ABSTRACT

WATSON, JESSE SAMUEL. Examining the Influence of Interpersonal Calibration and Mis-calibration on the Teacher-Student Relationship. (Under the direction of Dr. Heather Davis).

This purpose of this study was to investigate the impact of interpersonal perception calibrations on teacher-student relationship quality. 18 items measuring interpersonal dominance and yielding traits, relationship satisfaction, and perceived teacher support were adapted from the Questionnaire on Teacher Interaction (QTI) (Wubbels & Brekelmans, 2005), the Teacher Student Relationship Inventory (TSRI) (Ang, 2005), and other sources (Sakiz, 2012). Ratings of self and other were used to create calibration scores depicting the degree of agreement between teacher and student perceptions of each other's behavior. Ninety students and three teachers from a suburban middle and high school participated. Findings indicate TSR calibration of views of the teacher is meaningful for both student satisfaction and reports of teacher support by teachers and students. Calibration on views of the student is meaningful for both teacher and student satisfaction. The potential impact of perspective calibration research on better understanding the TSR is discussed and further directions for study are suggested.

Examining the Influence of Interpersonal Calibration and Mis-calibration on the Teacher-Student Relationship

by
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FIELD OF STUDY

Major Field: Educational Psychology

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Secondly, I want to say thanks to two others kind enough to take time out of their summers to serve on my committee: Doctors Jessica Decuir-Gunby and Amy Halberstadt. Thank you both for your patience.

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Finally, I wish to thank all of my friends and family who have listened to me dither about interpersonal relationship calibration for months. You guys can relax now.

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CHAPTER 1

INTRODUCTION

Subjectivity Statement

I consider myself both a student and an educator, and in no way do I see those roles as conflicting or exclusive of each other. I believe students and teachers are multi-faceted individuals fully capable of both learning and teaching in the same setting. My training represents a mix of education methodologies. I got my Bachelor's in English for Secondary Education and Outdoor Experiential Education. I have been a certified climbing and first aid instructor. I also have certifications in Japanese martial art instruction practices. Within these approaches I see a vital blending of the many contexts in which we teach and learn.

I feel very much a social constructivist. I see the environment in which learning occurs as shaped by both teacher and student participants in the lesson and a litany of social, cultural, and physical influences. This amalgamated physical, sociological, cultural, and psychological space is deeply influential on the sort of learning that goes on. To ignore these contexts is not only to invite unexpected faults but to miss golden opportunities. The secret is to pay attention regardless of your assigned role – teacher or student.

My experiences as a student and a teacher brought me to appreciate that a good teacher is one who can operate in many contexts and many roles. Further, as I met amazing student after amazing student I realized that even as they came to learn from me, there were things I could learn from them. Together, my students and I strive to create learning environments where everyone had something to gain. This requires communication between me and my students. It requires listening between me and my students. It requires teamwork and a two-way effort.

Most teachers do not find themselves in a position to demand that their students teach them something new. Each student expresses themselves in their own way, and these expressions help to shape the relationship we as teachers have with them. Each

relationship between student and teacher is a unique dyad influencing the larger group called a "class" which itself exists within various influential socio-cultural, physical, and psychological contexts. I see here an interconnected web of influences in which student and teacher are equal part participants. It is from this web that perceptive students and teachers can glean knowledge and understanding. Both students' and teachers' beliefs and perceptions have meaningful impacts.

I see successful interpersonal relationships as inter-reactive partnerships that fuel the core of a positive learning environment. This study was put together to delve into that center and try to better understand what is happening within. Furthermore, I hope to elevate awareness within the educational psychology literature of a lesson I learned in the dojo and have witnessed time and again: two people in a relationship of any kind have an influence each over the other. So it goes with teachers and their students. Both parties are deeply influential in creating a positive relationship.

Teacher-Student Relationships (TSR)

The quality of the Teacher-Student Relationship – or TSR – is a decisive factor in a student's motivation, engagement, academic achievement, and overall success (Brekelmans, Mainhard, den Brok, & Wubbels, 2011; Cornelius-White, 2007; Davis, 2003; Klem & Connel, 2004; Patrick, Kaplan, & Ryan, 2011; Rosenfield, Richman, & Bowen, 2000; Skinner & Belmont, 1993). Students succeed when they have a positive relationship with their teacher and are more likely to fail or drop out when they don't (Cornelius-White, 2007). We can popularly agree as teachers, students, and researchers that the TSR is a very meaningful part of the school experience.

Much effort has gone into the subject of TSRs over the last few decades of educational psychology research. In a 2008 synthesis of educational research meta-analyses, Hattie assessed 229 different studies that focused on the TSR (Hattie, 2008). There have been many more since; see also Cornelius-White, 2007. Among policy makers and researchers there is a fair amount of agreement about the types of TSR that are most

effective – that teachers should work for – and that adjustment of a teacher's communication style can have a positive impact on students' growth (Davis, 2003; Klem, et al., 2004; Roorda, Koomen, Spilt, & Oort, 2011).

Not everyone sees the challenges of building a healthy TSR in the same way. Questions remain regarding how it is accomplished and upon whom the onus of responsibility falls. In a study of Maori students' educational success as a minority population in New Zealand, Bishop and colleagues found that students, school administrators, and parents feel it is the responsibility of the teachers to maintain the positive working relationship with their students (Bishop, Berryman, & Richardson, 2002). The most powerful factor in that relationship was the teacher, as they saw it. The very same teachers, however, felt that the students – their home environment and personalities – were the more important factor in deciding the quality of TSR. There was disagreement among the stakeholders over whose job it is to make the relationship work. Are we teachers somehow not doing enough when a relationship turns sour? Is failure caused by outside forces? Is success a question of luck?

Building Relationships – The Problem

Interpersonal communication models are being applied to the TSR as an approach to understanding these relationships and why – or how – they do or don't work (Wubbels, den Brok, Veldman, & Tarwijk, 2006). Unfortunately, building positive and successful interpersonal communications is not always as easy as "being nice" and one person alone cannot maintain a mutually satisfactory relationship. Communication studies tell us that interpersonal relationships are built upon a series of transformative exchanges between groups or individuals that inform each participant's role in that context. What Amelia says to Yuki influences what Yuki says back to Amelia, which in turn influences what Amelia says next, and so on to infinity. Over time these exchanges will shape Yuki and Amelia's expectations for each other and their relationship even in later meetings. A positive relationship results from the two of them adopting complementary behaviors that

avoid discordance. The situation is much like a conversation at the subconscious level. When two conversing people complement each other's styles of communication within a given context, it is peaceful. When those two fail to complement each other's communication accurately, there is discord. A teacher who is trying to be authoritative is supported by students who accept that authority and follow it. When students do not support that authority – when they speak out or act up in class – the result is disruption and discordance in the learning environment (Locke & Sadler, 2007; Markey, Funder, & Ozer, 2003). Providing the expected complementary behaviors and supports in communication is a matter of perception, skill, and willingness. Students' willingness to comply and interest in the TSR is influenced by the relationships they have developed with school, the home, the classroom, their peers, and their teacher (Davis, 2006). Hopefully, one can assume the teachers' willingness to try by the nature of their career choices. Skill in communication is a question of social development in both parties. Neither great skill nor great willingness are enough to overcome the fault of mis-perception, however. In order to provide the expected complementary response, one must first correctly understand what is expected. Doing so is a matter of accurate perception of the partner's expressions and behavior. Skills can be trained. Willingness is a matter of motivations that can be nurtured and developed. Perception, however, is in the way one evaluates another's communication. The qualities of that evaluation dictate limits on a communicator's capacity for providing an expected and supportive response. Perception is a bottleneck through which all communication processes must pass (Kenny & Albright, 1987; Markey, et al., 2003).

Figure 1.1 demonstrates my interpretation of the TSR as an interpersonal relationship and the role perception plays within it. Going counter-clockwise, student perceptions (top left) shape the student view, which in turn shapes their expressions and behaviors (bottom left). Teachers then perceive those expressions (bottom right) and have their views shaped by them. Teacher expressions (top right) are guided by their views and perceived by the student. This cycle can begin at any point. The whole of it shapes TSR quality (within).

Perception is precisely where many people fail – even great teachers (Brekelmans, Mainhard, den Brok, & Wubbels, 2011). Studies on people's abilities to judge their own interpersonal behavior have made an important discovery: humans are less than perfect at judging the way others see them (Leising, Rehbein, & Sporberg, 2006). A mis-understanding of the way others perceive one's communication can lead to surprise and consternation when those others do not reply in the way that we expect (Wagner, Kiesler, & Schmidt, 1995). A popular expression for this is "Not being on the same page" as another person, and teachers are by no means immune to this phenomenon.

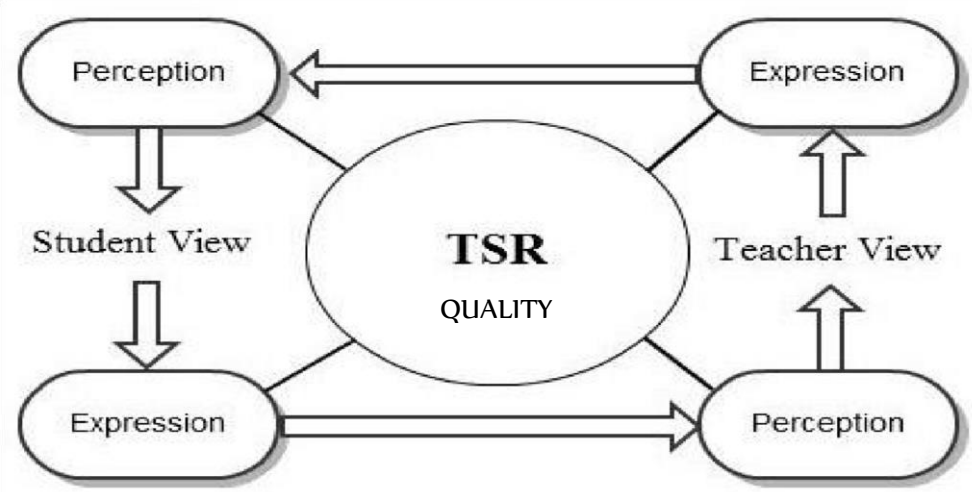

FIGURE 1.1 TSR as affected by Teacher and Student Perception

In 1992, teachers' interpersonal self-perceptions were compared with students' perceptions. Findings revealed two-thirds of teachers reported higher degrees of control (dominance) and affiliation (warmth) than their students perceived. The remaining one-third reported less control and affiliation than their students perceived (Wubbels,

Brekelmans, & Hooymayers, 1992). Teacher self-perceptions and student perceptions of the teacher are not matching up. The chances that students are giving the complementary behaviors a teacher desires dwindle if they do not perceive said teacher's communication the way it was intended.

What about students and their self-perceptions? Relationships are built on the efforts of both – or all – participants in that group. While some researchers would agree with the students, administrators, and parents in that New Zealand community that the teacher is the one *most* responsible and influential in making the TSR succeed – interpersonal communication is not a solo process. Student perceptions of themselves and of their teachers are as relevant to the TSR as the teacher's perceptions. Yet there is very little study of the student self-perceptions of their own communication behaviors. A failure of perception by either participant can lead to break downs in communication and in the relationship. The risk is one of mis-calibration. Mis-calibrations that interpersonal communications literature would suggest leads to less than optimal, or poorly developed interpersonal relationships. Mis-calibrations produce weak relationships which then lead to poor results for students academically, socially, and motivationally. For these reasons, we must come to better understand the balance – the calibration – of the TSR.

Problem

The purpose of this study was to apply an interpersonal communications model to understanding TSR quality. A calibration score was created for describing the degree of difference between teacher perceptions and student perceptions of their own and each other's interpersonal traits. My goal was to investigate a possible correlation between the quality of calibration and student affective outcomes of satisfaction and perceived teacher affective support.

Research Questions

The objective of this study was to explore the impact of teacher and student perceptions on TSR quality, and thereby the impact of perceptional calibration on satisfaction and perceived teacher affective support.

Three questions guided the study:

1) How well calibrated are teacher and student perceptions within the TSR dyad?
2) What impact does calibration quality have on student and teacher satisfaction?
3) What impact does calibration quality have on student and teacher perceptions of the degree of teacher affective support given to the student?

