# The Promise of Social Perspective Taking to Facilitate Teacher-Student Relationships

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**Abstract:**

Quality teacher-student relationships are linked with numerous valued student outcomes. Yet, questions remain about how to best facilitate these relationships. Social perspective taking – the process of discerning others' thoughts, feelings, and motivations – is critical to relationships; yet, its promise as a facilitator of teacher-student relationships remains largely unknown. This study examines associations between social perspective taking and teacher-student relationships in three secondary schools ($N$ = 328 students; 62 teachers). As predicted, social perspective taking was consistently associated with teacher-student relationship quality. Specifically, the social perspective taking accuracy of one party was associated with the other party's perception of the relationship. For practitioners, these results underscore the promise of social perspective taking as a means to improving teacher-student relationships; for researchers, these findings signal the need to account for motivation, accuracy, and context in future investigations of social perspective taking.

Keywords: aptitude, human development, motivation, psychology, social processes/development

person perception, social cognition, social perspective taking, teacher-student relationships

## The Promise of Social Perspective Taking to Facilitate Teacher-Student Relationships

Interviewer: "What do you think is the number one thing that works in the classroom to make it successful?"

2010 teacher of the year, Sarah Brown Wessling: "I think the number one thing that works in the classroom is that relationship between the teacher and the student" (CNN, 2011).

Wessling is not alone in her intuition. Because of their impact on outcomes ranging from happiness (Diener & Oishi, 2005) to health (Taylor et al., 2004), most scholars view social relationships as a core psychological need (Ryan & Deci, 2000). Within elementary classrooms, tomes of research on teacher-student relationships (TSRs) document the import of these relationships for student outcomes (e.g., Hamre & Pianta, 2001; O'Connor & McCartney, 2007). As adolescents strive for increased autonomy from their parents, the relationships between teachers and students become especially important during this developmental stage as well (Eccles et al., 1993).

Despite the important role of TSRs in an array of student outcomes (Juvonen, 2006), it is unclear how to most effectively improve these relationships – especially at the secondary level. What skills and/or dispositions facilitate social bonds between teachers and students? This article investigates social perspective taking as a promising, malleable precursor to TSRs in middle and high schools. We begin by reviewing the empirical evidence that signals the importance of TSRs. Second, we build from a framework that conceptualizes TSRs as a social process and make the theoretical case for why teachers' and students' capacity to take the perspective of one another should influence their TSRs. Next, we report findings on the associations between social perspective taking and TSRs across diverse school settings. We

discuss the scientific implications of these findings as well as the potential for developing social perspective taking interventions.

**Teacher Student Relationships in Secondary Schools**

Perhaps due to the fundamentally social nature of classrooms (Gehlbach, 2010), TSRs in middle and high schools are associated with numerous valued student outcomes. For example, students with more supportive teachers tend to perform better academically both in terms of grades (Goodenow, 1993) and standardized tests (Midgley, Feldlaufer, & Eccles, 1989). In looking at expectancies, Wentzel (2002) found that teachers' high expectations for their students also predicted middle school students' grades.

TSRs also seem to matter for students' affect towards school. Students with more supportive teachers view school (Roeser, Midgley, & Urdan, 1996) and their subject matter (Midgley, et al., 1989) more positively. Conversely, when students and teachers lack a bond or have a negative relationship, students are more likely to feel alienated (Murdock, 1999). In longitudinal studies, increases in perceived teacher regard predicted increases in middle-school students' self-esteem and declines in their anger and depressive symptoms (Reddy, Rhodes, & Mulhall, 2003; Roeser & Eccles, 1998).

Other scholars have linked TSRs with students' behavior. For instance, students who view their teachers as more caring pay more attention in class (Wentzel, 1997). Conversely, adolescents' who perceive more disinterest and/or criticism from their teachers cause more discipline problems (Murdock, 1999). According to Rumberger (1995), adolescents with more positive TSRs are less at risk of dropping out of school.

Finally, TSRs may impact students' motivation. Adolescents' perceptions of teacher support and caring predict student effort, whether student effort is reported by teachers

(Goodenow, 1993; Murdock & Miller, 2003) or by students (Wentzel, 1997). Murdock and Miller (2003) found that perceived teacher caring was also associated with students' academic self-efficacy and intrinsic valuing of education.

In sum, because of their associations with such disparate sets of outcomes as students' academic achievement, affect, behavior, and motivation, TSRs appear to be one of the most important barometers of students' academic and personal well-being throughout middle and high school. Even if TSRs have a causal impact on only a fraction of the aforementioned outcomes, facilitating these relationships could profoundly improve students' educational experience. Thus, learning what capacity might spark improvements in TSRs constitutes a pivotal opportunity for researchers to improve student outcomes.

**Conceptualizing Teacher-Student Relationships**

The aforementioned studies signal the import of several aspects of TSRs (e.g., teacher caring vs. perceived regard). To complement this work, we established a *holistic* conceptualization of TSRs and developed a corresponding measure. Our conceptualization is rooted in Tseng and Seidman's (2007) description of social processes as transactions between two or more people or groups. These social processes are shaped by individuals' roles within a specific setting. They involve a stream of interaction in which transactions and behaviors are repeated and adapted based on feedback with certain transaction patterns being reinforced over time. These social processes occur between relational units, which are co-constructed (Tseng & Seidman, 2007). We view TSRs as a specific social process (with specific roles assigned to students and teachers depending on the particular classroom setting). Although TSRs may be influenced by the overall classroom climate or the individual personalities of the teacher and student involved, they are dyadic interpersonal interactions (Pianta, 1999).

