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Application of a Questionnaire to Describe Teacher-Students Communication Behaviour in a University in Turkey

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Abstract: Teachers contribute enormously to a positive social climate in science classes, particularly through their communication with students. In the study described in this article, a questionnaire (The Teacher Communication Behaviour Questionnaire (TCBQ)) developed by She and Fisher (2000) was used. TCBQ can be used to assess students' perceptions of science teachers' interpersonal communication behaviours in their classroom learning environments. TCBQ has five scales: Challenging, Encouragement and Praise, Non-Verbal Support, Understanding and Friendly, and Controlling. The TCBQ was used with a large sample of a university' students in Turkey. Girl students perceived more of these communication behaviours in their teachers than did the boy students. There were statistically significant differences ($p<0.0001$) on four of the five scales of the TCBQ between teachers' gender. Statistically significant differences were not found among different grade classes. Teachers in biological and chemistry science classrooms exhibited more favourable behaviour toward their students than did those in physical science classrooms.

Key words: Teacher Communication, Students' Perceptions, Sex Differences, Department Differences, Grade (Year) Differences

INTRODUCTION

Our first article in this department assessed secondary science students' perception of teachers' interpersonal communication behaviours (Ozay et al., 2004). In this second article, we assessed university students' perception of teachers' interpersonal communication behaviours.

Use of students' perceptions of classroom environment as predictor variables has established consistent relationships between the nature of the classroom environment and student cognitive and affective outcomes. Furthermore, research involving a person-environment fit perspective has shown that students achieve better where there is greater congruence between the actual classroom environment and that preferred by students (Taylor, Fraser & Fisher, 1997).

In this article, a questionnaire of She & Fisher (2000) was used to assess students' perceptions of science teachers' interpersonal communication behaviours in their classroom learning environments in university in Turkey. This study' results were appreciated according to sex, grade (year) and department differences.

In the past three decades much attention has been given to the development and use of instruments to assess the qualities of the classroom-learning environment from the perspective of the student. Therefore, one purpose of the study was to establish a questionnaire that would allow a study of students' and teachers' perceptions of teacher communication behaviour in a large number of science classes at the same time. The questionnaire could then be used to investigate students' perceptions of their teacher's interpersonal communication behaviour in classroom-learning environments (She & Fisher, 2002).

In this study differences among students of biological, chemistry and physical department, between gender of teachers and among grade (year) were examined.

METHOD

This study' methodology is same with Taiwan methodology of She and Fisher, 2002. The study described in this article used a questionnaire to assess university students' perceptions of science teachers' interpersonal communication behaviours in their classroom learning environments. The objectives of the research described in this article were to: (a) use the TCBQ to determine if there are any differences among biological science students', chemical science students' and physical science students' perceptions of their teachers' communication behaviours using, Duncan' multiple range test; (b) use the TCBQ to determine if there are any sex differences of teachers and students in students' perceptions of their teachers' communication behaviours using T test; (c) if there are any grade (year) differences science students' perceptions of their teacher communication behaviours using, Duncan' multiple range test.

This research study involves. The sample of randomly selected schools participating was available to the authors. The sample consisted of 429 biological, physical and chemical science students in Ataturk University in Turkey. Each student in the sample responded to the TCBQ.

Table 1. Students' sex differences in item mean scores for each scale of the TCBQ

	Male		Female		Difference	
Scale	Mean	SD	Mean	SD	(F-M)	T test
Challenging	3,35	0,92	3,52	0,82	0,17	2,07*
Encouragement &praise	2,85	1,02	2,98	0,96	0,13	1,39
Non-verbal support	3,18	1,01	3,25	0,99	0,07	0,68
Understanding & friendly	3,52	1,05	3,52	0,90	0	0,004
Controlling	3,77	0,74	3,89	0,76	0,12	1,62

*p<0.05.
n= 241(males)n= 188(females).

