

Teacher-Student Attachment and Student School Adaptation: A Variable Centered and Person Centered Analytical Approaches

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Abstract The present study followed the attachment perspective for assessing the contribution of teacher-student relationships to the explanation of student school adaptation. The study sample included 100 pairs comprised of Israeli homeroom teachers and their school-aged students (mean age=10.7 years). Participating teachers and students reported on their perceptions about their reciprocal relationships on dimensions used for the evaluation of parent-child attachment relationships, such as availability, acceptance, closeness, rejection, conflict, and dependence. Additionally, 56 of the children's subject-matter teachers reported on the children's school adaptation. Person-centered cluster analysis identified two teacher-student *ad hoc* attachment-like relationship groups: *secure* (n=72), characterized by high levels of acceptance and closeness, and by low levels of rejection, conflict, and dependency; and *insecure* (n=28), characterized by high levels of rejection, conflict, and dependence, and by low levels of acceptance and closeness. After controlling for children's socio-demographic indicators (gender, age, class size, and family socioeconomic status), analysis revealed that children in the secure teacher-student attachment-like group showed lower levels of behavior problems (externalizing, internalizing), difficulties in learning self-regulation, higher levels of frustration tolerance, task orientation, popularity among peers, and better academic achievement than did the children in the insecure teacher-student attachment-like group. Implications for educational counseling intervention for teachers and for research are discussed.

Keywords: *teacher-student attachment-like relationships, school adaptation, socio-economic indicators*

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1. Introduction

A growing body of research has been examining the nature and the influence of the quality of teacher-student relationships. The studies highlight teacher's role in enhancing the development of the student's emotional, behavioral, and academic self-regulatory skills that foster adaptive functioning in the school environment [8]. The research on teacher-student relationship quality has been guided primarily by three broad themes or perspectives: attachment, motivation, and sociocultural context [8,31]. The present research is based on the Israeli homeroom teacher's special function as the student's *de facto* primary school caregiver, and therefore it relies on the attachment perspective. The general goal of the present research is to add to our current understanding of the effect of the quality of close teacher-student relationships on the socio-emotional and academic adaptive functioning of school children. According to the attachment paradigm, by being accessible and sensitive to students' needs, teachers serve as alternative caregivers who provide a "secure base" from which children can explore and adjust to the socio-

emotional environment of the school [42]. "Good" teacher-student relationships enable students to regulate their emotional and social behaviors according to the learning demands of school [31]. As Verschueren & Koomen [41] emphasis: "we contend that the teacher can be regarded as an *ad hoc* attachment figure with a safe haven and secure base function" [[41], p. 205].

1.1. Objectives of the Study

Teacher-student relationships quality researchers who were influenced by the attachment paradigm have developed questionnaires for the evaluation of teacher-schoolchildren relationship based on indices that reflects dimensions derived from observational methods ("The strange situation" paradigm and "Q-sort rating") used for classifying early childhood parent-child relationships into attachment patterns [8], p. 209]. Specifically, the indices of the above questionnaires reflect dimensions such as availability, acceptance, emotional closeness, rejection, conflict, and dependence [2,3,8]. Using a person-centered approach, the first objective of the present study is to focus on the salience of the above dimensions for both teachers' and students' perceptions and beliefs about their

reciprocal relationships for identifying secure/insecure teacher-student *ad hoc* attachment-like relationships groups that parallel the typology of parent-child secure/insecure attachment patterns. The second objective of the present study is to examine the differences in school adaptation between children belonging to the hypothesized secure and insecure teacher-child attachment-like groups, and the consistency of these differences with the school adaptation differences found between children with secure/insecure parent-child attachment patterns.

