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Teacher–student relationship quality as a function of children’s expectancies

Suzanne T. Gurland¹ and Jessie E. Evangelista^{1,2}

¹Middlebury College, USA

²University of Vermont, USA

Abstract

Study 1, a longitudinal field study, tested children’s summertime expectancies of their upcoming teachers as a predictor of teacher–student relationship quality (TSRQ) across an academic year. Eighty-one fourth- to sixth-grade children and their 16 teachers reported on TSRQ 2, 20, and 36 weeks into the school year. Children’s summertime expectancies predicted TSRQ, with greater expected autonomy support predicting higher quality relationships, as reported by both children and teachers. In Study 2, we manipulated 71 third- through sixth-grade children’s expectancies of a guest teacher’s autonomy-supportiveness prior to a 6-week instructional unit and measured TSRQ repeatedly throughout. The causal effect of expectancies was limited to the oldest children, and its direction differed by sex and time of measurement. Implications are discussed.

Keywords

Autonomy support; expectancy effects; self-fulfilling prophecy; teacher–student relationship

Children’s relationships with their teachers constitute an important social context for their elementary school lives (Bursuck & Asher, 1986; Ladd, Birch, & Buhs, 1999). Closeness, conflict, and other dimensions of teacher–student relationship quality (TSRQ) predict various academic outcomes, including achievement and school adjustment (Hughes, Luo, Kwok, & Loyd, 2008; Ladd et al., 1999; Pianta, Hamre, & Stuhlman, 2003) as well as indices of social adjustment, such as aggression, antisocial behavior, and peer acceptance (Ladd et al., 1999; Meehan, Hughes, & Cavell, 2003). Thus, the stakes are high in identifying and understanding what influences the quality of these relationships.

Teachers are known to contribute to TSRQ through sensitive, responsive styles of interaction that support children’s autonomy (Deci & Ryan, 2002). Such autonomy-supportive orientations have shown a variety of positive effects in classroom settings (Black & Deci, 2000; Hardre & Reeve, 2003; Kaplan & Assor, 2012; Reeve, 2002; Reeve, Bolt, & Cai, 1999) and in interpersonal relationships (Deci, LaGuardia, Moller, Scheiner, & Ryan, 2006; Knee & Uysal, 2011; La Guardia & Patrick, 2008). The central role of autonomy support in

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Corresponding author: Suzanne T. Gurland, Department of Psychology, Middlebury College, Bicentennial Way, Middlebury, VT 05753, USA., sgurland@middlebury.edu.

teacher–student and other relationships has long been recognized, and indeed, current thinking suggests that support for autonomy (or lack thereof) is a fundamental feature of all interpersonal relationships (Deci & Ryan, 2014; Weinstein & DeHaan, 2014).

However, children themselves also contribute to their relationships with adults, and one way is through subtle processes of social cognition. Specifically, children bring to their interactions with others a set of prior expectancies that affect relationship outcomes such as rapport and liking (Gurland, 2004; Gurland & Grolnick, 2003, 2008; Harris, Milich, Corbitt, Hoover, & Brady, 1992). By what pathways might expectancies be associated with relationship quality? Children's expectancies—made up perhaps of past relationship experience, prior knowledge of individual relationship partners, or predictive information provided by others (i.e., hearsay)—could produce expectancy effects or self-fulfilling prophecies. Expectancy effects would suggest that children come to perceive their teachers and the teacher–student relationship in ways consistent with their prior beliefs, regardless of whether those perceptions are accurate; self-fulfilling prophecies would suggest that children's beliefs lead them to behave in ways that actually elicit expectancy-consistent behavior from their teachers, creating the very relationships they had expected (Jussim & Harber, 2005; Miller & Turnbull, 1986).

If such effects are present in school classrooms, it would suggest that the critical teacher–student relationship could be subject to incidental effects of children's prior expectancies and might open the way to using expectancies as an avenue of intervention for improving TSRQ. In the first of two studies reported here, we therefore investigate fourth- through sixth-grade children's prior expectancies of teachers' autonomy supportiveness as an antecedent of TSRQ in real classrooms as well as possible origins of those expectancies. We use a longitudinal, multi-informant design to test whether associations between children's expectancies and TSRQ persist over time and whether their expectancies are associated only with their own perceptions of TSRQ, or with teachers' perceptions, as well.

Associations between children's expectancies and TSRQ would establish a predictive, but not a causal, relationship. It is possible that some third variable, such as relationship skill, could account for such an association by contributing both to children's expectancies of their teacher and to TSRQ. In our second study, therefore, we experimentally manipulate children's expectancies and specifically test whether they affect TSRQ.

Autonomy support and the teacher–student relationship

A useful dimension for characterizing children's expectancies of teachers is that of autonomy supportive to controlling (Deci & Ryan, 2002). Supporting children's autonomy means providing developmentally appropriate opportunities for them to make choices, demonstrating to them that their opinions and perspectives are valued, encouraging them to pursue activities or solve problems in their own way, and giving them reasonable latitude to be in charge of their own behavior with only a minimum of imposed controls. The antithesis of autonomy is control. Controlling children means pressuring them toward particular outcomes, taking over tasks of which they are capable, leading them, or otherwise failing to recognize them as whole people with volition and value.

This dimension is drawn from self-determination theory (Deci & Ryan, 2002; Vansteenkiste & Ryan, 2013), which views humans as having an innate psychological need for autonomy—that is, a need to experience oneself as an active agent in the environment, who engages in activities and makes decisions out of true volition, free from internally or externally imposed pressures. Corresponding to this psychological need, self-determination theory identifies the social-contextual dimension of “autonomy support,” the presence of which facilitates vitality, development, and motivation and the absence of which undermines optimal growth, development, and motivation (Deci & Ryan, 2002; Vansteenkiste & Ryan, 2013).

Teachers evidence stable individual differences in the degree to which they support children’s autonomy versus control children’s behavior (Reeve et al., 1999). The academic consequences of these orientations for children range from higher academic performance (Boggiano, Flink, Shields, Seelbach, & Barrett, 1993) to more fully self-regulated forms of motivation (Grolnick, Farkas, Sohmer, Michaels, & Valsiner, 2007) and a variety of other positive educational outcomes (for a review, see Reeve, 2002).

In addition to educational outcomes, autonomy support evidences benefits in the realm of interpersonal relationships (La Guardia & Patrick, 2008; Weinstein, 2014). In adult couples, the tendency to incorporate support for a partner’s autonomy is associated with increased relationship satisfaction (Patrick, Knee, Canevello, & Lonsbary, 2007). Close friendships with people who support others’ autonomy are rated higher on a variety of indices of relationship quality (Deci et al., 2006). Teacher autonomy support would, therefore, be expected to result in better TSRQ.

Consistent with this prediction, in studies involving child–adult interaction, adult provision of autonomy support has resulted in better relationship quality, measured as rapport. In first-time encounters between children and a novel adult in a videotaped “pseudointeraction,” the adult used either an autonomy-supportive or a controlling script to engage the children in a school-like activity. Children reported greater rapport with an autonomy-supportive adult (Gurland & Grolnick, 2003, 2008). Similarly, in live, face-to-face interactions between children and a novel adult, independent ratings of the adults’ degree of autonomy support were associated with children’s ratings of relationship quality (Gurland, 2004).

