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Classroom Management at Different Timescales: An Interpersonal Perspective¹

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Abstract

This chapter reviews and summarizes research that has been carried out on classroom management from an interpersonal perspective since 2006. The interpersonal approach to classroom management analyses teaching in terms of the interactions and relationships between teachers and their students. After an introduction of the basic concepts and mechanisms of interpersonal theory, such as the Interpersonal Circle, and its application to teaching and classroom management, this chapter describes how using concepts derived from social dynamic systems theory can help understand interpersonal dynamics between teachers and students. Then, measurement instruments for teacher-student interactions, (e.g., the Continuous Assessment of Interpersonal Dynamics) and its representation in State Space Grids, and for relationships (the Questionnaire on Teacher Interaction) are presented. Associations are discussed of these interactions and relationships with other educational variables such as student, class and teacher characteristics, student achievement and emotions and teacher job satisfaction and physiological measures. Changes in interactions and relationships are reviewed on three different timescales: how teacher and student behaviors feed into moment-to-moment classroom interactions, how interactions are associated with teacher-student relationships and social climate developing over weeks and months, and with a teacher's interpersonal style which develops over the teacher's professional life.

¹ We are grateful to an anonymous reviewer for very helpful comments on an earlier version of this chapter.

Introduction

In the chapter *An Interpersonal Perspective on Classroom Management in Secondary Classrooms in the Netherlands*, in the first edition of the Handbook of Classroom Management, (Wubbels, Brekelmans et al., 2006), we and our colleagues, we described an interpersonal approach to classroom management and summarized research findings. The interpersonal approach analyses teaching, and more specifically classroom management, in terms of the relationships and interactions between teachers and their students.

In the present chapter, we review and summarize the considerable amount of research that has been carried out on classroom management from an interpersonal perspective since 2006 and show how interpersonal dynamics between teachers and students can be understood and described at different time scales: at the level of moment-to-moment interactions, at the level of relationships developing over weeks and months and at the level of a teachers' professional life. We start this chapter with an introduction of the basic concepts and mechanisms of interpersonal theory and its application to teaching and classroom management. We also describe how using concepts derived from social dynamic systems theory can help understand how teacher and student behaviors feed into classroom interactions and are associated with teacher-student relationships (TSRs) and with a teacher's interpersonal style which develops over the teacher's professional life.

We are aware that there is a lot of research based on perspectives like the interpersonal perspective that have results adjacent to the studies we summarize in this chapter. Because of space limitations we confine this chapter to research from an interpersonal perspective.

Concepts and Mechanisms

Interpersonal Theory

Interpersonal theory describes the perceptions of behavior of persons in the vicinity of others (Horowitz & Strack, 2011). A basic premise of this theory is that all interpersonal behavior can be described along two orthogonal dimensions, together forming the basis of a circular structure (e.g., Gurtman, 2009; Leary, 1957; Sadler et al., 2011). Depending on the context (e.g., psychiatry, family, education) the dimensions are designated differently with "agency" and "communion" as meta-level labels (Fournier et al., 2011; Gurtman, 2009). Agency refers to someone is individuated, dominant, and strives for power and control, whereas communion means someone is social, and strives for union, friendliness, and affiliation (Gurtman, 2009). Each behavior communicates interpersonal messages with a specific blend of agency and communion. Thus, all behaviors people might show during interactions can be ordered along the circumference of the circular structure, referred to as the interpersonal circle (IPC, see figure 1). When teachers, for example, are perceived as behaving "compliant", their behavior conveys relatively little agency and moderately high communion. Compliant behavior has some similar qualities to behavior that is perceived as understanding (positive communion) and uncertain behaviors (low agency) and therefore these behaviors are close to each other on the IPC. Further, behaviors that are perceived as very agentic and communicating moderately low communion, can be qualified as "imposing" and have an opposite position at a maximum distance from each other on the IPC.

Figure 1

The Interpersonal Circle (IPC) for the Teacher (left) and for the Student (right)

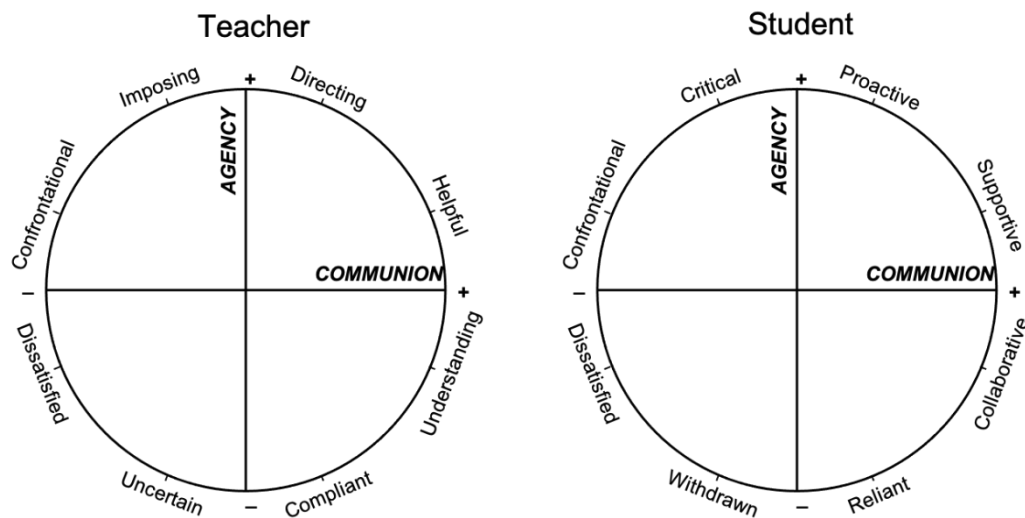


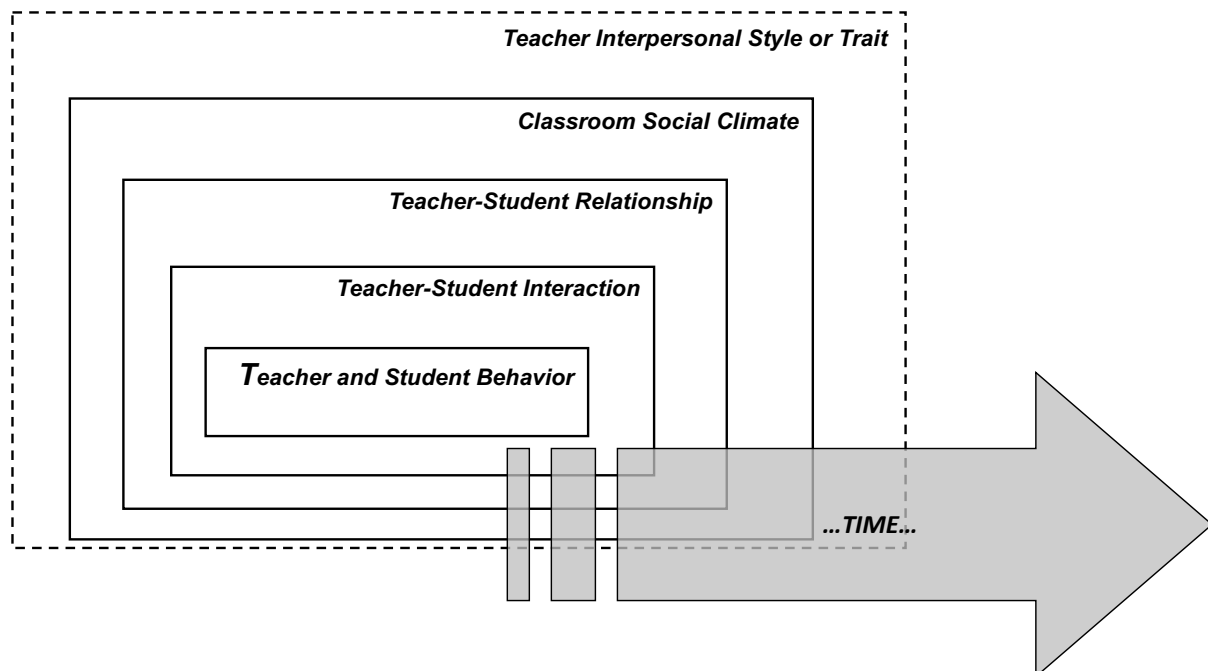
Figure 1 (left) shows how we currently refer to the dimensions and eight positions along the circumference of the IPC, when we use it to describe teacher behavior from an interpersonal perspective. Wubbels et al. (2012) explained how and why changes in the labels occurred over time. The words on the IPC are prototypical and should be understood as placeholders of similar behaviors. For example, the label “directing” for behavior is very similar to concepts such as “structuring” or “leading” that therefore also could have been used as label. A similar IPC can be used for describing student behavior from an interpersonal perspective (figure 1, right). Some student labels differ from the teacher IPC-labels because some of these teacher labels are not terms that are commonly used to describe student behaviors e.g., for high agency and moderately low teacher behavior we use “imposing” whereas for students we use “critical”. However, the underlying circular structure is universal for describing the interpersonal meaning of behavior.

