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ABSTRACT

Teacher-principal relations play an important role in creating a positive school climate. This paper describes findings of a study that sought to: (1) determine the reliability of the Organizational Climate Description Questionnaire--Rutgers Secondary (OCDQ-RS) in a South African context, and (2) measure the openness of the organizational climates of schools in the Orange Free State Education Department (OFSED). The questionnaire was administered in 1990 to 86 schools. Responses from 1,198 teachers in 78 secondary schools in the region controlled by the OFSED were received. The instrument measured five factors of organizational climate--two of principal management behaviors and three of staff relations practices. Findings show that the instrument was a reliable measure of organizational climate in South African schools. Teachers in smaller schools experienced more open organizational climates than teachers in larger schools. In general, principals took an interest in teachers' well-being and used constructive criticism; however, they also tended to exercise strict control over their teachers. Finally, the findings point to the importance of creating an open organizational climate for attaining the objectives of pedagogical instruction. Ten figures are included. (LMI)

ORGANIZATIONAL CLIMATE IN SCHOOLS IN WHITE COMMUNITIES IN SOUTH AFRICA: A VALIDATION OF THE OCDQ-RS

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Introduction

The teacher in South Africa (as in all other countries) forms part of a system of education. Steyn, *et al.* (1990:3) define the system of education as the logistical framework of effective education through which provision is made for the educational needs of a specific group of people. The system of education, according to the above-mentioned authors, consists of four parts, namely the education policy, the system of education administration, the didactic structure, and support services.

To study only the role of the teacher in terms of the system is inadequate. Van Schalkwyk (1986:98) calls the *school* the unit, place, point, or terminal in the system of education where the functional activities take place. It is in the environment of the school that the teacher practises his/her career. The standard or quality of the teacher's working life may be influenced by a number of factors.

During 1983 a comprehensive investigation into the working life of teachers in schools controlled by the TED, CED, NED and OFSED was conducted by the Department of National Education. A total of 6 193 teachers participated in the project. The quality of the working life of teachers was defined, for the purposes of the investigation, in terms of seven components, namely the organizational climate, working group processes, task characteristics, management/leadership, affairs pertaining to remuneration, the determination of remuneration, and job satisfaction. One of the findings was that teachers experienced as negative the organizational climate as well as affairs pertaining to remuneration - something which therefore needs to be addressed.

Bellon, *et al.* (1988) have carried out a comprehensive investigation on the quality of the teacher's working life in the USA. The group of researchers found, amongst other things, that teachers' experience of the quality of their working life is influenced to a high degree by persons in management positions in schools.

On the basis of the above the deduction may be made that there is a correlation between the management task of the education manager (school principal) and the organizational climate in the school. Furthermore, it may be postulated that the quality of the teacher's working life could be improved if the existing organizational climate could be developed.

Problem statement and aim

It is clear that the organizational climate is a component of the teacher's working life. Aspects like efficient management and the mutual relations between teachers

lead to a specific 'atmosphere' at a school. This atmosphere and the teacher's experience of his/her working environment form the most important elements of the organizational climate (Owens, 1991:167; Hoy & Miskel, 1987:225; Basson, *et al.*, 1991:630; Zaaiman, 1990:162).

When it is kept in mind that the climate in a school is formed by the norms, views of life, and attitudes towards life which are reflected in the school (Basson, *et al.*, 1991:630), it becomes clear that these aspects form the basis of any attempt to create a (more positive) organizational climate, or to preserve such a climate.

The point of departure with regard to creating the organizational climate thus lies not in the wishes of, for instance, the school principal, but in an analysis of the school situation. This is understood as entailing the existing value system (preferences and presuppositions) of staff, and the attitude of staff towards the school. Only if the principal acknowledges and respects these aspects, will s/he be able to start building a more positive working environment. The 'atmosphere' of the school reflects the shared experiences of staff with regard to their working environment, based on the underlying value structure.

Creating a positive organizational climate implies much more, according to Du Brin (1984:413), than cosmetically implementing a management or organization developing programme. Radical changes in management philosophy and values are necessary in order to adjust to the underlying values of the workers. Changing the organizational climate implies changing the organizational culture.

