

Teacher control and affiliation: do students and teachers agree?

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Teacher Control and Affiliation: Do Students and Teachers Agree?

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ABSTRACT

Using an interpersonal circumplex model, we examined whether teachers and students in secondary education apply a similar frame of reference when thinking about how a teacher relates to students. We also examined the alignment of teacher and student perceptions of two dimensions of the teacher-student relationship: Control and Affiliation. Results showed that although teachers and students use a similar framework, they do not agree on the amount of teacher Control and Affiliation in a given classroom. This study contributes to our understanding of teacher self-reports by comparing student and teacher perceptions of the teacher-student relationship.

INTRODUCTION

In effective classrooms students are actively involved in learning processes, feel comfortable, and their efficacy and adaptive patterns of engagement are promoted (Davis, 2003; Freeman, Anderman, & Jensen, 2007; Patrick, Turner, Meyer, & Midgley, 2003; Woolfolk-Hoy & Weinstein, 2006). The way teachers affiliate with students and control classroom processes is an important factor in explaining the effectiveness of classrooms for student learning (Cornelius-White, 2007; Davis, 2003; den Brok, Brekelmans, & Wubbels, 2004; Pace & Hemmings, 2007; Pianta, 2006).

How a teacher relates to students may be studied by observations or by perceptions of the persons involved. Research based on perceptions often focuses *either* on teacher perceptions or student perceptions. The correspondence between these two points of view has received far less attention (den Brok, Bergen, & Brekelmans, 2006). The present study investigates (a) whether teachers and students in secondary education apply the same frame of reference to their perception of how teachers relate to students, and (b) the degree of

alignment between teacher and student perceptions. Comparing teacher and student perceptions may contribute to insights in how teacher self-reports on the teacher-student relationship should be valued. Teacher self-reports continue to be an important point of action in many teacher professional development programs (Wubbels, Brekelmans, den Brok, & van Tartwijk, 2006), and teacher perceptions are used in scientific studies as an indicator of the teacher-student relationship (e.g., Pianta, 2006).

TEACHER CONTROL AND AFFILIATION

Previous research has indicated that the dimensions of *dominance vs. submission* and *hostility vs. affection* are primary for understanding various interpersonal outcomes (Fiske, Cuddy, & Glick, 2007; Judd, James-Hawkins, Yzerbyt, & Kashima, 2005). In the current study, these two dimensions are utilized to describe how a teacher relates toward students in class. To study these dimensions, the interpersonal circumplex model is widely used (Blackburn & Renwick, 1996; Fabrigar, Visser, & Browne, 1997; Gaines et al. 1997; Gurtman & Pincus, 2000). The two dimensions in the circumplex model have been given different names, such as Dominance versus Love (Leary, 1957), Control versus Affiliation (Kiesler, 1983; Tiedens & Jimenez, 2003), Agency versus Communion (Locke, 2000), or Competence versus Warmth (Fiske et al., 2007; Judd et al., 2005). Wubbels and colleagues (Créton, Wubbels, & Hooymayers, 1989; Wubbels et al., 2006) adopted the Leary circumplex model (Leary, 1957) to the classroom context. Figure 1 is a graphic representation of this model (Teacher Interpersonal Circle), labeling the dimensions as Control and Affiliation¹. Affiliation is conceived as the warmth and care, and Control

¹In publications on research with this model the "Teacher Interpersonal Circle" is also called "Model of Interpersonal Teacher Behavior," with *Influence* and *Proximity* as labels for the two dimensions.

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as the authority or interpersonal influence a teacher conveys in class. The eight octants arranged around the interpersonal circle represent distinct combinations of the two dimensions, Control and Affiliation. In Table 1 an overview is provided of typical behaviors that relate to each of the eight octants of the circle.