However, TSRs are more than just behaviors. Drawing from Gable, Reis, and Downey (2003), each party's perceptions of one another and of their interactions are key components of the relationships. As these authors imply, within relationships, behaviors and perceptions are highly intertwined, "Patterns of interaction depend on the actions and reactions of both partners, and their actions and reactions depend on each individual's perceptions and interpretations of the other's behavior" (p. 100). They also note that, even within close dyadic relationships, perceptions – or the memories of those perceptions (e.g., Gilbert, 2006) – may differ substantially. Thus, our conception of TSRs encompasses teachers' and students' aggregated and ongoing perceptions of each other and their interactions with one another, which are stored in memory and serve to guide future interactions with the other party.

**Social Perspective Taking**

Given this conceptualization of TSRs as a combination of interactions and perceptions of those interactions, what malleable capacities lie upstream from TSRs that might theoretically help improve them? One hypothesized precursor, social perspective taking, has sparked particular interest among relationship researchers (e.g., Galinsky, Ku, & Wang, 2005). Social perspective taking entails discerning the thoughts, feelings, and motivations of others as well as their point of view and perceptions of the situation. It is a complex aptitude in that it encompasses both motivation and accuracy. In other words, for social perspective taking to improve relationships, a "perceiver" not only has to have the ability to accurately read or infer the thoughts and feelings of a "target," but s/he must also be motivated to enact that ability (Gehlbach, 2004).

At a theoretical level, we posit two pathways through which social perspective taking might influence TSRs – by changing perceptions or interactions. First, improved social

perspective taking (motivation or accuracy) is likely to de-bias teachers' and students' perceptions of one another. Social perspective taking strategies such as developing alternative hypotheses have improved the accuracy of social perceptions (Lord, Lepper, & Preston, 1984). In other studies, motivating participants to engage in social perspective taking has reduced stereotyping of and prejudice against others (Galinsky & Moskowitz, 2000). Although occasionally a teacher's biased perception of a student (or vice-versa) may be more positive than an accurate perception (potentially improving their TSR), the intergroup perception literature strongly suggests that most misperceptions between distinct groups such as teachers and students will be negative (Hewstone, Rubin, & Willis, 2002).

In addition to influencing the respective perceptions of teachers and students, social perspective taking may influence their interactions. Nickerson (1999) describes how a more accurate understanding of another's knowledge and thoughts paves the way for more effective communication. This seems particularly important for teaching and learning in the classroom context given teachers' needs to accurately assess student understanding. Galinsky, Ku, and Wang (2005) argue that improved social perspective taking should increase the social coordination and sense of similarity between individuals, which are robust predictors of liking (Cialdini, 2009).

Beyond these two pathways through which social perspective taking might influence TSRs, this aptitude seems promising for three reasons. First, an array of empirical work connects social perspective taking to different *aspects* of social relationships (Hall, Andrzejewski, & Yopchick, 2009). Social perspective taking may contribute to conflict resolution (Corcoran & Mallinckrodt, 2000), supportiveness (Verhofstadt, Buysse, Ickes, Davis, & Devoldre, 2008), and more positive social interactions (Gruhn, Rebucal, Diehl, Lumley, &

Labouvie-Vief, 2008). Social perspective taking manipulations can facilitate altruism (Batson, Early, & Salvarani, 1997), diminish aggression (Richardson, Green, & Lago, 1998), and enhance perceptions of perceiver-target similarity (Davis, Conklin, Smith, & Luce, 1996).

Second, these experiments establish that social perspective taking is malleable. In each case, simple manipulations bolster social perspective taking motivation or accuracy in the treatment group relative to the control group. Training in social perspective taking can also improve perspective taking accuracy. Ekman and Friesen (2003) have taught perceivers to improve their recognition of facial expressions of emotion. Marangoni, Garcia, Ickes, and Teng (1995) demonstrated that providing perceivers with feedback improved their accuracy over time. Selman's (2003) classroom curricula bolstered the frequency with which students engage in social perspective taking.

Finally, social perspective taking addresses the foundational building blocks of TSRs – each party's perceptions of one another and their interactions. Thus, an intervention that trains students to more frequently and accurately "read" their teachers (or vice-versa) thoughts and feelings could be enacted hundreds of times a day – thereby magnifying its impact. Furthermore, because these relationships are recursive social processes (see Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009), small improvements in interactions early in the school year may yield big dividends through a positive spiral of subsequent interactions.

**The Present Study**

To summarize, TSRs appear to be among the most important aspects of students' schooling experience. In assessing what malleable capacities might form the core of interventions to improve these relationships, social perspective taking appears exceptionally

promising. Thus, in the present study, we explore two research questions to understand the extent to which social perspective taking is associated with TSRs:

1) Whose social perspective taking aptitude (students' or teachers') is associated with students' and teachers' perception of the TSRs?

Better social perspective taking by students might result in *students* perceiving more positive TSRs. Perhaps, by more frequently and accurately "reading" their teachers, students may perceive their teachers' decisions and actions with more understanding and give them the benefit of the doubt. On the other hand, students who frequently and accurately read their teachers may change their interactions by better calibrating their actions and reactions to their teacher. Through this ability to improve their interactions with their teacher, the *teachers'* perceptions of the relationship might be enhanced. Perhaps both possibilities are true. The same logic may apply equally to teachers.

2) Which dimensions of social perspective taking aptitude (accuracy or motivation) are associated with students' and teachers' perceptions of TSRs?