Autonomy support thus provides an empirically supported construct with direct links to relationship quality. Moreover, children are sensitive to autonomy support and report on it reliably in those around them (e.g., Gurland & Grolnick, 2008), but in idiosyncratic ways, such that different children perceive the very same adult as providing different levels of autonomy support. Thus, for all of teachers’ efforts to support their students’ autonomy, children will experience their teachers through a particular interpretive lens—that is, their expectancies—that might or might not match teachers’ actual orientations toward autonomy support in the classroom.

Children’s expectancies

Teachers’ best efforts at autonomy support may fail if children do not attend to the teachers’ actual behavior but instead allow their perceptions to be colored by their preexisting beliefs.

Based on the social psychological literature on impression formation and expectancy effects, it has been suggested that children have stereotypical expectations of individual adults and categories of adults that can affect their perceptions of relationship quality (Gurland & Grolnick, 2008). That is, children's predictions about the kind of person an adult will be can influence—by way of expectancy effects or self-fulfilling prophecies (e.g., Cooper & Hazelrigg, 1988; Harris & Rosenthal, 1985; Jussim & Harber, 2005; Miller & Turnbull, 1986; Rosenthal & Rubin, 1978)—their experience of the relationship with that adult.

Expectancy effects or “self-fulfilling prophecies” in adults have been demonstrated in over 300 studies (Cooper & Hazelrigg, 1988; Harris & Rosenthal, 1985; Rosenthal & Rubin, 1978). For example, in the classic study of such effects (Rosenthal & Jacobson, 1968), teachers were given the expectancy that some children would show dramatic gains in intellectual competence across the school year. At the end of the year, children of teachers who had expected them to “bloom” did in fact show greater gains in test performance than their peers (though for a critical, nuanced review of this finding, including its small effect size, see Jussim & Harber, 2005).

Students' expectancies of peers and teachers produce effects, as well. In one study, boys in Grades 3 through 6 were either led to expect that their play partner had behavioral problems or given no expectancy at all. Compared with perceivers given no expectancy, those given the expectancy gave their partners less credit for doing well on the tasks, attributed more expectancy-consistent negative behaviors to their partners and were less friendly toward them (Harris et al., 1992). Students led to expect that their teacher would be competent and motivating performed better and displayed more appropriate classroom behavior than students given no such expectancy (Jamieson, Lydon, Stewart, & Zanna, 1987). Finally, students who formed more positive expectancies of a confederate “magic trick teacher” on the basis of interpersonal cues regarding the teacher's intrinsic motivation then reported greater interest in the lesson, in performing the trick, and in learning more tricks than did students whose expectancies were more negative based on cues about the teacher's extrinsic motivation (Wild, Enzle, Nix, & Deci, 1997).

These studies suggest that children's expectancies are formed at least in part on the basis of exposure to interpersonal cues and can have potent effects on children's perceptions, experiences, and relationships. Empirical support bears out the predictions that (1) children's expectancies affect relationship quality, above and beyond adults' provision of autonomy support, and (2) this holds true for children's naturally occurring (i.e., not experimentally induced) expectancies. In two laboratory studies using video-based pseudointeractions between children and adult “teachers,” children reported better relationship quality with autonomy-supportive teachers, and children's expectancies affected relationship quality above and beyond teachers' actual levels of autonomy support (Gurland & Grolnick, 2003, 2008). Thus, relationship quality, operationalized as a paper-and-pencil measure of rapport, was predicted both by autonomy support and by children's expectancies. In a similar study using live interactions, greater adult autonomy support predicted greater rapport, and children's expectancies of autonomy support again contributed uniquely to rapport (Gurland, 2004). Thus, converging evidence from three laboratory studies suggests that

pseudoteachers' provision of autonomy support and children's expectancies of autonomy support independently affect the quality of the relationship, as perceived by children.

These studies, however, leave open three key questions: those of ecological validity, the source(s) of children's expectancies, and causality. To address the question of ecological validity—that is, whether the results hold for real children in real classrooms who develop and sustain relationships with their teachers over time, in Study 1, we use a questionnaire-based, longitudinal field study to test children's expectancies of teachers' autonomy support as predictors of TSRQ over time in actual classrooms. It has been suggested that expectancies might play a larger role at the beginning of relationships during the formation of initial impressions, but less of a role later in the relationship, with increasing experience of the target (Jussim & Eccles, 1995; Srull & Wyer, 1989). However, since the literature provides little guidance as to particular time frames, we aimed broadly to measure relationship quality at the beginning (2 weeks), middle (20 weeks), and end (36 weeks) of the school year.

Regarding the sources of children's expectancies, prior laboratory studies hinted at possible origins but did not directly address this issue. Individuals might construct expectancies based on memories of relevant past experiences, and on interpretations of available interpersonal cues (Radel, Sarrazin, Legrain, & Wild, 2010; Wild et al., 1997), such as information provided by others. This account is consistent with the findings that children generalize from their beliefs about a social category (e.g., “adults who work with children” or “all teachers”) to an unfamiliar individual who is a member of that category (e.g., the specific teacher to whom they are assigned; Gurland & Grolnick, 2003; Levy & Dweck, 1999). In Study 1, we therefore also measure children's perceptions of a whole category of adults, as well as the information they heard from others about their teachers, and test the relationship of these to children's teacher-specific expectancies.

Finally, regarding causality, although earlier studies have examined children's teacher expectancies in the field, or have manipulated children's expectancies of peers or along other dimensions, no prior study has specifically tested whether children's expectancies of autonomy support versus control from their teachers are causally related to the quality of relationships with those teachers. If indeed children's expectancies are causally related to TSRQ, then they offer a possible avenue of intervention for improving TSRQ. In Study 2, we therefore conduct such a test.

Research questions and hypotheses

To summarize, then, this set of two related studies was designed to address the following key questions:

1. What are the sources of children's prior expectations of their teachers' autonomy support?
2. Are such prior expectations related to the quality of the teacher–student relationship over time?
3. Do such prior expectations causally affect TSRQ?

We hypothesized that the more positive was the information children heard about their future teachers, and the more they viewed the general category of adults as being autonomy supportive, the more autonomy support they would expect of their future teachers. We further hypothesized that children's expectations of autonomy support would predict the quality of their teacher–student relationships, in the direction of expectancy confirmation; specifically, the greater the expectation of autonomy support, the better the quality of the relationship. Finally, we hypothesized that better TSRQ could be experimentally induced by leading children to expect autonomy support from a future teacher.

