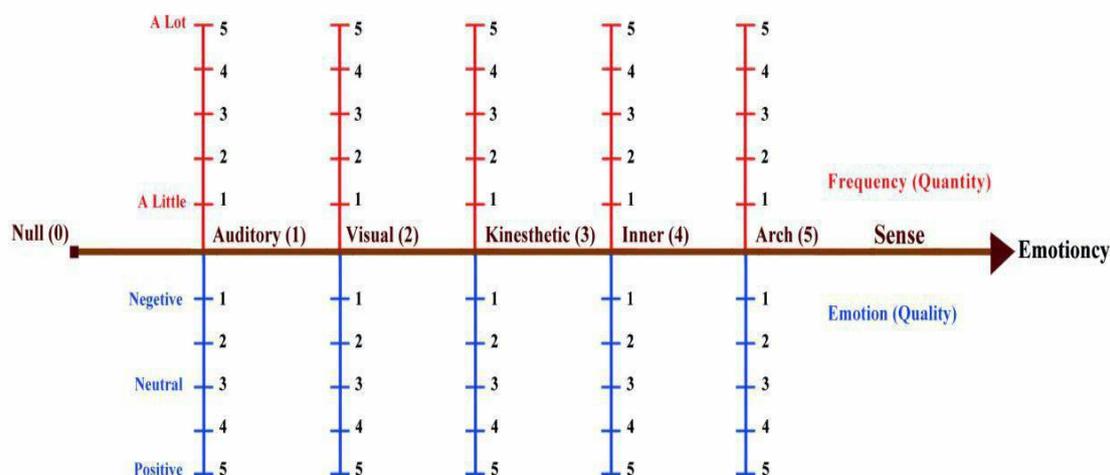


Figure 2. A Metric for Measuring Emotioncy (Adapted from “Emotioncy, Extraversion and Anxiety in Willingness to Communicate in English” By R. Pishghadam, 2016a, May, Paper presented at the 5th International Conference on Language, Education and Innovation. England: London).

Procedure

In order to determine the difficulty level of the text, Flesch New reading formula modified by Dayyani (as cited in Soltani & Koosha, 2015) and Gunning Fog index of readability validated for Persian texts by Maftoon and Daghigh (2001) were utilized. Then, the first paragraph of the text was selected as a representative of the whole text and eight words (radio, newspaper, magazine, star, sea, ocean, report, and result) were selected to be measured in the emotioncy scale. Since the participants were children, the research procedure was first introduced to them through examples. The passage was intended for the 5th grade students and marked respectively fairly difficult and extremely difficult by Flesch and Fog indices of readability. The reason behind choosing students from lower grades was to have a group of students who would surely have found it difficult to comprehend the text in accordance with the prediction made by the formulae. They were asked to read the first paragraph of the text and determine its difficulty level from 1=extremely easy to 5=extremely difficult. Immediately after that, the emotioncy scale was distributed and explicated to them thoroughly. They were asked to take the emotioncy scale. Finally, Cronbach’s alpha, one-way ANOVA, post hoc Scheffe tests, and Pearson product-moment correlation were employed to analyse the data by using SPSS 20 software.

Results

The following table illustrates the difficulty level of the text based on Flesch and Fog indices of readability.

Table 2. Scores obtained from two readability formulae

Formula	Score	Interpretation
Flesch	52.6	Fairly difficult
Fog	27.5	Extremely difficult

As depicted in Table 2, the selected passage was considered hard for students of the 5th grade of the elementary school based on the utilized readability formulae. What was

claimed by readability formulae was challenged since the level of difficulty was not consistent for all three groups.

Table 3 summarizes the results obtained from analysing the emotioncy scale and the difficulty level of the text. Moreover, the reliability of the emotioncy scale was .89 for all the participants involved as calculated by Cronbach's alpha; and Kolmogorov - Smirnov test was used to ensure the data was distributed normally.

Table 3. Descriptive statistics

Grades	N	Frequency		Emotion		Emotioncy		Difficulty	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
2	66	10.06	2.6	12.12	1.6	22.18	2.9	3.9	1.2
3	70	17.70	2.1	12.19	1.7	24.89	3.3	3.1	.98
4	85	15.20	3.4	13.16	2.1	28.36	3.5	2.2	.31

As Table 4 suggests, the claim made by readability formulae with regard to the difficulty level of the text was relatively true. Moreover, with respect to the level of text difficulty, the differences among all three groups were statistically significant ($F=2.6, p<.05$). It was rated difficult (mean= 3.9) for students of the 2nd grade, but average in difficulty (mean= 3.1) for students of the 3rd grade, and finally marked easy (mean= 2.2) for the 4th grade students. It seems that difficulty is a relative concept which is determined by other factors.