According to our conceptualization of social perspective taking, a student (or teacher) would have to be motivated to engage in social perspective taking with some frequency *and* would have to maintain some level of accuracy in reading the other party if social perspective taking is to enhance the relationship. Thus, in investigating the association between the two constructs, we predict that both dimensions of social perspective taking will be associated with teachers' and students' perceptions of their TSRs – a consequential detail for those designing interventions.

## Method

To investigate these questions we selected a middle school and two high schools, each with distinctive characteristics. This research was part of a larger investigation that included several other schools and examined many aspects of TSRs. Although other measures were included in the data collection (Author reference), this study focuses on a performance task assessing teachers' and students' social perspective taking accuracy, their self-reports of their social perspective taking motivation, and their perceptions of their TSRs.

**Participants**

School 1 was a public, suburban, middle school serving $6^{th}$ – $8^{th}$ grade students. Our sample included 119 of these students (50% female; 61% White, 23% "Other," and 10% Hispanic) and 31 teachers (67% female; 94% White) from all subject areas. School 2 was a military charter school serving $9^{th}$ – $12^{th}$ grade students. At this school, our sample included 137 students (54% female; 64% Black, 15% "Other," and 10% Hispanic) and 27 teachers (65% female; 87% White) from all subject areas. School 3 was a private Catholic high school in which students worked at a job placement 1-2 days per week. At this school, 72 of these $9^{th}$ – $12^{th}$ graders (56% female; 47% Hispanic, 28% Black, and 18% "Other") and their 4 English teachers (50% female; 100% White) participated.

Because of the importance of role and setting (Tseng & Seidman, 2007) in our conceptualization of TSRs, we selected distinct school contexts. We chose the middle school as likely to be representative of typical TSRs. By contrast, the roles and authority structure between teachers and students at the military charter school were clearly prescribed. At the Catholic school, teachers' roles included providing students with extra support in preparation for their job placements. Given these potential differences in the school settings and the respective

roles of teachers and students in each school, we were particularly interested in the extent to which our results would generalize across each environment.

**Measures**

**Level 1 variables.** We assessed TSRs through parallel surveys given to teachers and students. Separate subscales measured the positive and negative aspects of the relationship. For example, a representative item from the *TSR-positivity* subscale was "How respectful is <teacher's name/student's name> towards you?" The *TSR-negativity* subscale consisted of items such as, "How angry does <teacher's name> make you feel during class / How angry do you make <student's name> feel during class?" Across the three schools, reliabilities for the 9-item *TSR-positivity* subscale ranged from $\alpha$ = .89 to .95 for students and $\alpha$ = .86 to .93 for teachers. The 5-item *TSR-negativity* subscale reliabilities ranged from $\alpha$ = .73 to .80 for students and $\alpha$ = .67 to .82 for teachers. Possible scores on both measures ranged from 1 to 5. The complete scales are listed in the appendix; additional evidence of the scales' validity is reported in (Author reference).

Participants' social perspective taking accuracy was assessed using a performance task similar to Luo and Snider (2009). Specifically, we asked students and teachers to predict how the other party would respond to the TSR items. For example, students were asked: *Please take your best guess as to how your teacher will answer the question,* "How respectful is <student's own name> towards you?" To assess perspective taking *accuracy*, scores were computed by correlating students' (and teachers') predictions of the other party's responses with that teacher's (and student's) actual self-report.

How frequently students were motivated to engage in social perspective taking was assessed by a 7-item scale using items such as, "How often do you attempt to understand your

teachers better by trying to figure out what they are thinking?" ($\alpha$ = .83 to .87). *Social perspective taking motivation* scores ranged from 1 to 5. The full measure is presented in the appendix.

**Level 2 variable.** Teachers' social perspective taking motivation was assessed through the same *social perspective taking motivation* scale ($\alpha$ = .84 to .89 for teachers[1]).

**Procedures**

To recruit participants, we first introduced the study to all the teachers at Schools 1 and 2, and to the English department at School 3. Once a substantial proportion of teachers agreed to participate, we sent consent forms home with students. At Schools 1 and 2, we used students' schedules to randomly select a teacher for each participating student to report on; we then asked that teacher to complete the parallel survey for each student. At School 3, students reported on their English teacher. Students completed their questionnaires under the supervision of members of the research team via paper and pencil (Schools 1 and 2) or via a web-based survey (School 3). No teachers were present during the administration to ensure that students were free to respond candidly. Teachers completed their questionnaires on their own time and returned them within two weeks. The demographic distribution of each sample mirrored each school's larger student body (Author reference).

## Results

To examine both research questions, we used Stata's *xtmixed* procedure to fit four multi-level models with maximum likelihood estimation in which each of the four TSR outcome variables were regressed on the four social perspective taking variables. Because many of the unique qualities of each setting were confounded with school (e.g., School 1 was the only public

[1] These reliability estimates include only Schools 1 and 2 because only 4 teachers completed this scale at School 3.

school), we fit models for each school separately. Based on previous findings linking students' gender with TSRs (Author reference), we controlled for gender in each model. At School 1 between 1 and 12 students were nested within a given teacher ($M$ = 3.5); our data at School 2 ranged from 1 to 18 students per teacher ($M$ = 4.7); at School 3 between 8 and 28 ($M$ = 18). Table 1 presents the descriptive statistics for each school (unadjusted for nesting).