Social Dynamic Systems: Behavior, Interaction, and Relationships

In their bio-ecological theory, Bronfenbrenner and Morris (1998) describe how interaction (the moment-to-moment time scale) is the primary engine of development, and therefore the basis for macro-social outcomes on a longer time scale. When applying this to the context of the classroom, this means that teacher-student interactions, which can be conceptualized as exchanges of interpersonal messages through behavior, are underlying characteristics of the classroom social climate and TSRs, teacher job satisfaction, and student emotional wellbeing. Any human development can be viewed as being hierarchically nested in time, and interactions can be regarded as the building blocks of relationships (Granic & Hollenstein, 2003). In this dynamic process, interactions not only form, re-negotiate and change relationships, but relationships also constrain real-time processes such as interactions (Hollenstein & Lewis, 2006; Mainhard et al., 2012). In classrooms, the typical teacher and student roles as well as the nature of a specific TSRs, make certain interactions and interpersonal behaviors more likely than others. For example, in a “cold” TSR, interactions are likely to be more hostile than friendly and at the same time such hostile interactions perpetuate a cold relationship. Relationships become manifest in recurring patterns of classroom interactions.

Figure 2 visualizes how the different aspects of TSRs can be understood as being nested in each other. At the core of social classroom processes lie behaviors which convey interpersonal messages. Interpersonal messages can be communicated with words, but also nonverbally, e.g., through facial expressions, body posture, gestures, distance to others, gaze, voice volume and intonations (Van Tartwijk, 1993; Van Tartwijk et al., 2010). These verbal and nonverbal behaviors happen from moment to moment and together form a stream of actions of teacher or student. These behaviors are embedded in teacher-student interaction, which can be regarded as an integrated moment-to-moment stream of actions and reactions. Interactions, in turn, are situated in the context of (dyadic) TSRs which represent the *generalized* perceptions a teacher may have of the interactions with a specific student (or classroom group: teacher-class relationship) or a student may have of the interactions with a specific teacher. Together, all the relationships in a classroom can be understood as the building blocks of the classroom social climate. More technically, the classroom social climate can be viewed as the average or shared student perception across several lessons and students. Relationships, on the other hand, also include the idiosyncratic way a student views the teacher, for example as being more friendly or less imposing than most other students view the teacher (Mainhard et al., 2018). Finally, the way teachers tend to teach all their classes represents the teacher interpersonal style. A teacher's interpersonal style can, for instance, be assessed by averaging student perceptions of the teacher's agency and communion over several lessons and for several groups of students. A teacher's interpersonal style can be considered as a rather stable trait, which does develop slowly over a teacher's professional life. Lower levels in the scheme (e.g., behavior) are more dynamic than higher levels (e.g., the classroom climate or teacher style). In dynamic systems thinking, adjacent levels or timescales are interdependent as explained above for the reciprocal dependency of teacher-student interactions and TSRs.

Figure 2
Levels and Components of Teacher-Student Variables



Note. Adjacent levels are interdependent and lower levels change and develop faster than higher levels.

In the remainder of this chapter, we highlight classroom management from an interpersonal perspective in terms of three timescales. First, we focus on teacher-student interactions, then on relationships and the classroom social climate, and finally on changes in interactions and relationships and during teachers' professional life.

Teacher-Student Interactions

Measurement and Representation

To map teacher-student interactions in terms of the IPC for the teacher and for the student (Figure 1), Mainhard et al. (2012), following earlier work by Van Tartwijk et al. (1998), rated teacher and student agency and communion on a five-point scale and the combination of these scores defined the position in the circle. Van Tartwijk et al. (1998) scored behavior per eight-second fragments, while Mainhard et al. (2012) rated every change that occurred in either student or teacher agency or communion. There are two methodological innovations that made the study and visualization of classroom interactions from an interpersonal perspective more accessible, and which sparked new lines of study.

Most importantly, Sadler et al. (2009) innovated the observation of interpersonal interaction. Rather than summarizing entire lessons or larger periods of time (e.g., Pianta et al., 2008), they developed an observational method for coding videotaped interpersonal behaviors in terms of agency and communion continuously from moment-to-moment (Continuous Assessment of Interpersonal Dynamics, CAID). While observing a person, the researcher moves a joystick device over the interpersonal circle and agency and communion values are automatically stored twice per second, resulting in a stream of changing agency and communion values. The coding for classroom observations is done separately for the teacher and the class. This method made it possible to quantify interactions and study the nature of interactions directly. Questions that can be studied, for instance, are: how variable is teacher behavior?; how are teacher and student behaviors aligned interpersonally?; and, how are interactions and relationships interrelated?

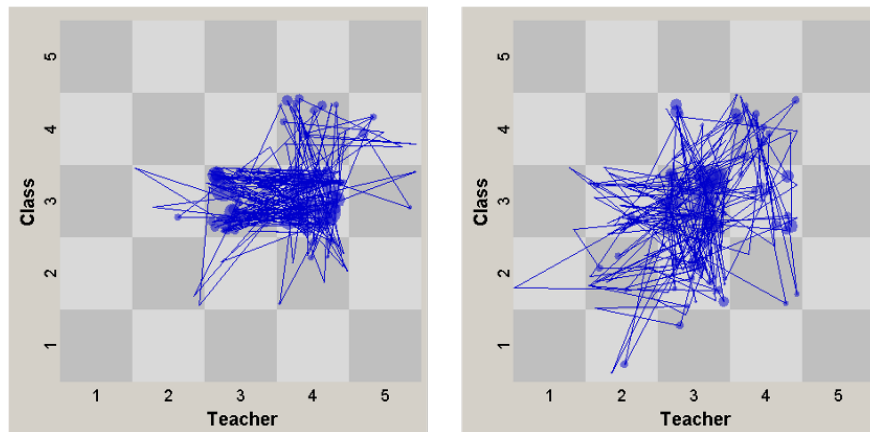
It should be emphasized that what trained observers register when using CAID to code classroom interaction, is not the same as what students perceive and what teachers report about themselves (Donker et al., 2021). While teacher agency is relatively similar from these three perspectives, observers, students and teachers agree to a lesser degree on the level of teacher communion. Specifically, what observers register in terms of communion while watching a classroom video seems to differ from teachers' self-perceived communion.

A second innovation was the introduction of the State Space Grid (SSG) by Hollenstein and colleagues (Hollenstein, 2013; Lamey et al., 2004). SSGs allow a researcher to visualize and summarize data from continuous behavior observation of two parties in an interaction. A certain behavior exhibited during interaction is called a state and the set of all possible behaviors is referred to as the state space. Originally developed to capture child-parent interactions, SSGs have also been used to describe classroom interaction (Mainhard et al., 2012; Pennings & Mainhard, 2016; Turner & Christensen, 2020; Pennings & Hollenstein, 2020). With SSGs it is possible, for example, to make the differences in interactional patterns of two classrooms tangible. Figure 3 depicts communion during the interaction between teacher and class in two different classrooms. Communion is scaled to run from 1 to 5 for both the class and the teacher (Mainhard et al., 2012). Each dot in the grid represents a specific combination of teacher and class communion, the larger the dot, the longer the

interaction resided in this specific state. The lines represent the sequence of the interactions over time. While the interaction in the left panel is rather stable and concentrates on states that represent intermediate high teacher and student communion (states 3,3 and 4,3), the interaction in the other classroom is clearly more variable and dispersed over the entire state space grid. In this classroom, states involving low teacher communion occur more frequently. While the climate in the classroom depicted in the left panel could be described as mellow and friendly with only few and short instances where the teacher corrects student behavior, the climate in the other classroom is at times clearly positive as well, nonetheless, also negative interactions occur frequently, which contribute to an overall more chaotic atmosphere.