Study 1

Method

Participants—Participants were 81 children (54% girls) entering Grade 4 ($n = 20$, $M_{\text{age}} = 8.90$ years), Grade 5 ($n = 40$, $M_{\text{age}} = 9.85$ years), and Grade 6 ($n = 21$, $M_{\text{age}} = 10.90$ years) at a single, large, public school (approximately 1,000 students in prekindergarten through eighth grade, or equivalently, 4 through 14 years of age) located in a small town of approximately 8,000 residents. Our sample reflected the ethnic/racial demographics of the town, which is 98.5% White (U.S. Census Bureau, 2000). Four students (5%) in the sample were receiving free or reduced lunch, compared to 16% in the student body as a whole. The sample thus somewhat underrepresents low-income students. The students' 16 teachers (15 women) also participated: Grade 4 ($n = 5$), Grade 5 ($n = 6$), and Grade 6 ($n = 5$).

Procedure—At the end of the school year, all children finishing third ($n = 88$), fourth ($n = 114$), and fifth ($n = 104$) grades received a letter describing the study, a consent form, and a stamped return envelope. In all, 93 responses were received (30.39% response rate), with 83 of them (89.25%) in the affirmative. Two participants subsequently withdrew from the study, for a final sample size of 81 children. Retention of participants was excellent. In all, 80 of the 81 participants provided data at the first follow-up (1 missing), 79 at the second follow-up (2 missing), and 80 at the third follow-up (1 missing). The total of four missing data points came from four different children; thus, no single child was missing more than one data point. We, therefore, included all available data in all analyses.

During the summer (Time 0), trained research assistants contacted each child by telephone. The children heard a brief description of the project, were asked for their assent, and were reminded in age-appropriate language that their answers would be kept confidential. They reported their expectancies of the general category of “Adults I know” on the dimension of autonomy support to control. They then confirmed the name of their assigned teacher for the coming school year and verbally responded to questions about the level of autonomy support versus control they expected specifically from him or her. Children also indicated the extent of their prior knowledge of the teacher. A thank-you gift valued under US\$3 was sent to each child at his or her home.

Approximately 2 weeks (Time 1), 20 weeks (Time 2), and 36 weeks (Time 3) into the new school year, the research team visited the school to collect children's and teachers' reports of TSRQ. Groups of up to 30 children were brought to the school cafeteria, where a trained research assistant repeated the assent and confidentiality procedures and then read aloud

from questionnaires as the children followed along and marked their responses on their own papers. A second assistant circulated around the room to respond to any questions that arose. The questionnaires tapped children's reports of TSRQ, measured as rapport, their feelings with their teacher, and perceived relatedness. Children were thanked for their participation with a small gift at each time point. Teachers were given questionnaires tapping their reports of relationship quality with each study participant in their class. At Time 3, teachers received a one-time stipend of US\$50 to thank them for participating.

Measures

Autonomy Support Questionnaire–Expected (ASQ-E): At Time 0, children reported their expectations of their assigned teacher on the dimension of autonomy support to control by rating 10 items, such as “I think [teacher's name] will let kids do things their own way” and “I think [teacher's name] will try to control everything (reverse scored).” Each item was rated on a 4-point scale from 1 (*not true at all*) to 4 (*very true*). Summary scores were created by reverse scoring as necessary and averaging across all items, with higher scores indicating higher levels of expected autonomy support. In a previous study, reliability was reported as $\alpha = .63$, and remained satisfactory when the autonomy supportive, $\alpha = .77$, and control conditions, $\alpha = .70$, were analyzed separately (Gurland & Grolnick, 2003). In the current study, $\alpha = .63$.

Autonomy Support Questionnaire–General perceptions (ASQ-G): Also at Time 0, children completed the ASQ-G, which is identical to the ASQ-E, except that it taps children's perceptions of the autonomy supportiveness of the general category of adults who work with children, using the stem, “How many adults who work with kids ... “ and a 4-point scale from 1 (*almost no adults*) to 4 (*almost all adults*). Summary scores were created as above. Reliability was previously reported as $\alpha = .64$ (Gurland & Grolnick, 2003). In the current study, $\alpha = .60$.

Autonomy Support Questionnaire–Perceived (ASQ-P): The ASQ-P measures children's perceptions of how autonomy supportive versus controlling their teacher actually is. The measure thus functions as a child-reported measure of teachers' classroom orientations. Children completed the ASQ-P at Times 1, 2, and 3, each time rating items (e.g., “My teacher lets me make decisions” and “My teacher is interested in my ideas”) on a 4-point scale from 1 (*not true at all*) to 4 (*very true*). Summary scores were created as mentioned previously. Reliability ranged from .73 to .87 (Gurland & Grolnick, 2003). In the current study, Cronbach's α was .78 at Time 1, .77 at Time 2, and .82 at Time 3.

Prior knowledge of teacher: This collection of face-valid items written for this study tapped two categories of information, namely personal familiarity with the teacher (e.g., “How well do you know your teacher for next year? and How much do you already know about your teacher for next year?”) and positivity of exposure to hearsay regarding the teacher (e.g., “People have told me that my teacher for next year is nice,” “People have told me that my teacher for next year is strict [reverse scored]”). All items were rated on 4-point Likert scales, with the exception of one of the familiarity items. The three familiarity items were therefore standardized before being averaged to form a summary score, with

higher scores indicating greater personal familiarity with the teacher. The 4 hearsay items were reverse scored as necessary and averaged to form a summary score, with higher scores indicating greater positivity of exposure to hearsay about the teacher. For personal familiarity, Cronbach's α was .69, and for hearsay was .71.

Child–adult rapport measure (CHARM). The CHARM consists of 20 items that children rate from 1 (*not true at all*) to 4 (*very true*) as a measure of TSRQ (e.g., “My teacher would laugh if I told a joke,” “My teacher doesn’t want to get to know me better [reverse scored]”). Items are reverse scored as appropriate, and a summary score is computed by averaging across all items. Higher scores indicate greater rapport. Previously reported as ranged from .94 to .97 (Gurland & Grolnick, 2003). In the current study, Cronbach's α was .93, .95, and .94 at Times 1, 2, and 3, respectively.

Feelings measure. Children rate 9 items on a scale from 1 (*not true at all*) to 4 (*very true*) to indicate how they feel with their teachers (e.g., “When I am with my teacher, I feel happy,” “When I am with my teacher, I feel ignored [reverse scored]”). Five of these items were drawn directly from the emotional security subscale of the Research Assessment Package for Schools (IRRE, 1998), and another four were written to supplement these. Higher scores indicate greater positivity of feelings. In reliability studies, as ranged from .71 to .74 (IRRE, 1998). In this study, Cronbach's α was .94 at Times 1 and 2 and .95 at Time 3.

Relatedness scale. As an additional measure of relationship quality, children assessed relatedness by rating 5 items tapping their teachers' involvement with them (e.g., “My teacher doesn’t seem to have enough time for me [reverse scored],” “My teacher cares about how I do in school”), on a scale from 1 (*not true at all*) to 4 (*very true*). Items are reverse scored as necessary, and a mean is computed across all items, with higher means indicating greater relatedness (IRRE, 1998; Wellborn & Connell, 1987). Cronbach's α s for Times 1, 2, and 3 were .85, .79, and .81, respectively.