1.2. Parent-child Attachment Associations with School Adaptation in Middle Childhood and Early Adolescence

A large number of studies [for a detailed review, see 17 p. 373-377] conducted among middle childhood and early adolescent students have shown that schoolchildren whose relationships with their parents are characterized as secure rather than insecure generally demonstrate better learning self-regulation and school task orientation, as manifested in their constructive academic attitude, motivation for achievement, work habits, and persistence. Secure attachment has also been related to competent coping with the demands imposed by the school, as manifest in seeking support from others, problem solving, and a positive attitude in interactions. Moreover, secure attachment was associated with higher quality of children's relationships with peers than was insecure attachment. Securely attached children were found to have more reciprocated companionship and more responsive friendships than insecurely attached children; they were better liked and less rejected by their peers, showed greater social engagement, and achieved higher peer popularity. Finally, parent-child attachment security has been linked to lower levels of externalizing and internalizing behavior problems [17]. Although there has been an assumption that externalizing and internalizing problems, as well as other school adaptation difficulties, are likely to be related to specific forms of insecurity (avoidant or ambivalent), there is no evidence of such linkage in middle childhood and early adolescent samples [17]. According to Bergin and Bergin [3] and O'Connor, Collins & Supplee [29] attachment is considered to affect children's school functioning in two ways: indirectly, by attachment to parents, and directly, by attachment to teachers. Kerns [17] suggested that, given the substantial evidence that mother-child attachment is related to children's school adaptation, "there is not a strong need for additional studies documenting these associations" [17 p. 378]. Furthermore, Hughes [13] suggested that as children enter school, the importance of attachment security with the mother for adaptive functioning in the class may decrease. At the same time, other social relationships and the children's relationships with teachers and peers may gain in importance. Therefore, the present study focuses on the effect of teacher-students attachment-like relationships on children's school adaptation.

1.3. The Quality of Teacher-Student Relationships from the Point of View of the Attachment Paradigm and Students' School Adaptation

Studies conceptualizing student-teacher relationships from the point of view of an attachment paradigm indicate that the quality of these relationships affects children's emotional, behavioral, and academic school adaptation. The following review highlights central portions of these findings. For example, Howes, Hamilton, and Matheson [11] found that the level of toddlers' emotional closeness, conflict, and dependence accords with the children's teacher-predicted pro-social behavior, aggression, and withdrawal. Similarly, longitudinal research emphasizes that the toddlers' attachment to their first teachers predicts their perceptions of the quality of their relationships with peers at age 9 [12]. In a longitudinal study, Silver, Measelle, Armstrong, and Essex [38] found that conflict in teacher-child relationships contributed to faster rates of increase in externalizing behavior from kindergarten through third grade, whereas teacher-child closeness in kindergarten was associated with reduced externalizing behavior. Pianta and Sternberg [33] found that the teachers' rating of conflict predicted behavior and learning problems among elementary school students, whereas a close relationship was associated with competence with peers, tolerance of frustration, and better academic and social skills. Additionally, Hughes, Cavell, and Jackson [14] revealed that teachers' and children's reports of an affective (acceptance, warmth, intimacy) quality of their relationship in grades 2 and 3 predicted children's aggression the following year. Recently, O'Connor et al. [29] assessed the reports of children of pre-kindergarten through fifth grade teachers on the level of teacher-child closeness and conflict, and its association with the children's externalizing and internalizing problem behaviors. Findings show that high levels of teacher-child conflict in childhood were predictors of externalizing behaviors in fifth grade, and low levels of teacher-child closeness were predictors of internalizing problem behaviors. Research results obtained by Merrit, Wanless, Rimm-Kaufman, Cameron, and Peugh [23] indicated that teachers' emotional support (warmth, sensitivity) were related to lower levels of aggression and greater self-control among first grade students.

Combining children's reports on teacher-child relationship quality, Al-Yagon and Mikulincer [1] found significant associations between teacher-child attachment-like factors and elementary school children's socio-emotional and academic adjustment. Children's appraisal of the teacher as less rejecting, more available, and more accepting, and higher closeness felt by the teacher toward a child were associated with better socio-emotional and academic adjustment of the children. Moreover, the children's appraisal of the teacher as less rejecting predicted higher teacher-reported student academic functioning [1].

2. Methodological Difficulties Related to the Study of the Associations between the Qualities of Teacher-Child Relationships with Students' School Adaptation

Previous research on teacher-child attachment-like relationship quality has established that the affective aspects of these relationships have important ramifications

for the children's consequent adaptation to school demands [6]. Murray, Murray, and Waas [27] indicated, however, that theoretical and statistical questions related to the examination of teacher-child relationship quality remain unanswered. For example, previous investigations have used teacher reports to assess the quality of teacher-child relationships and the nature of children's school adaptation [5,26,30]. Reliance on teacher reports to assess both predictor and criterion variables has probably led to exaggerated estimates of the importance of these relationships [27]. Moreover, research conducted by Murray et al., [27] revealed that both teachers' and their students' reports of student school adaptation showed stronger within-rater than cross-rater correlations, indicating the possibility of same-source rater bias. Murray et al., [27] stated the need for additional study that includes a "blind" (third party) rating and valid measures of the children's school adaptation.