Hypotheses and Anticipated Results

The researcher expects to find that some teacher and student dyads – two person interactive pairings – exist in a state of mis-calibration. This mis-calibration will have a meaningful impact on the relational satisfaction of teachers and particularly of students – both of whom will report lower levels of satisfactions in those relationships where the mis-calibration is strongest. Mis-calibration will also have an impact on student perceptions of teacher affective support as teachers who are mis-perceiving their students interpersonally are at greater risk of also mis-interpreting the needs of the student. Teacher perceptions of their own expressed affective support are not expected to be notably influenced by calibration as this is a self-report.

Operational Definitions

Calibration: The degree to which teacher perceptions of the student's interpersonal behavior agree with the student's view of his or her own behavior. Also the

degree to which teacher perceptions of their own interpersonal behavior agree with the student's view of the same.

Interpersonal Circumplex Model (IPC): A model for understanding interpersonal communication behaviors first developed by Leary (1957).

Interpersonal Traits: The expressed attitudes of a communicator as defined here by scaling orthogonal axes of dominance and warmth (Locke & Sadler, 2007).

Dominance: The degree to which a person controls or guides communication and the relationship. Dominance ranges from the extremes of "Dominant" (Very controlling) to "Yielding" (Not at all controlling).

Warmth: The degree to which a person expresses friendliness, sympathy, and a willingness to be close. Warmth ranges from the extremes of "Warm" (Very personable and close proximity) to "Distant" (Very reserved and removed).

TSR: Teacher Student Relationship. Primarily considered here in the form of a dyad – an interpersonal relationship formed of two people.

Satisfaction: An expression of the degree to which one perceives their needs and desires being met satisfactorily within the context of the relationship.

Teacher Affective Support: Social and emotional guidance offered to students by teachers. Often also thought of as teacher caring (Wentzel, 1997).

CHAPTER 2
LITERATURE REVIEW

The Teacher Student Relationship (TSR)

In a synthesis of meta-analyses on education and learning, Hattie discerned that TSR quality had a mean impact of .72*d* (.72 of one standard deviation) on student achievement over 229 studies of TSR (Hattie, 2008). This represents a major influence on student achievement. Relationships with adults are a necessary and lasting influence on the shaping of social competence in children (Hartup, 1989). In this and other ways, students' conceptions, feelings, and attitudes towards academics can be positively or negatively affected by their perceived relationship with teachers and the classroom (Davis, 2003; Davis, 2006; Rosenfield, Richman, & Bowen, 2000). Students' engagement and motivation to participate is improved by experiencing positive relationships with their teachers (Skinner & Belmont, 1993; Wentzel, 1997). TSR qualities also greatly influence student behavior within the classroom (Ang, 2005; Davis, 2003). Students who perceive their relationship with their teacher as negative have an increased risk for poor social and emotional adjustment and even aggressive behavioral patterns (Ang, 2005).

Current TSR research primarily examines the impact of one set of perceptions – the teacher's or the student's – on achievement related outcomes. This study, however, examines the TSR as an interactive dyad; specifically the perceived communication styles between the two members. Interpersonal communication theory tells us that both members of the dyad have influence on relationship quality (Locke & Sadler, 2006; Markey, Funder, & Ozer, 2003). The responsibility to maintain a high quality relationship in a school context is typically regarded as belonging to the teacher. As Davis (2003; Davis, Summers, & Miller, 2012) argues, the provision of positive social contexts for learning and development falls squarely on the shoulders of teachers and the relationships they develop with their students. In a meta-analysis of studies on relationships within the classroom context, Cornelius-White (2007) describes a positive learner-centered approach based around the teacher's provision of warm support, understanding, self-awareness,

encouragement of critical thinking, and a non-directive approach which encourages students to think critically and self-regulate. Achieving such a complex and supportive relationship requires teachers to be close to their pupils and yet allow them some degree of autonomy with which to think and act for themselves.[1]

The most effective and meaningful TSRs strike a balance of proximity and distance, influence and autonomy (Wubbels & Brekelmans, 2005). Teachers must walk a fine line that fits the needs and expectations of the students to build a satisfying relationship. We must remember that the responsibility to find this balance lies primarily with teachers, as Davis and colleagues pointed out. Yet, it would be a mistake to discount the importance of students' knowledge, perception, and skills in building a satisfying TSR.[1]

Efforts to build a positive and satisfactory TSR must take into account the student's perception of the teacher's exhibited behavior and personality. That is, the student must understand the well-meaning intentions of the teacher: a near-impossible task if said teacher expresses him or herself poorly or in some way the student is not culturally or developmentally inclined to understand. In short, the teacher's communication skill and style is strongly related to developing a positive teacher-student relationship (Koomen, Spilt, & Oort, 2011; Rosenfield, et al., 2000; Wentzel, 1997; Wubbels, Levy, & Brekelmans, 2007).

In an analysis of two decades of research on TSRs, Wubbels and Brekelmans (2005) found that students who perceived their teacher as having high degrees of interpersonal influence over and proximity to them achieved greater academic success. Generations of Dutch students in these studies demonstrated higher degrees of success when working with teachers they perceived to be close to themselves and with whom they had developed meaningful relationships. The authors further state that for students a greater sense of teacher proximity leads to greater motivation in the relevant subject area. Intrinsic

[1] Hattie (2008) references this analysis by Cornelius-White heavily in the synthesis mentioned previously.

motivation towards academic success can be inspired by a close relationship with one's teacher.

Davis et al. (2011) cites similar findings in which low income first grade African American students enjoyed higher math motivation when they felt their teacher treated them fairly and supportively, to allow them the opportunity to take advantage of teacher-provided resources to feel smart. Wentzel (1997) describes findings from a 6th to 8th grade longitudinal study wherein students who experienced positive motivational outcomes also tended to perceive their teachers as caring. Wentzel defined caring teachers as those who provided democratic classrooms in which their students had a modicum of control, modeled caring attitudes about academics, and provided consistent and constructive feedback.

Another conceptualization of positive TSRs is that of the teacher as a warm demander (Bondy & Ross, 2008). Such teachers express the same openness, understanding, and closeness to students as called for by the learner-centered and other recommended methods while retaining a degree of authority – the final say, as it were – in the hands of the teacher. Classroom environments with warm-demanding teachers have been found to encourage high levels of student engagement, motivation to succeed, and lessen the occurrence of class disruptions (Davis, Summers, & Miller, 2012).

Interpersonal Circumplex Models (IPC) of Teacher – Student Relationships

Communications research makes extended use of the interpersonal modeling frameworks for understanding communication within a relationship. These models conceptualize interpersonal dispositions – communication traits. Of the many models, Leary's Interpersonal Circumplex (IPC) model is particularly interesting for authors seeking to bridge communications theory with social cognitive theory and educational research (Locke & Sadler, 2006; Wubbels & Brekelmans, 2005). Circumplex models can be used to describe the expressed disposition of any member of an interpersonal grouping, as an

assessment of how that person interacts with other members of the group (Markey, Funder, & Ozer, 2003). Typical IPC models define interpersonal attitudes along two primary domains: control (dominant to yielding) and warmth (distant to warm) – and arrange these on two orthogonal axes. Figure 2.1 depicts a simple IPC, like those used in Locke & Sadler, 2006, and Wubbels, et al., 2006.

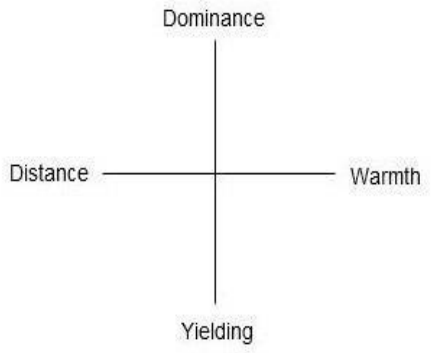

FIGURE 2.1: Interpersonal Circumplex Model

The control axis is a scale representation of the degree to which the participant seeks to lead communication – and therefore, the relationship – (dominant) or to which the participant allows other members to lead (yielding). Dominant communicative behaviors include leading conversations; claiming executive status in the group; raising one's voice above others; aggressive or controlling body language and tone, and other acts. Yielding behaviors are those that reserve one's opinions; speaking in lower tones with passive body language; claiming a supporting status in the group; accepting guidance from communication partners, and so on.

The warmth axis is a scale representation of the proximity sought by a communicator with his or her group, and is the most often adapted or modified element of

the IPC. One end of the axis represents a desire for closeness that is considered friendliness or warmth in some models. Behaviors seen at this end of the spectrum include standing very near group mates; paying a high degree of attention to group mates' needs and situations; being open to exchange of feelings and personal information, and other behaviors. Opposite warmth is distance, or attitudes that reduce proximity between the communicator and group mates. Group members who are distant may be seen as aloof and have behaviors such as standing at a distance from the group; avoiding the sharing of personal information; choosing to work alone, and so on. It is critical to understand that these behaviors belong on scales within the IPC, and that group members typically fall somewhere between the extremes of either axis. Expressed dominant behaviors do not so much make one a dominant interpersonal communicator as move them up the scale from yielding towards dominance (Locke & Sadler, 2006). The "Warm Demander" (Bondy & Ross, 2008; Davis, et al., 2012) teacher represents a teacher who is high in both dominance and warmth.

Wubbels, et al. developed an instrument specifically for the implementation of an IPC model in schools. It is the Questionnaire on Teacher Interaction (QTI). The QTI has been used extensively since in Dutch public schools and also abroad to study the qualities of TSRs in relation to academic success. Student reports of perceived teacher behavior and teacher reports of their own behavior are used to assess communication traits along the axes of control and proximity (warmth). Findings from the initial twenty year study through which the QTI was developed support the hypothesis of a "Warm Demander" type teacher being most efficacious in raising class engagement and academic success. Efforts are being made to demonstrate the cross-cultural validity of the QTI across numerous translated versions (den Brok, Brekelmans, & Wubbels, 2006; Wubbels & Brekelmans, 2005).

Understanding Complementarity in Communication

A central assertion of IPC theory is that behavior perceived to be directed at oneself shapes the response. This stimulus – response – stimulus – response cycle creates a 'complementary loop' of actions that reinforce perceived dispositions (Markey, et al., 2003; Thijs, Koomen, Roorda, & ten Hagen, 2010; Wagner, Kiesler, & Schmidt, 1995). Take an example of two strangers on a train: Freya and Irina, as depicted by Figure 2.2.

I) The two stand beside each other in silence for two stops. That is the norm for that context in American cities, and could be classified as interpersonally distant. II) When Irina has a question about directions, however, she turns to Freya and smiles as she asks it. Smiling is a distance closing, or warmth, behavior. Freya smiles back and answers in a friendly tone. Distance behaviors beget distance; and warmth behaviors beget warmth.

III) By asking a question out of need, Irina puts herself in a yielding position to Freya's expert knowledge. IV) Freya complements the yielding behavior by answering in a dominant way. Freya gives detailed instructions on where Irina should go, what to do, and what to see on her trip. Yielding behaviors beget dominant behaviors, and vice versa.

