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The Questionnaire on Teacher Interaction: Assessing Information Transfer in Single and Multi-Teacher Environments

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ABSTRACT

The Questionnaire on Teacher Interaction (QTI) has been used to assess teacher behavior from the perspective of students in order to provide feedback to teachers about their communication and teaching style. In this article we argue that it may also be valuable in determining how students perceive teachers' attitudes toward them, or "information transfer" from teachers to students. However, in order to use this device to assess aspects of students' overall experience of social interactions at high school, where a different teacher teaches each subject, it is necessary to modify the manner in which it is administered. In this pilot study, the QTI was administered to a sample consisting of 64 high school students and 35 elementary school students to determine whether its psychometric properties would be preserved under these conditions. The two dimensions underlying the model were replicated in each sample, although the expected pattern of the QTI's scales was not reproduced exactly in either sample. The QTI may prove to be a useful instrument for examining aspects other than teacher behavior, and may be used to determine the importance of teacher behavior on students' academic performance and social anxiety.

INTRODUCTION

In a series of studies spanning more than a decade, Wubbels and his colleagues (e.g. Créton & Wubbels, 1984; Wubbels, Créton & Hooymayers, 1985; Wubbels & Levy, 1991; 1993) have investigated interpersonal behavior in the classroom. More recently they have conceptualized the classroom as a system (Créton, Wubbels & Hooymayers, 1993) and focused on the ways in which teacher behavior and communication style influence students' behavior, particularly learning-related behavior. The essence of their research has been to understand what behaviors characterize an 'effective teacher' within a broader understanding of outcomes, such as effective teaching.

In order to assess teacher behavior, Wubbels and Levy (1993) argued that it is important to go beyond teachers' self-reports or the observations of independent observers. They suggested that students themselves are important sources of information for three basic reasons:

1. Many teacher behaviors only become meaningful when they are perceived as cues by the students.
2. Students' perceptions may provide an insight into 'usual' teacher behavior as opposed to snapshot data gathered through observations.
3. Student perceptions may allow the measurement of idiosyncratic teacher behavior, because students will be familiar with such behaviors while observers may not.

In addition, research has shown that there is high concordance between the perceptions of teacher behavior by students and observers and that these perceptions tend to differ from those of the teachers. Therefore, it can be argued that not only are students' perceptions of teacher behavior reliable and valid (Marsh, 1984), they also offer a parsimonious and economical way to investigate at least some aspects of patterns of classroom communication.

The contribution of teacher behavior to student behavior is however of broader interest than that implied by Wubbels and his colleagues. Recent research by Beidel and Turner (1998) for example, suggests that perception of others' behaviors or attitudes, which they termed information transfer, may be influential in shaping students' anxiety. This has been confirmed in a retrospective study of university students by Moore (1999), who found that perceptions of paternal parenting behavior were associated with social anxiety. Similarly, Moore and Mellor (2000) have found that aspects of students' current perceptions of teacher behavior are also associated with social anxiety. Further, this association has been implicitly recognized by other researchers (e.g., Bokhorst, Goossens & Ruyter, 1995) who have designed programs based on both curriculum content and teacher behavior to reduce social anxiety in students.

In order to assess teacher behavior from the student perspective, Wubbels and his colleagues developed the Questionnaire on Teacher Interaction (QTI) (Breckelmans, 1989; Créton & Wubbels, 1984; Wubbels, et al, 1985). This instrument is based on Leary's (1957) theory of