Another critique concerning research on teacher-student relations and students' school adaptation applies to the reliance on quantitative methodology that is based primarily on variables. Although such analyses can be useful in predicting the adaptation of hypothetical students based on distinct levels of appraisal of teacher rejection or distinct levels of hypothetical teacher's feelings of closeness to student, there may be no student with these combinations of teacher-child relationships [25]. In other words, these analyses do little to increase our understanding of the configuration of real students' affective context, as defined by different styles of teacher-student attachment-like relationships, and by the associations between them and students' school adaptation. The alternative cluster-analysis approach adopted in the present study, which is consistent with a person-centered agenda, prioritizes individuals in their context as the unit of research [20].

2.1. The Present Study

The present study observed one hundred pairs comprised of Israeli homeroom teachers and their regular public school students of the same ethnic origin (Israeli Jews). According to the Policy Circular of the Israeli Ministry of Education [16], homeroom teachers hold their position for a minimum of two and a maximum of three years. The post requires that the teachers fulfill three central roles: student case manager, school intermediary on behalf of parents, and primary educational contact for students. Thus, homeroom teachers in Israel function as the children's main school address for dealing with personal issues, and are *de facto* school caregiver figures. Given the role of Israeli homeroom teachers, the purpose of the present study was to use both student and teacher points of views regarding their relationships to identify the affective context of students, as defined by the following attachment dimensions: availability, acceptance, emotional closeness, rejection, conflict, and dependence, and its associations with the students' school adaptation. We used two statistical approaches to examine our data: variable-centered correlations and person-centered clustering. Variable-centered correlations allow us, for example, to separate the unique correlations between the students' reports on their appraisal of teacher availability/acceptance, or teachers' reports on feelings of

closeness to a child on one hand, and the student's socio-emotional and academic school adaptation on the other. Cluster analysis makes it possible to examine the possibility that the above dimensions can be categorized into secure/insecure styles of teacher-student attachment-like relationships, which resemble the typology used for classifying children as having secure/insecure parent-child attachment styles. Second, it makes it possible to examine the differences between secure and insecure teacher-student attachment-like school adaptation.

To avoid relying on homeroom teacher and student reports in assessing both predictor and criterion variables, we asked the student's special-subject teacher to act as experienced professional third-party observer. This ensured that reports on the children's school adjustment were not linked to any specific homeroom teacher-child relationship. We also provided an objective standardized measure of school adjustment. Finally, studies of teacher-student relationships have suggested that teachers' perceptions of their relationships with students and student school adaptation may be affected by the students' demographic and biological attributes such as age, gender, and socio-economic background [4,15,28,35]. Therefore, we controlled statistically for these influences.

2.2. Hypotheses

We hypothesized that (a) children's and teachers' secure/positive reciprocal relationship perceptions correlate positively with their school adjustment strengths and academic achievement, and negatively with their school adjustment problems, and conversely, that the opposite is true for children's and teachers' insecure/negative reciprocal relationship perceptions.

We hypothesized that (b) cluster analysis using variables of teachers' and students' relationships perceptions would show two groups of teacher-student ad hoc attachment-like relationship styles: secure and insecure.

Finally, we hypothesized that (c) compared to the children in the insecure teacher-student attachment-like group, the children in the secure teacher-student attachment-like group would show better socio-emotional, behavioral, and academic school adaptation.