F = Freya I = Irina ? = A question A = An answer

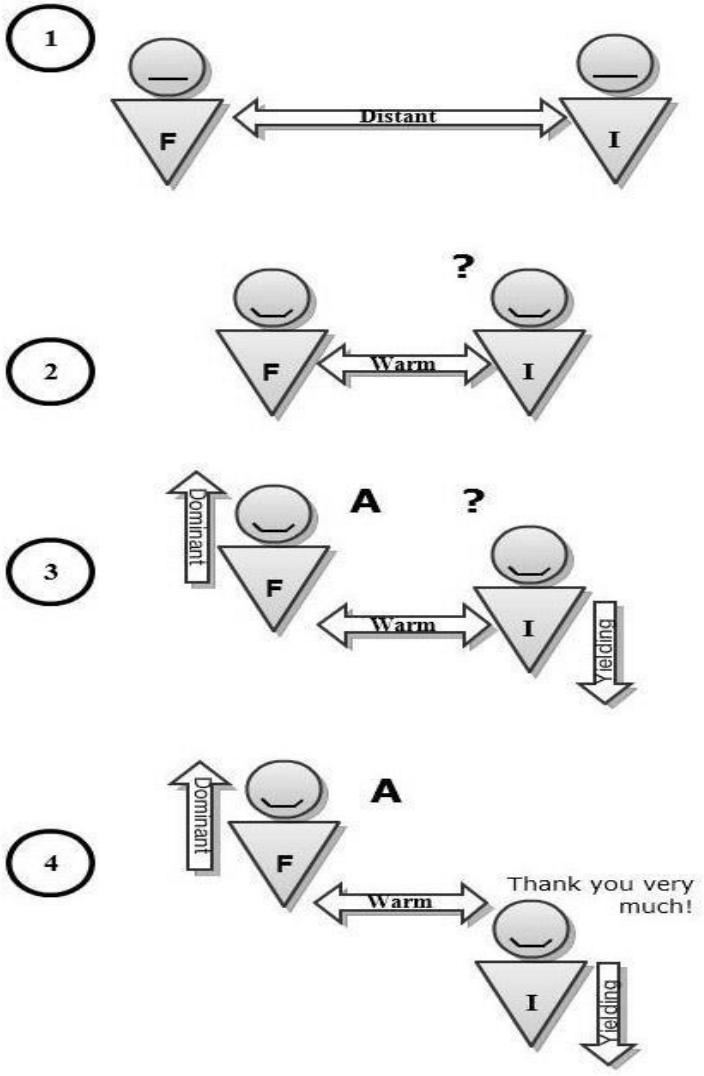

FIGURE 2.2: Interpersonal Complementarity Example

Alterations in behavior can range from small changes in tone to complete code switches or attitude shifts in immediate and first time encounters. Members of a group remember the results of previous exchanges and alter their expectations accordingly upon meeting again. Repeated meetings can cause these moment to moment, complementary interactions to become habitualized styles of communication whereby the actors will reflexively repeat during future meetings. This is a time saving quality for repeated interactions (Davis, et al., 2008). Habitualized styles are generally persistent, however, and slow to change once established. With that said, a single instance of dialogue or communication may vary greatly from the next due to a number of possible influences including mood, health, recent events, social or situational pressures, and others. A normally warm teacher may have an especially bad day and come across as distant and unfriendly to students, for example, as an isolated situation. The next day, that same teacher is likely to return to his or her typical / habitual warm attitude.

What is considered to be "complementary" depends upon the domain of the expression. Dominant behavior is complemented – encouraged – by submissive or yielding responses. Use of a meaning-laden moniker such as 'Sir' in conversation is a yielding behavior that tends to increase the dominant or leading behaviors of the person to whom the title is given. Telling someone to 'sit down' in an authoritative voice would be a dominant behavior that encourages a yielding response – to do as instructed. Dominant behaviors are encouraged by yielding behaviors, and yielding behaviors are encouraged by dominant behaviors. Warm or friendly behavior, however, is complemented by similar warmth of action. A friendly smile is a warm behavior that encourages one to smile back – another warm behavior. Sitting alone at a window is typically received as a distancing behavior that will encourage group members to respect that distance. These relationship defining behaviors will become reflexive with time and experience within that group (Locke & Sadler, 2006; Wagner, et al., 1995).

Teachers who consistently express dominant behavior such as speaking loudly to the class as a whole do so because they expect their students to adopt yielding behaviors such as listening attentively. When a teacher sits at the students' level instead of standing

over them, it can be perceived as yielding. The expected complement may be for students to speak more often and more directly; to express dominant behaviors.

Students who raise their hands in the middle of a lecture are giving a small expression of dominance. They expect the teacher to yield by pausing and allowing the comment or question. A student who is asked a question may look embarrassed and say they don't know, or otherwise stall as a yielding behavior that expects the teacher to take the floor – and the class attention – away as dominant behavior.

What happens when behavioral responses are not complementary? Theory states that a non-complementary response to behaviors leads to relationship confusion or dissatisfaction (Locke & Sadler, 2006). Consider as an example the student who stands up in the middle of a teacher's lecture and begins telling his own story without permission. Consider also if students are leading a group lesson but the teacher continually interrupts them or doesn't go along with student instructions. The result is disruption. A teacher who prefers to maintain personal distance from students would be made uncomfortable by a too-friendly student asking about daily life matters outside of the school. The same may be said for a teacher who asks many personal questions in an affable way to a student who prefers distance. The result is social discomfort for one or both of the participants. Participants in dyads report low interpersonal satisfaction scores in such cases of non-complementarity (Locke & Sadler, 2006). Results are typically negative when the response to a behavior is not the one expected or desired – is non-complementary.

Perception

Complementary communication behaviors are necessary for relationship satisfaction (Locke & Sadler, 2006; Markey, et al., 2003). The communication skills and a willingness to provide the expected and desired complementary response are necessary. Most interpersonal dispositions are adopted unconsciously, either as a direct reaction to a dyadic partner's expression or as fulfillment of a context-driven self-perceived role (Locke & Sadler, 2006; Markey, et al., 2003). Actors in a communicative dyad don't typically

consider the attitude they adopt or even the mannerisms they use. Adopted interpersonal affects are reflexive to perceived behaviors and contexts. An agreement of context or perceived and intended expression is necessitated for the delivery of a complementary behavior to the interpersonal affects displayed by one's conversation partner. (Thijs, et al., 2011) Break downs in perception may lead to unexpected or undesired responses. If teachers are to grow positive relationships with students in their classrooms, then they must have the capability to accurately perceive what their students are trying to communicate and to respond in a complementary, supportive way. This relationship building is a two way street that calls upon students to also perceive and respond accurately.

Intended expression is not always accurately perceived (Leising, Rehbein, & Sporberg, 2006). Though most socially skilled people are more than capable of reading the interpersonal behaviors of others – and have to become interpersonal experts to survive in society – it is decidedly easy to misjudge how one's own expressions will be perceived. Leising, Rehbein, & Sporberg (2006) used controlled situations to contrast participant self-perceptions of their own Dominant or Yielding expressiveness against dyadic partner perceptions and third party observation. Participants were placed in a context and given time for conversation. Afterwards, participants filled out reports detailing the interpersonal behaviors they perceived from their partners as well as their own behaviors. Observers completed their own reports on each participant's behavior as a neutral and non-interactive third party. Participants who rated themselves as dominant regularly underestimated the degree of dominance perceived by their partners and observers, and those who rated themselves as submissive also regularly underestimated the degree of submission perceived. Essentially, the degree to which we perceive ourselves as dominant or yielding as found to regularly fall short of how Dominant or Submissive (Yielding) we are perceived to be by others.[2] Other studies have found similar results in the classroom,

[2] Different IPC models have used "submissive" as the opposition to "dominant". I have chosen to use "yielding" for the purposes of this study out of concern for how participating teachers may interpret the connotations of submission.

wherein the teacher is often found to have a perception of the Dominant / Yielding relational balance that conflicts with that reported by their students (Brekelmans, et al., 2011; Wubbels, Creton, & Holvast, 1988; Wubbels, den Brok, Veldman, & van Tatwijk, 2006). Inaccurate perceptions of our own behaviors can lead to confusion within the relationship when the responsive behavior does not complement or agree with what one believes they expressed to the other. This is the threat of mis-calibration.

Social perceptions can also play a role in shaping the TSR and its outcomes. Davis and Lease (2006) were able to map the impacts of peer perceptions of the TSR on the quality of each member of the TSR dyad's perceptions of that relationship and found that perceptions of not being liked by the teacher lead to lower reports of both student satisfaction and perceived teacher support. Students in the study who felt that the teacher liked them and that their peers agreed with that assessment saw greater academic success.

Capturing TSR Dyad Calibration in Communication

Does mis-calibration of interpersonal communicative behavior and perception impact students' school satisfaction and success? The TSR is a key element in school success (Cornelius-White, 2007; Davis, 2003; Hartup, 1989; Wubbels, et al., 2006). Recall that TSR quality is positively correlated to academic success and student satisfaction (Hattie, 2008; Wubbels, et al., 2006). Students who report having satisfactory relationships with their teachers also tend to have better grades and classroom engagement. However, the TSR is comprised of the interpersonal attitudes and beliefs of both teacher and student (Brekelmans, et al., 2011). Teacher attitudes are a shaping influence on students' satisfaction with the TSR. Interpersonal communications theories argue both teachers' and students' attitudes are defined by complementary and non-complementary interpersonal communicative behaviors expressed by both the students and the teachers (Locke & Sadler, 2006; Wubbels & Brekelmans, 2005; Wubbels, Creton, & Holvast, 1988). One teacher or student, operating in a communication vacuum, is incapable of creating a TSR. Two people working in conjunction through expression and

complementary responses guided by accurate perception can create a satisfactory dyad. Inaccurate perceptions lead to inaccurate responses and discord in the relationship (Locke & Sadler, 2006).

Salonen, Vaurus, & Elkides (2005) demonstrated that teacher mis-perceptions of their students' attitudes can lead to instructional mismatch. Observed teachers in their study made instructional choices based upon their perceptions of student attitudes and status. Where the teachers' understanding of their students' meta-cognitive status did not match the students' own feelings, those teachers had a strong tendency to make sub-optimal instructional choices. Mis-calibration of needs perception and instruction led to deleterious results.

Thijs et al. (2011) studied the relationships of kindergartners and their teachers and found complementary expression on the part of teachers related to the affiliation - Warmth – that students expressed. Those teachers most skilled at properly grasping their students interpersonal affects were better able to encourage TSRs with a high degree of complementary Warmth. Warmth could then make the transition into a warm demander easier to achieve. In another study, Brekelmans, et al. (2011) used the QTI to compare teacher self-perceptions of their own behavior along the domains of control and affiliation (warmth) and found mis-calibration between those self-reports and the reports from their students on the qualities perceived. Teachers did not mean to express themselves in the way that their students perceived them acting, or at the very least not to the degree observed. This mis-calibration occurred equally among those teachers identified as more and less interpersonally competent. Less interpersonally competent teachers had a tendency to over-estimate their influence in class, while their opposites more often under-estimated their influence. The researchers concluded that interpersonal studies of classroom environments that depend solely upon the perceptions of one party – in this case the teacher – are lacking the necessary scope for proper understanding. Triangulation and a developed awareness of the differences between intended expression and perceived expression are needed for such research.

Outcomes

High quality TSRs are strongly correlated with student academic and affective success (Davis, 2003; Cornelius-White, 2007). Successful interpersonal relationships require the maintenance of complementary interpersonal behaviors between participants (Locke & Sadler, 2006). Mis-perceptions of a partner's expressed behavior and of one's own behavior can lead to mis-calibration in the interpersonal relationship and the denial of expectations (Locke, 2010). Thus, it is important to understand the potential differences between the teacher and student's views of each other's interpersonal behavior. Studying interpersonal dispositions and perceptions at the same time is not an easy task, due in large part to the fact that the two directly influence each other (Locke & Sadler, 2006; Muller, Katz, Dance, 1999). When studying student perceptions of their teacher, one must consider validity issues at multiple levels, including misleading responses produced by students' relations with the classroom environment; the influence of student beliefs; and the fact that teachers are at times speaking with a single student and at others the entire class – thus constantly shifting the relational dynamics. Any researcher seeking to investigate the calibration of expression and perception within the TSR must take great care to consider the multi-variate nature of the context in which that relationship exists (den Brok, Brekelmans, & Wubbels, 2006).

Students' perception of teacher support was selected as an affective outcome in this study for its relevance to academic and social success (Sakiz, 2012; Skinner & Belmont, 1993). Students who perceive they receive a high degree of support from teachers have better in-school behavior, high attendance, and greater academic success (Rosenfield, Richman, & Bowen, 2000). Teacher support can come in many forms, from scaffolding or direct instruction to teacher availability and willingness to answer questions. A key point being that support must not only be provided, but that students are aware of and comfortable accessing that reinforcement structure. Positive perceptions of teacher support via the TSR correlate with social goal and academic goal pursuit (Davis, 2003; Klem & Connell, 2004; Wentzel, 1994). Students who sense that their teacher is available, willing, and able to help do notably better on both social and academic objectives. Furthermore,

teacher support has been shown to correlate significantly with mastery goal structures. (Patrick, Kaplan, & Ryan, 2011) It behooves mastery oriented teachers to consider the type of teacher supports they provide for shaping their students' success.