Table 2. Teachers' sex differences in item mean scores for each scale of the TCBQ

	Male		Female		Difference	
Scale	Mean	SD	Mean	SD	(F-M)	T test
Challenging	3,55	0,84	2,94	0,87	0,61	5,96**
Encouragement & praise	3,01	0,98	2,49	0,95	0,52	4,47**
Non-verbal support	3,28	1,00	2,95	0,99	0,33	2,73**
Understanding & friendly	3,61	0,97	3,14	0,94	0,47	4,13**
Controlling	3,83	0,77	3,78	0,69	0,05	0,56

**p<0.0001
n= 343(males) n= 86(females).

RESULTS

The differences in scale means between students' gender are indicated in Table 1. As determined by a t test, there were statistically significant differences between boys' and girls' perceptions of the learning environment ($p<0.05$) on one of the five scales of the TCBQ. Girl students perceived more of these communication behaviours in their teachers than did the boy students. But there were not statistically significant differences between boys' and girls' perceptions except challenging scale. These results are similar to those of previous studies showing that girls tend to perceive their learning environment in a more positive way than do boys (Fraser et al., 1995; She & Fisher, 2002; Ozay et al.,2004).

The differences in scale means between teachers' gender are indicated in Table 2. As determined by a t test, there were statistically significant differences ($p<0.0001$) on four of the five scales of the TCBQ. Communication behaviours of male teachers are higher than female teachers' in four of the five scales of the TCBQ. We found that male teachers are received significantly more challenging, encouragement & praise, non-verbal support, understanding & friendly than did female teachers.

While a large body of research focuses on the gender of students, less research explores the impacts of a teacher's gender on students Literature establishes that boys and girls are treated differently in the classroom. Research suggests that this treatment depends upon the gender of the teacher. Many researchers argue that teacher gender differentially

Table 3. Duncan multiple range tests of science department differences in item mean scores for each scale of the TCBQ

Scale / Department	Challenging, praise	Encouragement, support	Non-verbal, & friendly	Understanding,	Controlling &
Biological	3,40a	2,91a	3,28a	3,63a	3,77b
Chemistry	3,43a	3,13a	3,48a	3,69a	3,63b
Physical	3,47a	2,66b**	2,80b**	3,15b**	4,11a**

The means that marked same letter are not statistically significant differences.
**p<0,0001
n=190 (bio science). n= 123 (chem. science). n=116 (phys science).

Table 4. Duncan multiple range tests of different classes in item mean scores for each scale of the TCBQ.

Scale	First year	second year	third year	fourth year
Scale1	3,22a	3,43a	3,46a	3,45a
Scale2	3,00a	2,79a	2,91a	2,92a
Scale3	3,40a	3,20a	3,32a	3,10a
Scale4	3,54a	3,52a	3,57a	3,48a
Scale5	3,79a	3,97a	3,74a	3,83a

The means that marked same letter are not statistically significant differences.
*p<0.01
n= 54 (1. class). n= 61 (2. class). n= 116 (3. class). n= 198 (4. class).

impacts the teacher's relationship with male and female students (Krieg, 2005)

As depicted in Table 3, statistically significant differences were found among biological science, chemical science and physical science classrooms. On all three scales of the TCBQ, the students in the biological and chemistrical science classrooms perceived more of these communication behaviours in their teachers. On all three scales of the TCBQ, the students in the physical science classrooms perceived less than other branches. Statistically significant differences were found between physical department and other departments.

As determined by Duncan multiple range tests, statistically significant differences were not found among different grade classes (Table 4).

DISCUSSION

The TCBQ was used with a large sample of students in Turkey, where Girl students perceived more of these communication behaviours in their teachers than did the boy students. But there were not statistically significant differences between boys' and girls' perceptions except challenging scale. These results are similar to those of previous studies showing that girls tend to perceive their learning environment in a more positive way than do boys (Fraser et al., 1995; She & Fisher, 2002; Ozay et al.,2004). She found that boys usually were dominant in the science classroom, and some of them became actively involved in class discussions to get the teacher's attention. This often resulted in a negative response from the teacher. On the other hand, girls usually were perceived by their teachers as being more passive learners. Therefore, the teachers were less likely to give the girls a negative response (She & Fisher, 2002). These observations are similarly observations in Turkey (Ozay, et al.2004). The results of this study are also similar to those of previous studies in other countries showing that girls tend to perceive their learning environment more positively than do boys (Fraser et al., 1995). The TCBQ has the potential for use in future studies in which the effect of the student's sex.