Figure 3

Example of two State Space Grids for Teacher and Student Communion in Different Classrooms (Mainhard et al., 2012)



In sum, CAID and SSGs make it possible to study not only the interpersonal content of interactions (i.e., the levels of agency and communion) but also the variability and predictability of classroom interaction (Mainhard et al., 2012).

The General Classroom Climate and the Nature of Classroom Interaction

In line with general expectations of teachers in their professional role, teachers usually refrain from hostility and subordinate behavior in class (Pennings et al., 2018). The level of agency and communion teachers exhibit in class during interaction corresponds to how their students perceive them on a more general level (i.e., the TSR as assessed with the QTI), with moderate correlations for both agency and communion (e.g., Donker et al., 2021; Pennings & Hollenstein, 2020).

In addition, there is a clear tendency of teachers with less preferred classroom climates (i.e., relatively low levels of agency and communion in the TSR, see Wubbels, Brekelmans et al., 2006) to also show more variable interpersonal behavior (Mainhard et al., 2012; Pennings & Hollenstein, 2020). In class, when teachers move often between different levels of agency and communion this seems to indicate more chaotic teacher behavior and a more chaotic classroom social climate with more frequent and in intensity more pronounced negative interaction sequences, i.e., low teacher communion (Mainhard et al., 2012).

Adaptation of Teacher and Student Behavior

Next to studying how agency and communion of teachers and students during interaction relate to the classroom climate and the nature of TSRs, the way teachers and students adapt their interpersonal behavior to each other can be studied. We present two examples: interpersonal complementarity and answering the question: who is following who?.

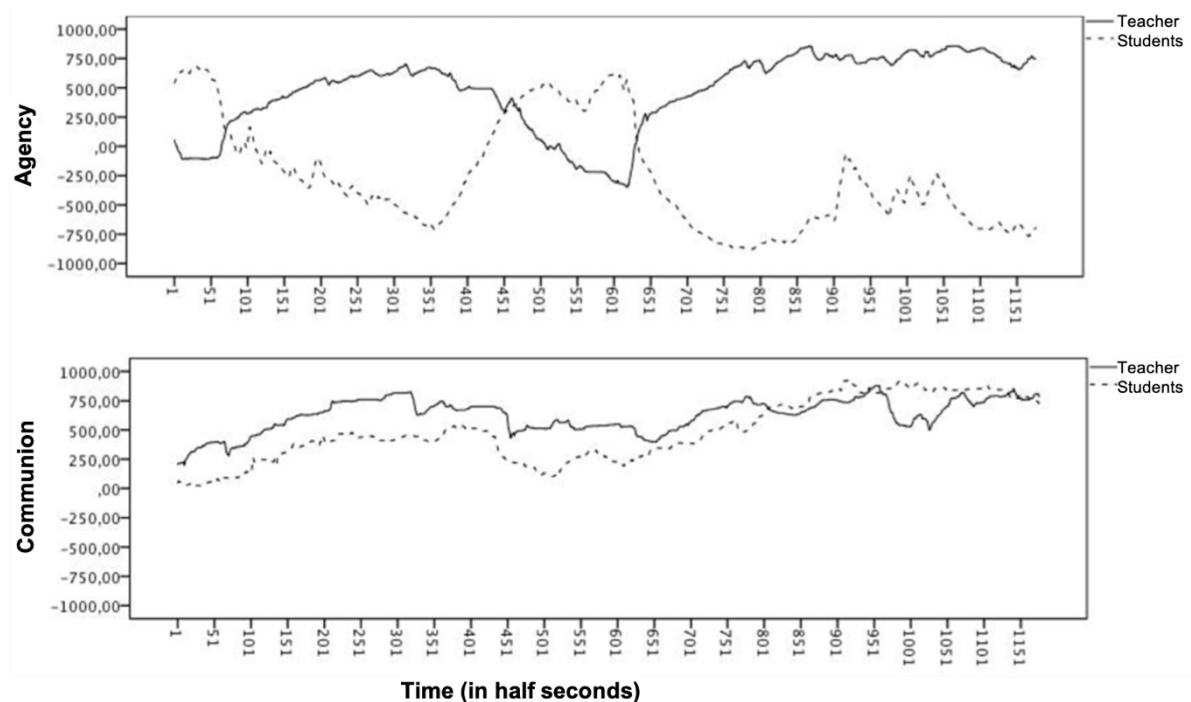
Teacher-Student Adaptation and Interpersonal Complementarity

A core concept of interpersonal theory is complementarity (Carson, 1969; Horowitz & Strack, 2011). This principle states that if someone shows high levels of communion, the most likely reaction of interaction partners is reciprocated high levels of communion. That is, it is very hard to be hostile with someone who is genuinely friendly. On the other hand, the more agentic (i.e., dominant) one interaction partner is, the more likely it is that the other will respond in a submissive way (and vice versa).

A general assumption of interpersonal theory is that more complementary interactions will result in more positive relationships (Kiesler, 1996; Sadler et al., 2009). Indeed, also in classrooms this seems to be the case (Pennings et al., 2018; Roorda et al., 2011). Figure 4 depicts two timeseries that summarize the first ten minutes of a lesson of teacher and student agency (upper panel) and communion (lower panel). These time series represent highly complementary interactions. The communion time series of teacher and class are highly positively correlated and follow each other closely over time. The agency timeseries are highly negatively correlated: whenever a teacher or students take on an agentic position, the other is more subordinate.

Figure 4

Teacher and Student Behaviors in Complementary Relationships (Pennings et al., 2018)



Pennings et al. (2018) showed that most non-complementary interaction occurs in classrooms with less preferred climates. There is however also evidence for an important exception:

teachers who according to their students have relatively more agency and communion, are more likely to remain agentic and friendly in the face of negative or dissatisfied student behavior (i.e., a non-complementary reaction). Of the 35 teachers included in their study, about two thirds refrained from hostile behavior in the face of hostile student behavior and did not react subordinately when confronted with dominant student behavior. This means that these teachers were able to break unfavorable patterns of complementary interactions. It is noteworthy that such a reaction (staying high on communion and agency) also implies less variable teacher behavior. Students, on the other hand, seem to accommodate more readily with a teacher's agency when this teacher is also more friendly (Pennings et al., 2018; Thijs et al., 2011). That is, students are more likely to show subordinate behaviors as a response to teacher agency when they perceive the TSR as generally positive and warm (i.e., as high on communion; see also Roorda et al., 2013).

Regarding classroom management, an unfriendly or impatient reaction towards a student with low motivation or who is dissatisfied, would be complementary and at the same time, it would be unproductive. In the case of such a complementary reaction, student and teacher can be expected to get caught in negative interaction cycles, because unfriendly behavior invites more unfriendly behavior. However, an agentic and positive teacher reply that is genuinely friendly and offers behavioral alternatives to the student may invite the student to become more cooperative as well.

Teacher-Student Adaptation: Who is Following Who?

An interesting question is whether teachers or students are in the lead during classroom interaction. Do teachers high on agency cause low student agency, or do students low on agency invite the teacher to be high on agency? Similarly: Do teachers become angry because of a bid of student misbehavior or the other way around? In a study by Pennings et al. (2018) classrooms had a varied pattern regarding who was leading the interactions during the lesson start. In classrooms with more preferred interpersonal classroom climates, teachers were more often leading on agency (overall, 17% of the studied classrooms teachers were leading in agency). In the kindergarten setting, Roorda et al. (2011) found that children were more inclined to respond in friendly ways to teacher's communion than teachers were inclined to do so as a response to student communion. For agency, this pattern was reversed. However, in more positive TSRs, children were inclined to behave more subordinately when the teachers increased their agency.

Context and Teacher-Student Interaction

In the 2006 edition of the Handbook of Classroom Management, Doyle (2006) described an ecological perspective to classroom management. In this perspective, the context of the classroom is considered a habitat or "behavioral setting" with specific features and "programs of action" that structure interactions. Other contexts in education, for instance teachers meeting students in the informal settings of the school corridors or during field trips, can also be regarded as behavioral settings with their own programs of actions.