3. Method

3.1. Participants

The sample consisted of 100 homeroom teacher-student pairs. The teachers' sample comprised 44 experienced, graduate-level female homeroom teachers with 3 or more years of teaching experience: five 2nd grade teachers, five 3rd grade teachers, thirteen 4th grade teachers, five 5th grade teachers, five 6th grade teachers, five 7th grade teachers, and six 8th grade teachers. The sample of children comprised 100 students (mean age=10.7, SD=1.7) in 2nd to 8th grades (five in 2nd grade, 15 in 3rd, 28 in 4th, 14 in 5th, 15 in 6th, 11 in 7th, and 12 in 8th), 50% males and 50% females. Fifty percent of the children were 8-10 years old (middle childhood), and 50% were 11-14 years old (early adolescence). The sample was recruited from schools in a mid-low-socio-economic status area in northern Israel. Parental permission was obtained for participation

(compliance was 90%) and the anonymity of all participants was ensured.

3.2. Procedure

The sampling plan of the present study was designed to capture the phenomena related to Israeli teacher-student relationship quality beyond specific teacher, student, classroom, special-subject teacher, and school contexts. To this end, the sample consisted of 100 homeroom teacher-student pairs comprising of 44 homeroom teachers (28-33 students per class) from 44 regular public schools, using 56 special-subject teachers as third-party observers.

Data were collected by interviewers at two points in time during a single school year. Members of the research team were special-education BA graduates doing their internship year in the participating schools. At Time 1, four months after the start of the school year, the researchers were asked to recruit experienced homeroom teachers. For each homeroom teacher, they were asked to identify two or three children (two $n=32$, three $n=12$) who were in the teacher's class for the second consecutive year (to ensure that children and teachers had established relationships with one another). McClelland [22] also noticed that children's academic achievements correlate substantially ($r=0.6-0.7$) with their IQ test scores. To use a sample within the range of the average IQ of the population, we sought to recruit students who based on school records (at Time 1) showed academic achievements within their class average. Members of the research team then met with each child and homeroom teacher individually, in school. All meetings took place outside the classroom to ensure that students felt as comfortable as possible answering questions about their relationships with their homeroom teacher. After having been introduced to the research instruments, each child was required to demonstrate adequate reading comprehension before completing of the *Children's Appraisal of Teacher as a Secure Base (CATSB) Scale* [2] and the *Children's Socioeconomic Background Questionnaire* [40]. About 80% showed good reading comprehension and 20% showed sufficient reading comprehension. All children were told that their responses to all questions were anonymous and would not be shared with anyone at the school. Teachers were asked to complete the *Student-Teacher Relationships Scale - STRS* [33]. Four months later (Time 2), children's school socio-emotional adaptation was examined using special-subject teacher, primarily English, math, or language teachers who had taught the students three or more lessons per week during the academic year. Special-subject teachers were administered individually the *Teacher-Child Rating Scale - T-CRS* [10] (29 special-subject teachers were interviewed twice, 14 were interviewed three times). Finally, the reading comprehension, written expression, and math proficiency scores of each participant child were obtained from school records at the end of the school year.

Note: All the research measurements were completed individually by the participants, who were assembled by the research team in the schools. The research team then checked the measures for missing data and requested additional information if necessary.

3.3. Measures

3.3.1. Student Socio-economic Background Indicators

According to Yair [40], the principal indicators of higher levels of socio-economic status in Israel include the wage of the main earner (father) derived from his occupation, and a low ratio of residents per rooms. The participating students' reports of main earner occupation (unemployed, salesperson, teacher, engineer, high-tech worker, medical doctor, etc.) were classified into the following categories: (a) minimum or no wage (13%); (b) low wage (29%); (c) average wage (33%); (d) high wage (14%); and (e) very high wage (6%). Based on the children's reports regarding the ratio of people to rooms, 43% of the participants had less than one room per person, 30% one room per person, and 27% more than one room (maximum 2) per person. A comparison of the children's socio-economic background questionnaires with school records regarding the families' SES status revealed adequate correspondence between the two.