Organizational climate is, for the purposes of this research, defined next as the general atmosphere in the school, and this atmosphere is the result of the way in which the teacher experiences his/her working environment. The experience of the working environment depends upon factors like the quality of mutual relations, and the management method.

If these two aspects (the quality of mutual relations and the management method) are accepted as fundamental determinants of the organizational climate in a school, the question arises of how measurable these two aspects are within the context of the organizational climate. Furthermore, it may be accepted as a given that schools differ, and that the teacher's experience of the openness of the organizational climate will therefore vary as well (Hoy & Miskel, 1987:225). This assumption leads to the question of whether the organizational climate in certain *groups* of schools (eg. urban vs. rural, academic vs. technical) is experienced differently by teachers.

It is clear that, in order to create and develop a positive organizational climate, the existing organizational climate must first be measured. It is precisely for this reason that a measuring instrument may be used in order to make an organizational diagnosis with the aim of improving the organizational climate. Viewed against this background, the aim of this research has been to indicate that it is possible to use a measuring instrument in order to carry out a reliable diagnosis of the climate of a school. This aim has been operationalized in the following objectives:

- Is it possible to measure reliably the organizational climate in a South African context?
- How do the results of the completed research in the USA compare with those in the population used for this investigation in the RSA?
- Is it possible to compile alternative openness indices (-formulas) by virtue of the results of the investigation in the RSA?
- To what extent does the experience of the openness of the organizational climate in schools and groups of schools differ?

Population and measuring instrument

Population

The population consisted of teachers on post levels 1 and 2 on the staff of secondary schools controlled by the Orange Free State Education Department (OFSED) (n = 1 622). In this way a total of 86 schools were involved. Responses from 78 schools were received (1 198 teachers). The research was undertaken in 1990.

Measuring instrument

The measuring instrument used is the Organizational Climate Description Questionnaire - Rutgers Secondary (OCDQ-RS). Five factors were designated in the original investigation (Kottkamp, *et al.*, 1987) in New Jersey in the USA, of which two were defined in terms of the management behaviour of the principal, and three in terms of the mutual relations among staff. The measuring instrument is a four point Likert scale type questionnaire with 34 items. The purpose of the OCDQ-RS is to determine and express numerically the openness of the organizational climate in a school. This figure is obtained by processing the score of each of the four factors (per school) by means of a specific arithmetical combination.

For the purposes of this research, which was carried out in the OFS, a section was added to the questionnaire through which data was obtained pertaining in each case to the type of school (complicated, S1, S2, or other), the medium of instruction (Afrikaans, English, both, or other), the nature of the school (academic, technical, agricultural, or other), the number of staff, and finally the geographical location (urban, semi-urban, or rural). Schools were categorized, as far as geographical location is concerned, according to data included in the municipal annual of South Africa (1988). The five aspects mentioned above formed the basis of comparison between the schools, as the OCDQ-RS takes the *school* as the unit of measurement.

Findings

The findings of the research are reproduced in terms of the results of the factor analyses, the subsequent determination of the openness of the schools (and of groups of schools), and the reliability of the questionnaire.

Factor analysis

A factor analysis was carried out on the data after the aggregate score per item for each school had been determined. Initially eight factors were designated. Factors 1 to 5, however, explained 65,69% of the variance, and a subsequent varimax-rotation was carried out on only these five factors. The results of this five factor varimax-rotation are given in Figure 1. For the sake of clarifying Figure 1 the following must be pointed out:

- The factor loadings were grouped in such a way that comparisons were possible with the original results (Kottkamp, *et al.*, 1987). From this it is clear that similarities exist with the original results. As far as principal supportive behaviour (PSB) is concerned, the factors which grouped together on the basis of the factor analysis are exactly the same ones as in the above-mentioned investigation in the USA, while high factor weighting was obtained in both investigations. This also applies to teacher engaged behaviour (TEB). Small changes occur, as indicated, with regard to the other three factors.

- The variances which are explained (eigenvalues) range between 11,31 and 1,83, while in the US investigation they ranged between 8,61 and 1,94 (Kottkamp, *et al.*, 1987).

- The total percentage variance which was explained by means of the five factors is 65,69 as opposed to the 56,1 in the US investigation (Kottkamp, *et al.*, 1987).