Within the classroom behavioral setting, more specific settings can be distinguished that each have their own programs of action. Examples of such settings are common classroom activities such as lecturing, recitation, seatwork, and the lesson start and transitions between lesson phases. According to Doyle (2006), order in the classroom means that students are following the program of action of that particular classroom activity. This implies that the interpersonal meaning of specific teacher or student (nonverbal) behavior may differ depending on the classroom activity in which it is

situated. Van Tartwijk et al. (1998) studied associations between teacher agency in the TSRs with the level of agency communicated through teacher behavior during whole class teaching and group work. Only teacher agency in behavior during whole class teaching turned out to be predictive for students' perceptions of teacher agency in the TSR. Van Tartwijk et al. (2010) also compared the association between the relative frequency of teacher nonverbal behavior during various classroom activities with students' perceptions of their relationship with their teacher. They found that this association was quite different within various classroom activities. They, for instance, established a strong correlation between student perceptions of teacher communion in the TSR and their teachers' frequency of smiling or laughing during informal situations (e.g., when students are entering the classroom). However, no correlation was found during whole class teaching of non-verbal behaviors and communion perceptions.

Research investigating the interpersonal significance of teacher-student interactions outside the classroom is scarce. A noteworthy exception is research by Claessens et al. (2017). They interviewed 28 teachers about the quality of their relationships with specific students. It turned out that teachers define the quality of these relationship mostly by the level of communion in the TSR. In teachers' perceptions, positive and problematic relationships also differed with the context where interactions take place and the topic of the interaction. Contrary to interactions in problematic TSRs, interactions in positive relationships were mostly situated outside the classroom context and conversations during these encounters covered a wide range of topics.

All these studies point at the importance of considering the context when studying the interpersonal significance of (non-)verbal behavior and of the character of teacher-student interactions.

Outcomes and Teacher and Student Interaction

Student Behavior

How teachers and students interact is related to students' engagement with their classwork. In a study with 179 kindergartners, Roorda et al. (2017) coded teacher and student behavior in small group interaction. They found that teacher agency was associated with child engagement and task performance, while the teacher's communion was largely unrelated to the children's behavior, possibly due to ceiling effects in teacher communion. Interestingly, the more subordinate teachers behaved while children took on a more agentic role (i.e., the stronger complementarity was in these situations), the better children performed. This latter finding may be due to an overlap between the agency and engagement constructs, which both imply active involvement which then may result in better performance. In another article on the same sample, Roorda et al. (2013) studied how teachers behaved differently with children showing relatively more internalizing or externalizing behaviors than their peers. As expected, teachers were more friendly and agentic with children showing internalizing behavior. While children with externalizing behavior problems showed no less communion or friendliness towards their teachers, they nonetheless were treated in less friendly ways by their teachers. Apparently, it is more difficult for teachers to show communion towards children with externalizing than with internalizing problems.

Teacher Emotional Responses

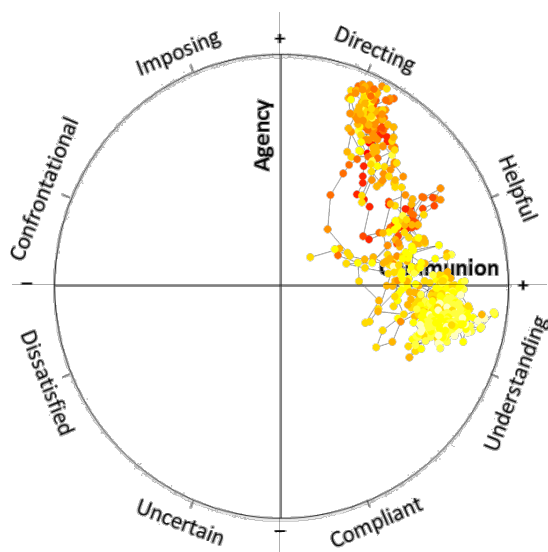
Classroom interaction and negative TSRs can be the cause of considerable teacher stress and negative emotions (Skaalvik & Skaalvik, 2015). While for most teachers lecturing in front of the class

goes together with extra alertness, teachers differ largely in what kind of interpersonal interaction and student behavior they experience as stressful (Junker et al., 2021).

To understand how classroom interaction and teachers' emotions and wellbeing are intertwined, Donker and colleagues (Donker, Erisman et al., 2020; Donker, Van Gog et al., 2020; Donker et al., 2018) not only used questionnaires on teacher emotions, but also assessed heart rate to pinpoint moments during the lesson that teachers experienced as important and potentially stressful. Heart rate is increasingly used as indicator of psychological phenomena such as emotions and psychological arousal (Cacioppo et al., 2017; Ebner-Priemer & Kubiak, 2007; Mauss & Robinson, 2009). An increased heart rate is not so much an indicator of positive or negative emotions, but signals personal importance, urgency, or task engagement. Figure 5 illustrates the heart rate in combination with a teacher's interpersonal behavior during one entire lesson. The more agency the teacher showed in class, the higher this teacher's heart rate tended to be ($r=.68$), and the more communion this teacher showed, the more relaxed this teacher was (i.e., a lower heart rate; $r=-.65$) (Donker, Erisman et al., 2020).

Figure 5

Interpersonal Behavioral and Corresponding Heart Rate Values of a Teacher During an Entire Lesson (ca. 45 minutes)



Note. The darker the dot, the higher the heart rate at that moment (Donker, Erisman et al., 2020).

Importantly, the association between teachers' heart rate and their interpersonal behavior is linked to how teachers feel about their teaching. The higher a teacher's heart rate is during moments of friendly and communal behavior, the more teachers are inclined to report stress and disappointment about their lesson. On the other hand, a positive association between teacher agency and teacher heart rate was linked to more positive teacher emotions and satisfaction (Donker, Erisman et al., 2020).

From a classroom management perspective, this result may indicate that teachers compare their own behavior to what they think is desired classroom behavior (Barber et al., 2011; Chang & Davis, 2009; Hagenauer & Volet, 2014). Showing friendly behavior while being stressed may trigger

what is referred to as emotional labor (Keller et al., 2014), because teachers feel compelled to act friendly while actually not feeling friendly. Regarding agency, apparently, being able to take the lead in class despite a certain level of stress or arousal may reflect a mastery experience and as a result, teachers may feel good about having been able to meet a challenge. Generally, teachers with, according to students, more agency in class also report lower levels of emotional exhaustion (Donker, Van Gog et al., 2020). Divoll and Ribeiro (2021) provide strategies to help teachers overcome emotional stress.

Culture and Classroom Interaction

What we discussed so far mostly stems from research in western classrooms, but there are indications that similar teacher behaviors may convey different interpersonal meanings in different cultures. A few studies directly compared interpersonal processes in Western and East Asian classrooms (McIntyre et al., 2017, 2020; Sun et al., 2018). For example in Chinese classrooms, “the acceptance of the legitimacy of hierarchy and the valuing of perseverance and thrift” (Franke et al., 1991, p. 167) may be more pronounced and students may expect and at the same time accept more agentic teacher behavior (Wei et al., 2009; Wei et al., 2015). Indeed, in Chinese classrooms teachers frequently showed agentic behavior and there were only very few or no instances of low agency, which do occur frequently in western classrooms. At the same time, teacher behavior was also perceived as being relatively communal or friendly which resembled teacher behavior in the western context. Overall, Chinese teachers showed more stable and predictable behavior than western teachers, mostly due to the lack of subordinate behaviors.

McIntyre et al. (2020) used eye-tracking glasses during real-life classes to investigate the association between teacher gaze and TSRs. Generally, teachers had more agency according to students when they maintained eye-contact with students while asking questions. Eye-contact during lecturing, on the other hand, was associated with teacher communion. Interestingly, and against what could be expected (see for example Hofstede, 1986; Mielle et al., 2013), McIntyre et al. (2020) did not find any differences between UK and Hong Kong teachers in the effect of their gaze: making eye-contact had a similar effect in all classrooms.

Thus, concerning classroom management, what works in western settings at least to some degree may be transferable to other cultural settings.

Interaction in multicultural classrooms

Research was also carried out into what interaction strategies are effective when teaching in multicultural classrooms. It seems that the multicultural classroom puts heavier demands on teachers’ interpersonal competence than a less diverse classroom (Wubbels, Den Brok, et al., 2006). This research was carried out in the Netherlands among teachers who were considered experts in classroom management by their principals and their students (Van Tartwijk et al., 2009). Although these teachers were aware of the importance of providing clear rules and correcting student behavior whenever necessary, they also felt the need to reduce potential negative influences of correcting undesirable student behavior on the classroom social climate. To do this, they used strategies such as using small rather than intense corrections, use humor to make corrections less grave, and use rational rather than power arguments. They also invested in getting to know students better and in building positive personal relationship with students.