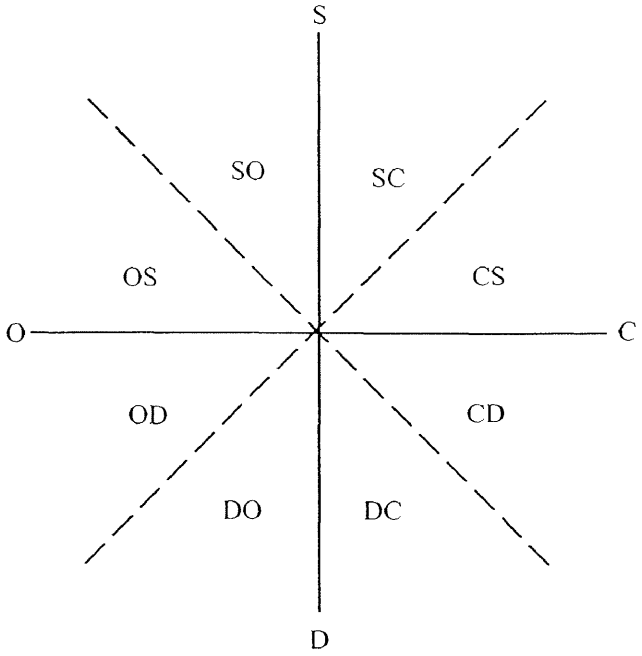

Figure 1. Theoretical model of QTI sectors

Table 1

Sectors of the model for interpersonal teacher behavior as described by Wubbels, Créton, Levy and Hooymayers (1993)

Scale	Name	Typical Behaviors
Dominance-Co-operation (DC)	Leadership	Noticing what is happening, leading, organizing, giving orders, setting tasks, holding attention and structuring the classroom.
Co-operation-Dominance (CD)	Helpful/friendly	Assisting, showing interest, behaving in a friendly or considerate manner, and inspiring confidence and trust.
Co-operation-Submission (CS)	Understanding	Listening to students with interest, empathizing, showing confidence and understanding, accepting apologies, looking for ways to settle differences, and being patient and open.
Submission-Co-operation (SC)	Student responsibility/ freedom	Giving opportunity for independent work, waiting for the class to let off steam, giving freedom and responsibility, and approving of something.
Submission-Opposition (SO)	Uncertain	Keeping a low profile, apologizing, waiting to see how the wind blows, and admitting one is wrong.
Opposition-Submission (OS)	Dissatisfied	Waiting for silence, considering pros and cons, keeping quiet, showing dissatisfaction, looking glum, and questioning and criticizing.
Opposition-Dominance (OD)	Admonishing	Getting angry, taking students to task, expressing irritation and anger, forbidding, and correcting and punishing.
Dominance-Opposition (DO)	Strict	Keeping a tight reign, checking, judging, keeping the class silent, and having exact norms and rules.

interpersonalbehavior, which construes interpersonal communication in terms of two orthogonal dimensions - Dominance (D)-Submission (S), and Co-operation (C)-Opposition (O). The graphical representation of these dimensions, D-S and C-O, reveals one quadrant that is characterized by dominant but co-operative behavior, another characterized by submissive co-operative behavior, a third that is characterized by adverse submissive behavior, and the fourth quadrant characterized by dominant but adverse behavior.

The QTI uses Leary's model but in a co-ordinate system that is further divided into eight sectors, as shown in Figure 1. The sectors are labeled according to their relative position within the co-ordinate system, and describe eight different aspects of behavior. Thus, the sector DC is characterized by both Dominance and Co-operation, but it is the former that is more influential. This sector is called "leadership," and typical behaviors related to it include noticing what is happening, leading, organizing, giving orders, setting tasks, holding attention and structuring the classroom. The sector CD is characterized by high Co-operation and Dominance, with the latter characterizing it to a lesser degree. It is labeled "helping/friendly," and behaviors typical of this sector include assisting students, showing interest in them, behaving in a friendly or considerate manner and inspiring confidence and trust. All eight sectors are summarized in Table 1.