With regard to the emotioncy scale, as illustrated in Table 4, emotioncy differences among all of the three groups were statistically significant ($F=7.7, p<.05$). This means that students of the 4th grade had higher levels of emotioncy (mean= 28.36) than the students in the 3rd grade (mean= 24.89) and both groups demonstrated higher levels of emotioncy than the 2nd grade students (mean= 22.18). Considering the frequency aspect of emotioncy, the differences among all groups were found to be significant ($F=.3.4, p<.05$), while the emotion differences were not statistically significant ($F= 1.1, p>.05$). In fact, as the results of post hoc Scheffe tests revealed, as students' age increases, their sense experiences also increase in a way that leads to higher levels of emotioncy.

Table 4. ANOVA and post hoc Scheffe tests for all variables

Variables	df	F	p level	Post hoc Scheffe
Frequency	218	3.4	.03	4>3>2
Emotion	218	1.1	.09	Non-significant
Emotioncy	218	7.7	.00	4>3>2
Difficulty level	218	2.6	.04	2>3>4

Moreover, the results of correlational analyses revealed that, except for emotion ($r= -.11, p>.05$), emotioncy ($r= -.44, p<.05$) and frequency ($r= -.31, p<.05$) are statically correlated with text difficulty (see Table 5). The results are in line with those of ANOVA analyses.

Table 5. Correlations between all variables

Variable	Frequency	Emotion	Emotioncy
Difficulty level	-.31**	-.11	-.44**

** $p<.05$

Discussion

Establishing reliable criteria for measuring the difficulty level of a text and matching it to readers' ability is one of the basic requirements of educational settings. Having that in mind, in this study, we first sought to inspect the practical function of readability formulae as long trustworthy measures of comprehensibility. We then tried to examine whether the newly designed notion of emotioncy can act as a reliable measure for readability.

The outcomes of the study indicated that although readability formulae have been utilized in educational milieu for a long time, they are not as dependable as expected. This suggests that readers' comprehension of a text might not necessarily correlate with the obtained results from readability formulae. As the results of this study indicate, the text marked as fairly difficult and extremely difficult for a class of readers by specific formulae (in the case of this study, Flesch, 1979 and Fog, 1968) might be easy for not only the target group, but also for lower level readers, that is, 4th graders. The results show that difficulty is not something that is set firmly in the text through textual factors, but something that is inconsistent from a group of learners to the other. This left the researchers with the idea that other factors which are likely to be human-oriented ones are probably in charge of determining text difficulty. Since these factors are totally neglected in readability formulae, the need for opening a new vista of comprehension tools which take into account reader oriented factors is deeply felt.

Moreover, it was found that students were emotionally exvolved or even involved towards certain concepts/words in the passage. This shows that students were already familiar with the concepts raised in the passage. In addition, there was a significant increase in emotioncy levels when students transcended in age (4th graders' emotioncy levels > 3rd graders' > 2nd graders'), which indicates that the more frequently they are exposed to a certain concept, the higher their emotioncy levels, and therefore comprehension will be. It seems that difficulty is a relative concept which is relativized by the amount of emotional engagements. On the contrary to what Ausubel's (1965) notion of relatibility claims, it is not only the cognitive connections which tie individuals to words in a passage, but also the emotional dependency on the text itself. That is to say, individuals' interests, their background knowledge, and motivation, noted among paramount factors disregarded in readability formulae (Klare, 1976; Schriver, 1989), are the basic requirements of emotioncy which tries to approach readers' minds through their hearts (Pishghadam, Adamson, et al., 2013). One rationale for an input marked as difficult for the fifth graders to be fairly understandable for students of the 4th grade might be their emotional relationship with the concepts discussed in the passage. Information is stored in working memory and is transferred to permanent memory only when it finds a peg to stand on (Stevick, 1996). According to Pishghadam (2016b), one likely justification may be that working memory is less entangled with processing data when a firm emotional background is established. The result is less cognitive overload, and consequently a more desirable comprehension rate. Should this be the case, it would no longer be surprising that some students could easily understand what was marked as hard for them through forming an emotional rapport with the text.

By the same token, diverse socioeconomic capitals provide individuals with different sensory experiences. As Pishghadam and Shayesteh (in press) claim, learners bring with themselves their social and cultural capitals, hence their learning and comprehension of the concept in question may largely differ in accordance with their socio-economic status. That is, there always exists an emotioncy gap within learners of different socio-economic status (Pishghadam, 2016a), which leaves us with the idea that an emotioncy gap may generate a comprehension gap among learners. Since emotioncy has a dynamic nature and can fluctuate over years, that is to say, an avolved student may become emotionally involved over time (Pishghadam, 2016a), it is recommended for teachers to take steps to compensate

for the shortage of comprehensibility by bridging the gap prior to the initiation of teaching by providing emotional experience for learners. Derrida, in his deconstruction theory, also highlights the dynamic nature of readers' comprehension of text by claiming that there are "moments of meaning that give way, inevitably to more meanings" (Tyson, 2006, p. 259), the fleeting nature of meaning in this quotation can be best justified by the dynamic nature of emotioncy.