Most of these Dutch expert teachers seemed reluctant to refer to the cultural and ethnic background of their students and they presented themselves as “color blind” (cf. Milner, 2006). Van

Tartwijk et al. (2009) attributed this to the dominant discourse in Dutch society at that time, in which it was regarded inappropriate to take students' cultural or ethnic background into consideration when discussing student misbehavior, because this might reinforce prejudice. This is quite different from the dominant discourse in the USA where teachers are urged to be aware of and respond to their students' ethnic, and cultural characteristics (Brown, 2003).

Teacher-Student Relationships and the Classroom Social Climate

In this section, we first describe how students' and teachers' perceptions of the TSR can be assessed with the Questionnaire on Teacher Interaction. Subsequently, we review research on associations of the TSRs with other student, teacher and class variables. Then we describe research on how TSRs can change from lesson to lesson.

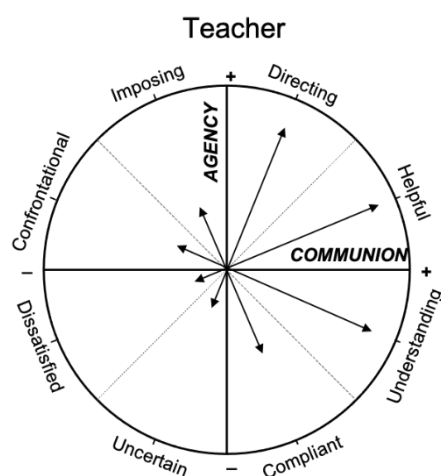
Measurement

Teachers' and students' perceptions of the TSR can be measured with the Questionnaire on Teacher Interaction (QTI) (see Wubbels & Levy, 1991). Over the years the QTI has been translated into many different languages and has been used in several countries and cultural contexts (see for some of the most recent adaptations: China, Sun et al., 2018; Greece, Charalampous & Kokkinos, 2013, Kyriakides, 2006; Indonesia, Maulana et al., 2012; Iran, Safa & Doosti, 2017; Italy, Passini et al., 2015; Malaysia, Jailani & Abdullah, 2019; Pakistan, Bahoo et al., 2020; Saudi Arabia, AlDhafiri, 2015; Slovakia, Brestovanský, 2020; Spain, García Bacete et al., 2014; Thailand, Santiboon & Ekakul, 2017; Turkey, Telli et al., 2007). In addition to the original version developed for secondary education, there are versions for primary (e.g., Charalampous & Kokkinos, 2013; Zijlstra et al., 2013) and higher education (e.g., Laudadio & Mazzitelli; Mainhard et al., 2009) and for the measurement of the relationship during specific situations (e.g., Mainhard et al., 2014).

The items of the QTI are divided into eight scales corresponding with eight octants of the IPC depicted in figure 6. Based on these scale scores, agency and communion dimension scores can be calculated (Wubbels & Brekelmans, 2005). The questionnaire can be used to assess students' perceptions of their relationship with their teacher (i.e., the degree of agency and communion a teacher usually conveys in class) and to measure teachers' self-perceptions and teacher ideals.

Figure 6

QTI Scores in the IPC's Octants



Note. Arrows represent scale scores for the average best teacher according to students (Brekelmans, 1989)

Studies on the reliability and validity of the QTI (e.g., Den Brok, Fisher et al., 2006; Den Brok, Brekelmans et al., 2006; Fulmer & Lang, 2015; Passini et al., 2015; Sivan et al., 2017) usually show acceptable to good reliability of the scales and dimensions at the student level and good to excellent reliabilities at the class level. Regarding the circular structure of the model for the QTI, in most cases adjacent scales have the highest positive correlations, whereas diametrically opposite scales the highest negative ones (Charalampous et al., 2016). Testing of the assumption that the scales are ordered in a circumplex structure usually shows a fit of a circular model, but the scales are not ordered equidistantly on a circle (Wubbels et al., 2012). Especially with younger students, there is a tendency for more differentiation in the student perceptions on the communion than the agency dimension (Zijlstra et al., 2013). Furthermore, the structure differs slightly across countries (e.g., Den Brok, Fisher et al., 2006) and these between-country differences might reflect different meanings or connotations attached to the words describing TSRs (see Hui & Triandis, 1985).

Teacher and Student Outcomes and Teacher-Student Relationships

Since the first edition of the Handbook of Classroom Management appeared in 2006 (Everston & Weinstein, 2006), a wealth of studies has been published on associations between student or teacher perceptions of the TSR gathered with the QTI and other student, class or teacher variables. Because of the scarcity of longitudinal and experimental studies that would allow for more causal inferences, we present what we call correlates of TSRs. Further, many studies have investigated the associations in terms of the eight QTI scales or octant scores. Because of the theoretically assumed and empirically confirmed collinearity between the scales (Wubbels, Brekelmans et al., 2006) it is preferable to use the statistically independent measures of agency and communion, and therefore we only included studies referring to these two dimensions or using just one or two sub-scales. Many studies did not report effect sizes, but sometimes we were able to estimate these from the results.

Student Variables

Student Background Characteristics. Student gender is related to students' perceptions of their teacher's agency and communion; girls generally perceive more teacher agency and communion than boys, although effect sizes are small (Charalampous & Kokkinos, 2014; de Jong et al., 2014; Den Brok et al., 2009; Den Brok, Taconis & Fisher, 2010; Fisher et al., 2006). One study (Den Brok, Taconis & Fisher, 2010) reported that younger students experienced less teacher communion than older students, while other studies (Den Brok et al., 2009) found that older students saw less agency. Indicating cultural differences, Den Brok and Levy (2005) showed in a meta-analysis that students in the US and Australia, with a background from non-Western countries, reported more teacher agency than students originating from the majority, western culture. According to Fisher et al. (2006), Australian students who do not speak English at home perceived lower agency and communion in the TSR. On the other hand, the same study reported that when students' mothers were from Southeast Asia, they perceived higher agency in their teachers. In a study in the Netherlands, Den Brok et al. (2009) found that Moroccan students perceived their teachers higher on agency than students from other countries. Students with a Surinamese background perceived their teachers relatively higher on communion.

In Greece, Charalampous and Kokkinos (2014) investigated associations between student personality and their perceptions of the TSR and math achievement. Student extraversion was positively, and neuroticism negatively related to student perceived teacher communion. The

association of extraversion with the TSR positively mediated the relationship between student extraversion and their math achievement. In China, Wang et al. (2020) found that student emotional intelligence was negatively related to teacher communion. Finally, students' parental attachment perceptions (Charalampous et al., 2016) were associated with the perception of the relationship with their teacher. The more students felt trust in and communication with their parents and the lower their alienation from their parents, the more they perceived communion in the relationship with their teachers.

Student Achievement. In the 2006 presentation of work around the QTI, we concluded that higher student cognitive and affective outcomes were associated with students' perceptions of high teacher agency and communion (Wubbels, Brekelmans et al., 2006). Since then, also in other studies in several countries, generally positive associations have been reported between students' perceptions of teacher agency and communion and student achievement, with slightly stronger associations for the communion dimension (Ethiopia: Gedamu & Shure, 2015; Greece: Charalampous & Kokkinos, 2014, 2018; Kyriakides, 2006; Italy: Molinari et al., 2013; Malaysia: Jailani & Abdullah, 2019). In the United Kingdom (Creech & Hallam, 2011) and in Spain (García Bacete & Rosel Remírez, 2021) only associations were found with communion. In the latter study, the relationship was partly mediated by achievement motivation. In all, it seems that the 2006 conclusions that higher student cognitive and affective outcomes are associated with students' perceptions of high teacher agency and communion still holds today. However, it should be noted that the effect sizes are generally small. An exception is a study by Slof et al. (2016) that reported no association between student achievement and teacher interpersonal relationships in a computer supported collaborative learning environments. The different character of such an environment might well explain the different result.

Differential effects of TSRs on student achievement and attitudes have been reported for students with different ethnic backgrounds in the Netherlands. Overall, the positive effects of both teacher agency and communion on student outcomes was larger for students with parents born in non-western countries than for students whose parents were born in the Netherlands (Den Brok, Van Tartwijk et al., 2010). Thus, it can be concluded, that the TSR is more important for students with a non-Dutch background than for students with a Dutch background and it appeared also more for second-generation than for first-generation immigrant students. For these students, the TSR may function as a protective factor (Roorda et al., 2017), that, for example, is needed because of a lower parent support at home for these students.