Research based on the Teacher Interpersonal Circle used both teacher and student perceptions of a teacher's Control and Affiliation in class. Studying *teacher perceptions* underlines the active role that teachers play in classrooms. Studying teacher perceptions of teaching can contribute to the understanding of the interplay between teacher intentions and teacher behavior. Studying *student perceptions* underlines the active role that students play in their own learning in classrooms. Studying student perceptions of teaching can contribute to the understanding of the interplay between teacher behavior and student outcomes (e.g., Shuell, 1996). Research based on the Teacher Interpersonal Circle has shown that students who perceive more teacher Control and Affiliation show greater cognitive achievement, stron-

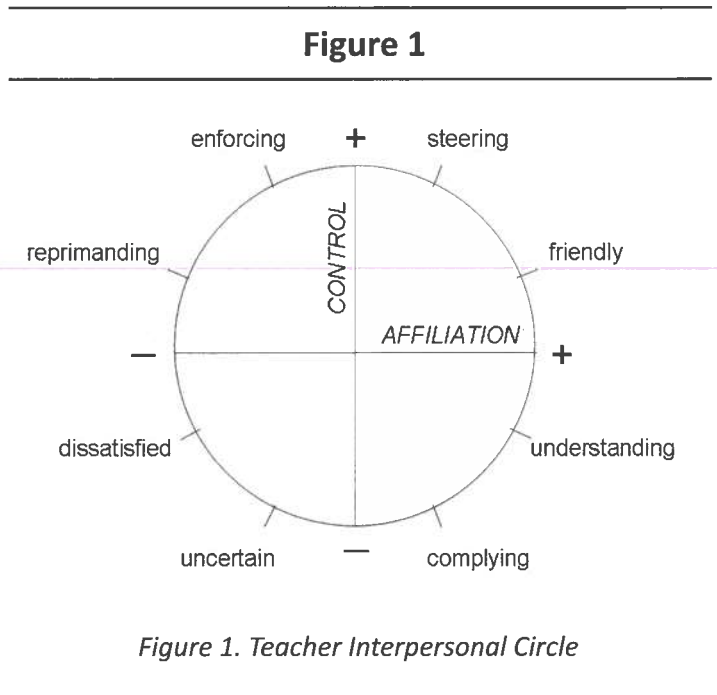


TABLE 1

Typical Behaviors of a Teacher that Relate to Each of the Eight Octants of the Teacher Interpersonal Circle

Octant	Typical behaviors
Leadership	Noticing what's happening, organizing, giving orders, setting tasks, determining, clear procedures, structuring, explaining, holding the attention, acting confidently, showing enthusiasm
Helping/friendly	Assisting, showing interest, behaving in a friendly or considerate manner, being able to make a joke, inspiring
Understanding	Listening with interest, empathizing, showing confidence and understanding, accepting apologies, looking for ways to settle difference, being patient, open, trustful
Student freedom	Giving opportunity for independent work, waiting for class to let off steam, giving freedom and responsibility, approving of something
Uncertain	Keeping a low profile, apologizing, waiting and seeing how the wind blows, being hesitant
Dissatisfied	Waiting for silence, considering pros and cons, keeping quiet, showing dissatisfaction, looking glum, questioning, criticizing, being suspicious
Admonishing	Getting angry, taking pupils to task, expressing irritation and anger, forbidding, correcting, punishing
Strict	Keeping reins tight, checking, judging, getting class silent, maintaining silence, being strict, setting norms and rules

ger engagement, and more positive subject-related attitudes than do students who perceive their teacher as performing at lower levels of these dimensions (Brekelmans, Slegers, & Fraser, 2000; den Brok et al., 2004; Wubbels et al., 2006). In other educational studies, equivalents of Control (Allen, Witt, & Wheelless, 2006; Cornelius-White, 2007) and Affiliation (Goodenow, 1993) also have been highlighted as valuable concepts when studying classrooms, and Woolfolk-Hoy and Weinstein (2006) underscored the importance of the Authority and Care dimensions in their description of good teachers. In the present study, teachers with relatively high levels of Control and Affiliation, according to their students, are therefore referred to as more interpersonally competent.

DO STUDENTS AND TEACHERS AGREE?