The QTI has eight scales that correspond to the eight sectors described above. It evolved over a series of studies with the final Dutch version consisting of 77 items. The American version (Wubbels & Levy, 1991) is made up of 64 items to which students respond on a five point Likert scale (see Appendix 2.1 in Wubbels & Levy, 1993, for this scale). A shorter 48-item version is described by Wubbels (1993). The QTI has acceptable reliability across American (Wubbels & Levy, 1991), Dutch (Breckelmans, 1989; Créton & Wubbels, 1984; Wubbels et al, 1985) and Australian (Fisher, Fraser & Wubbels, 1992) samples. Further, its structural validity has been supported by structural equation modeling and studies investigating the correlation pattern between the scales. Because the underlying model requires the scales to be arranged in a circular order in the two-dimensional system, each scale should correlate highly positively with its neighboring scales and highly negatively with those in the opposite sectors. Wubbels, Créton, Levy and Hooymayers (1993) report that such a pattern has been observed in a number of studies (e.g. Créton & Wubbels, 1984).

The major use of the QTI has been to provide feedback to teachers about students' perceptions of their teaching style. For this reason, it is completed by students in relation to a particular teacher. However, if the purpose of assessing perceptions of teacher behavior is for other purposes (e.g. information transfer and its relationship to social anxiety), the students' *overall* perception of their experiences with school teachers will be required. For this reason, in high schools — where students are subject to the instruction of several teachers during each school day — the QTI must be adapted to achieve this end.

It is the purpose of this study to trial the QTI in a study of both elementary and high school students in Australia to ascertain if:

1. Similar patterns of correlation between the scales are found in each sample.
2. The spatial relationships between the factors are replicated in each sample.
3. The internal consistency of the items within each scale is maintained when students are asked to describe the behavior of teachers in general.

METHOD

Participants

Ninety-nine students were surveyed for a study investigating social anxiety. There were 50 girls (Age M = 12.63 years, SD = 1.26) and 49 boys (Age M = 13.08, SD = 1.08). There was no significant difference in age between boys and girls. Thirty-five students were recruited through elementary schools (year 6) and 64 through high schools (year 8) in and around Melbourne, Australia.

Materials

The 48-item version of the QTI described by Wubbels (1993) was included in a package of questionnaires that measured social anxiety, and perceptions of teacher, parental and peer interactions. The instructions for the QTI asked participants from the elementary schools to describe their class teacher, while the participants from the high schools were asked to describe the behaviors of their teachers in general.

Procedure

With the consent of the Department of Education and the principal of the participating schools, information about the study and invitations for students to participate were distributed to parents. Students whose parents provided written consent — and who themselves also agreed in writing — participated in the study.

The questionnaires were completed in class groups, with one of the researchers and a teacher present to address any questions that may have arisen.

RESULTS

The data were analyzed using the program Statistical Package for the Social Sciences (SPSS). Following the recommendation of Tabachnick and Fidell (1996), the conservative approach of mean substitution was used to replace the few instances of non-systematic missing data. This approach allows the total sample to be analyzed at the expense of truncating the variance for the variables affected.