Student Attitudes and Emotions. It was consistently found across countries that student motivation and emotions (e.g., attitude toward the teacher, lesson or subject matter, enjoyment, attitude toward inquiry in project work, peer relations, school attachment and school adjustment) were positively related to the students' perceptions of teacher agency and communion, again, with usually stronger associations for communion than for agency (Australia: Fisher et al., 2006; China: Wei et al., 2009; Greece: Kyriakides, 2006; Indonesia: Maulana et al., 2011, 2012, 2014; Italy: Molinari et al., 2013; Netherlands: Hendrickxs et al., 2016; Hopman et al., 2018, van Uden et al., 2014; Turkey: Telli et al., 2010, with an exception for career interest; UK: Creech & Hallam, 2011; USA: Tyler et al., 2016).

More specifically, Wijsman et al. (2014) reported for a Dutch sample, that although at the individual level the relationship between teacher agency and communion and student-controlled motivation could vary between classes, generally there was a positive relationship of controlled motivation with agency and a negative association with communion, which was positively related to

autonomous motivation. In another, longitudinal, study in the Netherlands, Opdenakker et al. (2012) found indications for a relationship between TSRs and student autonomous motivation, but not controlled motivation. So, these two studies report mixed results. Research in Turkey (Telli, 2016) showed a differential effect across subjects taught by the teacher. Whereas agency was positively related to student motivation in sciences and literature and languages, it was unrelated for arts and sports. Communion, however, was positively related to motivation in all four subject areas.

Some studies investigated the association between TSRs and student achievement goals i.e., approach and avoidance goals that both can be oriented toward mastery or performance (Elliot, 1999). Shukla et al. (2020), in a large study in India with two measurement occasions, showed that student self-efficacy and mastery goal orientation were influenced negatively by low teacher communion, specifically the degree of perceived teacher confrontation and dissatisfaction, with about 25% of the variance in goals explained. Other scales of the QTI were not included. In a study by Mainhard (2015), a considerable amount of variance in student achievement goals was related to the students' perceived teacher communion and agency with a positive relationship of agency and a negative relationship of communion with approach goals. This relationship was found for students' individual perceptions of teacher agency and communion and for the difference of a student's perception with the class mean of the students' perception. Personally liking a generally tough teacher, added the most to mastery approach goals. In general, perceiving more agency combined with communion in teachers was positively associated with approach goals. Regarding avoidance goals, next to generally being perceived as high on agency and a bit low on communion was related to stronger mastery avoidance. Mainhard (2015) concluded that:

It is not simply perceiving support that connects to a student's goals; whether the teacher substantiates support with relatively high levels of agency is also important. In general, low agency adds to avoidance goals, and high agency adds to approach goals whereas communion is positively associated with approach goals and negatively associated with avoidance goals. (p. 570)

Regarding student emotions, we finally highlight two studies on student enjoyment and anxiety. In a Dutch study, Mainhard et al. (2018) reported that perceived teacher agency and communion were positively related to student enjoyment and negatively to student anxiety with a stronger association for communion. The amounts of explained variance were 45% for enjoyment and 20% for anxiety. These results were corroborated in a Chinese sample by Sun et al. (2020). Additionally, student boredom was negatively related to teacher communion. An interaction effect between agency and communion on enjoyment and anxiety indicated that the two interpersonal dimensions strengthened each other's effect.

Student Behavior. Studies on student behavior and the TSR from an interpersonal perspective are relatively scarce. Student bullying and victimization were associated negatively only with teacher communion and peer trust and peer communication were positively related to teacher communion (Charalampous et al., 2019). Effect sizes were rather small. Van Aalst et al. (2021) investigated teacher communion and corroborated the finding of a negative association with bullying and victimization. Regarding student problem behavior, negative associations between boys' externalizing problem behavior and teacher communion were found in special education (Hopman et al., 2019). Agency and communion were negatively related to students behavioral, emotional and social problems (Poulou, 2014) and positively to prosocial behavior (Hendrickx et al., 2016). Glock and Pit-ten Cate (2021) investigated student teachers' intended behaviors toward

fictitious students presented to them. These students differed in being placed in Special Education or not and having internalizing or externalizing problem behaviors. The student teachers wanted to show more intense behavior in all octants of the IPC for the teacher for students placed in Special Education and with externalizing problematic behavior. This is a surprising outcome because usually when on certain scales teachers behave or want to behave more, they want to show less behavior on octants placed opposite in the model (i.e., if one intends to be more imposing, this usually entails also being less compliant).

Class Variables

Class level variables have been studied far less than individual student characteristics. Studies including class level variables generally take into account the nested character of data (students in classes in schools) by performing multilevel analyses. The higher the class achievement level, the more students see teacher communion (García Bacete & Rosel Remírez, 2021) and the lower the ratio boys girls, the more students perceive agency and communion (Fisher et al., 2006). Regarding class size, the bigger a class, the less teacher agency is perceived by students (Fisher et al., 2006) and for the ratio of student ethnicity, the more non-native speakers in a class, the more teacher agency tends to be reported (Fisher et al., 2006). Similarly, in the Netherlands Den Brok et al. (2009) found that teachers in multi-ethnic classes were perceived as being higher on agency and communion compared to teachers in more homogeneous classes.

Teaching and Teacher Variables

Associations between students' perceptions of the curricular orientation in the lessons and teacher agency and communion were studied by Overman et al. (2014). Students in "knowledge development chemistry-based" chemistry classrooms perceived their teachers as having less agency than students in traditional chemistry classrooms. Students in "chemistry technology and society-based" classrooms perceived their teachers as being lower on communion than students in traditional classrooms.

Regarding the subject taught, Telli (2016) found no relationship with students' perceptions of agency and communion. Den Brok, Taconis and Fisher (2010), however, reported students' perceptions of agency and communion to be slightly lower for science teachers, in line with Fisher et al. (2006) who found lower communion scores for science teachers as compared to other teachers. For teachers' self-perceptions hardly differences across subjects were found (Fisher et al., 2006).

For teacher educators in Iran, Khodamorado et al. (2020) reported strong negative associations of student teacher personality (neuroticism and conscientiousness) with student perceptions of communion and positive associations of communion with agreeableness. These associations were weaker for teacher self-perceptions of agency and communion. However, De Jong et al. (2014) reported no relationship of teacher personality (extraversion and agreeableness) and student perceptions of teacher agency and communion. Regarding teacher's moral beliefs, paternalist beliefs were shown to be positively related to teacher's self-perception of their agency while liberal beliefs were negatively related with students' perceptions of teacher's communion (Pantić & Wubbels, 2012). Thus, all in all results on teachers' beliefs and personality are mixed.

Also, for teacher self-efficacy, results on associations with the TSR are mixed. Van Uden et al. (2013) found positive associations between teacher self-perceived agency and communion and their self-efficacy, but Hopman et al. (2018) found no such associations with students' perceptions. Veldman et al. (2017) reported that teacher self-efficacy was related positively to the degree of ewrealization of their ideals for agency and communion (the difference between their self-

perception and ideal of the TSR). Teacher self-perceived teaching competence (Van Uden et al., 2013) and the students' perceived teacher's use of complex instructional strategies (Van der Lans et al., 2020) were positively related to the levels of agency and communion in the TSR.

Associations between TSRs and teacher job satisfaction consistently point to good relationships concurring with high job satisfaction (Spilt et al., 2011). Admiraal et al. (2019) showed a positive relationship of teacher job satisfaction with the quality of the TSR and Hopman et al. (2018) reported communion to be negatively related to later emotional exhaustion. Veldman et al. (2016) found that the smaller the distance between teacher' ideals and their self-perception of the TSR, the higher their job satisfaction, i.e., the more they felt they realized their ideal the higher their job satisfaction was. Korthagen and Evelein (2016) reported on the association between teacher perceived needs fulfillment (need for competence, relatedness and autonomy) and the TSR. Overall, they found a positive association between agency and communion and the degree of needs fulfillment. An exception was that fulfillment of autonomy was negatively related to the degree of agency.

Regarding teacher disciplinary actions, student perceived teacher punishment and recognition of students were both positively related to teacher agency, and the latter also to communion (de Jong et al., 2014). Aggression was negatively related to both agency and communion and punishment was negatively associated with communion.