Another affective outcome within this study is the degree of satisfaction reported by each member of the TSR dyad. Both student and teacher may feel varying degrees of satisfaction with the relationship based upon their individual expectations for that relationship and whether or not they are being met. Early research trends surrounding Satisfaction were to measure as an up-down, 'yes or no', pass or fail construct. A recent shift towards considering Satisfaction from a holistic perspective that takes into account many factors within the school environment also supports its treatment as a scaling factor in the same way that many other psychometric qualities are measured (Elliot & Shin, 2002). Satisfaction is individual, and subject to conceptions ranging from completely unsatisfied to completely satisfied in every expectation, and a wide range of partial successes are possible. Teacher Satisfaction has been linked to organizational success and positive academic outcomes for students (Ostroff, 1992). Students who are satisfied with their relationship with their teacher are more likely to be engaged, involved, and intrinsically motivated to succeed (Cornelius-White, 2007; Patrick, et al., 2011).

CHAPTER 3
METHODS

Participants

Participants for this study were 90 students and three teachers from an ethnically diverse, suburban, public charter school with grades K-12. The school was designed around Paideia set of pedagogical principles set down by Mortimer Adler and his colleagues in 1982. Student-centered lesson plans with interrogative and creative elements are focused upon under the Paideia plan. Furthermore, faculty are encouraged to rely upon three primary methods of teaching: didactic, skills coaching, and Socratic questioning. Paideia schools encourage students to be active and vocal participants in their own learning (National Paideia Center, 2013).

Students were well distributed among the three teachers (27, 31, 32). All three teachers taught in the same content area, two of them at the high school and one at the middle school. Students ranged in age from 12 to 14 (32 students),15-17 (38 students), and 18-19 (16 students). Two of the teachers were female. All three teachers had a minimum of three years teaching experience. In order to protect the identity of the teachers, gender-neutral pseudonyms were assigned.

Students were drawn from multiple class periods in each participating teachers' schedule. The school was ethnically diverse, which was represented in study participants' self identifications: White (39%), African American (27%), Hispanic American (9%), Asian American (7%), Middle Eastern American (1%), and students who identified as "other" (13%). Student respondents were 52% female and 48% male. Despite the wide distribution of ethnicities represented, the small overall sample size (90) meant that individual ethnic populations could not be reported individually within analysis with any reliability. The decision was made to treat ethnicity on a match or mismatch basis, judging by whether students matched ethnicity with their respective teachers (white).

Procedures

Data were collected from both students and teachers near the end of the academic year. First was the delivery of student surveys. Student data collection came in April, before end of semester and end of grade testing began. Class visits were arranged in coordination with participating teacher's needs and schedules. The primary investigator presented an introduction protocol explaining the details of the study to students, the meaning of consent, and inviting all students to participate.

The investigator returned three days later to collect completed consent forms and distribute student versions of the survey to all students who had a signed affirmative consent form. Before handing out surveys, the investigator reminded the class as a whole that the survey was intended to gather information about the nature of the relationship they had with their teacher. It was stressed that there were no 'right or wrong', 'good or bad' answers and that they should not consider the survey as 'scoring' their teacher. The investigator concluded by explaining the participant's right to opt out and confidentiality. Students were given index cards with unique student codes. They were to write these unique codes on their surveys in place of their signature, and to sign the back of the index card for the investigator's record keeping. This step was part of ensuring the confidentiality of student responses.

Those who were not completing surveys were asked by their teachers to begin on assigned class work and / or homework. All students finished their surveys within five minutes. The principal investigator then gathered the surveys and thanked the class.

Teachers completed surveys separately that rated participating students and themselves. Following collection of student surveys, the principal investigator used class rolls to assign a one letter, four digit teacher code to each student that took part. Teacher codes were then written on the teacher versions of the survey, one to a survey. Along with the codes, each survey had a post-it note appended with the appropriate student's name. Teachers completed surveys with the named student in mind for each one, and then removed the post it notes. Once the post-its were removed; only the principal investigator had the necessary coding list to match teacher surveys to student surveys for identification

and calibration. After encoding teacher surveys, the principal investigator delivered them to each teacher's drop box in a self-addressed pre-paid envelope.

Measures

The survey instruments for this study were developed using established measures of perceived dominance from the QTI (Fisher, Fraser, & Cresswell, 1995; Wubbels & Brekelmans, 2005), teacher support from Ang (2005), and relationship satisfaction from Sakiz (2012). Several items were modified to be suitable to the individual survey taker. For instance, the teacher survey refers to students, and the student survey refers to teachers. Each survey consisted of 18 questions with likert-scale answers from 0 – "Strongly Disagree" to 4 – "Strongly Agree". Student surveys included optional demographic questions regarding age, gender, and ethnicity.

Six measures were prepared for each survey: Dominance of Self, Yielding of Self, Dominance of Other, Yielding of Other, Satisfaction, and Affective Support. Only items relating to the dominance axis of the IPC were used in this study.

Dominance of Self & Yielding of Self

Participants rating themselves high in dominance perceive themselves to be the controlling member of the dyad. Participants rating themselves high in yielding perceive themselves to be the non-controlling, or following, member of the dyad. Three items measured dominance of self and three items measured yielding of self on each survey. Dominance of self shares a scale with yielding of self. A high score in one is expected to accompany a low score in the other (Wagner & Kiesler, 1995). Table 3.1 below displays sample items relating to dominance and how they appeared on each survey. A complete listing of items is available in Table 3.2 in Appendix B.

Table 3.1: Dominance of Self Items

Student	Teacher
I am confident with this teacher.	When I am with this student, I am confident.
I respect this teacher's boundaries.	I respect this student's privacy.
When I am with this teacher, I voice my opinions.	When I am with this student, I voice my opinions.

Dominance Other & Yielding Other

Participants who rate the 'other' in a dyad as highly dominant perceive the other person to be the controlling member of the relationship. On the other hand, participants who rate the 'other' in a dyad as highly yielding perceive the other person to be non-controlling, or a follower, in the relationship. Three items measured dominance of other and three items measured yielding of other on each survey. Dominance of other shares a scale with yielding of other. As a participant rates their partner high in dominance or yielding behaviors, it is expected for them to rate their partner low in the opposite trait.

Student self-dominance and self-yielding ratings were used to create a total student self image composite. The student dominance of self item, "When I am with this teacher, I voice my opinions" was dropped for having too weak a relationship with the other items in the composite. The remaining five items accounted for 34% of the variance in students' self ratings. A Cronbach's alpha was calculated yielding a probability *r* of .67. Teacher self-dominance and self-yielding scores were used to create a total teacher self image composite. Five items accounted for 32% of the variance in teachers' ratings. A Cronbach's alpha was calculated yielding a probability *r* of .69. Student dominance-other and yielding-other ratings were used to create a total student-rating-teacher image composite. Five items accounted for 31% of the variance in students' ratings. A Cronbach's alpha was calculated yielding a probability *r* of .71. Teacher dominance-other and yielding-other ratings were used to create a total teacher-rating-student composite. The teacher dominance of other item, "This student is confident voicing his / her opinion with me" was dropped for having too weak a relationship with the other items in the composite.

The remaining five items accounted for 43% of the variance in teachers' ratings. A Cronbach's alpha was calculated yielding a probability *r* of .77.

Satisfaction and Affective Support

Target outcomes for this study included both teacher and student reports of satisfaction and perceived teacher affective support. Satisfaction is a measure of how well the relationship is perceived as meeting the needs and expectations of the respondent. Affective support is a measure of the perceived degree of emotional and social support offered by the teacher to the student. Note that the students are reporting the affective support they perceive themselves receiving, and the teachers are reporting the affective support they perceive themselves as providing. Three items measured satisfaction and three items measured affective support on each survey.

Analyses

Data analysis began with a check of item frequencies. Less than 1% of the data were missing. Missing responses for individual items on surveys were imputed as a mean of other ratings in the same factor. Eight item responses had to be imputed across the 90 surveys collected. A list of imputed entries is provided in Appendix B along with frequency tables and descriptive information for kurtosis, skew, and standard deviation.

To verify the structure of the dominance / yielding scales, I submitted the six items for student-rating-teacher and the six items for teacher-rating-self to exploratory factor analysis (EFA). This same process was completed for student-rating-self and teacher-rating-student. The aim of these analyses was to identify a complementary set of items to use with both the teacher and the students. Scree plots indicated there might be between 1-3 factors in each set. I hypothesized a two factor structure. So, I began by forcing the six items for each set into two factors. Unfortunately, the two factor solutions either would not converge or

were not complementary for both students and teachers. I then forced all six items onto a single factor. All six items for rating-self on each survey were forced to load on a single "self-dominance" factor. All six items for rating-student and the six for rating-teacher were forced to load on a single "dominance-other" factor. Factor analyses established predictive reliability of individual items within the four categories: teacher dominance was reflected by teacher-rating-self and student-rating-teacher and student dominance was reflected by student-rating-self and teacher-rating-student. Two items were dropped due to low inter-item correlations.

Exploratory factor analyses revealed dominance and yielding items loaded best on the same factor. The six teacher-rating-self items shared a reliability of .77 and accounted for 43% of variance. Student-rating-teacher items shared a reliability of .71 and accounted for 31% of the variance. Items referencing opinion were a poor fit in single factor loading for student-rating-self and teacher-rating-student, so these two items were dropped. The five student-rating-self items shared a reliability of .67 and accounted for 34% of variance. Teacher-rating-student items shared a reliability of .69 and accounted for 32% of the variance.

Influences of individual items on variance within the factor were used in the creation of weighted composite scores for teacher self- and other- image, and student self- and other-image. Examples of varying influence include the Teacher-rating-self item "When I am with this student I am confident," which loaded weakly in the factor model (.17), and "When I am with this student, I try to conform to his/her expectations," which loaded powerfully (.94). To reflect the varying impact of each item on final Teacher-rating-self means, means for each of these items were multiplied by their respective powers (.17 and .94) first. In this way the investigator raised the importance of the most meaningful item ratings and lowered the importance of the less meaningful item ratings. Item powers for each factor are presented on Table 3.3 and composite score means and inter-correlations are presented in Table 3.4. Both are available in the appendix.

The raw data was then screened for meaningful differences between gender, ethnicity, age, or teacher. Gender, ethnicity, and age were non-significant influences on variance. Teacher code was a significant influence on teacher-rating-self ($p < .001$). Teacher-rating-self varied greatly according to the particular teacher replying, whereas teacher-rating-student, student-rating-self, and student-rating-teacher were not meaningfully impacted. Only the teacher code resulted in significant differences among the scores, the investigator chose to center teacher-rating-self scores on the teacher mean and the teacher-rating-other, student-rating-self, and student-rating-other on the grand mean for these scores. Centering is a process whereby the selected mean for a group is subtracted from each individual respondent's rating to produce a depiction of that respondent's positive or negative difference from the group mean. Centering on the grand mean in this case means that scores of teacher-rating-other, student-rating-self, and student-rating-other are positive, negative, or zero relative to the mean of all responses in that category. Centering on the teacher mean is achieved by subtracting the mean score for each individual teacher's own self-ratings from their responses in this category. The result is that scores in teacher-rating-self are positive, negative, or zero relative to the mean of all of that same teacher's responses in that category. Doing so aids in the interpretation of calibration scores, which were created next.

Calibration scores are a function of self and other ratings for teacher image and student image. They are easily interpreted depictions of the quality of relationship perception between teachers and students. Teacher-rating-student scores were subtracted from student-rating-self scores to produce a 'student image' calibration score for each participating student. Teacher-rating-self scores were subtracted from student-rating-teacher scores to produce a 'teacher image' calibration score. Table 3.5 below presents the means of calibration scores for both teachers and students under all three teachers.