All in all, although further studies are required to solidify the practicality and generalizability of the current study, this study intends to bring to light the missing piece of readability measures by opening a new window to the notion of emotioncy. The obtained results can have broad implications for educational administrators in writing textbooks and reviewing tests, as well as designing syllabi. Firstly, for educators to remember the fact that readability is a relative concept which is relativized by readers' emotional backgrounds and readability formulae per se are not credible anchors to rest upon. They must therefore take into account emotioncy scales alongside the readability formulae. Secondly, another possible implication is that textbooks should be localized on the basis of learners' cultural emotional capitals. As it would be impractical to change and reshape all textbooks, another recommendation is for educators to incorporate a diverse emotional load in the textbooks so that all learners can eventually have an adequate and equal share of understanding. Thirdly, teachers should be cognizant of the fact that they are responsible for bridging the gap conceived by varied emotional status among learners. They should come up with strategies to make up for that. Finally, textbook writers should contemplate the forms they come up with to convey a particular concept and to make it congruent with the readers' current state of emotioncy, to select words whose world is already experienced by the reader.

On the whole, the issue of adapting comprehensibility of what is written with what one would comprehend is still of paramount concern. This study serves as the merging point of the reader and the writer, where emotioncy of form, concept, or situation (manifested in the mind of the reader) espouses readability formulae (manifested in the work of the author). Nonetheless, readers should bear in mind that the present study has its own restrictions. First, the sample used in this study comprised only the male middle class students; another study is needed to be done to take females and other socio-economic statuses into account. Second, since this study was the first study of its own kind to measure readability through emotioncy, generalization of the findings is not recommended. In fact, the new criterion for readability can serve as a suggestive model which calls for further empirical support to determine the levels of text difficulty for different groups of individuals.



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Appendices

Appendix 1: Reading passage chosen from Persian reading textbook of Iranian students studying at the 5th grade (Translated version)

Every day you listen to the radio, read newspapers, sift through magazines, watch TV, and hear or see the news which can be fantastic and incredible. One reports the discovery of a new star, others speak of depth of seas or oceans. What you see may even be the successful results of an experiment.

Appendix 2: A sample item for the emotioncy scale

1. Radio	I don't know what it is <input type="radio"/>	I have seen it <input type="radio"/>	I have heard it <input type="radio"/>	I have talked to people who have listened to it <input type="radio"/>	I have turned it on and listened to it <input type="radio"/>	I have researched it <input type="radio"/>
How I feel about radio		Extremely negative <input type="radio"/> Negative <input type="radio"/> Neutral <input type="radio"/> Positive <input type="radio"/> Extremely positive <input type="radio"/>	Extremely negative <input type="radio"/> Negative <input type="radio"/> Neutral <input type="radio"/> Positive <input type="radio"/> Extremely positive <input type="radio"/>	Extremely negative <input type="radio"/> Negative <input type="radio"/> Neutral <input type="radio"/> Positive <input type="radio"/> Extremely positive <input type="radio"/>	Extremely negative <input type="radio"/> Negative <input type="radio"/> Neutral <input type="radio"/> Positive <input type="radio"/> Extremely positive <input type="radio"/>	Extremely negative <input type="radio"/> Negative <input type="radio"/> Neutral <input type="radio"/> Positive <input type="radio"/> Extremely positive <input type="radio"/>
My exposure to and contact with it		Extremely low <input type="radio"/> Low <input type="radio"/> Normal <input type="radio"/> High <input type="radio"/> Extremely high <input type="radio"/>	Extremely low <input type="radio"/> Low <input type="radio"/> Normal <input type="radio"/> High <input type="radio"/> Extremely high <input type="radio"/>	Extremely low <input type="radio"/> Low <input type="radio"/> Normal <input type="radio"/> High <input type="radio"/> Extremely high <input type="radio"/>	Extremely low <input type="radio"/> Low <input type="radio"/> Normal <input type="radio"/> High <input type="radio"/> Extremely high <input type="radio"/>	Extremely low <input type="radio"/> Low <input type="radio"/> Normal <input type="radio"/> High <input type="radio"/> Extremely high <input type="radio"/>

Appendix 3: Question for finding the difficulty level

How difficult did you find the text?	1. extremely easy <input type="radio"/>
	2. easy <input type="radio"/>
	3. average <input type="radio"/>
	4. difficult <input type="radio"/>
	5. extremely difficult <input type="radio"/>

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