A closer analysis with regard to the questions (and especially with regard to the importance of the questions) in the different subscales reveals the following (factor scores higher than 0,80 are discussed):

- As regards principal supportive behaviour (PSB), questions C23 and C29 have high factor scores of 0,88 and 0,81 respectively. In the case of question C23 teachers had to indicate the extent to which the school principal 'goes out of his/her way to help teachers'. In the case of question 29 teachers had to indicate the extent to which the school principal makes use of constructive criticism.

- As regards principal directive behaviour (PDB), the highest factor scores are found in the case of questions C31, C13 and C18 (respectively 0,90, 0,88, and 0,87). In the case of question C31 teachers had to indicate the extent to which the principal 'closely supervises teachers', in the case of question C13 the extent to which the principal 'monitors everything teachers do', and in the case of question C18 the extent to which the principal 'controls' what teachers do.

- As regards teacher frustrated behaviour (TFB), question C15 has a factor score of 0,83. Teachers had to indicate in this case the extent to which administrative work at the school constitutes a large burden.

- As regards teacher engaged behaviour (TEB) and teacher intimate behaviour (TIB), there are no factor scores higher than 0,80.

It may be deduced further that the OCDQ-RS is a reliable measuring instrument with respect to the population within which it was used in the RSA, as the items have high factor weighting on only the applicable subscales. Furthermore, the stability of the factor structure supports the construct validity of the five subscales as well as the meaning ascribed to the constructs.

Second-order factor analysis

A second-order factor analysis with a varimax-rotation was carried out on the five standardised subscales which were designated on the basis of the first factor analysis. The subscales (I_n) were standardised with the aid of the formula

$$SI_n = 50 + 10 \frac{(I_n - GS)}{ST}$$

(GS indicates the averages across all the subscales per school, and ST the standard deviance) in order to enable comparisons among the subscales. The reason for carrying out this second-order factor analysis was to find out which *factors* grouped together (rather than *items* during the first factor analysis). Furthermore, a comparison with the results of the second-order factor analysis as carried out by Kottkamp, *et al.* (1987) could also be made.

The results of the second-order factor analysis are reproduced in brief in Figure 2 (only factor weightings higher than 0,3 or lower than -0,3 are provided, as these are the significant weightings). The results of the second-order factor analysis as carried out by Kottkamp, *et al.* (1987) in the USA are summarized in Figure 3.

Figures 2 and 3 are briefly compared next in terms of certain aspects.

The variance explained by the two factors in Figure 2 are respectively 2,03 and 1,99. This means that the percentage variance explained by the subfactors which grouped together in Factor 1 is about 40%. The percentage variance which is explained by the subfactors which grouped together in Factor 2 is also about 40%. The affinity with the data in Figure 3 is found therein that the percentage variance of the subfactors which grouped together in Factor 1 is also about 40% (eigenvalue = 1,99). In Figure 3 only about 20% of the variance can be explained through the subfactors which grouped together in Factor 2 (eigenvalue = 1,03). The reason the researchers in the USA used as variables only the factors which grouped around Factor 1 in the openness index, is probably to be found the fact that only 20% of the variance is explained by the subfactors in Factor 2.

Determining the openness of the climate

A comparison of the results as reproduced in Figures 2 and 3 yields more interesting points. In the research carried out in the USA the subfactors PSB, PDB, TEB, and TFB obtained high factor weightings on Factor 1 (Figure 3). The only subfactor

which obtained a high factor weighting on Factor 2 was TIB. On this basis the researchers in the USA created an openness index through which the openness of the organizational climate of a school may be determined with the aid of the formula OPENIND = (PSB + TEB) - (PDB + TFB).

The factors are each time summed *per school* in order to determine the openness of the school.

During this research in the OFS, however, it was found that PSB, TIB, and TFB obtained high factor scores on Factor 1, and TIB (again), TEB and PDB obtained high factor counts on Factor 2 (Figure 2).

It is important to note that the openness index as formulated by Kottkamp, *et al.* is based on the preceding results of the second-order factor analysis (1987). Since the four subfactors PSB, PDB, TEB, and TFB clearly grouped together in one factor, these four subfactors were employed in combination by the researchers in the USA in order to provide a formula for the degree of openness of the organizational climate in a school.