Table 3.5: Calibration Score Means by Teacher

		MEAN	SD
Jesse	Teacher Image	-.067	2.68
	Student Image	.463	1.63
Sam	Teacher Image	-.236	2.36
	Student Image	-.446	2.01
Jordan	Teacher Image	.884	3.41
	Student Image	.264	2.26

A positive calibration score can be interpreted as the students reporting higher ratings for perceiving dominance and yielding than their teachers. Students tended to report higher levels of dominance and yielding for both themselves and their perception of their teachers, as exemplified by Jordan's mean teacher image score of .884. Jordan's students rated Jordan's dominance and yielding considerably higher than the teacher rated their self. A negative calibration score can be interpreted as the teacher reporting higher ratings than the students. Sam tended to report higher levels of dominance and yielding in Sam's students than they reported about themselves, resulting in a calibration score of -.446 on student image. Small absolute value calibrations suggest a well calibrated relationship, as the distance from perfect calibration – 0 – is small. The most closely calibrated views belong to the teacher image in Jesse's classes. Jesse's self ratings were on average only .067 higher than students' ratings of Jesse's dominance and yielding. Larger absolute value calibration scores suggest a high level of disagreement between student and teacher perceptions.

Student perceptions were chosen to be the primary score first because studies of teacher – student relationship perceptions found teachers are less consistent than students in their perceptions of their own work, possibly a result of a distorting idealistic bias.

Secondly, that students report perceptions of the TSR more in line with expert outside observers' conclusions (Brekelmans, et al, 2011; Wubbels, Brekelmans, & Hooymayers, 1992). Finally, because the investigator agrees with den Brok, Brekelmans, Levy, & Wubbels (2002) that students deserve a place at the head of perception analyses because they are at once products of the education system and its most important clients.

Calibration scores were then used in regression analysis to judge the influence of calibration on the variance in teacher and student satisfaction mean scores and reports of teacher affective support. Inter-correlation and multiple regression were used to gain a clearer picture of the impact of gender, ethnicity, and age of the student on satisfaction and affective support.

CHAPTER 4
RESULTS

Analysis began with a screening of the data that revealed teachers have a slightly rosier outlook on the TSR than their students. Teachers reported moderate to high - self (M = 3.01, SD = .78) and - other (M = 3.31, SD = .61) scores, and high satisfaction (M = 3.66, SD = .63) and teacher support (M = 3.40, SD = .66) scores. Students reported moderate to high - self (M = 2.87, SD = .70) and – other (M = 2.93, SD = .63) scores, and moderate (M = 2.82, SD = .88) and teacher support (M = 2.59, SD = .82) scores. Table 4.1 in the appendix contains a complete listing of means and standard deviations for the raw data.

Weighted composite means were created for teacher - self and - other, and student - self and - other incorporating the influence of each item on variance within the factor. Gender was used as a covariate in ANOVAs testing for differences by teacher. Only teacher view of self was significantly different by teacher ($p < .001$). Ethnicity and gender had no significant impact on the variance in teacher-rating-self and –student, or student-rating-self and –teacher. Teacher-rating-student, student-rating-self, and student-rating-teacher were then centered on the grand mean for these items. Teacher-rating-self was centered on individual teacher's means to reflect the influence of teacher code on teacher-rating-self scores. Teacher-rating-student-centered was subtracted from student-rating-self-centered to create the student image calibration score. Teacher-rating-self-centered was subtracted from student-rating-teacher-centered to create the teacher image calibration score. Table 4.2 displays the means for – self and – other items. Table 4.3 displays the means of calculated student image and teacher image calibration scores.

TABLE 4.2: Calculated – Self and – Other Means

	Student Other	Student Self	Teacher Other	Teacher Self
Weighted Mean	9.42	7.75	9.28	9.47
Weighted SD	2.14	1.89	1.77	3.64
Centered Mean	.11	.04	-.005	-.09
Centered SD	2.14	1.89	1.77	1.53

TABLE 4.3: Student Image and Teacher Image

	Mean	SD
Student Image	.06	2.03
Teacher Image	.23	2.89

Correlation Analysis

Inter-correlation analyses found a significant relationship ($p < .001$) between student-rating-teacher centered scores and student-rating-self centered scores ($r = .67$). These scores shared 44% of the variance within each other in a positive relationship, suggesting that students who scored their teacher highly also scored themselves highly. Student-rating-self-centered also shared a positive relationship ($r = .39$, $p < .001$) with teacher-rating-student centered. These scores shared 15% of the variance within each other. Teacher-rating-self centered and teacher-rating-student centered shared a positive relationship ($r = .25$, $p = .02$). Teachers tended to score their students more highly when they scored themselves more highly, sharing 6% of the variance.

Teacher image had a strong positive relationship with student-rating-self centered ($r = .504$, $p < .001$). Students who rated themselves highly also had a tendency to rate their teachers more highly – above and beyond those teachers' ratings of themselves. The result was a gap that increased with students' high self-rating and teachers' low self rating. Student image had three strong relationships: with student-rating-teacher centered

(r = .46, p < .001), with teacher-rating-self centered (r = -.23, p = .04). Students' ratings of themselves grew in conjunction with their ratings of their teacher, resulting in a rosy self image that was often greater in difference from the teacher's rating of the same students. The gap between student-rating-self and teacher-rating-student was higher when teacher-rating-self scores were lower. Teachers who rated themselves lower also tended to rate their students lower (r = .25). The result was a greater positive gap and thereby a higher student image score.

Teacher image and student image shared a positive and significant relationship (r = .46, p < .001) that accounted for 21% of the variance in each. The gap between student-rating-self and teacher-rating-student perceptions grew in conjunction with the growth of the gap between student-rating-teacher and teacher-rating-self perceptions.

Research Question 1: How well calibrated are teacher and student perceptions within the TSR dyad?

Teacher and student image scores represent the differences between teacher and student perceptions, with negative scores relating a higher teacher rating, positive scores relating a higher student rating, and the absolute value of the score representing the difference between the two. A perfect calibration between teacher and student perceptions within the TSR dyad would result in a score of 0.00 on teacher image and student image – this would mean no difference between the two perceptions. Of all the respondent dyads, not one scored a perfect calibration on either image. The closest were -.01 for student image and two .01's for teacher image, all three scores coming from different dyads.

Student image (M = .061, SD = 2.03) ranged from 11.74 to -6.2 and was better calibrated than teacher image (M = .226, SD = 2.89), which ranged from 16.03 to -9.93. Positive high end scores for either image represent a situation where the student gave a dramatically higher rating than the teacher on the same factor, and negative low end scores for either image represent a situation where the student gave a dramatically lower rating

than the teacher on the same factor. Students tended to give higher ratings than the teacher in both categories, with those ratings being closer to the teacher's on the student image and farther from the teacher's on the teacher image. Overall, it would appear that students and teachers are closely calibrated on their perceptions of the student. The two groups are less well calibrated on their perceptions of the teacher, however. Teacher image may be mis-calibrated.

Research Question 2: What impact does calibration quality have on student and teacher satisfaction?

Linear regression analysis was used to find the influence of gender, ethnicity, student image, and teacher image on both student and teacher satisfaction reports.

TABLE 4.4: Predicting Student Satisfaction using Calibration Scores

	Student Satisfaction		
Variable	Standardized Beta	*t*	Part Correlation
Constant - 11.573 - Gender	.063	.703	.059
White / Non-White	.149	.838	.071
Teacher Image	.540**	5.688	.481
Student Image	.208*	2.137	.181
R^2	.45		
F	15.758**		

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

TABLE 4.5: Predicting Teacher Satisfaction using Calibration Scores

	Teacher Satisfaction		
Variable	Standardized Beta	*t*	Part Correlation
Constant	-	19.870	-
Gender	-.179	-1.623	-.169
White / Non-White	.131	1.210	.126
Teacher Image	-.053	-.454	-.047
Student Image	.284*	-2.361	-.246
R^2	.162		
F	3.725**		

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

Forty-five percent of the variance in student satisfaction (M = 2.83, SD = .84) can be explained by these scores (F = 15.76, p < .001). Teacher image (t = 5.67, p < .001) and student image (t = 2.14, p = .04) were significant influences on student satisfaction. Correlation analysis shows that student satisfaction grew as the gap between student perceptions and teacher perceptions became larger, with the student reporting the higher ratings in either student image (r = .46, p < .001) or teacher image (r = .65, p < .001). High student perception ratings led to high student satisfaction, with the overall teacher image being the more consequential. Student satisfaction rose significantly as the gap between teacher and student ratings in both student image and teacher image grew upwards away from zero.

Sixteen percent of the variance in teacher satisfaction (M = 3.67, SD = .60) can be explained by these scores (F = 3.73, p = .008). Teacher image had a non-significant influence on teacher satisfaction in the regression, though it shares a slightly significant correlational relationship (p = .048, r = -.21). When teachers reported lower self ratings,

the gap between teacher and student perceptions of the teacher grew. Teacher satisfaction rose non-significantly as teacher calibration scores moved towards zero or lower.

Student image alone had a significant influence on teacher satisfaction ($t = -2.36$, $p = .02$). Student image also had a negative correlation with teacher satisfaction ($r = -.39$). Lower student image scores correlated with higher teacher satisfaction scores. Teachers were more satisfied by the relationship when their perceptions of the student were close to or greater than the student's self-perception. Teacher satisfaction rose significantly as student image calibration scores moved towards zero or lower.

Gender and ethnicity were non-significant influences on either student satisfaction or teacher satisfaction.

Research Question 3: What impact does calibration quality have on student and teacher perceptions of the degree of teacher affective support given to the student?

Linear regression analysis was used to find the influence of gender, ethnicity, student image, and teacher image on both student and teacher reports of affective support being offered by teachers to students.

TABLE 4.6: Predicting Student Perception of Affective Teacher Support using Calibration Scores

	Student Perception of Support		
Variable	Standardized Beta	*t*	Part Correlation
Constant	-	9.012	-
Gender	.046	.427	.043
White / Non-White	.043	.413	.041
Teacher Image	.465**	4.114	.414
Student Image	.001	.010	.001
R^2	.221		
F	5.459**		

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

TABLE 4.7: Predicting Teacher Perception of Providing Affective Support using Calibration Scores

	Teacher Perception of Support		
Variable	Standardized Beta	*t*	Part Correlation
Constant - 15.193 - Gender	.099 .868 .093		
White / Non-White	.015	.137	.015
Teacher Image	-.250*	-2.079	-.223
Student Image	-.134	-1.084	-.116
R^2	.114		
F	2.481		

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

Twenty-two percent of the variance in student reports of affective support (M = 2.59, SD = .82) can be explained by these scores (F = 5.46, p =.001). Teacher image was the only significant variable (t = 4.11, p < .001) in the grouping. Teacher image also held a strong positive correlation with student reports of affective support (r = .48, p < .001). Students who rated their teacher highly on interpersonal influence also rated that teacher highly on affective support. When teachers exhibited humble characteristics and rated themselves lower than their students – leading to high teacher image scores and a high degree of mis-calibration – the students' perception of teacher affective support grew. Student perceptions of the support they received rose significantly as teacher image calibration scores moved upwards and away from zero.

Student image was far from being a significant variable in predicting student perceptions of affective support (p = .992). Yet there was a moderately significant positive correlation between student image and student reports of affective support (r = .25, p = .02). Students who thought highly of themselves above and beyond what their teachers reported of them – a mis-calibration – also tended to report high levels of teacher support. This difference was not a strong predictor of the variance in student perceptions of affective support. Student perceptions of the support they received rose non-significantly as student image calibration scores moved upwards away from zero.

Eleven percent of the variance in teacher reports of affective support (M = 3.40, SD = .66) can be explained by these scores (F = 2.48, p =.051). Again, teacher image was the only significant variable in the grouping (t = -2.08, p = .041). Teacher image also shared a negative correlation with teacher perceptions of affective support (r = -.32, p = .003). Teacher perceptions of the support they offered rose significantly as teacher image calibration scores moved towards zero or lower.

CHAPTER 5
DISCUSSION

The purpose of this study was to explore the quality of interpersonal calibration within the TSR and its effect on satisfaction and perceived teacher support as reported by both the student and the teacher. This study is poised to make several contributions to the educational psychology literature.