Multidimensional scaling (MDS) — which evaluates

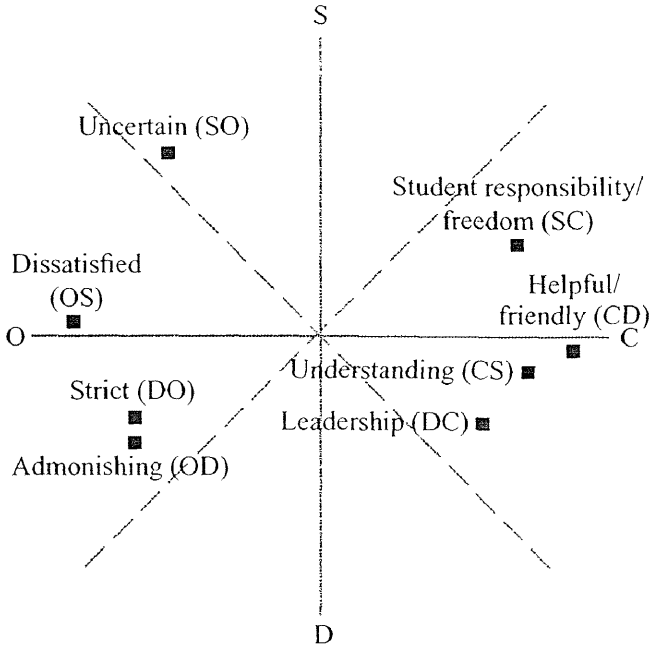

Figure 2. Multidimensional scaling map for Year 6 children

Table 2

Correlation matrix for the QTI scales for the elementary school sample

	DC	CD	CS	SC	SO	OS	OD	DO
DC								
CD	.89**							
CS	.75**	.89**						
SC	.63**	.79**	.69**					
SO	-.35*	-.28	-.14	-.12				
OS	-.70**	-.77**	-.82**	-.62**	.33			
OD	-.62**	-.73**	-.66**	-.47**	.29	.74**		
DO	-.48**	-.61**	-.443**	-.80**	.11	.53**	.48**	
DC		.89**	.53**	.63**	-.35*	-.70**	-.62**	-.48**
CD			.75**	.79**	-.28	-.77**	-.73**	-.61**
CS				.69**	-.14	-.82**	-.66**	-.53**
SC					-.12	-.62**	-.47**	-.80**
SO						.33	.29	.11
OS							.74**	.53**
OD								.48**

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

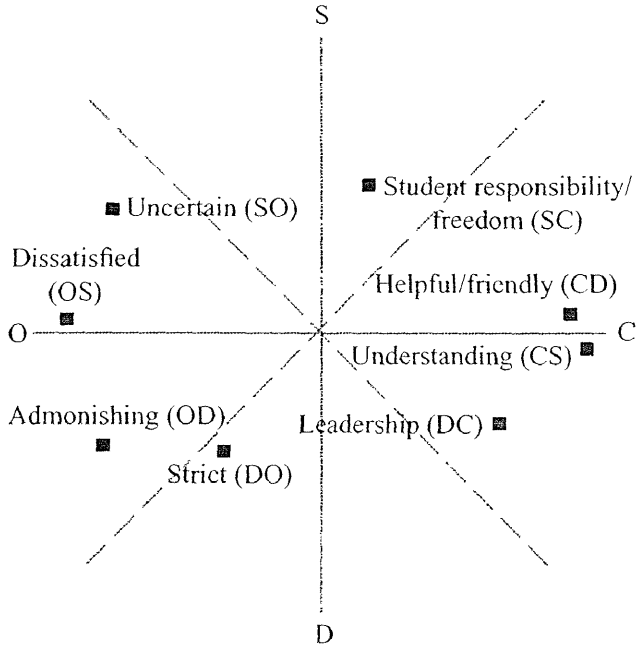

Figure 3. Multidimensional scaling map for Year 8 children

Table 3

Correlation matrix for the QTI scales for the high school sample

	DC	CD	CS	SC	SO	OS	OD	DO
DC								
CD	.70**							
CS	.67**	.83**						
SC	.34**	.66**	.54**					
SO	-.44**	-.45**	-.46**	-.05				
OS	-.49**	-.69**	-.67**	-.35**	.66**			
OD	-..37**	-.63**	-.62**	-.42**	.55**	.81**		
DO	-.06	-.39**	-.39**	-.42**	.35**	.50**	.63**	
DC		.70**	.66**	.34**	-.44**	-.48**	-.37**	-.06
CD			.83**	.66**	-.45**	-.69**	-.63**	-.39**
CS				.54**	-.46**	-.67**	-.62**	-.39**
SC					-.05	-.35**	-.42**	-.42**
SO						.66**	.55**	.35**
OS							.81**	.50**
OD								.63**

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Table 4

Reliability co-efficients for scales of the 48-item QTI

	Elem. school	High school	Total sample	Fisher et. al (1992)
Leadership (DC)	.74	.64	.68	.83
Helpful/friendly (CD)	.92	.83	.87	.85
Understanding (CS)	.87	.79	.83	.82
Student responsibility/ freedom (SC)	.85	.66	.76	.68
Uncertain (SO)	.64	.67	.66	.78
Dissatisfied (OS)	.83	.77	.79	.78
Admonishing (OD)	.68	.73	.71	.80
Strict (DO)	.74	.64	.70	.72

identifying any latent structure (Kruskal & Wish, 1976) — was used to identify the dimensions underlying students' perceptions of their teachers. The summated factor scores for the 48-item QTI were used in the MDS analyses that were run separately for Year 6 and for Year 8 students.