Student–teacher relationship scale (STRS). The STRS consists of 20 items that teachers rate from 1 (*definitely does not apply*) to 5 (*definitely applies*) to describe the quality of their relationship with a given child. The items make up three subscales: conflict (e.g., “this child feels that I treat him/her unfairly”), closeness (e.g., “if upset, this child will seek comfort from me”), and dependency (e.g., “this child appears hurt or embarrassed when I correct him/her”). Items are reverse scored where appropriate and summed to form subscale scores (Pianta, 2001), which are then weighted and combined to form an overall summary score representing relationship quality. Higher scores represent greater relationship quality. Test–retest reliability in a previous study was .88 for closeness, .92 for conflict, .76 for dependency, and .89 overall (Pianta, 2001). In the current study, after removing two underperforming items, Cronbach's α ranged across time points from .91 to .94 for conflict, from .60 to .67 for dependency, from .80 to .84 for closeness, and from .75 to .79 overall.

Results

Preliminary analyses—Girls' means were higher than boys' on all key variables (Table 1). This pattern is consistent with other findings suggesting that gender plays a role in TSRQ

(e.g., Ladd et al., 1999; Meehan et al., 2003; Saft & Pianta, 2001). We nonetheless analyzed girls' and boys' data together because these were simple mean-level differences; sex did not interact with other factors to affect outcomes. We similarly collapsed across grade because only two isolated effects of grade emerged—on feelings at Time 2 and on relatedness at Time 3—and grade did not interact with other factors to affect outcomes.

Primary analyses

Sources of children's prior expectations of teachers' autonomy support.: An initial question of interest involved possible origins of children's expectancies of their teachers. To investigate this, we tested children's general expectancies of "adults I know," personal familiarity with the teacher, and positivity of exposure to hearsay about the teacher as predictors of children's summertime expectancies of their assigned teacher for the coming year, using multilevel modeling to account for the fact that children were nested within classrooms. Personal familiarity with the teacher had no effect on children's expectancies, $F(1, 77) = .21$, *ns*, but categorical expectancies, $\beta = .59$, $F(1, 77) = 49.36$, $p < .001$, and positivity of exposure to hearsay did, $\beta = .15$, $F(1, 77) = 8.31$, $p = .005$. Specifically, the more autonomy-supportive children perceived adults to be generally, and the more positive was the information they had heard about their teacher, the more autonomy supportive they expected her/him to be.

Relation of prior expectations to teacher–student relationship over time.: A central question of the study concerned the effect of children's summertime expectancies on the quality of their teacher–student relationships. Relationship quality was measured from children's perspective as rapport, relatedness, and positivity of feelings and from teachers' perspective as overall relationship quality. We tested each of these four outcome measures separately. Since each was measured at three time points, and since children were nested within teachers, our strategy was the first to model the random effects of child (within teacher), teacher, and time, absent any predictors. We then added children's expectancies as a predictor. Results are summarized in Table 2 and presented by outcome, that is, rapport, relatedness and feelings, and teacher reports.

Rapport.: The nonsignificant random effect of teacher suggested that children's reports of rapport did not vary systematically from teacher to teacher. Rather, there was more variability in rapport within classrooms than between classrooms. The significant random effect of the slope for time suggests that children differed from one another in their reported trajectories of rapport across the school year. Many children's reports of rapport declined from the beginning to the end of the year, while others' remained relatively steady or increased. Based on these tests, the nonsignificant random effect of teacher was excluded from subsequent models, while the random effect of child and random slope for time were retained.

To further illuminate the effect of time, we ran a follow-up model, including time as a fixed effect, in addition to including it as a random effect. The effect was significant, $F(1, 79.39) = 65.76$, $p < .001$, with a negative parameter estimate, $\beta = .23$, indicating that rapport declined over time. Thus, although children differed significantly from one another in their reported

trajectories of rapport over time, taken on average, children reported declining rapport across the school year.

To test whether children's summertime expectancies of their teachers' autonomy support affected rapport, we added expectancies into the model as a fixed predictor. Children's summertime expectancies of their teachers' autonomy support did significantly predict rapport. The effect was in the direction of expectancy confirmation, with greater expected autonomy support predicting greater rapport.

A remaining question was whether children's summertime expectancies would predict the trajectory of rapport over time. To represent this possibility, we tested the interaction of time and expectancies along with each of their main effects. The interaction was not significant, $F(1, 74) = .01$, ns, suggesting that the between-children differences in the trajectory of rapport were not attributable to initial expectancy levels.

Relatedness and feelings. The patterns of results for the other two child-reported outcomes—relatedness and feelings—were similar to that for rapport (Table 2). Specifically, neither relatedness nor feelings showed significant variation from teacher to teacher, but both revealed significant differences in trajectory over time from child to child. These individual slope effects coexisted with mean effects, such that on average, children's reports of relatedness declined over the course of the school year, $F(1, 80.22) = 26.15$, $p < .001$, $\beta = -.19$, as did the positivity of their feelings, $F(1, 79.96) = 48.77$, $p < .001$, $\beta = -.28$.

Children's summertime expectancies significantly predicted relatedness and feelings, in the direction of greater expected autonomy support predicting greater relatedness and more positive feelings. Expectancies did not interact with time to affect relatedness, $F(1, 74) = .87$, ns, or feelings, $F(1, 74) = .09$, ns, suggesting that while expectancies predicted relatedness and feelings, they did not predict changes in these constructs over time.

Teacher reports of relationship quality. When teachers' reports of relationship quality were tested as the outcome variable, teacher-to-teacher variance did not reach significance but did approach it. For this reason, we retained the random effect of teacher in subsequent models, to be sure we accounted for correlation among teacher–student relationships within a teacher. The random effect of time was again significant, indicating that teachers reported different trajectories over time for the quality of different teacher–student relationships. There was no overall mean effect of time, however, $F(1, 78.15) = 1.06$, ns, suggesting that teachers, unlike children, tended to report stable relationship quality across the year.

Children's expectancies predicted teachers' reports of relationship quality, in the expected direction. Specifically, greater expected autonomy support on children's part predicted greater relationship quality as reported by teachers. This finding suggests that children's expectancies might affect the teacher–student relationship in ways that are detectable by teachers in addition to children. The interaction of expectancies with time was not significant, $F(1, 73.66) = 2.19$, ns.

Discussion

This longitudinal field study investigated children's summertime expectancies of their soon-to-be teachers as a predictor of TSRQ and explored possible origins of those expectancies. The findings suggest that children form expectancies of their teachers based on information heard from others and on generalizations from their perceptions of adults around them. Findings further suggest that these expectancies are associated with the quality of their teacher-student relationships across the academic year.

Children's summertime expectancies were independently predicted both by their general beliefs about the category of adults who work with children and by the positivity of "hearsay" to which they had been exposed. The application of general beliefs about a group to a novel individual who is believed to be a member of the group is consistent with earlier research (Levy & Dweck, 1999). From a practical standpoint, this means that individual teachers are subject to the consequences of children's experience with other adults. In addition to generalizing from a group to an individual, children also generalize from an individual to a group (Levy & Dweck, 1999). Thus, their eventual experiences with a given teacher likely feed back into their general beliefs about adults who work with children.