One surprise emerged from these descriptive statistics. It appeared that teachers, were more motivated to take their students' perspectives than vice-versa, yet students were more accurate in taking their teachers' perspective. Because social perspective taking is a developmental phenomenon (Keating, 1990), we expected that teachers would be more accurate than their students. To further explore this preliminary result, we fit multi-level models regressing social perspective taking *motivation* or *accuracy* on *status* (0 = student; 1 = teacher). The *social perspective taking motivation* models revealed significant differences favoring teachers in each instance: School 1 ($t$ = 8.60, $p$ < .001); School 2 ($t$ = 5.14, $p$ < .001); and School 3 ($t$ = 3.33, $p$ = .001). By contrast, the models regressing *social perspective taking accuracy* on *status* showed that students were more accurate in taking the perspective of their teachers than vice-versa: School 1 ($t$ = -2.04, $p$ = .04); School 2 ($t$ = -2.76, $p$ = .006); and School 3 ($t$ = -3.44, $p$ = .001). See Figure 1.

Our first research question asks whose social perspective taking attitude is associated with each party's perceptions of the TSR. Tables 2-5 indicate a consistent pattern: at all three schools, the other party's social perspective taking was strongly associated with more positive or less negative perceptions of the TSR. For example, those students who did a better job of taking their teachers' perspective had teachers who reported better relationships with those students. In

addition, students' motivation to take their teachers' perspectives was associated with students' positive perceptions of their relationships at all three schools.[2]

Our second research question focuses on which dimension of social perspective taking aptitude – accuracy or motivation – is most strongly associated with TSRs. As Tables 2-5 indicate, social perspective taking *accuracy* is consistently associated with teacher student relationships. Somewhat contrary to our expectations, social perspective taking *motivation* was only sporadically associated with these same relationships. As the descriptive statistics indicate the possibility that *social perspective taking motivation* only occasionally reached significance because it shared substantial variation with the *social perspective taking accuracy* measure seems unlikely. Coefficients from a multi-level model that regressed social perspective taking *accuracy* on *motivation* never reached significance (i.e., all *p*-values > .05) for students (School 1: $\beta$ = -.01, *SE* = .03; School 2: $\beta$ = .05, *SE* = .03; and School 3: $\beta$ = .02, *SE* = .03) or teachers (School 1: $\beta$ = .04, *SE* = .07; School 2: $\beta$ = .14, *SE* = .07; and School 3: $\beta$ = .02, *SE* = .41).

## Discussion

The overarching goal of this research was to ascertain the viability of social perspective taking as a possible locus from which to develop interventions that might improve TSRs. As a secondary goal, we hoped to gain insights into the nature of the associations between social perspective taking and TSRs that might illuminate how to structure such interventions. The answer to whether there is an association between social perspective taking and TSRs is a clear, consistent "yes." We found significant associations between our social perspective taking

[2] We also analyzed each model to control for "projection." For example, in predicting *teachers' TSR positivity*, we added *students' TSR positivity* to the model described above to ensure that our significant findings could be attributed to social perspective taking accuracy rather than a mere artifact of students' projecting their perceptions of the relationship onto their teacher. Although this additional predictor reached significance in a few cases, the other predictors remained fundamentally unchanged. Because our theoretical focus was not on projection, we omitted this predictor for the sake of parsimony.

performance task and students' and teachers' TSRs across three distinct secondary school settings. Across all 12 models the perspective taking of one party was linked with the other party's perception of the relationship (research question #1); social perspective taking accuracy, rather than motivation, generally manifested stronger associations with TSRs (research question #2).

We posited that social perspective taking might be associated with TSRs through changing perceptions and/or interactions between teachers and students. Although our data do not support causal inferences, they are congruent with the notion that more accurate perspective takers might act and react in ways that are perceived positively by the other party in the relationship. Only at School 2 were our data congruent with the possibility that improving a student's (or teacher's) own social perspective taking accuracy might help to view the teacher (or student) in a more understanding way, thereby bolstering the student's (or teacher's) own perception of the relationship.

Despite the consistency of the associations, they did not emerge entirely as we had anticipated. The motivation to engage in social perspective taking was only sporadically associated with TSRs. The one trend that was reliable across schools was that students who were motivated to take their teachers' perspective were more likely to feel positively about that teacher. Before concluding that social perspective taking accuracy matters more (or more consistently) than motivation, however, we need to consider an alternative possibility. Most measures of social perspective taking motivation ask respondents to report on their propensity to take the perspective of people in general. In an effort to enhance our measure's precision, we asked respondents to report on their disposition to take the perspective of teachers (or students) in general. However, perhaps we did not get specific enough. In the same way that much of the

variability in perceivers' accuracy depends upon the readability of particular targets (Zaki, Bolger, & Ochsner, 2008), perhaps social perspective taking motivation is similarly target-specific. Thus, a measure of social perspective taking motivation *for a specific person* might have generated stronger and/or more consistent associations with TSRs than we found. This possibility has major implications for future studies of social perspective taking.

Students' superior social perspective taking accuracy relative to their teachers was our other surprising finding with important consequences. The preponderance of the literature indicates that teachers should have superior social perspective taking accuracy given the cognitive complexity of the task (Davis & Kraus, 1997). Furthermore, adolescents are still developing the capacity for abstract thought and hypothetical reasoning – the pre-requisites for sophisticated social perspective taking (Keating, 1990) – that most teachers will have long since mastered. Our finding that students were more accurate perspective takers – even middle school students, who should lag farthest behind their teachers in cognitive capabilities – suggests that another factor is involved. Although other explanations are possible – perhaps students are less "readable" perspective taking targets than their teachers given the differences in power (e.g., Hall, Rosip, Smith LeBeau, Horgan, & Carter, 2006) – we suspect the more plausible explanation is that the social context of classrooms, disproportionately advantages students. While secondary school students maintain relationships with about six different teachers, their teachers routinely manage relationships with over 100 students. Moreover, in most classrooms, teachers are likely to be the central focus of attention. Thus, students should have disproportionately more information about their teacher from which to make inferences.