On the basis of the results of the second-order factor analysis as obtained from the research carried out in the OFS and reproduced in Figure 2, two *alternative* openness indices are suggested. These indices (called IND 1 and IND 2) may be constructed as follows:

IND 1 = (PSB + TIB) - 2(TFB),

based on the weightings which place the subscales on Factor 1.

IND 2 = (TEB + TEB) - 2(PDB),

based on the weightings which place the subscales on Factor 2.

The standardised scores for the subscales are each time used for the preceding formulas. The reason why the formulas may be constructed as above is that the three subfactors which respectively obtained the highest factor scores on the two factors were used on the assumption that the three subfactors are in each case the best predictors for the openness in that particular factor. In order to test the assumption that the above-mentioned openness indices (IND 1 and IND 2) are also valid in determining the openness of organizational climate, IND 1 and IND 2 were correlated with the openness index of Kottkamp, *et al.* (1987), which is called OPENIND to facilitate description.

Correlation between openness indices

The extent to which the OPENIND of Kottkamp, *et al.* (1987) correlates with the openness indices IND 1 and IND 2, as proposed in this research, was determined with the aid of the CORR procedure of SAS. The Pearson correlation matrix is reproduced in Figure 4.

From Figure 4 it may be deduced that there is a particularly high correlation between the original openness index and the new supplementary openness indices proposed here. The openness index proposed by Kottkamp, *et al.* (1987) may therefore be taken to be valid also for the population which was used for this investigation in the RSA.

The average openness of the organizational climate of each of the 78 schools in the OFS which participated in this investigation, was subsequently determined using the OPENIND openness index. The schools were next placed on a percentile ranking (PCTL procedure of SAS). The school with the smallest degree of openness was placed on the first percentile, and the school with the highest degree of openness on the 99th percentile. Similarities and differences between different groups of schools were subsequently determined.

Openness and effect size: nature of school

In Figure 5 the *average openness* as well as the standard deviance for each group of schools is given.

Certain salient aspects with regard to the openness of the schools in this group are examined next, after which the pedagogical significance of the differences are determined by means of effect sizes.

Complicated schools are, generally speaking, schools with more than 800 pupils and a large staff. S2 schools, on the other hand, are schools with fewer than 550 pupils and a small staff. Since their scores are virtually identical, these schools compare well with regard to the openness of their organizational climate. Furthermore, the average openness of these two groups of schools lies on the 51st percentile.

Significant *large* differences come to the fore with regard to the experience of the organizational climate in the S1 and S2 schools on the one hand (d = 0.90), and between CS and S1 schools on the other hand (d = 0,89) if the effect sizes of the differences between the various groups of schools are computed by using the standard deviance, and the openness of the two groups are compared with each

other. According to Cohen (1977:8-13), a d-value higher than 0,80 is an indication of a large effect. In this study a large effect will throughout be viewed as a pedagogically significant difference. The difference between CS schools and S2 schools is, however, insignificant (d = 0,01).

Openness and effect size: medium of instruction

The results of the computation of the average openness and standard deviance of the groups of schools with only Afrikaans, only English, and both Afrikaans and English as media of instruction are provided in Figure 6.

The average openness with respect to Afrikaans and English medium schools are almost identical (about the 48th percentile), while the average openness of double medium schools lies on about the 30th percentile.

With the determination of the effect sizes in order to determine the pedagogical significance of the differences, the significance of the differences between Afrikaans and double medium schools was found to be average (d = 0,55), as the d-value is higher than 0,5 (Cohen, 1977). The differences between English and double medium schools were, however, *small* (d = 0,32), as the d-value is higher than 0,2.

Openness and effect size: field of study

The results of determining the average openness of schools which offer different fields of study is provided in Figure 7. The schools were divided into three groups on the basis of the field of study offered, viz. academic schools, technical schools, and agricultural schools.

Of all the groupings the highest average index for openness on the basis of demographic data was found in agricultural schools. Even though the population contains few agricultural schools, the openness index was standardised in order to compare bigger and smaller groupings of schools.

The openness of academic schools lies at the 44th percentile, that of technical schools at the 29th percentile, and that of agricultural schools at the 54th percentile. It is therefore possible to say that there are large differences in the average openness in the different groups, which becomes clear from the computation of the degree of significance as well.