The positivity of the hearsay about their future teachers to which children were exposed predicted their summertime expectancies. This squares with anecdotal evidence suggesting that children hear quite a lot about their assigned teachers (e.g., from other children). Indeed, some schools try to minimize this kind of extraneous communication by communicating the next year's teacher assignments as late as possible. Children's expectancies are causally affected by the provision of relevant information (Wild et al., 1997), and our findings suggest that even casual information provided in everyday contexts might operate similarly. Moreover, children appear to generalize from the information they hear, given that our hearsay questions tapped dimensions distinct from our expectancies questions.

A central finding of the study was that TSRQ is predicted by children's expectancies. The more supportive of autonomy children expected their teachers to be, prior to the start of the school year, the better quality they reported their relationships to be throughout the school year. What is more, children's summertime expectancies also predicted teachers' later reports of relationship quality. One possible interpretation of this finding is a self-fulfilling prophecy whereby children elicit behavior from their teachers that is consistent with their prior expectancies, creating the relationship that was expected. An alternative interpretation is that children who are skilled at relationship building would be more likely both to expect and to create supportive relationships with their teachers. Study 2 below was designed to address these possibilities more directly.

Children were nested within teachers, and it was therefore plausible that teacher-to-teacher differences would account for some of the variance in relationship quality. Our data suggest, however, that it is not simply that certain teachers are "good relationship builders" who consistently achieve high-quality relationships with all their students, while others are "bad relationship builders" who fail to. Rather, there is considerable within-teacher variation in relationship quality, despite what teachers' reputations among students (and the subsequent cycle of hearsay and expectancies) might suggest. However, an alternative explanation could

be that systematic differences between teachers do exist but were too small to detect with our limited sample size of teachers (Maas & Hox, 2005).

Study 2

The central finding of Study 1 was that children's summertime expectancies of their teachers predicted TSRQ during the school year. We suggest a causal role of expectancies via expectancy effects or self-fulfilling prophecies. A plausible alternative explanation, however, is that some third variable is at work, and expectancies are not causally related to relationship quality. To adjudicate between these alternatives, we designed Study 2 to include the experimental manipulation of children's expectancies of their teachers.

Method

Participants—Participants were 71 (52.9% female and 40.8% male) children from four classes at an elementary school in a small Vermont town (population <5,000). Children were in Grade 3 ($n = 14$), Grade 4 ($n = 24$), Grade 5 ($n = 15$), and Grade 6 ($n = 18$).

Procedure—The study capitalized on an opportunity to manipulate children's expectancies of a guest teacher who would be teaching a short-term “add-on” unit during the regular school day and who would have no future contact with the children. The instructional unit—called the “bucket-filling program”—was taught in 12 half-hour sessions over 6 weeks at a single school. Two college students with prior teaching experience served as the guest teachers and were kept blind to hypotheses. The bucket-filling curriculum was based on the “How full is your bucket?” series of books (e.g., McCloud, 2011; Rath Reckmeyer, 2009), in which children's “invisible buckets” are employed as a metaphor for their emotional well-being: supportive words and deeds “put drops in” and fill other people's buckets, whereas critical or undermining words and deeds “spill drops out” and empty others' buckets.

Before the unit began, a classroom-level expectancy manipulation was delivered separately to four mixed-grade classrooms, which were then combined into two bucket-filling classes. The goals were to ensure that grade in school would not be confounded with experimental condition (e.g., that not all third graders would receive the same manipulation) and that each bucket-filling classroom would contain a mix of children who had received each of the manipulations. The specifics of which classrooms received which manipulation and how they were combined into bucket-filling classes are presented in Figure 1. The population of each bucket-filling class, therefore, represented the full factorial crossing of 2 Grades 2 (regular) Classrooms 2 Experimental Conditions. This avoided potential contamination problems if classmates in the same regular classroom discussed their expectancies, but still allowed effects of grade, classroom, and condition to be tested. Despite what children were led to believe, in reality, the guest teachers simply used their own natural styles of teaching and were blind to children's expectancies.

The experimental manipulations themselves were delivered by playing a prerecorded DVD in each classroom on the first day that the bucket-filling program was to begin. The DVD showed the primary researcher, close-up, speaking directly into the camera and addressing

the children. She greeted the children and explained that they would be learning about “bucket filling” from a special teacher who they could think of as their “bucket lady.” Then, in the experimental condition, she gave children the expectation that the guest teacher would be autonomy supportive:

Now, you might be wondering who the Bucket Lady is for your class, and what she’ll be like. Let me tell you a bit about her ...

The bucket lady for your class is Ms [Name]. Ms [Name] is really interested in kids’ ideas, even more than her own ideas. She almost always lets kids do things their own way and asks kids first how they want to do things. She tries to help them do it the way they want to do it.

So, now you know what your bucket lady will be like!

After brief instructions about logistics, the heart of the manipulation was then repeated in full:

Remember, your bucket lady is Ms [Name]. Ms [Name] is really interested in kids’ ideas, even more than her own ideas. She almost always lets kids do things their own way and asks kids first how they want to do things. She tries to help them do it the way they want to do it.

By contrast, in the control condition, children were given the expectation that the guest teacher would sometimes be autonomy supportive and sometimes controlling:

Now, you might be wondering who the Bucket Lady is for your class, and what she’ll be like. Let me tell you a bit about her ...

The bucket lady for your class is Ms [Name]. Ms [Name] is sometimes interested in kids’ ideas, but sometimes uses her own ideas without asking kids. She lets kids do some things their own way, but with other things, she says the kids have to do it her way. She makes sure they do it the way it is *supposed* to be done.

So, now you know what your bucket lady will be like!

After brief instructions about logistics, identical to those in the experimental condition, the heart of the control manipulation was then repeated in full:

Remember, your bucket lady is Ms [Name]. Ms [Name] is sometimes interested in kids’ ideas, but sometimes uses her own ideas without asking kids. She lets kids do some things their own way, but with other things, she says the kids have to do it her way. She makes sure they do it the way it is *supposed* to be done.

Right before the guest teachers entered their rooms to begin the bucket-filling program, children completed a measure of expected autonomy support as a manipulation check. Their perceptions of the guest teachers’ actual autonomy support and their reports of relationship quality were then measured multiple times throughout the bucket-filling program, after the guest teacher had left the room.

Measures—The ASQ-E ($\alpha = .72$ in this sample) was administered before the guest teacher entered the room on the first day of the program, and the ASQ-P ($\alpha = .70$ and $.89$ the first

and second times measured, respectively) and CHARM (a ranging from .92 to .95 at different times of measurement) were administered after she left the room on various days several weeks into the program. The questionnaires were identical to those in Study 1, with minor modifications to the sentence stem (e.g., “I think the bucket lady will ... “ instead of “I think [teacher’s name] will”). Questionnaires were read aloud by a researcher while children followed along on their own papers.