**Limitations**

Some of this study's limitations – e.g., that social perspective taking motivation may require a more target-specific measurement approach – have been implied in the previous sections. Two additional limitations warrant special mention.

First, is the issue of causal direction. Logic dictates that social perspective taking should precede the relationship between teachers and students. Relationships simply cannot develop without the parties first perceiving and drawing inferences about each other. However, this logic still allows for the possibility that relationships might also impact social perspective taking. Thus, future research that can empirically tease apart the extent to which social perspective taking accuracy *causes* improvements in TSRs, whether the reverse is true, and to what extent reciprocal causality exists will be immensely beneficial.

Second, a perceiver's accuracy may vary across different forms of social perspective taking (Gehlbach, in press). Our measure of accuracy only captured one such form. In other words, we asked students to reflect on their teacher's thoughts and feelings without even seeing their teacher in the room. This "reflective" form differs from "in-the-moment" perspective taking that students might engage in while speaking directly with a teacher. In this latter form of perspective taking, many additional cues are present to help students make inferences, such as gestures, tone of voice, and facial expressions. In addition, because they are interacting, students: (a) have the opportunity to ask additional questions to glean more information from their teachers, but (b) have an increased cognitive load to manage while engaging in the social perspective taking process. In short, although the diversity of our sample bolsters the likelihood that our results generalize to students and teachers in a wider array of schools, our findings may or may not generalize across different forms of social perspective taking.

## Implications and Conclusion

In this study, we find a robust connection between social perspective taking and TSRs. Given the newness of this area of inquiry, much remains for scholars to explore if this work is to ultimately inform the development of social perspective taking interventions. First, our data show a clear pattern of associations between social perspective taking accuracy and our outcomes. However, we also find some associations involving social perspective taking motivation and raise questions about its (potentially) target-specific nature. Future studies that can disentangle the extent to which perceivers' social perspective taking motivation is stable versus varying as a function of the target and/or the situation will be especially important to better understand this phenomenon. Second, based on our counter-intuitive finding in which students' social perspective taking accuracy surpassed that of their teachers, we infer that the context in which the social perspective taking occurs is also important. Thus, future investigations of social perspective taking that assess accuracy, motivation, *and context* will be particularly beneficial. Finally, and perhaps most importantly, is the need to establish whether a causal relationship exists between social perspective taking and TSRs. Not only will experimental studies be critical to advancing this area of research, but they can shed light on the magnitude of social perspective taking's effect on TSRs – crucial information for determining potential impact of social perspective taking interventions.

These experiments will be especially important for practitioners and those thinking about designing social perspective taking interventions. The associations we find provide one signal that social perspective taking may be a viable candidate as a locus for developing interventions. Past studies showing that social perspective taking is malleable and causally connected to important aspects of relationships are other important signals (e.g., Galinsky & Moskowitz,

2000). However, the unusual promise of this capacity also stems from the possibility that by intervening at the level of teachers' and students' perceptions, the effect of the intervention might be repeated multiple times per day, might initiate positive recursive cycles, and might ripple across multiple outcomes (Gehlbach, 2010; Yeager & Walton, 2011).

Even as practitioners await more clarity on the causal question, the findings from this study begin to paint a picture of what such interventions might look like – albeit in broad brush strokes. First, previous studies indicate that teachers' and students' perceptions of TSRs are each important for different student outcomes – for example, teachers' perceptions are associated with students' grades and students' perceptions are associated with interest (Author reference). Thus, teaching social perspective taking to both parties (with the goal of improving teachers' and students' perceptions of the relationship) may be important to maximize the benefits of improved TSRs. Second, social perspective taking accuracy and motivation appear largely independent of one another. Pending more understanding of the role of social perspective taking motivation, it might make sense to design interventions that address both dimensions of social perspective taking and take advantage of these independent levers through which relationships might be improved. Finally, we speculated that the situation played an important role in understanding why students' social perspective taking ability surpassed their teachers in our study. Interventions that can help teachers and students structure their immediate context so as to facilitate their social perspective taking capacity might be particularly important. For example, classroom structures that allow for more one-on-one time between teachers and students might provide each party with more background knowledge about the other. This additional knowledge could facilitate the accuracy of their inferences about each other.

As suggested by the 2010 teacher of the year and as substantiated by a myriad of studies, TSRs are clearly pivotal to a multitude of critical student outcomes. Yet, the question of the best ways to improve these relationships seems much less clear. Our data suggest that social perspective taking might be a particularly promising avenue towards that end.