Reflections on Teacher-Student Relationships Studies

There is a wealth of evidence for associations between student, class and teacher characteristics with the TSR. The outcomes of studies generally support each other, but there are a few areas where results are mixed, for example about teacher personality. The associations of student perceptions with student and class variables alert researchers not to interpret student perceptions too easily as the general view of a class. Although most effect sizes are small, class perceptions may be influenced by student characteristics.

Most of the studies on associations of TSRs with other variables are correlational in origin and therefore do not allow for causal inferences. For some variables e.g., gender or ethnicity, causality might be plausible, but it cannot be ruled out that a third variable explains the association. For example, student enjoyment of a lesson might be higher for girls than boys and thus explain that female students see higher teacher communion than boys in the TSR. Also, this association between enjoyment and teacher communion can be interpreted in two different ways: positive student enjoyment of lessons could provide high teacher communion or a high communal TSR might lead to high student enjoyment.

Reflecting on the methods used in QTI studies, we can conclude that considerable progress has been made in the way data are analyzed. Whereas to take the nested character of data in consideration, before 2006 data often were analyzed separately at the individual and the class or teacher level, now multilevel analyses are quite common to cater for the nested structure of data and simultaneously analyze effects on student and class or teacher level. The amount of variance is usually much larger on the student than the class level and at the teacher and school level much smaller than the class level. For example, Fisher et al. (2006) reported about 2/3 of the variance to be at the student and 1/3 at the class level with a very small amount at the school level.

Despite this progress, several points need to be considered for strengthening the results. First, because of the collinearity of the QTI scales it is essential to include dimension scores in the analyses. Second, to investigate causality in the associations between TSR and other variables,

longitudinal studies are asked for. Finally, there is a need for the use of valid achievement outcome measures instead of the often-used teacher grades or student perceived outcomes.

Changes in Teacher-Student Relationships over time

Overall, the nature of the classroom social climate and TSRs are rather stable over time (Wubbels, Brekelmans et al., 2006). At the same time, not all lessons are the same, and not all students perceive the teacher similarly in every lesson. In the area of classroom management, thinking in terms of changes from lesson to lesson was first highlighted when Evertson and Veldman (1981) reported on the changes in the quality of classroom management over the course of a school year. They saw an increase in misbehavior among students and a decrease in the time students spent on their tasks but also noted that “although life in classrooms deteriorated towards the end of the year, these changes were not dramatic” (p. 162). Patrick, Ryan, and colleagues (Patrick et al., 2003; Ryan & Patrick, 2001) focused more specifically on interpersonal aspects of teaching. Their general conclusion was that student perceptions of teacher support remain rather stable over time: teachers who showed more support and care at the start of a school year had also a more positive classroom climate later on.

Two separate studies looked specifically at the development of teacher agency and communion from lesson to lesson in new secondary classes (Mainhard, Brekelmans, den Brok & Wubbels, 2011; Opdenakker et al., 2012). By using multilevel growth modelling, these studies were able to provide a more intimate picture of change.

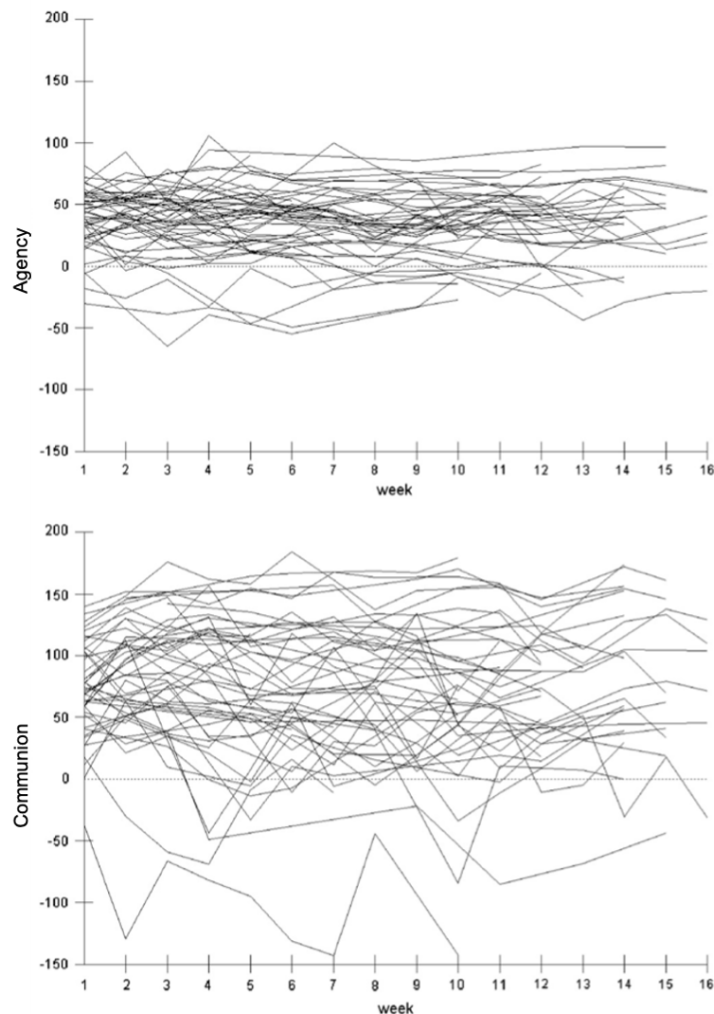
Mainhard, Brekelmans, den Brok and Wubbels (2011) also found the general theme of stability of the classroom social climate. They assessed teacher agency and communion in 48 classrooms on a weekly basis for 16 weeks starting from the first lesson at the start of the schoolyear. Overall, the nature of the classroom climate during the first lesson was like that in all other lessons with correlations around .80. Nonetheless, when looking at what happened in these classrooms from week to week, it is clear that much is going on. Figure 7 depicts the raw trajectories.

What is clearly visible, is that, according to students, teachers differed more in terms of communion (lower panel) than in terms of agency (upper panel). Also, it is visible that within a classroom rather pronounced differences from lesson to lesson could occur; again, this was more pronounced for communion. Thus, the general finding of stability at the level of the sample is clearly not an adequate description of what happened within each of the classrooms. Indeed, about one third of the variability in agency and communion was due to weekly changes. On the other hand, this change was not systematic, and the classroom climate quality had no clear tendency to increase or decrease over time. Interestingly, for teachers with classroom climates characterized by relatively lower agency and communion at the end of the first lesson, it was more likely that agency and communion would further decline.

Diverting somewhat more from the general findings of stability, Opdenakker and colleagues (2012) found that agency and communion of 20 middle school teachers decreased steadily over the course of the school year. The decrease was more pronounced for communion than for agency and for these teachers a bad start predicted that a stronger subsequent decline in agency and communion was more likely.

Figure 7

Raw Trajectories of Agency and Communion During the First 15 Weeks of the School Year (Adapted from Mainhard, Brekelmans, den Brok & Wubbels, 2011)



An interesting question is if what happens during class affects changes in the quality of the TSR and the classroom social climate. Mainhard and colleagues (Mainhard, Brekelmans & Wubbels, 2011) used teacher coercion (yelling, using punishment or sarcasm) and interpersonal support to understand possible links between teacher behavior and the general classroom climate. Both teacher coercion and support in a lesson were clearly related to student perceived teacher communion in that same lesson, and in the lesson one week later. Interestingly, coercion did not help to increase teacher agency, while increasing agency may be the primary reason for teachers to engage in coercion. In fact, two consecutive lessons with teacher coercion were associated with decreased teacher agency according to students. This result is in line with work of Lewis et al. (2005) and Miller et al. (2000) which suggests that teacher coercion does not help to confine student misbehavior but may in fact even further increase this.

Overall, these findings have implications for teachers and their classroom management. A continuous negative classroom climate, characterized by both low teacher agency and communion, is likely to hamper a positive development of students in class. First of all, it is not likely that TSRs and the classroom climate as such will improve during the course of a schoolyear, despite

(sometimes pronounced) differences between single lessons of teachers. Being more stern and even coercive will almost certainly further deteriorate teacher communion, while it is unlikely to help establishing teacher agency and authority. Investing in positive relationships from day one on and in a clear structure for students (agency) is key. For student-teaching placement in teacher education it might be important to consider that a continuous negative classroom climate may hamper student-teachers' development of classroom management competencies. Therefore, if things get too tough for a student-teacher in the TSR, it may be advisable to change student-teaching classes. Indeed, especially for early career teachers, the classroom climate quality may differ largely between classrooms (Mainhard et al., 2018), and thus changing to a different class, ideally in combination with strong behavioral support, could be beneficial.