Results

Manipulation check—Children given the autonomy-supportive expectancy expected greater autonomy support from their guest teachers, $M = 3.06$, than did children given the balanced expectancy, $M = 2.54$, $t(65) = 3.89$, $p < .001$.

Analytical approach—Multilevel analyses were used to model relationship quality as a function of children’s manipulated expectancies, with classroom included as a random factor to account for within-classroom correlations among children. Perceived autonomy support was included to test its effects on relationship quality and to test whether any effects of expectancies would emerge above and beyond the effects of perceived autonomy support. Sex, grade, time of administration, and all interactions were also included as potential moderators. The primary effect of interest was the fixed effect of experimental condition on relationship quality and any moderators of it.

Relationship quality was hypothesized to be greater for children given the autonomy-supportive expectancy, over and above perceptions of guest teachers’ autonomy support. Support for this hypothesis would emerge as a main effect of expectancy condition, when perceived autonomy support is included in the model.

Results are reported in Table 3. As hypothesized, they indicate that expectancy condition, in interaction with other moderators, did indeed affect relationship quality. However, a variety of incidental effects emerged, as well. We therefore briefly describe these incidental effects before undertaking a fuller presentation of tests of the study’s main hypothesis.

Incidental effects—The random effects of teacher and time (Table 3) suggest that relationship quality differed from teacher to teacher and across the duration of the bucket-filling program. This is likely a function of natural variability in teacher styles and rhythms and is controlled for in the subsequent tests of fixed effects. The effect of perceived autonomy support was in the positive direction, indicating that greater perceived autonomy support predicted greater relationship quality. Relationship quality was also affected by the Sex $\times$ Grade interaction and further the Time $\times$ Sex $\times$ Grade interaction. Specifically, girls tended to report greater relationship quality than boys, but the difference was particularly pronounced among fifth-grade children. The Time $\times$ Sex $\times$ Grade interaction suggested that girls in third grade reported increasing relationship quality across the duration of the bucket-filling program, but in the later grades, reported decreasing relationship quality across the duration of the program. Boys showed the opposite pattern, that is, in third grade, boys reported decreasing relationship quality over the 6 weeks of the program; in fourth and fifth grades, they reported steady relationship quality; and then in sixth grade, increasing quality over the 6 weeks of the program.

Primary analyses—Since condition effects were of primary interest, we focus on reporting those. In cases where lower order effects were qualified by higher order interactions, we focus primarily on the highest order interactions that involve experimental condition, namely, Time $\times$ Grade $\times$ Condition and Sex $\times$ Grade $\times$ Condition.

Time $\times$ Grade $\times$ Condition.: Grade and condition interacted, such that there appeared to be no effect of condition, except among the fifth graders, where the effect was in the counterhypothetical direction. However, this interaction was further modified by time, in a three-way Time $\times$ Grade $\times$ Condition interaction. The relevant means are presented in Table 4, but to illustrate the pattern of condition effects, we plotted the *difference in rapport between the two conditions*, broken out by time and grade, as shown in Figure 2. Inspection of the figure reveals that among the fifth graders, the effect was counterhypothetical across the first two time points, but diminished to nonsignificance at the third time point. Among the sixth graders, rapport showed the predicted pattern the first time it was measured, with those sixth graders who expected autonomy support reporting greater rapport than those expecting balance. The second time rapport was measured, the two sixth-grade groups showed no difference, and at the third time point, the effect had reversed direction, with sixth graders in the balanced expectancy condition reporting greater rapport than sixth graders in the autonomy support expectancy condition.

Sex $\times$ Grade $\times$ Condition.: Means relevant to the Sex $\times$ Grade $\times$ Condition interaction are presented in Table 4, but to illustrate the pattern of condition effects, we plotted the *difference in rapport between the two conditions*, broken out by sex and grade, as shown in Figure 3. Inspection of the figure reveals the absence of a condition effect among third-grade boys and girls. Among the fourth graders, boys showed a counterhypothetical effect (greater rapport among those in the balanced expectancy condition than among those in the autonomy support expectancy condition), while girls showed the hypothesized effect (greater rapport among those in the autonomy support expectancy condition). Among the fifth graders, both boys and girls showed a counterhypothetical effect. Among the sixth-grade boys, the condition effect then reversed to the predicted direction, whereas among the sixth-grade girls, the effect became stronger (relative to younger grades) in the counterhypothetical direction.

Follow-up analysis—The models tested above established that expectancies affected rapport, above and beyond perceptions of autonomy support. It is of course possible, however, that expectancies also affected perceived autonomy support and, indeed, that perceived autonomy support might be an avenue through which expectancies have their effect. Therefore, using the same model as above, but substituting perceived autonomy support as the dependent variable and rapport as an independent variable, we tested the effect of expectancy condition on perceived autonomy support. The effect of condition was significant, $F(45.47) = 10.15$, $p < .01$, in the anticipated direction; those who expected autonomy support perceiving greater autonomy support, $M = 2.902$, than those who expected balance, $M = 2.296$.

Discussion

Children's prior expectancies causally affected TSRQ, above and beyond children's perceptions of their teachers' autonomy support, but the effect and its direction depended on children's sex and grade and on the particular point in the developing relationship at which outcomes were measured.

As predicted, perceived autonomy support was positively associated with relationship quality. This finding is consistent with the earlier work (Gurland, 2004; Gurland & Grolnick, 2003, 2008) and provides further evidence that the dimension of autonomy support to control is a valid and important component of relationship quality.

Children's expectancies explained variance in relationship quality above and beyond perceived autonomy support, but specifically among sixth graders, and in nuanced ways. The effect was in the predicted direction among the sixth-grade boys and at the beginning of the student-teacher relationship; but in the opposite direction among sixth-grade girls and later in the student-teacher relationship. Given that girls (relative to boys) and older children (relative to younger) are more sophisticated in various aspects of social cognition (Gur et al., 2012), we suggest the results are evidence of a developmental progression, wherein younger children with less developed social cognition do not integrate the experimentally provided expectancy with their own experience of the target adult. Older children, with more advanced social cognitive abilities, integrate the expectancy, allowing it to color their perceptions of another. Girls in this oldest group, whose social cognition is arguably the most advanced of the children in this sample, might consider the expectancy information and then discount it—for example, as unrealistically positive—in favor of a more balanced view of the teacher. Such a “backlash” effect of overly positive expectancies would be consistent with an earlier finding that very positive expectancies predicted the best outcomes for children in the middle elementary school years but that realistic expectancies predicted the best outcomes for children in the late elementary school years (Gurland, Grolnick, & Friendly, 2012).

General discussion

This pair of studies examined TSRQ as a function of children's expectancies of their teachers' support for autonomy. In the first study, children's summertime expectancies of their teachers predicted relationship quality during the following school year. Of course, one parsimonious interpretation of this correlational finding might be that a third variable—such as children's relationship skills—led them both to expect their teachers to support their autonomy and to successfully develop high-quality relationships with their teachers. However, three bits of evidence seem to suggest a more nuanced explanation.