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Table 1: Descriptive statistics for each school (unadjusted for nesting)

| Variable Name | Mean | *sd* | Pearson Correlations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| School 1 (*N* = 107-118) | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1) S_SPT-Motivation | 2.68 | .80 | -- | | | | | | |
| 2) S_SPT-Accuracy | .66 | .27 | -.03 | -- | | | | | |
| 3) T_SPT-Motivation | 3.87 | .60 | -.01 | .04 | -- | | | | |
| 4) T_SPT-Accuracy | .58 | .36 | .09 | .67*** | .06 | -- | | | |
| 5) S_TSR-Positivity | 3.59 | .85 | .27** | .35*** | .15 | .54*** | -- | | |
| 6) S_TSR-Negativity | 1.69 | .62 | -.16 | -.42*** | -.14 | -.55*** | -.59*** | -- | |
| 7) T_TSR-Positivity | 3.75 | .58 | .05 | .29** | .10 | .13 | .19* | -.16 | -- |
| 8) T_TSR-Negativity | 1.54 | .52 | .08 | -.47*** | -.11 | -.26** | -.16 | .34*** | -.46*** |
| School 2 (*N* = 129-135) | | | | | | | | | |
| 1) S_SPT-Motivation | 2.82 | .93 | -- | | | | | | |
| 2) S_SPT-Accuracy | .59 | .31 | .15 | -- | | | | | |
| 3) T_SPT-Motivation | 3.87 | .63 | .07 | .13 | -- | | | | |
| 4) T_SPT-Accuracy | .49 | .37 | .07 | .67*** | .25** | -- | | | |
| 5) S_TSR-Positivity | 3.47 | 1.13 | .27** | .59*** | .18* | .61*** | -- | | |
| 6) S_TSR-Negativity | 2.02 | .86 | -.21* | -.55*** | -.19* | -.50*** | -.70*** | -- | |
| 7) T_TSR-Positivity | 3.57 | .74 | .13 | .55*** | .06 | .52*** | .51*** | -.44*** | -- |
| 8) T_TSR-Negativity | 1.70 | .56 | -.10 | -.51*** | -.16 | -.49*** | -.36*** | .41*** | -.62*** |
| School 3 (*N* = 73) | | | | | | | | | |
| 1) S_SPT-Motivation | 2.48 | .85 | -- | | | | | | |
| 2) S_SPT-Accuracy | .69 | .22 | .04 | -- | | | | | |
| 3) T_SPT-Motivation | 3.88 | .17 | .11 | .06 | -- | | | | |
| 4) T_SPT-Accuracy | .55 | .32 | .03 | .68*** | -.04 | -- | | | |
| 5) S_TSR-Positivity | 3.49 | .77 | .16 | .37** | -.23 | .69*** | -- | | |
| 6) S_TSR-Negativity | 1.85 | .62 | .05 | -.50*** | .02 | -.60*** | -.57*** | -- | |
| 7) T_TSR-Positivity | 3.70 | .62 | .03 | .68*** | .14 | .43*** | .33* | -.36** | -- |
| 8) T_TSR-Negativity | 1.59 | .58 | .09 | -.66*** | -.19 | -.40*** | -.10 | .36** | -.66*** |

Notes:
1) * $p < .05$; ** $p < .01$; ***$p < .001$
2) S_ denotes student; T_ denotes teacher; SPT denotes a social perspective taking measure; TSR denotes a teacher-student relationship measure

Table 2: Predicting students' perceptions of their *TSR-positivity*: Unstandardized estimates and (*SE)*

| | School | | |
|---|---|---|---|
| | 1 (102 students; 30 teachers) | 2 (127 students; 27 teachers) | 3 (72 students; 4 teachers) |
| | Fixed Effects | | |
| Intercept | 1.49 (.68)* | 1.78 (.61)*** | 5.74 (3.59) |
| Level 1 Variables | | | |
| S_Gender | .12 (.13) | -.19 (.14) | .04 (.11) |
| S_SPT-Accuracy | .53 (.30) | 1.03 (.29)*** | -.62 (.34) |
| S_SPT-Motivation | .21 (.08)** | .24 (.07)*** | .22 (.07)*** |
| T_SPT-Accuracy | .76 (.23)*** | .92 (.27)*** | 1.88 (.24)*** |
| Level 2 Variables | | | |
| T_SPT-Motivation | .20 (.16) | .03 (.16) | -.88 (.92) |
| | Random Parameters | | |
| Variance between teachers | | | |
| T_SPT-Motivation | .01 (.01) | .00 (.00) | .00 (.00) |
| Intercept | .10 (.21) | .12 (.07) | .07 (.06) |
| Variance between students | .29 (.05) | .51 (.07) | .20 (.03) |
| -2 log likelihood | 150.04 | 202.01 | 85.35 |

Notes:
1) * p < .05; ** p < .01; ***p < .001
2) S_SPT denotes a student social perspective taking measure; T_SPT denotes a teacher social perspective taking measure; S_Gender is students' gender (0 = female; 1= male)

Table 3: Predicting students' perceptions of their *TSR-negativity*: Unstandardized estimates and (*SE)*

| | School | | |
|---|---|---|---|
| | 1 (102 students; 30 teachers) | 2 (127 students; 27 teachers) | 3 (72 students; 4 teachers) |
| | Fixed Effects | | |
| Intercept | 2.87 (.41)*** | 3.43 (.39)*** | 2.69 (2.97) |
| Level 1 Variables | | | |
| S_Gender | -0.01 (.10) | .09 (.12) | -.10 (.11) |
| S_SPT-Accuracy | -0.35 (.26) | -.93 (.25)*** | -.48 (.34) |
| S_SPT-Motivation | -0.08 (.06) | -.12 (.06) | .00 (.07) |
| T_SPT-Accuracy | -0.72 (.19)*** | -.54 (.21)* | -.93 (.23)*** |
| Level 2 Variables | | | |
| T_SPT-Motivation | -0.08 (.09) | -.09 (.09) | .01 (.76) |
| | Random Parameters | | |
| Variance between teachers | | | |
| T_SPT-Motivation | | .00 (.00) | .00 (.00) |
| Intercept | .00 (.00) | .00 (.00) | .05 (.04) |
| Variance between students | .26 (.04) | .41 (.05) | .20 (.03) |
| -2 log likelihood | 156.13[a] | 248.29 | 94.38 |

Notes:
1) * p < .05; ** p < .01; ***p < .001
2) S_SPT denotes a student social perspective taking measure; T_SPT denotes a teacher social perspective taking measure; S_Gender is students' gender (0 = female; 1= male)
3) [a] The standard error calculation in Stata failed because of the lack of variance explained by T_SPT-Motivation so that variable had to be removed as a random effect.