For year 6 students, the low Kruskal's Stress Index (= .10) and high R^2 = .95 both indicated a good fit of the data to two dimensions (Hair, Anderson, Tatham & Black, 1995) (Figure 2). The horizontal axis represents the O-C dimension and the vertical axis the S-D dimension. With the exception of Understanding (CS) and Helpful/friendly (CD), each scale falls within their appropriate quadrants, and each of these is very close to the axis. However, only the Uncertain (SO) and Dissatisfied (OS) scales are distributed within the expected sectors. As shown in Table 2, this pattern is reflected in the correlation matrix for the scales. The expected pattern would be for each scale to correlate strongly positively with those in adjacent sectors in the model, and strongly negatively with the scales located in the sectors opposite. Thus in Table 2, each correlation column should begin with a highly positive value, then cycle through positive, negative, to highly negative values, before returning through the reverse pathway to highly positive values. As seen in Table 2, this is the general pattern followed by each correlation, but no scale follows it exactly.

The MDS for year 8 students is presented in Figure 3. The Kruskal's Stress Index (=.03) and R^2 = .99 each indicated an excellent fit of the data across two dimensions. Again, with the minor exceptions of Understanding (CS) and Helpful/friendly (CD), each of the scales falls within the appropriate quadrant, and here, four of the eight scales fall within the expected sector. Table 3 shows the correlation between the scales for the Year 8 sample. Again, although the expected pattern is generally followed by the correlations, it is not followed exactly by any scale.

Table 4 shows the reliability co-efficients for the samples in the current study, and the previous Australia data reported by Fisher et al (1992). The co-efficients in the current data are within the same ranges as those reported previously, but there is some minor variability between elementary and high school samples.

DISCUSSION

The aim of this study was to determine if the spatial relationships between the factors of the QTI would be maintained when it is used as a measure of students' perceptions of teachers in general as opposed to a specific teacher. To do this, the instrument was administered to a sample of elementary school students who have just one teacher in their class, and to a sample of high school students who have different teachers for each subject studied. A secondary aim was to determine the internal consistency of each scale across the two conditions.

On the basis of these results, it appears that the four underlying dimensions of the QTI are robust in both the elementary school and high school samples. The two dimensions making up each of the four quadrants were appropriately represented for both the year 6 and year 8 students. However, the further classification of these four quadrants into eight sectors was only partially confirmed. While the eight sectors were approximately replicated for both year 6 and year 8 students, the clear separation described by Wubbels et al. (1993) was not present in these data. It may be that the sample size was insufficient to provide this separation, or the lines between these dimensions were more blurred in this Australian sample. For example, perceptions of teachers as strict or admonishing may not be a real distinction for this sample, or these young students may not be able to make the linguistic distinction between terms in the items.

The lack of definitive support for the eight-sector model was also reflected in the correlation between the various scales for each sample. The expected pattern of each scale correlating most positively with the adjacent scales in the model and most negatively with the scales in the opposite quadrant was not consistently evident in either sample. The reliability of each scale appears to be acceptable, with the reliability co-efficients in each sample being comparable to those reported by Wubbels et al. (1993) for American, Dutch and Australian samples.

Despite the limitations in the present data in terms of utilizing the QTI with students to ascertain their general perception of teachers, the data suggest that the QTI is at least as useful as it is when it is used to assess students' perceptions of one particular teacher. It may be informative for further studies to investigate the relative perceptions of different students at the high school level and to compare this across subjects taught, student interaction and student performance in those subjects. The QTI may prove to be a useful instrument for examining aspects other than teacher behavior, and may be used to determine the importance of teacher behavior on students' academic performance and social anxiety.

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