First, positivity of hearsay exposure contributed independently to children's expectancies of their teachers. This opens up the possibility of a classic expectancy effect, whereby children come to view their relationships with their teachers in ways consistent with their prior beliefs. As Miller and Turnbull (1986) point out, such expectancy effects can come about in a variety of ways. Children might selectively attend to expectancy-confirming information. In this case, their perception is biased and does not accurately reflect the reality of the

relationship. Alternatively, children might behave in ways that elicit expectancy-confirming behavior from their teachers and then form accurate perceptions on the basis of observing those expectancy-consistent behaviors. This latter case is described as a true “self-fulfilling prophecy” in the sense that the belief makes the reality come about. It would indicate not simply that children perceived their teacher– student relationships in expectancy-congruent ways but rather that the teacher and the relationship have actually come to agree with the expectancy.

The second bit of evidence suggesting a more nuanced explanation for the link from expectancies to TSRQ has to do with this latter account of a self-fulfilling prophecy. Children’s summertime expectancies predicted not only their own perceptions of TSRQ but also their teachers’ perceptions of relationship quality. That is, the children’s teachers, who were blind to the children’s summertime reports, appear to have come to view their relationships in ways that were consistent with children’s earlier expectancies. It is possible that, on the basis of their expectancies, children elicited expectancy-congruent behaviors from their teachers that affected the actual quality of the relationship, such that teachers could report on it as well. Future studies involving independent observation of teacher behaviors, and controlling for children’s relationship skills, can help test the plausibility of this account.

The findings from Study 2 constitute the third source of evidence in support of TSRQ as a function of children’s expectancies. The central effect in Study 2 was multiply moderated, but the overall finding was that the oldest children’s experimentally manipulated expectancies of guest teachers’ autonomy supportiveness were causally related to subsequent relationship quality. This effect held above and beyond children’s perceptions of the teachers’ actual provision of autonomy support, suggesting an effect specifically of expectancies.

The multiply moderated central effect in Study 2 also presents somewhat of a contrast with the findings of Study 1. Specifically, whereas Study 1 showed a relatively straightforward expectancy effect whereby expectations of greater autonomy support predicted greater relationship quality, Study 2 showed that the magnitude and even the direction of the expectancy effect depended on children’s sex and grade and at which time point the measurement was made. If, as described previously in the Study 2 Discussion, the variability in these latter findings is explained by developmental changes in children’s social cognition, the question remains why such developmental differences would emerge in Study 2 but not in Study 1. We suggest that the answer lies in ecological differences between the two studies. In the first study, we measured children’s incidental expectations of their teachers and then allowed the teacher–student relationship to unfold over time, subject to the effects of children’s expectancies but also subject to the multitude of other influences that a teacher–student relationship encounters in the day-to-day flow of activity over the weeks and months of a school year. The relationship was embedded in the rich context of children’s school lives apart from participation in the study and, while we measured its quality at particular time points, children never evaluated the quality of the relationship specifically relative to their initial expectations. That is to say, the first study asked children to report on their lived experience of the teacher, but never directly called on children’s social

information processing. The second study, by contrast, called directly on children's social information processing. By virtue of the short duration of the bucket-filling program and the novelty of a guest teacher, children were quite likely evaluating the teacher specifically as against what they had been led to believe about her and possibly as against their evaluation of the researcher as a reliable source of information about the guest teacher. They had only a few hours' total experience of the relationship, and all of that experience was inextricably linked to participation in the study and measurement of the relationship. It is in just this kind of comparative paradigm (expectation versus information gleaned from subsequent perception) that developmental differences in social cognition were noted in a previous study (Gurland, et al., 2012). What is more, our findings are consistent with developmental work showing that, with age, children show increasing cynicism or skepticism regarding information provided by others (Heyman, Fu, & Lee, 2007; Mills & Keil, 2005). In Study 2, children received information about their guest teachers from the researcher, a source of unknown trustworthiness. The older children may, therefore, have recruited their social information processing skills to evaluate the truth of the expectancy information by closely monitoring the match or mismatch between the information they were given and their own subsequent perceptions. In Study 1, by contrast, children's expectancies would have come from their own reasoning or from known, trusted sources. Therefore, there would have been no motivation to treat their expectancies with skepticism.

Taken collectively, we suggest the results of this pair of studies are of both theoretical and practical value. Regarding theory, the results underscore autonomy support versus control (Deci & Ryan, 2002) as an important dimension of children's relationships with their teachers. In addition to autonomy, self-determination theory posits that humans have a psychological need for relatedness (Deci & Ryan, 2002), and prior work suggests that satisfaction of the needs for autonomy and for relatedness go hand in hand (La Guardia & Patrick, 2008). Extending the notion that support for autonomy enhances interpersonal relationships, our results suggest that the mere expectancy of having one's autonomy supported might enhance relationships.

Regarding practical implications, our results suggest that teacher–student relationships, which are linked to critical academic outcomes for children (Hughes et al., 2008; Ladd et al., 1999; Pianta et al., 2003), might be subject to the incidental influence of children's expectancies. Further, these expectancies are partially informed by hearsay from others regarding the teacher. School policies that provide children with actual experience of their assigned teacher—such as meeting him or her very soon after the assignment is made, instead of allowing for their expectancies to fill a void of information—might, therefore, be beneficial. Another possibility is to provide positive, truthful information to students about their assigned teachers. For example, students could be asked to indicate anonymously what they “like best” about their current teacher, and these responses could be shared with the children entering that teacher's class the following year.

Several limitations of these studies are worth mentioning, especially those that point the way toward important topics for future study. The reliabilities of some of the measures were lower than would have been ideal. While it is probable that these reliabilities only diminished the apparent effects, it will be important to replicate the findings with more

reliable measures. In multilevel analyses as are reported here, sample size considerations are more complicated than in non-nested designs. For example, whereas Study 1 included 81 children, they were drawn from only 16 classrooms and that constrains the power of the analyses. Future replications with larger samples at both levels of analysis will be useful in establishing the generalizability of the findings. A further limitation, regarding Study 1, is we had no independent ratings of the teachers' autonomy supportiveness or the quality of the teacher–student relationship. In future work, it would be valuable to obtain these ratings, as they could provide more definitive insight regarding the question of expectancy effects versus self-fulfilling prophecies. Finally, a future study that replicates Study 2, but with increased ecological validity, would go a long way toward testing our assertion that aspects of the Study 2 design pulled for the multiply moderated effects we detected.

Overall, this pair of studies substantiates children's prior expectancies as a determinant of TSRQ and points the way for using expectancy management to protect and improve teacher–student relationships.

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Figure 1.

Children's regular school classrooms were mixed grade, with two classrooms containing a mix of third- and fourth-grade students and two containing a mix of fifth- and sixth-grade students. Students in one third-/fourth-grade classroom and one fifth-/sixth-grade classroom were led to expect that the guest teacher ("bucket lady") would be autonomy supportive; students in the other third-/fourth-grade classroom and the other fifth-/sixth-grade classroom were led to expect that the guest teacher would show a balance of autonomy support and control. The classrooms were then re-sorted by grade to create one bucket-filling class of entirely third and fourth graders, half of whom expected autonomy support and half of whom expected balance; and a second bucket-filling class of entirely fifth and sixth graders, half of whom expected autonomy support and half of whom expected balance.