Table 4: Predicting teachers' perceptions of their *TSR-positivity*: Unstandardized estimates and (*SE)*

| | School | | |
|---|---|---|---|
| | 1 (102 students; 30 teachers) | 2 (127 students; 27 teachers) | 3 (72 students; 4 teachers) |
| | Fixed Effects | | |
| Intercept | 3.07 (3.59)*** | 2.61 (.47)*** | .93 (1.16) |
| Level 1 Variables | | | |
| S_Gender | -.25 (.11)* | -.06 (.09) | .10 (.11) |
| S_SPT-Accuracy | .83 (.34)*** | .72 (.20)*** | 2.03 (.33)*** |
| S_SPT-Motivation | .00 (.07) | .04 (.05) | -.01 (.06) |
| T_SPT-Accuracy | -.21 (.24) | .44 (.19)* | -.10 (.22) |
| Level 2 Variables | | | |
| T_SPT-Motivation | .11 (.92) | .06 (.13) | .36 (.30) |
| | Random Parameters | | |
| Variance between teachers | | | |
| T_SPT-Motivation | .00 (.01) | .01 (.00) | .00 (.00) |
| Intercept | .07 (.12) | .00 (.00) | .00 (.00) |
| Variance between students | .21 (.03) | .23 (.03) | .19 (.03) |
| -2 log likelihood | 150.04 | 202.01 | 85.35 |

Notes:
1) * p < .05; ** p < .01; ***p < .001
2) S_SPT denotes a student social perspective taking measure; T_SPT denotes a teacher social perspective taking measure; S_Gender is students' gender (0 = female; 1= male)

Table 5: Predicting teachers' perceptions of their *TSR-negativity*: Unstandardized estimates and (*SE)*

| | School | | |
|---|---|---|---|
| | 1 (102 students; 30 teachers) | 2 (127 students; 27 teachers) | 3 (72 students; 4 teachers) |
| | Fixed Effects | | |
| Intercept | 2.21 (0.4)*** | 2.43(.34)*** | 4.91(1.10)*** |
| Level 1 Variables | | | |
| S_Gender | .36 (.08)*** | .06 (.08) | .18 (.10) |
| S_SPT-Accuracy | -.79 (.19)*** | -.59 (.17)*** | -1.90 (.31)*** |
| S_SPT-Motivation | .02 (.05) | -.01 (.04) | .06 (.06) |
| T_SPT-Accuracy | -.10 (.15) | -.40 (.15)** | .18 (.21) |
| Level 2 Variables | | | |
| T_SPT-Motivation | -.08 (.09) | -.06 (.09) | -.60 (.28)* |
| | Random Parameters | | |
| Variance between teachers | | | |
| T_SPT-Motivation | .00 (.00) | .00 (.00) | .00 (.00) |
| Intercept | .00 (.00) | .00 (.00) | .00 (.00) |
| Variance between students | .12 (.02) | .17 (.03) | .17 (.03) |
| -2 log likelihood | 103.45 | 153.18 | 76.69 |

Notes:
1) * p < .05; ** p < .01; ***p < .001
2) S_SPT denotes a student social perspective taking measure; T_SPT denotes a teacher social perspective taking measure; S_Gender is students' gender (0 = female; 1= male)

Figure 1a and 1b: Mean differences between teachers' and students' social perspective taking motivation and accuracy