A particularly *high* degree of significance (d = 1,17) is evident in the differences in openness between the agricultural and technical schools. The difference concerning

academic and technical schools is of *average* significance (d = 0,54). There is a *small* degree of significance (d = 0,41) in the differences in openness between academic and agricultural schools.

Openness and effect size: number of staff

The data in Figure 8 pertaining to the average openness of each group and the standard deviation were determined on the basis of categorizing the schools in the population with regard to the number of staff at the school.

From a comparison of the data above with the percentile ranking, it becomes evident that the grouping of schools with a staff complement of between 11 and 20 lies on the 46th percentile, that of schools with a staff complement of between 21 and 30 on the 52nd percentile, that of schools with a staff complement of between 31 and 40 on the 28th percentile, that of schools with a staff complement of between 41 and 50 on the 37th percentile, and that of schools with a staff complement of more than 50 on the 36th percentile.

The following strikes one when the different groupings are compared in terms of openness and effect size:

- Schools with a staff complement of between 21 and 30 indicate a greater degree of openness of organizational climate. An interesting aspect is that the next category, viz. schools with a staff complement of 31 to 40 experience the *smallest* degree of openness. There may therefore possibly be a 'critical' number of staff, which may form a threshold between a possible high and low degree of openness.

- In the light of the above it is therefore not surprizing that the level of significance in the differences between categories 21-30 and 31-40 is particularly *high* (d = 1,11). The only other category which indicated a level of significance higher than 0,5 is that between categories 11-20 and 31-40 (d = 0,70).

Openness and effect size: geographical area

All schools were, on the basis of the classification as expounded above, divided into one of three categories, viz. urban, semi-urban, and rural. The average openness and standard deviation of these groups of schools are provided in Figure 9.

Urban schools lie, with respect to the percentile ranking, on the 43rd percentile, semi-urban schools on the 32nd percentile, and rural schools on the 50th percentile.

Teachers in rural schools experience the organizational climate in their schools as being more open than teachers in schools in urban and semi-urban areas. It is important, though, to note that the differences between rural and urban schools are insignificant(d = 0,14). However, the differences between semi-urban and rural schools have an *average* significance (d = 0,60).

Reliability of the questionnaire

The reliability of the questionnaire was determined by using the Cronbach-alpha reliability coefficient (Cronbach, 1989). As is clear from Figure 10, the reliability coefficient is consistently high.

The alpha-coefficients in the research carried out by Kottkamp, *et al.* (1987:43) in the USA with the OCDQ-RS ranges between 0,91 and 0,71, which is usually viewed as being high. It may therefore be deduced that the OCDQ-RS is a reliable measuring instrument for the population within which it was used in the RSA.

Conclusion

It is clear that organizational climate may be measured reliably in the RSA by using the OCDQ-RS. Furthermore, it seems possible on the basis of particularized results to construct further openness indices with which to measure the openness of the organizational climate.

It seems clear from this research that teachers experience the organizational climate of the smaller schools in the population as being more open. It may be assumed that communication among teachers is more informal, and that there is greater supportive management behaviour by the school principal. From the results obtained by analyzing individual questions, however, it seems clear that school principals, generally speaking, take an interest in the personal and professional well-being of the teachers, and that they make good use of constructive criticism. On the negative side, however, it is also clear that school principals tend to exercise strict control over teachers, since the three questions in the questionnaire which deal with *monitoring, controlling, and checking* by the school principal obtained high factor scores on the respective subscales.

It is necessary to create an atmosphere (climate) which promotes the optimal attainment of the objectives of pedagogical instruction. It is therefore important

that the principal and each member of staff should see to it that, in terms of management, the organizational climate of the school is open to such an extent that these objectives may be realized. An analysis of the organizational climate (with the aid of a measuring instrument) may provide the school principal with important guidelines with respect to his/her management style, as well as with respect to the relations among staff (the two dimensions used in the OCDQ-RS). The level at which problems with regard to the organizational climate are experienced may thus be determined and improved by means of communication between the principal and members of staff.