It is sometimes concluded that, based on the findings of relative stability of the classroom social climate that the first impression a teacher makes in class is crucial for the subsequent quality of the classroom social climate (c.f., Everston & Emmer, 1982; Hargreaves, 1972; Patrick et al., 2003). This conclusion is however somewhat questionable, because it is not clear whether a causal relation exists between the nature of interpersonal teacher behavior during the first and subsequent lessons. The first lesson is just (or already) a fairly good indicator of what the classroom climate usually looks like in a specific classroom. This has also been confirmed in studies with experimental designs using what is called 'thin slices' (i.e., very short video clips) of teacher behavior to predict more general teaching quality (Begrich et al., 2021; Mainhard et al., 2014).

Teacher Interpersonal Styles during the Professional Life

In the section on concepts and mechanisms used to study teacher-student communication, we referred to teacher interpersonal style as the way teachers tend to teach all their different classes: a rather stable trait, which does develop slowly over a teacher's professional life. In this section, we focus on this development.

There is a long tradition of research into how teachers develop throughout their professional lives (for an overview see, for example, Van Tartwijk et al., 2017). Much of this research was inspired by the work of Fuller and her colleagues (Fuller, 1969; Fuller & Bown, 1975), who identified several stages in the concerns teachers have about their development and functioning during their professional lives. As a first stage, Fuller and Bown (1975) distinguish the period before prospective teachers start teaching. In this stage, their primary concern is their own progress as students. Once they have started teaching, the second phase, their concerns are mainly about their survival as a teacher. They focus on class control and being liked by students, and on the quality of their teaching techniques. This is the stage in which classroom management, and more specifically the interpersonal dynamics with their students are what they worry about most. Subsequently, a mastery phase can be distinguished in which they focus on being able to perform well as a teacher. In the final phase of the Fuller model, teachers focus on student learning and development. Several authors have built on Fuller's work, such as Fessler and Christensen (1992) and, more recently, Day and Gu (2010) and Van de Grift and colleagues (see Van der Lans et al., 2017).

A pitfall when conceptualizing the development of teachers' expertise in terms of stages, is that it suggests that after teachers have mastered a routine that is central in a specific developmental stage, they can move to the next stage and no more attention needs to be paid to the routines that are mastered in the earlier stages. Day (2008) found that most teachers maintain their effectiveness throughout their professional lives, but do not necessarily become more effective over time. He warns that teachers in later years are even at greater risk of becoming less effective.

Research into the development of expertise and expert performance using a cognitive psychological perspective, shows that expertise may continue to develop with experience, provided that targeted efforts are made to develop performance (Ericsson, 2018). The targeted efforts that are made to improve performance are referred to as “deliberate practice” and during this practice, prospective experts develop perceptual and behavioral routines which help to perform tasks without having to spend limited working memory capacity. Experience is necessary for automatizing these routines but without deliberate practice, performance tends to stabilize after a relatively short period and may even decline later: the pattern that Day (2008) warned about.

In earlier research into the development of teachers’ interpersonal styles throughout their professional lives, Brekelmans and her colleagues used both cross-sectional and longitudinal Dutch secondary school teachers QTI data (Brekelmans et al., 1992; Brekelmans et al., 2005). They established that, during the first three years of teaching, mean students’ perceptions of teacher agency significantly increased every successive year. After these three years, mean differences between years got smaller but still increased until about six years of experience and then stabilized for most teachers. Their analyses showed, however, that there was significant individual variation around the mean. Compared with students’ perceptions of agency, the students’ perceptions of their teachers’ interpersonal styles in terms of communion showed far less variation during teachers’ professional lives. On average, perceptions of communion slightly increased during the first ten years of teaching and became slightly lower afterwards. Differences were large between teachers, but the variation across years for specific teachers were small.

More recently, Veldman and her colleagues combined interview data from veteran teachers about their job satisfaction and their interpersonal relationship with their students throughout their professional lives, with data gathered with the QTI (Veldman et al., 2013; Veldman et al., 2016). For some of these teachers, these authors retrieved QTI data which were gathered at several points earlier in their career. Teachers’ job satisfaction appeared positively related to the self-reported quality of the TSR, although these self-perceptions did not always coincide with student perceptions. Some of the teachers involved in the 2016 study with relatively low job satisfaction, reported that the emotional distance between them and the students had increased over the years. To avoid low job satisfaction, some of them reduced the number of tasks that were directly related to teaching students.

These research findings did show that early in their teaching career, teachers need to develop routines in classroom management that are related to students’ perceptions of teacher agency in the TSR. This is in line with studies on stages in the development of teacher expertise, pointing at the importance of the development of routines early in the career (e.g., Fuller & Bown, 1975; Van der Lans, et al., 2017). Research using the QTI and interviews did not show that agency related routines (e.g., providing students with structure) declined later in the career. Rather the increasing emotional distance to their students, i.e., the communion aspect of the relationship, can be problematic for veteran teachers.

Conclusion and Future Research Lines

The research reported in this chapter shows that the interpersonal approach to study classroom management is fruitful in providing insights for theory and practice. The Interpersonal Circle, measurement tools for interactions and their representation in State Space Grids and mapping TSRs with the QTI were developed for research purposes but can be used also for feedback to teachers. The notions of adaptation and complementarity provide teachers and student-teachers with

important anchors for understanding how they communicate with students and how this communication can be improved if needed. Especially being able to avoid negative forms of complementarity in the interactions from moment-to-moment is an important competence for teachers to build a positive social climate in class.

There is a wealth of evidence for suggesting that teachers should be seen by students as relatively high on agency and communion in their TSR. For these teachers then, high levels of agency and communion are seen during teaching, with relatively low variability of these behaviors and few negative incidents. For all teachers, separate lessons may differ to some degree, but overall relationships are relatively stable from lesson to lesson.

In the early years of the professional career of teachers, in particular the level of agency is likely to increase every year until, on average, the sixth year. Differences between teachers, however, are large. For some veteran teachers, the level of communion in the relationship decreases towards the end of the career, which has a major impact on their job satisfaction. How student teachers can be assisted in developing routines related to agency has not been studied. Techniques such video-simulation (Theelen et al., 2020) and in-ear coaching (Coninx et al., 2013) might be useful as techniques for deliberate practice of these routines, but further research is needed on this topic.

Future research could also further explore the significance for classroom communication processes of teachers' and the students' cultural background specifically in multicultural and urban classrooms. For teachers, building productive working relationships with their students in such classrooms seems to be challenging. More knowledge on what culturally sensitive teaching strategies work in these classrooms and why these work, can help further develop teacher education programs that better prepare prospective teachers for these contexts.

All changes in the classroom climate and relationships between students and teachers are initiated during interaction and, ultimately, it is a teacher's behavior that, as part of the interaction, affects students' social-emotional well-being and learning. Therefore, future research on classroom management from an interpersonal perspective could delve deeper into the moment-to-moment characteristics of favorable interpersonal teacher behavior. For example, research could investigate the circumstances that allow a teacher to avoid negative interaction cycles with students and how teachers could be trained to resist to reply to negative student behavior with an equally negative attitude. Learning to re-appraise student behavior and being able to take students' perspectives may be at the core of this. Further, research is needed that investigates the bio-physiological basis and correlates of classroom interaction and social processes. There is a growing body of research that has looked into cortisol levels of teachers (Catherine et al., 2012; Qi et al., 2017; Wettstein et al., 2020) and students (Hatfield et al., 2013; Hatfield & Williford, 2017; Oberle & Schonert-Reichl, 2016) to gauge longer term stress experiences and how these are connected to TSRs. To understand stress as it occurs during teaching and interaction with students, especially heart rate and skin conductance are interesting because these measures are highly susceptible to short-term situational changes (Donker et al., 2020). A new and exciting line of research has taken neurological measures to the classroom (e.g., Raufelder et al., 2016). How teachers and students adapt to each other cannot only be traced via their interpersonal behavior, but also via the level of brain-to-brain synchrony (Belivacqua et al., 2019). Understanding how interpersonal teacher behavior affects neurological processes that underly positive student emotions and engagement could inform theory and practice of teaching and classroom management in new and exciting ways.

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