Figure 1a: Social perspective taking motivation

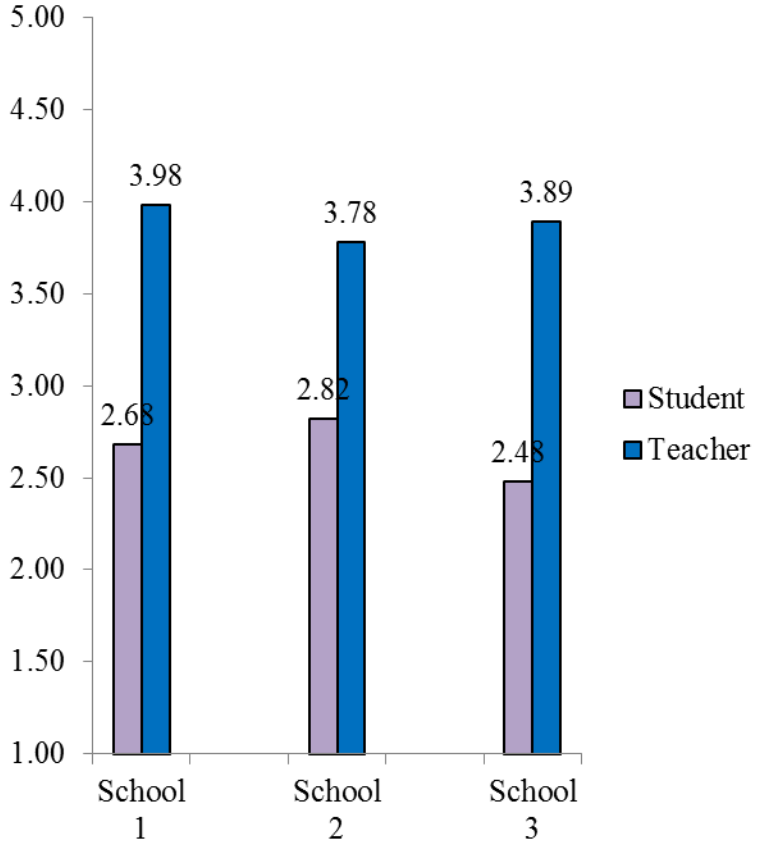
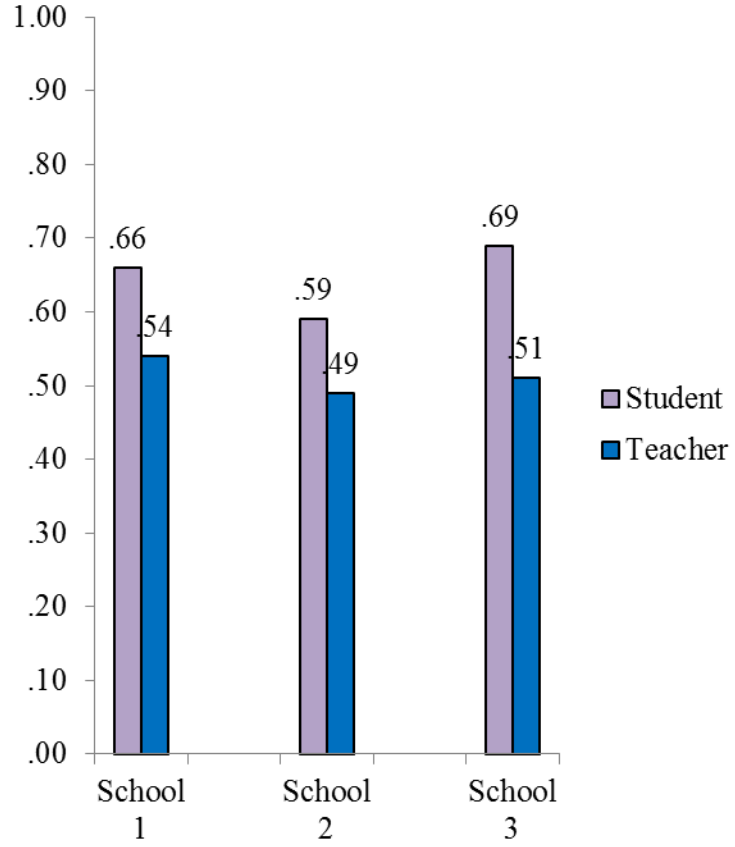



Figure 1b: Social perspective taking accuracy



**Appendix**

*Teacher-student relationship scale:* Student and teacher items

| | Student items | Teacher items |
|---|---|---|
| | *Positivity subscale* | |
| 1 | How much do you enjoy learning from <teacher's name>? | How much do you enjoy helping <student's name> learn? |
| 2 | How friendly is <teacher's name> toward you? | How friendly is <student's name> toward you? |
| 3 | How often does <teacher's name> say something encouraging to you? | How often do you say something encouraging to <student's name>? |
| 4 | How respectful is <teacher's name> towards you? | How respectful is <student's name> towards you? |
| 5 | How excited would you be to have <teacher's name> again next year? | How excited would you be to have <student's name> again next year? |
| 6 | How motivating are the activities that <teacher's name> plans for class? | How motivating does <student's name> find the activities that you plan for class? |
| 7 | How caring is <teacher's name> towards you? | How caring is <student's name> towards you? |
| 8 | How much do you like <teacher's name>'s personality? | How much do you like <student's name> personality? |
| 9 | Overall, how much do you learn from <teacher's name>? | Overall, how much does <student's name> learn from you? |
| | *Negativity subscale* | |
| 1 | How often do you ignore something <teacher's name> says? | How often does <student's name> ignore something you say? |
| 2 | During class, how often do you talk when <teacher's name> is talking (for instance, when you are supposed to be listening)? | During class, how often does <student's name> talk when you are talking (for instance, when <student's name> is supposed to be listening)? |
| 3 | How often does <teacher's name> say something that offends you? | How often do you say something that offends <student's name>? |
| 4 | How unfair is <teacher's name> to you in class? | How unfair are you to <student's name> in class? |
| 5 | How angry does <teacher's name> make you feel during class? | How angry do you make <student's name> feel during class? |

Notes:

Response anchors were arrayed along five points. For example: Not at all/Slightly/Somewhat/Quite a bit/A tremendous amount; Not at all friendly/Slightly friendly/Somewhat friendly/Quite friendly/Extremely friendly; Almost never/Once in a while/Sometimes/Frequently/Almost all the time; or Almost nothing/A little bit/Some/Quite a bit/A great deal.

*Social perspective taking motivation scale*: Student (and teacher) items

How often do you attempt to understand your teachers (students) better by trying to figure out what they are thinking?
When you are angry at a teacher (student), how often do you try to "put yourself in his or her shoes"?
How often do you try to think of more than one explanation for why a teacher (student) acted as s/he did?
How often do you try to figure out what motivates your teachers (students) to behave as they do?
Overall, how often do you try to understand the point of view of you teachers (students)?
How often do you try to figure out what emotions your teachers (students) are feeling when you meet them?
In general, how often do you try to understand how your teachers (students) view the situation?

Notes:
Response anchors were arrayed along five points. Almost never/Once in a while/Sometimes/Frequently/Almost all the time