Some of the few studies aligning teacher self-perceptions and student perceptions reported considerable differences. On average, teachers think they convey more Control and Affiliation than do their students (Brekelmans, Wubbels, & den Brok, 2002; den Brok, Levy, Rodriguez, & Wubbels, 2002; den Brok et al., 2006; Fisher & Rickards, 2000; Harkin & Turner, 1997; Rickards & Fisher, 2000; Wubbels & Brekelmans, 1997; Yuen, 1999). Some studies however found that student and teacher perceptions were not that different (Ben-Chaim & Zoller, 2001; Fisher & Rickards, 2000; Rickards & Fisher, 2000; Wubbels & Levy, 1991).

Wubbels, Brekelmans, and Hooymayers (1992) found that, compared to student ratings, about two-thirds of the 143 teachers in their study viewed themselves as conveying more Control and Affiliation in class, whereas one-third rated themselves as conveying less Control and Affiliation than students perceived. Wubbels et al. (1992) assumed the agreement between teacher perceptions and student perceptions was an indicator of the teachers' ability to understand how students perceived their behavior. They also assumed student perceptions of the amount of Control and Affiliation was an indication of the quality of teacher interpersonal competence. Taking this line, Wubbels et al. interpreted teacher reports of higher levels of Control and Affiliation, relative to their students, as overestimation and wishful thinking about their relationships with students, and teacher reports of relatively lower levels of Control and Affiliation as underestimation and a form of protection from disappointment. They found that the higher the differences between teacher and student perceptions, the lower were the levels of Control and Affiliation according to students.

These studies implicitly assumed that the frame of reference teachers and students used to describe teacher interpersonal behavior is identical. Yet teachers and students may have different understandings of the dimensions of Control and Affiliation. For example, teachers might see "asking

students what they want" as conveying "uncertainty" (i.e., relatively low levels of Control and Affiliation) whereas students might interpret such a question as conveying a relatively high level of Affiliation.

Moreover, research has highlighted the divergence between self-ratings and others' ratings, showing that self-perceptions are clearly less associated with actual behavior (e.g., the observed amount of friendly remarks made by a teacher) than are the ratings of others (e.g., "this teacher is friendly"; Kolar, Funder, & Colvin, 1996). Dunning, Johnson, Ehrlinger, and Kruger (2003) suggested that this discrepancy stems from two sources: less skilled professionals usually overestimate their performance because they are less able to reflect accurately on what they do, and highly skilled performers underestimate their skills. They hypothesized that the latter result stemmed from skilled professionals' overestimation of other people and underestimation of, or modesty, regarding their own skills. Kolar et al. (1996) used the "fish and water effect" hypothesis to explain people's lack of awareness of their own behavioral patterns. For the same reason that fish are said to find it difficult to detect water, it would be difficult to detect one's own stable (positive and negative) behavioral tendencies. Leising, Rehbein, and Sporberg (2006) confirmed this hypothesis, demonstrating that during interaction with others, dominant participants underestimated their dominance, and submissive participants underestimated their submissiveness.

Grounded in research on perceptions of teachers and students of the teacher-student relationship and in social psychology research demonstrating patterns of discrepancy in self-perceptions relative to actual behavior, this study has two purposes. First, we explicitly examined the assumption that teachers and students use equal frames of reference by testing the validity of the Teacher Interpersonal Circle simultaneously for student and teacher data. Second, we compared teacher self-perceptions and student perceptions of teacher Control and Affiliation. To add to the existing knowledge base we (a) used a large sample ($n = 6,060$ teachers and the reports of one class of their students) and (b) analyzed how the perceptions of more and less competent teachers (based on the level of Control and Affiliation reported by students) differed in their correspondence with student perceptions. In this way the study contributes to insights in the value of self-reports of teachers.