Figure 2.

Direction and size of condition effect by time point and grade. The vertical axis represents rapport in the autonomy support expectancy condition minus rapport in the balance expectancy condition. Therefore, bars above the x-axis are consistent with the hypothesis that greater rapport results from greater expected autonomy support, whereas bars below the x-axis are counter to that hypothesis.

Figure 3.

Direction and size of condition effect by sex and grade. The vertical axis represents rapport in the autonomy support expectancy condition minus rapport in the balance expectancy condition. Therefore, bars above the x-axis are consistent with the hypothesis that greater rapport results from greater expected autonomy support, whereas bars below the x-axis are counter to that hypothesis.

Table 1.

Means and standard deviations by gender and gender effects.

Variable	Girls		Boys		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Time 0					
Expected AS	3.34	.35	3.06	.41	3.29**
Time 1					
Feelings	3.66	.37	3.14	.86	3.36**
Rapport	3.62	.31	3.14	.62	4.24***
Relatedness	3.74	.28	3.29	.84	3.05**
Perceived AS	3.13	.41	2.69	.77	3.06**
STRS	113.63	10.11	102.89	14.96	3.68***
Time 2					
Feelings	3.50	.42	2.81	.90	4.11***
Rapport	3.48	.38	2.87	.71	4.63***
Relatedness	3.66	.39	3.03	.73	4.66***
Perceived AS	2.90	.47	2.29	.75	4.23***
STRS	115.95	10.31	102.64	13.53	5.00***
Time 3					
Feelings	3.16	.73	2.46	.97	3.65***
Rapport	3.16	.58	2.64	.71	3.59**
Relatedness	3.40	.59	2.86	.82	3.35**
Perceived AS	2.60	.66	2.12	.76	3.01**
STRS	115.27	9.74	102.53	16.50	4.10***

Note. AS = autonomy support; STRS = Student–Teacher Relationship Scale.

**
 $p < .01$

 $p < .001$.

Table 2.

Children's expectancies affect TSRQ (tested as a repeated measure).

Outcome	Effect	Random		Fixed			
		-2RLL ^a	-2RLL ^b	df	F	Estimate	PRV ^c
Rapport	Child	389.56	—				
	Teacher	388.79	-.77				
	Time	365.83	-22.96***				
	Intercept			73.03	16.77**	2.26	
	Expectancies			73.44	7.55**	.41	.10
Relatedness	Child	428.06	—				
	Teacher	428.05	-.01				
	Time	413.56	-14.49***				
	Intercept			73.14	14.42***	2.35	
	Expectancies			73.56	4.16*	-.34	.08
Feelings	Child	508.96	—				
	Teacher	508.62	.34				
	Time	480.28	-28.34***				
	Intercept			73.00	9.61**	2.15	
	Expectancies			73.24	5.96*	.45	.02
STRS	Child	1,772.88	—				
	Teacher	1,769.37	-3.51 [†]				
	Time	1,763.87	-5.50*				
	Intercept			60.52	35.05***	76.85	
	Expectancies			71.67	4.21*	6.81	.06

Note. TSRQ = teacher-student relationship quality; RLL = restricted log likelihood; RLL = Restricted log like-lihood; *df* = degrees of freedom; PRV = proportion reduction in variance.

^aThe -2RLL is a measure of model fit.

^bThe D -2RLL is the change in model fit when an effect is added to the model. This change in fit is χ^2 distributed with *df* = 1, as the nested models differ by one parameter (e.g., Garson, 2013).

^cPRV is a local estimate of effect size (Peugh, 2010).

[†]*p* < .10

* *p* < .05

** *p* < .01

*** *p* < .001.

Table 3.

Effects of children's expectancies on TSRQ.

Effect	Random		Fixed		
	-2RLL ^a	-2RLL ^b	df	F	Estimate
Child	302.24	—			
Teacher	298.45	-3.79 [*]			
Time	293.12	-5.33 [*]			
Perceived AS			73.26	5.07 [*]	.11
Time			28.81	.01	-.20
Sex			43.46	3.83 [†]	
Grade			42.59	1.54	
Condition			45.98	.03	
Time × Sex			28.96	.77	
Time × Grade			29.11	1.33	
Time × Condition			30.63	.88	
Sex × Grade			42.60	2.89 [*]	
Sex × Condition			42.24	1.60	
Grade × Condition			42.66	4.74 ^{**}	
Time × Sex × Grade			29.18	5.08 ^{**}	
Sex × Grade × Condition			42.53	3.58 [*]	
Time × Grade × Condition			29.24	7.53 ^{**}	
Time × Sex × Condition			28.89	2.27	
Time × Sex × Grade × Condition			29.13	2.51 [†]	

Note. TSRQ = teacher–student relationship quality; RLL = restricted log likelihood; *df* = degrees of freedom; AS = autonomy support.

^aThe -2RLL is a measure of model fit.

^bThe -2RLL is the change in model fit when an effect is added to the model. This change in fit is χ^2 distributed with *df* = 1, as the nested models differ by one parameter (e.g., Garson, 2013).

[†]*p* < .10

^{*}*p* < .05

^{**}*p* < .01.

Table 4.TSRQ: Estimated marginal means by Time and Condition broken out by Grade, Sex, and Grade $\times$ Sex.

Grade	Sex	Expectancy condition							
		Autonomy supportive				Balanced			
		Time 1	Time 2	Time 3	Total	Time 1	Time 2	Time 3	Total
3	—	3.30	3.49	3.53	3.44	3.40	3.46	3.45	3.44
4	—	3.17	3.32	3.37	3.29	3.36	3.44	3.30	3.37
5	—	2.86	2.78	2.87	2.84	3.37	3.31	2.99	3.22
6	—	3.10	2.76	2.51	2.79	2.51	2.70	3.09	2.77
	Boys	3.05	2.90	2.98	2.98	2.93	3.10	3.13	3.05
	Girls	3.16	3.27	3.15	3.19	3.38	3.36	3.28	3.34
3	Boys	3.41	3.36	3.29	3.35	3.44	3.39	3.20	3.34
	Girls	3.18	3.62	3.77	3.52	3.36	3.52	3.69	3.52
4	Boys	2.97	3.04	3.30	3.10	3.54	3.54	3.35	3.48
	Girls	3.36	3.59	3.43	3.46	3.17	3.34	3.24	3.25
5	Boys	2.57	2.36	2.44	2.46	2.90	3.24	2.85	3.00
	Girls	3.15	3.20	3.29	3.21	3.84	3.38	3.12	3.45
6	Boys	3.25	2.85	2.90	3.00	1.85	2.21	3.12	2.39
	Girls	2.94	2.67	2.11	2.57	3.16	3.18	3.06	3.13

Note. TSRQ = teacher–student relationship quality.