3.3.2. Students' Perceived Teacher-student Relationship

The students' appraisal of their teacher as an attachment figure was assessed using the *Children's Appraisal of Teacher as a Secure Base Scale - CATSB* [2]. This is a 25-item self-report questionnaire relating to various facets of attachment. The items were used to evaluate the students' perceptions of their homeroom teacher as a secure base from both a positive (availability, acceptance) and a negative (rejection) perspective. The availability and acceptance subscale comprises 17 items that address the extent to which the child perceives the homeroom teacher as available in time of need ("My teacher is always there to help me when I need her") and as a caring figure who accepts the child's needs, feelings, and behaviors ("The teacher makes me feel welcome in the class"). The rejection subscale comprises 8 items that assess the degree to which the child perceives the teacher as rejecting ("My teacher makes me feel unwanted"). Children were asked to rate the extent to which each item describes their homeroom teacher on a 7-point scale (1 = Does not apply at all; 7 = Applies very much). Two scores were computed by averaging items corresponding to each appraisal scale (positive and negative), with higher scores reflecting appraisal of the teacher as an available/accepting or a rejecting secure base figure. CATSB scale results in the present study exhibited high Cronbach alpha internal consistency coefficients (availability/acceptance = .88; rejection = .80).

3.3.3. Teachers' Perceptions of the Relationship

The homeroom teachers' perception of the teacher-student relationship was measured by the *Student-Teacher Relationship Scale - STRS* [33], a 28-item self-report measure designed to assess teachers' perceptions of their relationship with a particular student based on three dimensions (conflict, closeness, and dependence), which has been used to classify parent-child attachment relationships [8]. The conflict subscale comprises 12 items relating to the teachers' perception of the conflictual nature of their relationship with the student, e.g., "This child and I always seem to be struggling with each other." The closeness subscale comprises 11 items that relate to overall security in the relationship by focusing on the

teacher's positive feelings (emotional affection, warmth, open communication) about the child, and vice versa, e.g., "I share an affectionate, warm relationship with this child." The dependence subscale comprises 5 items focusing on the teacher's perceptions of student dependence, e.g., "This child is overly dependent on me." The answers are rated on a 5-point scale (1 = Definitely does not apply; 5 = Definitely applies). Three scores are computed by averaging the items corresponding to each relationship scale, with higher scores indicating greater conflict, closeness, and dependence. Internal consistency coefficients for the current sample were as follows: conflict = .88; closeness = .83; dependence = .61. These reliabilities are consistent with prior research [26].

3.3.4. School Socio-emotional Functioning

The reports of the special-subject teachers regarding the students' school socio-emotional functioning were measured using the Teacher-Child Rating Scale - T-CRS [10], a 38-item teacher report rating measure designed to assess students' emotional, behavioral, social, and general school adaptation. Its first part contains 18 behavior-oriented items measuring school adjustment problems categorized into three 6-item, empirically-derived scales: acting out – aggressiveness, disruptiveness, and impulsivity ("disruptive in class," "overly aggressive with peers," "defiant, obstinate, and stubborn"); shy-anxious – shy, withdrawn, dependent behaviors ("shy, timid," "anxious, worried," "unhappy, sad"); and problems learning self-regulation – difficulties applying the skills required to succeed in the school environment ("not working to ability," "poor concentration," "difficulty following directions"). Items are rated on a 5-point severity scale (1 = Not a problem; 5 = Very serious problem), with higher scores reflecting greater maladjustment. The second part consists of 20 items assessing student strengths and positive attributes on the basis of four 5-item subscales: "frustration tolerance" evaluates student competence in tolerating and adapting to limits imposed by the school environment or to one's own limitations ("accepts imposed limits"); "assertive social skills" measures the student's social status in interpersonal functioning and confidence in dealing with peers ("defends own views under group pressure"); "task orientation" assesses the student's functional effectiveness within the educational setting ("completes work"); and "peer social skills" evaluates the child's popularity or likeability amongst peers ("has many friends"). These items are rated on a 5-point scale according to how well the item describes the child (1 = Not at all; 5 = Very well), with higher scores reflecting greater competence. In the present study, research team members administered the T-CRS in the course of an interview with the students' specialist-subject teachers. The T-CRS subscales showed good Cronbach's alpha internal consistency coefficients (acting out = .92; shy-anxious = .77; self-regulation learning problems = .90; frustration tolerance = .80; assertive social skills = .89; task orientation = .91; peer social skills = .93).

3.3.5. Academic Achievement

The Haifa and the north districts of the Israel Ministry of Education administered standard regional reading comprehension, written expression, and math proficiency

tests five times during that school year (September to June) in all the elementary and junior high schools in the regions. At the end of the year, the schools calculated a score in the 1-100 range for each child, averaging the five test scores in each subject. For the present study, at the end of the school year, the research team obtained these normative scores for all the children who participated in the study.