METHOD

Participants

An existing database was used that included data of more than 18,000 Dutch secondary classroom groups that rated their teachers as part of annual teacher evaluations between 1990 and 2008. Over this time period the average

Control and Affiliation of teachers was rather stable.² For every teacher with more than one measurement, one measurement was randomly selected. The resulting sample consisted of 6,060 cases including a teacher's self-perception and one specific group of student perceptions of this teacher's Control and Affiliation. Teachers were from more than 300 different secondary schools (public and special) in The Netherlands (lower and higher general secondary education and pre-university education). They represented all different subject areas (math, science, language, social studies) and had 1 to 43 years of experience ($M = 7.9$, $SD = 8.6$). Fifty-one percent of the teachers were male. Students represented age group 12 to 18.

Instrumentation

Teacher self-perceptions and student perceptions of teacher Control and Affiliation were estimated using a 24-item selection of the Questionnaire on Teacher Interaction (QTI; Wubbels, Créton, & Hooymayers, 1985; Wubbels et al., 2006), which included three items for each of the eight octants of the Teacher Interpersonal Circle. The question printed on the student form was "What do you think of your teacher?"; the question on the teacher form was "How do you teach this class?"; examples of items include "this teacher is hesitant," "this teacher is patient," or "this teacher is strict" (to be rated on a five-point Likert-type scale ranging from "never" to "always"). Control and Affiliation scores were calculated based on factor loadings. These factor loadings reflect the position of the items on the interpersonal circle. Cronbach's alphas for Control and Affiliation for the current dataset were .85 and .81 for the teacher data and .79 and .88 for the student data (not aggregated and based on theoretical factor loadings reflecting a model with equidistant octants³).

In the current study, students were treated as multiple informants of their teachers (den Brok, Brekelmans, & Wubbels, 2006; Lüdtke, Robitzsch, Trautwein, & Kunter, 2009). As a result, "studies of scale homogeneity or scale intercorrelation should be carried out with the classroom group as unit of analysis" (Cronbach, 1973, p. 9.18, as cited in Lüdtke et al., 2009). To check the psychometric quality of the aggregated student perceptions, intraclass correlations (ICCs) were calculated (Miller & Murdock, 2007; Raudenbush & Bryk, 2002). The ICC1 estimates the proportion of total variance that can be attributed to between-class differences

and indicates how reliable *individual ratings* represents the class mean (.30 is regarded as high); the ICC2 provides an estimate of the reliability of the *class-mean ratings* (.70 is regarded as a sufficient level).⁴ For Control the ICC1 and ICC2 were .46 and .92, and for Affiliation .51 and .94. Furthermore, the Average Deviation index (AD; Burke & Dunlap, 2002; LeBreton & Senter, 2008) was calculated, which provides information on the *agreement of students within a classroom* by indicating the average deviation of a student rating from the class mean of Control and Affiliation (upper limit cut-off score for the AD index is .20). For the current sample the AD indices for Control and Affiliation were .07 ($SD = .02$) and .09 ($SD = .03$). Thus, overall, it was acceptable to regard class aggregated student ratings as reliable indicators of teacher Control and Affiliation in a given class.

RESULTS

Student and Teacher Frame of Reference

In order to test whether teachers and students apply the same frame of reference when rating how a teacher relates to students in class, *measurement invariance* across teacher self-perceptions and student perceptions was investigated with a multi-group confirmatory factor analysis (MPLUS software; Muthén & Muthén, 2001). The question of measurement invariance concerns whether a set of indicators (i.e., the eight octant scores of the Teacher Interpersonal Circle) assess the same constructs (i.e., Control and Affiliation) in different groups (i.e., teachers and students). Put another way, does the QTI measure the same thing when teachers, rather than students, complete it (Kline, 2005). Results are presented in Appendix A.