First, in this study, I established a calibration model for understanding the teacher – student relationship that treats the relationship as bi-directional. Wubbels and colleagues have done much work in developing models for perceiving the interpersonal skills and traits of teachers through the eyes of both teachers and their students (Wubbels & Brekelmans, 2005; Wubbels, den Brok, Veldman, & Tartwijk, 2006). However, theirs is a single target model that treats the teacher as the subject. Teacher perceptions of self and student perceptions of the teacher are considered with the student as an observer. The model presented in this study provides an approach to analyzing the TSR that includes the student and teacher as subjects of equal relevance within the dyad. Future studies could use this model to gain insight into the inter-reactive nature of the TSR framework by which each member of the dyad is shaping the nature of the relationship (Markey, Funder, & Ozer, 2003). Review and reframing of the items used here for determining dominance and yielding traits may lead to greater clarity in our understanding of how teachers and students view each other.

The second contribution this study makes to the literature is to provide evidence that the quality of TSR calibration may influence affective outcomes. Teacher satisfaction improved as a negative correlation to the size of difference between teacher and student perceptions of the student. Improvements in satisfaction appeared to come hand in hand with closer calibration. Teacher's perceptions of the support they provided also improved with calibration regarding the teacher and student views of the teacher. Students' views may have not have been influenced by calibration. Students reported more satisfaction as their relationship with the teacher became more mis-calibrated by the students having an opinion of themselves and their teacher that rated far higher than the teacher's. The same

was true for student perceptions of provided teacher support and the teacher image. Those students who thought more highly of the teacher than the teacher thought of themselves tended to rate that teacher high in supporting behavior. Future research could investigate the effects of these variances and the differing importance students and teachers place upon calibration quality.

Assumptions that mis-calibration would relate closely with a lack of satisfaction are supported by teacher reports and challenged by student reports. These findings suggest that student perceptions of themselves and their teachers are a more meaningful indicator of student satisfaction than the degree to which those perceptions match their teacher's. Teachers appear to seek calibration and are more satisfied when the two actor's views are closely aligned.

Assumptions that perceived teacher support is affected by calibration were supported by the evidence. Student image was non-significant for either the students' or the teachers' reports of provided affective support. Teacher image, however, was very significant. Positive differences in teacher image correlated significantly and positively with student reports of teacher support. Smaller or negative differences in teacher image correlated significantly and negatively with teacher reports of given support.

Calibration itself is a complex idea that can approached from many angles. In this study, I chose to look at interpersonal calibration as a measure of how closely aligned the two actor's perspectives were in their views of each other and themselves. A choice had to be made between two options for interpreting this calibration. The first, to take the difference between teacher and student reports as an absolute value showing the distance from zero – or perfect calibration. The second, to take that difference with a directional inflection up or down from a chosen center point. I chose the second option as I felt it gave more meaningful information by indicating not only the degree of difference from an exact match, but also showing which participant was giving the higher rating. Creation of a calibration score by subtracting teacher ratings from student ratings provides data not only on the degree of difference between perceptions, but on which actor gives the higher rating. Such a score allows an in-depth interpretation of the

relationship between combined teacher image and reported teacher support by each actor. Without that directionality, it would more difficult to see that when students rate the teachers more highly than the teachers rates themselves the students also tend to give high teacher support ratings.

Follow up research on TSR calibration should endeavor to provide more clear delineation between the different interpersonal traits used for calibration. Doing so will create a clearer picture of where and how calibrated students and teachers are. A better understanding of the way students and teachers are communicating within the TSR can improve teacher training and classroom support.

Limitations and Future Directions

Academic Calibration and Interpersonal Calibration

There exists in educational psychology literature another concept of calibration that relates student perceptions of their own ability in a domain to that of their actual scores or grades. As a self-efficacy construct, calibration has seen extensive exploration already (Stone, 2000). As a model, academic calibration compares student perceptions to objective reality in the form of performance outcomes with a focus on the accuracy of those perceptions or beliefs. These definitively quantitative outcomes give the researcher solid bedrock on which to define calibration quality or accuracy.

On the other hand, interpersonal communications models rely upon two sets of perceptions which are by their nature changeable. The result being that a calibration score representing the degree of agreement between the two communicators may be subject to a greater degree of variance due to factors within and without the relationship. "Accuracy" – in terms of correctly perceiving another's aspect – is less meaningful within this construct than whether or not the participants' perceptions agree. That a third party observer may rate both participants differently does not impact the interpersonal cycle. This study sought to lessen the effect of extraneous variables by creating two calibration

scores – one focusing upon the teacher, and one focusing upon the student. Further research needs to be done to explore the effectiveness of this approach.

Dominance and Yielding Load as One Factor

The most unexpected result of this study was that teachers and students did not see dominance and yielding items as being distinct from each other. When teachers reported a student as highly yielding, they also reported them as highly dominant, for example. This was the case for teacher-rating-self and -student, as well as for student-rating-self and -teacher. These results appear initially inconsistent with the literature regarding interpersonal complementarity and with the QTI instrument from which they were drawn as there is a developed understanding within the communications literature that these two qualities are opposite ends of the same scale (Locke, 2010; Markey, et al., 2003; Wubbels & Brekelmans, 2005). This study's results suggest that the instrument may not measure dominance and yielding behavior as separate constructs after all. However, factor loading analysis suggests that these items measured the participants' views of one construct consistently. These items were treated as reported dominance as both dominance and yielding lie on the dominance scale of the IPC. It has been suggested that the chosen items may have instead measured perceived confidence for the self and other. Future studies should include a second measure of interpersonal traits to provide an added level of discriminant validity.

Teachers and Students Answering the Same Items

This study adapted previously established items from other studies of interpersonal perception within the classroom (Ang, 2005; Sakiz, 2012; Wubbels & Brekelmans, 2005). Items were handpicked by the researcher for their factor representation and ease of modification for use by teachers and students both. Doing so may have introduced an unconscious bias on the part of the researcher. Furthermore, these items have not been

tested for their construct validity without the inclusion of other items from the origin instruments. Teachers and students answered the same eighteen items with only minimal semantic adjustment according to participant type. This was intended as a method of controlling for differences in items that would have influenced calibration scores. Yet it is possible that using the same items for teachers and students can create a validity issue as the two parties do not have the same vantage point on the relationship.

One particular pairing of items from the teacher and student surveys exemplifies this: "This student is confident voicing his / her opinion with me," and "When I am with this teacher, I voice my opinions." The first is a teacher survey item intended to measure the teacher's view of student dominance. The second is a student survey item intended to measure the students' view of their own dominance. If both items measure the student's dominance, then there should be some consistency with other dominance items. Yet, these items were dropped from calibration analysis as outliers for their inconsistency with other items in the factor loading. Furthermore, they correlate poorly even with each other (r = .204, p = .06). The lack of inter-correlation and this item's poor fit in the interpersonal factor suggest that students and teachers may not have been reading this question in the same way. Discerning the effects these differing interpretations may have will require further study.

Relevance of Satisfaction to TSR Quality

That satisfaction equates to perceiving a positive relationship is an assumption on the part of the researcher. The means of student-rating-self (M= 2.87) and teacher-rating--student (M = 3.31) scores suggests that teachers were typically rating their students higher than those students rated themselves. The resulting conclusion is that teachers are more satisfied with the relationship when they think better of the student than the students think of themselves. That is a positive perception, but not proof of a positive relationship. Further instrument development may be necessary to create a tool that can improve the reliability of interpersonal assessment of this kind.

Student Ethnicity and Level of Development

There is much literature suggesting that ethnicity and student emotional development are likely to have a meaningful influence on the nature of TSRs. Though this study found only non-significant differences between the various ages and ethnic groups represented, that not to say that a more in-depth study working with a larger participant group would not reveal such differences. Furthermore there is the question of racial-norming. Without further study, it cannot be said with absolute confidence that the instrument created here does not contain within it an unintended bias towards particular ethnic groups.

Future Directions

The results of this study suggest that interpersonal calibration in the TSR merits further research. Furthermore, that the role the student holds within that relationship is deeply influential on its quality. Next steps may include a review of the paired survey items for better delineation between yielding and dominance factors for teacher and student comprehension. Larger sample sizes with diverse cultural, ethnic, and socio-economic backgrounds would also serve to provide data more representative of minority populations. A larger number and diversity not just of students but of teachers and schools is recommended. It is important to note that as the three teachers in this study were working in the same school, they would also be working under similar conditions and influences that may have an unobserved effect on the results. Three teachers is too small sample size from which to draw conclusions about all teachers. There is much groundwork yet to be done in testing and establishing the validity of an interpersonal calibration construct as applied to the TSR.

Potential differences between habituated communication styles and moment to moment interpersonal complementarity could also have a meaningful impact on participant reports. This study makes an assumption that collecting student and teacher reports in the final two months of a school year allows for the development of solidified communication

styles between participants. It is possible that participant responses at the beginning of the year may vary significantly from responses at the end of the year, or the middle. Further studies should consider gathering data at different times of the school year to check for differences in reports of perceived interpersonal communication styles. The author recommends a new study using the paired-perceptions instrument developed here at the beginning, middle, and end of the school year to mark changes in student and teacher views over time.

Insights

As someone relatively new to the world of research, completion of this thesis project has been an eye opening experience. I'm excited to find that there may be quantifiable support of my perceptions of the TSR and the classroom environment. At the same time, I have encountered many challenges in shaping an instrument that measures calibration constructs within the classroom appropriately. This is a challenge for me to tackle as I move forward with my studies and in following this study up with further research. My goal now is to establish a valid and reliable method of assessing interpersonal calibration within the TSR. I have direction.

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APPENDICES

Appendix A

Campus Box 7514
Raleigh, North Carolina 27695-7514
919.515.2444 (phone)
919.515.7721 (fax)

From: Deb Paxton, IRB Administrator
North Carolina State University
Institutional Review Board

Date: 4/4/2013

Title: Exploring the Influence of Interpersonal Calibration and Mis-Calibration on the Teacher-Student Relationship

IRB#: 3148

Dear Mr. Watson

The project listed above has been reviewed by the NC State Institutional Review Board for the Use of Human Subjects in Research, and is approved for one year. This protocol will expire on March 7, 2014 and will need continuing review before that date.

NOTE:

1. You must use the attached consent forms which have the approval and expiration dates of your study.
2. This board complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU the Assurance Number is: FWA00003429.
3. Any changes to the protocol and supporting documents must be submitted and approved by the IRB prior to implementation.
4. If any unanticipated problems occur, they must be reported to the IRB office within 5 business days by completing and submitting the unanticipated problem form on the IRB website.
5. Your approval for this study lasts for one year from the review date. If your study extends beyond that time, including data analysis, you must obtain continuing review from the IRB.

Sincerely,

Deb Paxton
NC State IRB

North Carolina

State University

INFORMED CONSENT FORM for RESEARCH

(Surveys: Parents & Students)

This form is valid March 7, 2013 through
March 7, 2014

Title of Research Study: ***Exploring the influence of interpersonal calibration and mis-calibration on the teacher-student relationship***

Principal Investigator: Sam Watson

What are some things you should know about research studies?

Your child is being invited to take part in a research study. This study is being done in partial fulfillment of my Masters Thesis requirement. Your child has a right to participate in the study, or to stop doing so at any time. The purpose of my study is to gain a better understanding of the communication that happens between teachers and students. In particular, I will be looking at how teachers' and students' perceptions of *each others'* behavior affect how satisfied each person feels with the relationship. I wonder if there are times when one person (i.e. the student) thinks the relationship is going better than the other (i.e. the teacher)?

Participating in this study does not guarantee your child benefits, but you may both find it interesting. In this form you will find specific details about the research in which your child is being asked to participate. A copy of this consent form will be provided for you. If you do not understand something in this form it is your right to ask the researcher for clarification or more information. If you have any questions about participating please do not hesitate to contact me Sam Watson (jwatson3@ncsu.edu) or my supervising faculty member, Dr. Heather Davis (heather_davis@ncsu.edu).

What is the purpose of this study?

The purpose of this research study is to 1) work with students and teachers to gain a better understanding of their how they perceive each other, 2) identify places where teachers and students may not see the relationship the same way (i.e. not be calibrated) and 3) look at the impact of being (mis-)calibrated on feelings of satisfaction and support.

What will happen if you take part in the study?