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FIGURE 1. FACTOR LOADINGS OF THE FINAL 5-FACTOR VARIMAX-ROTATION FOR THE 34 ITEMS OF THE OCDQ-RS

SUBSCALE	ITEM	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	COMM.
PSB	C23	0,88					0,82
	C29	0,81					0,82
	C6	0,80					0,77
	C24	0,76					0,68
	C30	0,74					0,80
	C25	0,69					0,67
	C5	0,64					0,62
TEB	C34		0,78				0,68
	C11		0,72				0,60
	C16		0,71				0,76
	C4		0,66				0,71
	C3		0,59				0,41
	C20		0,58				0,74
	C28		0,58				0,79
	C17		0,49				0,30
	C33		-				0,21
	C10		-			0,48	0,27
PDB	C31			0,90			0,86
	C13			0,88			0,82
	C18			0,87			0,80
	C12			0,79			0,70
	C19			0,46			0,82
	C32			0,46			0,73
	C7	-0,76		-			0,68
TFB	C15				0,83		0,77
	C2				0,80		0,74
	C22				0,78		0,75
	C8				0,78		0,73
	C9		-0,46		-		0,41
	C1		-0,57		-		0,46
TIB	C26					0,78	0,80
	C21					0,68	0,59
	C27					0,61	0,55
	C14					0,54	0,51
Eigenval.		11,31	4,17	2,75	2,27	1,83	
% Var.expl.		33,28	12,27	8,09	6,68	5,37	
Variance explained by 5 factors : 65,7%							

PSB = Principal supportive behaviour; TEB = Teacher engaged behaviour; PDB = Principal directive behaviour; TFB = Teacher frustrated behaviour; TIB = Teacher intimate behaviour.

COMM = Communalities

Var. expl. = Variance explained

FIGURE 2. SECOND ORDER FACTOR ANALYSIS (OFSED)

	FACTOR 1	FACTOR 2
PSB_S	0,79	
TIB_S	0,70	0,59
TFB_S	-0,87	
TEB_S		0,93
PDB_S	-0,39	-0,85
Eigenval.	2,03	1,99
Variance expl.	40,6%	39,8%

FIGURE 3. SECOND ORDER FACTOR ANALYSIS (USA)

	FACTOR 1	FACTOR 2
PSB_S	0.56	
TIB_S		0,89
TFB_S	-0,85	
TEB_S	0,73	
PDB_S	-0,62	
Eigenval.	1,99	1,03
Variance expl.	39,8%	20,6%

FIGURE 4. CORRELATION : OPENNESS INDICES

	IND 1	IND 2
OPENIND	0,79	0,93

FIGURE 5.TYPE OF SCHOOL : OPENNESS AND STANDARD DEVIATION

TYPE OF SCHOOL	n	AVER.OPENNESS	STANDARD DEV.
Complicated school	7	25,32	7,91
S1-school	17	19,35	5,50
S2-school	54	25,23	7,59

FIGURE 6. MEDIUM OF INSTRUCTION : OPENNESS AND STANDARD DEVIATION

LANGUAGE	n	AVER.OPENNESS	STANDARD DEV.
Afrikaans	57	24,74	6,88
English	6	24,16	12,92
Afr. and Eng.	15	20,91	7,12

FIGURE 7.FIELD OF STUDY : OPENNESS AND STANDARD DEVIATION

FIELD OF STUDY	n	AVER.OPENNESS	STANDARD DEVIATION
Academic	70	24,10	7,71
Technical	5	20,40	5,92
Agriculture	3	26,69	4,83

FIGURE 8. NUMBER OF STAFF : OPENNESS AND STANDARD DEVIATION

NUMBER OF STAFF	n	AVER. OPENNESS	STANDARD DEV.
11-20	38	24,34	8,30
21-30	19	25,84	6,71
31-40	8	20,17	3,54
41-50	5	22,56	7,82
More than 50	8	22,31	8,12

FIGURE 9.GEOGRAPHICAL AREA : OPENNESS AND STANDARD DEVIATION

GEOGRAPHICAL AREA	n	AVER. OPENNESS	STANDARD DEV.
Urban	14	23,90	10,25
Semi-urban	18	21,18	5,80
Rural	46	25,07	7,06

FIGURE 10. RELIABILITY OF QUESTIONNAIRE : ALPHA-COEFFICIENT = = = = =

SUBSCALE	ALPHA-COEFFICIENT
PSB	0,95
PDB	0,86
TEB	0.87
TFB	0.74
TIB	0.79