First, a model (i.e., a free circumplex model, Gaines et al., 1997) was tested with equal restrictions for the teacher and student data. This model restricted the factor loadings of the eight octants on the Control and Affiliation dimensions to be equal for teachers and students, while factor variances were allowed to be different. This model indicated a reasonable fit (Kline, 2005) to the data ($\chi^2(28) = 1209.49$; CFI = .98; TLI = .97; RMSEA = .08; SRMR = .06). As a second step, a model was tested that allowed the eight factor loadings for Control and the eight factor loadings for Affiliation to be different for the teacher and student data, while still assuming a similar factor structure for teachers and students (i.e., the same general outline of the circumplex). This model produced a better fit to the data ($\chi^2(16) = 738.18$; CFI = .99; TLI = 0.97; RMSEA = .08; SRMR = .05), as a χ^2 -Difference test ($\chi^2_d(12) = 471.32$; $p < .0001$) indicated. Thus, the unrestricted model, which allowed different factor loadings of the eight octants on the Control and Affiliation dimensions, is to

²We compared the mean scores for Control and Affiliation dividing the 25-year period in five periods of five years. Differences turned out to be small (Control: $\epsilon^2 = .02$; Affiliation: $\epsilon^2 = .01$).

³Factor loadings based on an equidistant eight octant circumplex model are clockwise going from the leading to the strict octant for the Control dimension: .92, .38, -.38, -.92, -.92, -.38, .38, .92 respectively; for the Affiliation dimension: .38, .92, .92, .38, -.38, -.92, -.92, -.38 respectively.

⁴For details on the calculation of ICC1 and ICC2 see Lüdtke et al. (2009) or Snijders and Bosker (1999).

APPENDIX A

*Estimates of the Unconstrained Multi-Group CFA of Teacher Control and Affiliation
Across Teachers' Self-Perception and Students' Perception Data*

Parameter	Control				Affiliation			
	Teacher		Student		Teacher		Student	
	Estimate	Standardized	Estimate	Standardized	Estimate	Standardized	Estimate	Standardized
Factor variances	.01**	1	<.01**	1	.01**	1	0.02**	1
Factor loadings								
DC	1.56**	0.82	1.98**	0.84	0.52**	0.32	0.56	0.48
CD (AF-fixed)	0.57**	0.37	0.71**	0.34	0.92	0.71	0.92	0.89
CS	-0.22**	-0.16	-0.10**	-0.07	0.89**	0.75	0.72	0.94
SC (AF-fixed)	-1.07**	-0.63	-0.81**	-0.59	0.38	0.27	0.38	0.57
SO	-1.90**	-0.85	-2.11**	-0.90	-0.38**	-0.2	-0.46	-0.40
OS (CO-fixed)	-0.38	-0.22	-0.38	-0.23	-0.82**	-0.56	-0.71	-0.87
OD	-0.01	0.00	0.15**	0.08	-0.68**	-0.43	-0.75	-0.77
DO (CO-fixed)	0.92	0.52	0.92	0.58	-0.31**	-0.20	-0.30	-0.39
	Error Variances							
E _{DC}	<.01**	.24	<.01**	.06				
E _{CD}	<.01**	.37	<.01**	.10				
E _{CS}	<.01**	.42	<.01**	.11				
E _{SC}	<.01**	.53	<.01**	.33				
E _{SO}	<.01**	.23	<.01**	.04				
E _{OS}	.02*	.64	<.01**	.19				
E _{OD}	.03*	.81	.01**	.40				
E _{DO}	.02*	.69	.01**	.51				

* $p < .05$. ** $p < .01$.

be favored. Differences between the teacher and student data became especially apparent in the octants that contribute to low levels of Affiliation (i.e., the left side of the model), the other octants were more in line for teacher and student data suggesting partial measurement invariance. Thus, results of statistical analysis showed that teachers and students seem to apply, at least partially, a different frame of reference when rating how a teacher relates to students in class. A visualization of these results is provided in Figure 2, where the differences between the theoretical circumplex and the circumplexes according to the results of the performed multigroup CFA are shown. The figure shows that the theoretical eight octant scores, and the students' and teachers' octant scores are all in the same octant.

Second, Pearson's correlations were calculated between teacher Control and Affiliation according to the

theoretical factor loadings on the one hand and teacher self-perception and student perceptions on the other. These correlations were .97 and above.

We concluded that although there are some differences between the teachers' and students' frames of reference, these frames are similar when using Control and Affiliation dimension scores based on theoretical loadings for both teacher perceptions and student perceptions. We therefore used these theoretical scores to compare the amount of Control and Affiliation teachers and students perceive a teacher conveys in class.