There were statistically significant differences ($p<0.0001$) on four of the five scales of the TCBQ between teachers' gender. According to study of Krieg (2005); Communication behaviours of male teachers are higher than female teachers' in four of the five scales of the TCBQ. Teacher gender is systematically related to class environment. A number of studies suggest that male teachers provide a more positive atmosphere for boys (Etaugh & Hughes, 1975; McCandless, Bush & Carden, 1976); however, relative to male teachers, Stake and Katz (1982) suggest that female teachers tend to provide a more positive classroom atmosphere overall. After observing 40 class sessions, Einarsson and Granström (2002) find that male teachers increase the attention paid to girls as pupils age while female teachers consistently give more attention to boys (Krieg, 2005).

Department differences were also apparent, with teachers in the biological and chemical science classrooms exhibiting more favourable behaviours toward their students than did those in physical science classrooms. As determined by Duncan multiple range tests there were statistically significant differences between physical and biological-chemistrical science classrooms on four of the five scales of the TCBQ. In Turkey too as Taiwan, physical science content tends to be perceived by many students as more abstract and harder to learn than biological and chemistrical science (She, 1998b). Conversely, the biology and chemical content is considered more relevant to the students' daily lives. Also, biology and chemistry teaching appears to have a greater variety of approaches than does physical science teaching. These might be the reasons why students perceived their biological and chemical science classrooms more favourably than did the physical science students. In challenging scale of TCBQ, there was not statistically different between physical and biological-chemical science classrooms. Differences on four of the five scales of the TCBQ were not noted between biological and chemical science classrooms. Because, biology and chemistry contents are more connected with daily life than physics.

The comparison of the average ratings of the students according to their year grades; statistically significant differences were not found among different grade classes (Table 4).

CONCLUSION

The purpose of this study was to establish a questionnaire (TCBQ) that would allow a study of students' perceptions of teacher communication behaviour in Ataturk University in Turkey. According to sex (teacher and student), grade (year) and department (biological, chemistry and physical) differences, results of this questionnaire was be evaluated.

The results of this study indicate that there were statistically significant differences between students' gender perceptions of the learning environment ($p<0.05$) on one of the five scales of the TCBQ (Table3.1). This scale is challenging. Girl students perceived more of these communication behaviours in their teachers than did the boy students. But there were not statistically significant differences between boys' and girls' perceptions. Because, girls tend to perceive their learning environment in a more positive way than do boys (Fraser et al., 1995). There were statistically significant differences ($p<0.0001$) on four of the five scales of the TCBQ between teachers' gender. Communication behaviours of male teachers are higher than female teachers' in four of the five scales of the TCBQ. While it is clear that teachers treat and perceive boys and girls differently, it is less clear how this differential treatment impacts student performance on standardized exams. Of course, a large literature establishes differences on standardized exams by gender of student, but no research connects test results to teacher gender and its interaction with student gender. Some of these differences include disciplinary interactions, perceptions of student characteristics, and the amount of attention devoted to students (Krieg, 2005).

Statistically significant differences were found among biological science, chemical science and physical science departments. On all four scales of the TCBQ, students in the biological and chemical science classrooms perceived more of these communication behaviours in their teachers than physical science classrooms. Physical science content tends to be perceived by many students as more abstract and harder to learn than biological and chemistrical science. Conversely, the biology and chemical content is considered more relevant to the students' daily lives. Also, biology and chemistry teaching appears to have a greater variety of approaches than does physical science teaching. These might be the reasons why students perceived their biological and chemical science classrooms more favourably than did the physical science students. Physical content should be connected with daily lives.

Statistically significant differences were not found among different grade classes (Table 4).

This study can suggest some implications for practice, personnel development, and research. TCBQ can be applied for observing teachers and classifying them. Also, this questionnaire provides training in sensitivity to average and controlling teachers and less redirective and more elaborative to increase the overall quality of the classroom environment and to increase the percentage of student engaged. Teachers can use this supplement to promote an atmosphere of positive interaction in their science classrooms and improve student learning.

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