This is a onetime study aimed at gathering information on student and teacher perceptions of their own and each others' communication traits. If you agree to let your child be a part of this study, in one of his/her classes he/she will be asked to take 10-minutes to complete an eighteen question survey that is answered using a scale from "Strongly Disagree" to "Strongly Agree". It is intended to measure perceptions of the survey taker's own interpersonal behavior and their teacher's. Teachers at your child's school have kindly agreed to help with reminding students to turn in permission forms at sealed boxes in their classroom and with allocating time in class to completing the survey. I, Sam Watson, will oversee administration of the survey.

If you agree to allow your child to participate, I will also ask the teacher to compete a short survey reflecting on his or her perception of communication in the relationship. Neither the teacher, nor your child, will be able to view the other's responses. My goal is merely to see if they perceive the relationship the same, or differently.

Your child is NOT required to participate in this study as part of any course. Your child's grades in school will NOT be influenced by his/her decision to volunteer or decline to participate. You and/or your child may choose to stop participating at any time during the course of the study. I will remind all students when surveys are distributed that participation completely voluntary, and that they may choose to stop at any time.

Risks

There are no known risks for your child participating in this survey. You or your child may be concerned that your teacher will "find out" what was reported on the survey or they may be concerned about giving a "right" or "wrong" answer. This survey asks only for the child's own honest perceptions – there is no right or wrong answer, I am simply interested in his/her opinions. Each student will be assigned a confidential ID number to protect his/her responses, student names will not appear on any of the surveys, and teachers will not be granted access to student survey data or ID numbers. Results for individual students will not be shared with anyone, including school staff, parents, or the student. Reports will be shared as combined data for all students and teachers.

Benefits

There are no direct benefits to you and your child participating in this study, however information gained in this survey will hopefully help teachers and researchers gain a clearer understanding of what is happening when they communicate with students like your child.

Confidentiality (Privacy)

All surveys, responses, and work completed will be kept confidential. Data will be kept confidentially in locked filing cabinets. Identifiable information will be destroyed by August 1, 2020. No identifying information (ie name) will be on the surveys or be used in reports or research papers. The school and teachers will NOT have access to student IDs. Only combined data will be used in reports and research papers.

Compensation

Every child who returns a Consent Form (attached) to class will be entered into a raffle drawing for a Gift Certificate to the movies. This is regardless of the decision made to participate or not.

What if you have questions about this study?

If you have questions at any time about the study or procedures, you may contact the researcher – myself – Sam Watson at j watson3@ncsu.edu.

What if you have questions about your rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton,

NCSU IRB Administrator, at 919-515-4514 or dapaxton@ncsu.edu.

(Please retain this top form)

Title of Research Study: ***Exploring the influence of interpersonal mis-calibration and calibration on the teacher-student relationship***

Principal Investigator: Sam Watson

Consent to Participate:

Dear Parent or Guardian,

Please go over this form with your child to make sure you both understand what you are giving permission for:

"I have read and understand the above information. I have received a copy of this form. I agree to allow my child to participate in this study with the understanding that I may withdraw his/her participation at any time."

Child's Name (please print) _____

Parent/Guardian's signature_____Date

I would like yearly reminders / updates:

(Please print a contact e-mail or US Mail address if you want updates)

(Please have your son/ daughter return this form to the sealed box in their teacher's room.)

Overview of Research Study: ***Exploring the influence of interpersonal calibration and mis-calibration on the teacher-student relationship***

What is the purpose of this study?

The purpose of this research study is to 1) work with students and teachers to gain a better understanding of their how they perceive each other, 2) identify places where teachers and students may not see the relationship the same way (i.e. not be calibrated) and 3) look at the impact of being (mis-)calibrated on feelings of satisfaction and support.

What will happen if I participate in this study?

This is a onetime study aimed at gathering information on student and teacher perceptions of their own and each others' communication traits. If you agree to let your child be a part of this study, in one of his/her classes he/she will be asked to take a few minutes to complete an eighteen question survey that is answered using a scale from "Strongly Disagree" to "Strongly Agree". It is intended to measure perceptions of the survey taker's own interpersonal behavior and their teacher's. Teachers at your child's school have kindly agreed to help with reminding students to turn in permission forms at sealed boxes in their classroom and with allocating time in class to completing the survey. The researcher – myself – will oversee administration of the survey.

If you agree to allow your child to participate, I will also ask the teacher to compete a short survey reflecting on his or her perception of communication in the relationship. Neither the teacher, nor your child, will be able to view the other's responses. My goal is to see if they perceive the relationship the same, or differently.

Your child is NOT required to participate in this study as part of any course. Your child's grades in school will NOT be influenced by his/her decision to volunteer or decline to participate. You and/or your child may choose to stop participating at any time during the course of the study. I will remind all students when surveys are distributed that participation completely voluntary, and that they may choose to stop at any time.

Risks

There are no known risks for your child participating in this survey. You or your child may be concerned that your teacher will "find out" what was reported on the survey or they may be concerned about giving a "right" or "wrong" answer. This survey asks only for the child's own honest perceptions –there is no right or wrong answer, I am simply interested in his/her opinions. Each student will be assigned a confidential ID number to protect his/her responses, student names will not appear on any of the surveys, and teachers will not be granted access to student survey data or ID numbers. Results for individual students will not be shared with anyone, including school staff, parents, or the student. Reports will be shared as combined data for all students and teachers.

Benefits

There are no direct benefits to you and your child participating in this study, however information gained in this survey will hopefully help teachers and researchers gain a clearer understanding of what is happening when they communicate with students like your child.

Confidentiality (Privacy)

All surveys, responses, and work completed will be kept confidential. Data will be kept confidentially in locked filing cabinets. Identifiable information will be destroyed by August 1, 2020. No identifying information (ie name) will be on the surveys or be used in reports or research papers. The school and teachers will NOT have access to student IDs. Only combined data will be used in reports and research papers.

Compensation

Every child who returns a Consent Form (attached) to class will be entered into a raffle drawing for a Gift Certificate to the movies. This is regardless of the decision made to participate or not.

North Carolina

State University

INFORMED CONSENT FORM for RESEARCH

(Surveys & Class Usage :Teachers)

This form is valid March 7, 2013 through

March 7, 2014

Title of Research Study: ***Exploring the influence of interpersonal calibration mis-and calibration on the teacher-student relationship***

Principal Investigator: Sam Watson

What are some general things you should know about research studies?

You are being invited to take part in a research study. This study is being done in partial fulfillment of my Masters Thesis requirement. You have a right to participate in the study, or to stop doing so at any time. The purpose of my study is to gain a better understanding of the communication that happens between teachers and students. In particular, I will be looking at how teachers' and students' perceptions of *each others*' behavior affect how satisfied each person feels with the relationship. I wonder if there are times when one person (i.e. the student) thinks the relationship is going better than the other (i.e. the teacher)? Participating in this study does not guarantee you any benefits, but you may find it interesting. In this form you will find specific details about the research in which you are being asked to participate. A copy of this consent form will be provided for you. If you do not understand something in this form it is your right to ask the researcher for clarification or more information. If you have any questions about participating please do not hesitate to contact me.

What is the purpose of this study?

The purpose of this research study is to 1) work with students and teachers to gain a better understanding of their how they perceive each other, 2) identify places where teachers and students may not see the relationship the same way (i.e. not be calibrated) and 3) look at the impact of being (mis-)calibrated on feelings of satisfaction and support.

What will happen if you take part in the study?

This is a onetime study aimed at gathering information on student and teacher perceptions of their own and each others' communication traits. If you agree to be a part of this study, one of your classes will be invited to spend few minutes completing an eighteen question survey that is answered using a scale from "Strongly Disagree" to "Strongly Agree". It is intended to measure perceptions of the survey taker's own interpersonal behavior and their teacher's - yourself. These surveys will be distributed and collected during a class time that is most convenient for you. The researcher – myself – will oversee administration of the student surveys.

You will also be asked to complete a nearly identical eighteen question survey for each of your students that chooses to participate. You will be given coded surveys relating to each of these students and asked to complete them on your own time for collection one to two weeks later. I expect completion of this section to take 20 to 50 minutes.

Risks

There are minimal known risks to you for participating in this research. However, you may be concerned that this data could be used against you. I have taken several steps to protect you as a participant. First, in order to protect your privacy, I notified administrators at your school that only a subset of eligible teachers would be asked to participate so they will not know if you decided to decline. Second, data from individual students and teachers will be confidential. Only combined data, from which any information potentially identifying you or your students has been removed, will be reported. The resulting aggregate data reports will not contain any information which could potentially identify any teacher or student. There will be no way for administrators to know which data came from your class or you. Your participation is not a requirement of your job.

Benefits

There are no direct benefits to you for participating in this study, however information gained in this survey will hopefully help researchers gain a clearer understanding of what is happening when teachers communicate with students and vice versa. I would happy to discuss interpersonal communication traits and the state of the literature on these matters with for your own professional development.

Confidentiality (Privacy)

All surveys, responses, and work completed will be kept confidential. Data will be kept confidentially in locked filing cabinets. Identifiable information will be destroyed by August 1, 2020. No identifying information (ie names) will be on the surveys or be used in reports or research papers. Only combined data will be used in reports and research papers.

Compensation

You will not receive any compensation for participating in the study.

What if you have questions about the study?

If you have questions at any time about the study or procedures, you may contact the researcher – myself – Sam Watson at jwatson3@ncsu.edu, (980) 422-4682

What if you have questions about your rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton,

NCSU IRB Administrator, at 919-515-4514 or dapaxton@ncsu.edu.

Consent to Participate:

Dear Teacher,

Please go over this form and make sure you have read it and understand what you are giving permission for.

"I have read and understand the above information. I have received a copy of this form. I agree to allow my students to participate in this study with the understanding that I may withdraw my consent at any time."

Teacher signature_ _____ Date

Interpersonal calibration and mis-calibration influences in the teacher-student relationship
Student Survey

Hello, and thank you for volunteering to share your thoughts on the quality of communication and the relationship between yourself and your teacher. Remember that since this is your opinion, there is no right or wrong answer. Also, you are a volunteer, so you can stop any time you like without any kind of penalty. If you have any questions about your rights as a participant or about this survey, please ask me.

Sam Watson
Jwatson3@ncsu.edu

Please respond to the following statements by circling a number on the scales to the right of each one. The scale ranges from 0 = "Strongly Disagree" to 4 = "Strongly Agree".

	Strongly Disagree				*Strongly Agree*
I enjoy being in this teacher's class.	0	1	2	3	4
When I am with this teacher, I try hard NOT to make her / him angry.	0	1	2	3	4
I am comfortable sharing things from my personal life with this teacher.	0	1	2	3	4
I am confident with this teacher.	0	1	2	3	4
This teacher avoids embarrassing himself / herself in front of me.	0	1	2	3	4
Overall, I have a positive relationship with this teacher.	0	1	2	3	4
This teacher respects my privacy.	0	1	2	3	4
When I am with this teacher, I try hard NOT to embarrass myself.	0	1	2	3	4
When I am with this teacher, I voice my opinions.	0	1	2	3	4
This teacher treats me equally compared to other students.	0	1	2	3	4
When I am with this teacher, I try to meet her / his expectations.	0	1	2	3	4
This teacher is confident voicing his / her opinion with me.	0	1	2	3	4
This teacher is open and honest with me.	0	1	2	3	4
I respect this teacher's boundaries.	0	1	2	3	4
This teacher tries hard to meet my expectations.	0	1	2	3	4
This teacher tries hard not to upset me.	0	1	2	3	4
I am happy with my relationship with this teacher.	0	1	2	3	4
This teacher is confident with me.	0	1	2	3	4

See back side

Please take a moment to fill out the questions below.

What is your age? _____

What is your Gender? Boy Girl *(circle one)*

What is your ethnicity? (Circle all that apply)

Asian American
African American
Hispanic American
Native American
Middle Eastern American
White / European American
Other _____

Interpersonal calibration and mis-calibration influences in the teacher-student relationship
Teacher Survey

Hello, and thank you for volunteering to share your thoughts on the quality of communication and the relationship between yourself and your student. Remember that since this is your opinion, there is no right or wrong answer. Also, you are a volunteer, so you can stop any time you like without any kind of penalty. If you have any questions about your rights as a participant or about this survey, please ask me.