Student and Teacher Perceptions of Control and Affiliation

On average, teacher perceptions of Control ($M = 0.15$, $SD = 0.30$) and Affiliation ($M = 0.40$, $SD = 0.25$) were higher

TABLE 2

Teacher Over- and Underestimation of Control and Affiliation

	Percentage of Teachers	M (SD)
Control		
Overestimation	55.4	0.21
Equal estimation	1.8	0.00
Underestimation	43.3	-0.18
Affiliation		
Overestimation	66.0	0.25
Equal estimation	0.8	0.00
Underestimation	33.3	-0.16

than student perceptions of Control ($M = 0.12, SD = 0.24$) and Affiliation ($M = 0.29, SD = 0.28$). Table 2 presents results on disagreement between teacher perceptions and perceptions of their students in terms of the percentage of teachers who underestimated, overestimated, or equally estimated their level of Control and Affiliation, as compared to their students. Perceptions of teachers that remained within the range of measurement error from student perceptions were regarded as equal estimations.

Relative to the reports of their students, 66% of the teachers overestimated their Affiliation and 55% overesti-

mated their Control; 33% of the teachers underestimated their Affiliation and 43% underestimated their Control. On average, the (absolute) difference between student and teacher perceptions was 0.19 ($SD = 0.16$) for Control and 0.22 ($SD = 0.18$) for Affiliation. On both dimensions these differences are larger than half a standard deviation in student perceptions of Control and Affiliation (0.6-0.9 SD , medium to large effect; Cohen, 1988). So, on average the correspondence between teacher and student ratings on both interpersonal dimensions was rather low.

Differences in perception scores were then related to teacher interpersonal competence (i.e., student perceptions of a teacher's Control and Affiliation). To be able to differentiate between overestimation and underestimation we used real difference scores (in contrast with Wubbels et al., 1992, who used absolute difference scores). Consistent with the research of Dunning et al. (2003) and Leising et al. (2006), we expected a negative correlation between the level of Control and Affiliation and the difference between teacher perceptions and student perceptions. For teachers rated as having relatively high levels of Control and Affiliation, we expected underestimation; for teachers whose students rated them with relatively low levels of Control and Affiliation, we expected overestimation. Figure 3 displays the relationship for both Control and Affiliation.

Indeed, for both Control and Affiliation, a significant negative linear association between difference in perception and interpersonal competence was found. This association was stronger for Affiliation ($r = -.56, p < .001$) than for Control ($r = -.24, p < .001$). For Affiliation, more than 30% of the variance in difference in perception scores could be explained by (student perceptions of the) teacher's interpersonal competence, while for Control, this was only 6%.

Figure 2

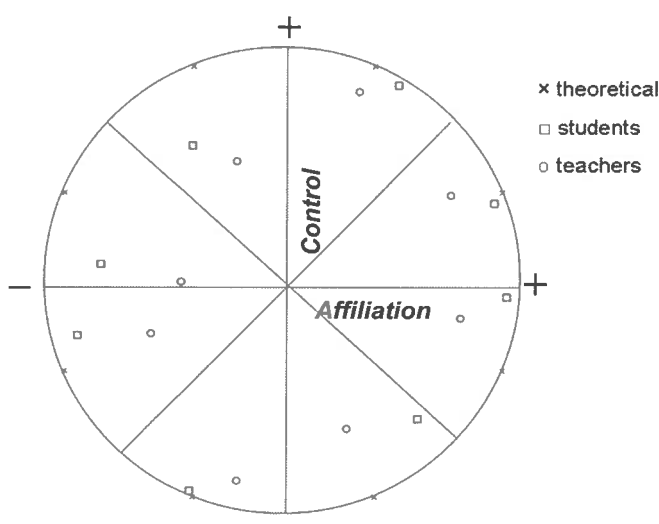


Figure 2. Circumplex models according to theory, and results for students' and teacher perceptions.

Figure 3

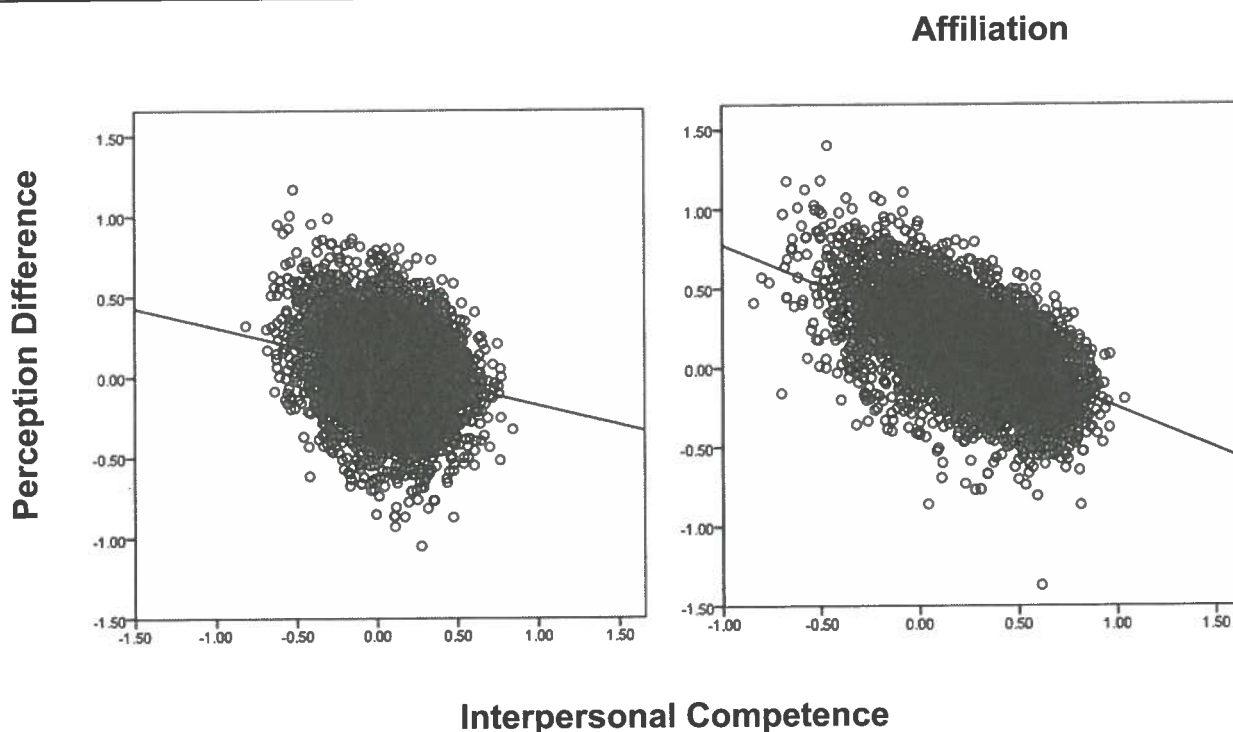


Figure 3. Difference between teacher and students' perceptions and interpersonal competence.

DISCUSSION

The present study had two goals: it tested the assumption that teachers and students use the same framework to interpret teacher Control and Affiliation, and it investigated the correspondence between teacher self-perceptions and student perceptions of teacher Control and Affiliation. Results show that the Teacher Interpersonal Circle is a valid model to describe both teacher perceptions and student perceptions. In terms of teacher Control and Affiliation, teachers and students apply a similar frame of reference when thinking about how teachers relate to students in class. Second, although both parties apply similar frames of reference, teachers and students do *not* agree on the *amount* of Control and Affiliation a teacher conveys in class. The results showed that teacher interpersonal competence (i.e., the average degree of Control and Affiliation students of a classroom group perceive) is an important variable when explaining why some teacher self-perceptions divert more than others from the student perceptions. It may also explain why some teachers underestimate rather than overestimate the quality of their classroom practice. Difference scores showed that more interpersonally competent teachers (i.e., those rated as using more Control and Affiliation, according to students) did not necessarily share their students' perceptions more than