Sam Watson
jwatson3@ncsu.edu

***Please remember to detach the name tag from the top of this survey when you are done. Leave the ID number attached.**

Please respond to the following statements by circling a number on the scales to the right of each one.

The scale ranges from 0 = "Strongly Disagree" to 4 = "Strongly Agree".

I enjoy having this student in my class.	0	1	2	3	4
When I am with this student, I try hard NOT to make him/her angry.	0	1	2	3	4
I am comfortable with this student sharing things from her / his personal life.	0	1	2	3	4
When I am with this student, I am confident.	0	1	2	3	4
This student avoids embarrassing himself / herself in front of me.	0	1	2	3	4
Overall, I have a positive relationship with this student.	0	1	2	3	4
This student respects my boundaries.	0	1	2	3	4
When I am with this student, I try hard NOT to embarrass myself.	0	1	2	3	4
When I am with this student, I voice my opinion.	0	1	2	3	4
Overall, I support this student as much as the other students in the class.	0	1	2	3	4
When I am with this student, I try to conform to his/her expectations.	0	1	2	3	4
This student is confident voicing his / her opinion with me.	0	1	2	3	4
I am always open and honest with this student.	0	1	2	3	4
I respect this student's privacy.	0	1	2	3	4
This student tries hard to meet my expectations.	0	1	2	3	4
This student tries hard not to upset me.	0	1	2	3	4
I am happy with my relationship with this student.	0	1	2	3	4
This student is confident with me.	0	1	2	3	4

APPENDIX B

TABLE 3.2: Item Descriptions

Teacher Question	Trait	Score
I am happy with my relationship with this student.	Satisfaction	0 ~ 4
I enjoy having this student in my class.	Satisfaction	0 ~ 4
Overall, I have a positive relationship with this student.	Satisfaction	0 ~ 4
I am comfortable with this student sharing things from her / his personal life.	Affective Support	0 ~ 4
I am always open and honest with this student.	Affective Support	0 ~ 4
Overall, I support this student as much as the other students in the class.	Affective Support	0 ~ 4
When I am with this student, I am confident.	Dominance (Self)	0 ~ 4
This student respects my boundaries.	Dominance (Self)	0 ~ 4
When I am with this student, I voice my opinion.	Dominance (Self)	0 ~ 4
When I am with this student, I try to conform to his/her expectations.	Yielding (Self)	0 ~ 4
When I am with this student, I try hard NOT to make him/her angry.	Yielding (Self)	0 ~ 4
When I am with this student, I try hard NOT to embarrass myself.	Yielding (Self)	0 ~ 4
This student is confident with me.	Dominance (Other)	0 ~ 4
I respect this student's privacy.	Dominance (Other)	0 ~ 4
This student is confident voicing his / her opinion with me.	Dominance (Other)	0 ~ 4
This student tries hard to meet my expectations.	Yielding (Other)	0 ~ 4
This student tries hard not to upset me.	Yielding (Other)	0 ~ 4
This student avoids embarrassing himself / herself in front of me.	Yielding (Other)	0 ~ 4

TABLE 3.2 continued

Teacher Question	Trait	Score
I am happy with my relationship with this teacher.	Satisfaction	0 ~ 4
I enjoy being in this this teacher's class.	Satisfaction	0 ~ 4
Overall, I have a positive relationship with this teacher.	Satisfaction	0 ~ 4
I am comfortable sharing things from my personal life with this teacher.	Affective Support	0 ~ 4
This teacher is open and honest with me.	Affective Support	0 ~ 4
This teacher treats me equally compared to other students.	Affective Support	0 ~ 4
I am confident with this teacher	Dominance (Self)	0 ~ 4
This teacher respects my privacy.	Dominance (Self)	0 ~ 4
When I am with this teacher, I voice my opinions.	Dominance (Self)	0 ~ 4
When I am with this teacher, I try to meet her / his expectations.	Yielding (Self)	0 ~ 4
When I am with this teacher, I try hard NOT to make her / him angry.	Yielding (Self)	0 ~ 4
When I am with this teacher, I try hard NOT to embarrass myself.	Yielding (Self)	0 ~ 4
This teacher is confident with me.	Dominance (Other)	0 ~ 4
I respect this teacher's boundaries.	Dominance (Other)	0 ~ 4
This teacher is confident voicing his / her opinion with me.	Dominance (Other)	0 ~ 4
This teacher tries hard to conform to my expectations.	Yielding (Other)	0 ~ 4
This teacher tries hard not to upset me.	Yielding (Other)	0 ~ 4
This teacher avoids embarrassing himself / herself in front of me.	Yielding (Other)	0 ~ 4

TABLE 4.1 : Raw Score Information

	Mean	*Std Dev.*	*Skewness*	*Kurtosis*
[SSat] I enjoy being in this teacher's class	2.53	.950	-.459	.235
[SSat] Overall, I have a positive relationship with my teacher.	2.99	1.000	-1.012	.948
[SSat] I am happy with my relationship with this teacher.	2.93	1.047	-1.125	1.268
[SAff] I am comfortable sharing things from my personal life with this teacher.	1.64	1.248	.177	-1.073
[SAff]This teacher treats me equally compared to other students.	3.09	1.067	-.976	-.080
[SAff] This teacher is open and honest with me.	3.03	.965	-1.218	1.705
[SYieldSelf] When I am with this teacher, I try hard not to make him/her angry.	2.88	1.140	-1.012	.361
[SYieldSelf] When I am with this teacher, I try to meet her / his expectations.	3.12	.897	-1.200	1.929
[SDomSelf] I am confident with this teacher.	2.57	1.006	-.864	.574
[SDomSelf] I respect this teacher's boundaries.	3.28	.912	-1.403	2.193
[SYieldSelf] When I am with this teacher, I try hard not to embarrass myself.	2.49	1.351	-.591	-.804
[SYieldOther] This teacher tries hard not to upset me.	2.92	1.030	-1.103	1.111

[SYieldOther] This teacher tries hard to meet my expectations.	2.71	1.052	-.636	-.105
[SDomSelf] When I am with this teacher, I voice my opinions.	2.80	1.073	-.539	-.498
[SDomOther] This teacher respects my privacy.	3.43	.984	-2.201	4.842
[SYieldOther] This teacher avoids embarrassing himself/herself in front of me.	2.31	1.098	-.181	-.765
[SDomONouse] This teacher is confident voicing her/his opinion with me.	3.16	.778	-.573	-.253
[SDomONOUSE] This teacher is confident with me.	3.06	.976	-1.152	1.461
[TSat] I enjoy having this student in my class.	3.63	.798	-2.069	3.177
[TSat] I am happy with my relationship with this student.	3.65	.682	-2.163	4.616
[TSat] Overall, I have a positive relationship with this student.	3.69	.637	-1.853	2.075
[TAff] I am comfortable with this student sharing things from her/his personal life.	3.47	.836	-1.557	1.685
[TAff] Overall, I support this student as much as the other students in the class.	3.62	.897	-2.564	6.251
[TAff] I am always open and honest with this student.	3.10	.933	-.390	-1.360

[TYieldSelf] When I am with this student, I try hard not to make him/her angry.	2.17	1.689	-.191	-1.709
[TYieldSelf] When I am with this student, I try to conform to his/her expectations.	2.52	1.395	-.102	-1.726
[TDomSelf] When I am with this student, I voice my opinion.	3.16	.893	-.329	-1.680
[TDomSelf] I respect this student's privacy.	3.79	.488	-2.334	4.840
[TYieldSelf] When I am with this student, I try hard not to embarrass myself.	2.49	1.335	-.202	-1.231
[TDomSelf] When I am with this student, I am confident.	3.94	.281	-5.330	30.491
[TYieldOther] This student tries hard not to upset me.	2.86	1.065	-.314	-1.249
[TYieldOther] This student tries hard to meet my expectations.	3.06	1.010	-.750	-.583
[TDomOther] This student is confident with me.	3.76	.552	-2.639	7.997
[TDomOther] This student respects my boundaries.	3.70	.753	-2.655	6.309
[TYieldOther] This student avoids embarrassing himself/herself in front of me.	3.21	1.139	-1.158	-.048
[TDomNouse] This student is confident voicing his/her opinion with me.	3.08	1.248	-1.123	-.015

Calculated Means by Variable and Demographic

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Gender	86	1	2	1.45	.501	.190	-2.011
Teacher Code	90	1	3	2.06	.812	-.103	-1.475
White(1)/ Non-White	90	0	1	.40	.493	.415	-1.870
Stu Satisfaction	90	0.00	4.00	2.8185	.88285	-1.120	1.787
Stu Aff Supp	90	0.00	4.00	2.5889	.82418	-.633	.258
Tea Satisfaction	86	1.67	4.00	3.6550	.62507	-1.921	2.754
Tea Aff Supp	86	1.33	4.00	3.3953	.66374	-1.078	.913
Tea Image	86	-9.93	6.10	.2259	2.88505	-.485	.816
Stu Image	86	-6.20	5.54	.0613	2.03244	-.129	.800
Stu of Self	90	0.00	4.00	2.8667	.70440	-.984	2.088
Stu of Other	90	.33	4.00	2.9315	.63250	-.875	2.186
Tea of Self	86	1.83	4.00	3.0136	.77847	.135	-1.568
Tea of Other	86	1.60	4.00	3.3163	.61469	-1.053	.544

TABLE 3.4: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	-	.269*	-.024	-.276*	-.033	.035	.047	.215	.163	.036	-.212	.062
2. White(1) / Non-White	.269*	-	.123	.085	-.014	-.049	-.096	-.076	.031	-.033	.117	.078
3. Tea Self Centered	-.024	.123	-	.249*	-.012	-.201	-.680** .014	-.227*	-.153	-.037	.422**	.398**
4. Tea Other Centered	-.276*	.085	.249*	-	.392**	.194		-.501**	.057	.175	.662**	.337**
5. Stu Self Centered	-.033	-.014	-.012	.392**	-	.666**	.504**	.600**	.523**	.423**	.195	.033
6. Stu Other Centered	.035	-.049	-.201	.194	.666**	-	.855**	.457**	.745**	.591**	.013	-.143
7. Teacher Image	.047	-.096	-.680**	.014	.504**	.855**	-	.462**	.648**	.478**	-.213*	-.317**
8. Student Image	.215	-.076	-.227*	-.501**	.600**	.457**	.462**	-	.463**	.250*	-.392**	-.262*
9. Student Satisfaction	.163	.031	-.153	.057	.523**	.745**	.648**	.463**	-	.552**	-.067	-.209
10. Student Support	.036	-.033	-.037	.175	.423**	.591**	.478**	.250*	.552**	-	.061	-.120
11. Teacher Satisfaction	-.212	.117	.422**	.662**	.195	.013	-.213*	-.392**	-.067	.061	-	.503**
12. Teacher Support	.062	.078	.398**	.337**	.033	-.143	-.317**	-.262*	-.209	-.120	.503**	-

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

List of Imputed Items

Pairing #	Item	Value Imputed
5	Student Yield Other 2	3
5	Student Affective Support 3	2
9	Student Satisfaction 2	2
17	Student Yield Self 3	4
35	Student Affective Support 3	3
45	Student Affective Support 1	4
50	Student Affective Support 1	4
72	Student Yield Self 1	2

APPENDIX C

TABLE 3.3: Factor Loadings

Teacher-Rating their Self (T Dom/Yield Self)	Item	Student-Rating the Teacher (S Dom/Yield Other)
.94	conform/meet expectations	.75
.78	opinion	.43
.77	'angry' / 'upset'	.69
.69	embarrass	.41
.15	respect privacy	.42
.17	confidence	.53
accounts for 43% of variance		accounts for 31% of variance
reliability of r=.77		reliability of r=.71

Student Rating their Self (S Dom/Yield Self)	Item	Teacher Rating the Student (T Dom/Yield Other)
.53	'angry' / 'upset'	.50
.79	conform/meet expectations	.57
.35	confident	.47
.53	respect privacy / boundaries	.60
.45	embarrass	.66
accounts for 34% of variance		accounts for 32% of variance
reliability = .67		reliability = .69