less interpersonally competent teachers. Rather, in line with Dunning et al. (2003) and Leising et al. (2006), the higher, but also the lower, a teacher's Control or Affiliation according to students, the larger the difference with the perceptions of their students, but in a different direction. Put another way, teachers with a high level of interpersonal competence are more likely to underestimate their Control and Affiliation in class, while less competent teachers are more likely to overestimate themselves (compared to their students' ratings). This effect was more pronounced for Affiliation than for Control. More pronounced disagreement on the Affiliation than the Control dimension might be related to the fact that the teacher-student relationship is more clearly defined for Control than for Affiliation due to the clear hierarchical nature of the teacher-student relationship.

The current study shows that it is important to make a clear distinction between teachers who overestimate and underestimate themselves for their relationships with students, rather than to just think in terms of correspondence between teacher and student perceptions. *Underestimation* may stem from a certain degree of modesty, perhaps resulting from the better understanding of the complexity of establishing positive classroom interactions, and may function for the teacher as stimulation to inspire him- or herself to improve classroom interaction (c.f., Wubbels et al., 1992). Possible sour-

es for *overestimation* are self-enhancement in order to keep up a positive self-image (Kenny, 1994) and limited ability to reflect accurately on one's practice (Dunning et al., 2003).

Limitations and future research

The data used in the present study was collected as part of teacher evaluations, which may have resulted in a certain bias in teachers' self-perceptions. Teachers, who are less skilled in terms of Control and Affiliation, may have reported even more positive self-images in such a context. Nonetheless, the general pattern of over- and underestimation is in line with earlier studies (Dunning et al., 2003; Leising et al., 2006; Wubbels et al., 1992).

A second limitation is the self-perception instruction teachers were given when completing the QTI. The question printed on the teacher-form was: "How do you teach this class?", while item formulations were similar to the student-form of the QTI (e.g., "This teacher is patient"). It may be argued that rather than measuring perceptions of actual behavior, the instrument may have captured teachers' intentions. Future research could address this issue by explicitly asking teachers to describe how they think students perceive their Control and Affiliation and then comparing the results (meta-accuracy; Kenny, 1994). Further, item-wording of the questionnaire was in terms of a third person. Hofstee (1994), on the basis of theoretical and empirical considerations, recommends that when self-report is used, "the writing of personality questionnaires [should be done] in the third person singular" (p. 159). This practice is intended to improve the accuracy of self-judgment by forcing one to take the psychological position of an outside observer on oneself. Future research could compare the effect of (a) first person (e.g., item wording "I am friendly"), (b) third person (e.g., item wording "He/She/This teacher is friendly"), and (c) explicitly addressing the meta-accuracy in studying teacher self-

reports (e.g., item wording "Students see me as a friendly teacher"). Relating personal characteristics such as gender and teaching experience, and class characteristics, including educational level, to differences between student and teacher perceptions can also add to the understanding of teacher self-reports.

Practical and scientific relevance

This study showed that although teachers and students view teacher Control and Affiliation through the same lens, what they see through that lens can be quite different. This finding has consequences for researchers, as well as teacher educators and school management, especially when interpreting (only) teacher self-reports about their practice.

In using teacher self-reports of classroom processes one should keep in mind that the interpretation of teacher perceptions is not straightforward. Students might perceive their teachers as, for example, far more skilled than teachers themselves.

As high perceptions of Affiliation and Control in the teacher-student relationship are associated with teacher effectiveness, the associations found between teacher perceptions and interpersonal competence also show the potential to contribute to teacher effectiveness through teacher professional development. Although our results do not allow for causal interpretations, they may justify further research into the reciprocal effects of the development of teacher perceptions of their relationships with students and teacher interpersonal competence. Such research can inform professional development programs designed to help strengthen teacher effectiveness. Dunning et al. (2003), for example, hypothesize that being less competent not only impairs actual practice, but also impairs the ability to accurately reflect on one's practice.

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