4. Results

4.1. Preliminary Analyses

Preliminary analyses were conducted to assess whether the study's two principal groups of variables, (a) predictors (teacher/student perceptions of the teacher-student attachment-like relationship) and (b) criteria (student school adaptation indices), were related to the student's central demographic variables (gender, age, class size, and socioeconomic indicators).

4.1.1. Relations between Teacher/Student Perceptions of Teacher-Student Attachment-Like Relationship and Student Demographic Background Variables

To examine potential demographic differences within the measures, we conducted T-tests analyses to assess whether boys and girls differed with regard to appraisal of the teacher as a secure base, and homeroom teachers' reports regarding the teacher-student relationship. None of the results were statistically significant. Pearson correlations between the teacher/student self-report measures and student age and class size proved non-significant as well. Similarly, T-tests analyses were conducted to assess the differences obtained between the middle-childhood (N=50) and early-adolescent (N=50) student groups with respect to appraisal of teacher as a secure base, and the homeroom teacher's reports regarding the teacher-student relationships. None of the results were statistically significant. Pearson correlations between teacher and student perceptions of the teacher-student attachment-like relationships, main earner wage based on occupation, and ratio of residents per room also proved non-significant.

4.1.2. Relations between Student School Adaptation and Background Variables

T-test analyses conducted to assess whether boys and girls differed with regard to school adaptation and academic achievement were significant for one subscale. Teachers reported that boys have a higher tendency toward acting out behavior (M=2.2, SD=1.1) ($t=2.5$; $p<0.05$) than girls do (M=1.7, SD=.89). Because these findings were expected [34], we controlled for the gender effect in subsequent analyses, using the acting out behavior scale as a criterion variable. Pearson correlations between children's school adaptation, academic achievement variables, and children's age and class size proved non-significant. Pearson correlations between children's school adaptation, academic achievement variables, and their socio-economic background indicators proved significant in two cases: main earner wages correlate negatively with children's learning problems ($r=-0.30$, $p<0.01$) and positively with children's language

skills ($r=0.24, p<0.05$). These findings are consistent with the findings of Hightower et al. [10] obtained while developing and validating the T-CRS. Therefore, in subsequent analyses we controlled for the effect of main earner wage, using children's learning problems and language skills as criterion variables.

4.2. Associations between Attachment-Like Factors and Students' Adaptation to School

4.2.1. Teacher-student Attachment-Like Relationships: a Variable-Centered Approach

Zero-order correlations between all variables are presented in Table 1.

Table 1. Range, means, standard deviations, and correlations between teacher and child attachment-based variables and children's school adaptation variables

Variable	1	2	3	4	5	6	7
1 Child CATSB acceptance	-						
2 Child CATSB rejection	-0.60**	-					
3 Teacher STRS closeness	0.23*	-0.13	-				
4 Teacher STRS conflict	-0.28**	0.40**	-0.38**	-			
5 Teacher STRS dependency	-0.03	0.17	0.09	0.42**	-		
6 T-CRS acting-out externalizing	-0.27**	0.47**	-0.17	0.52**	0.25*	-	
7 T-CRS shy-anxious internalizing	-0.22*	0.31**	-0.16	0.21*	0.09	0.17	-
8 T-CRS poor learning skills	-0.24*	0.55**	-0.29*	0.45**	0.24*	0.73**	0.47**
9 T-CRS frustration tolerance	0.16	-0.27**	0.19*	-0.37**	-0.14	-0.70**	-0.15
10 T-CRS assertive social skills	0.12	-0.17	0.09	-0.10	-0.05	-0.15	-0.58**
11 T-CRS task orientation	0.21*	-0.41**	0.17	-0.40**	-0.21*	-0.57**	-0.42**
12 T-CRS peer social skills	0.22*	-0.33**	0.06	-0.24*	-0.12	-0.25*	-0.46**
13 Math proficiency score	0.14	-0.33**	0.15	-0.17	-0.14	-0.45**	-0.29*
14 Language score	0.19	-0.36**	0.16	-0.24*	-0.08	-0.49**	-0.28*
Range	2.8-7	1.0-4.9	1.5-5.0	1.0-3.8	1.0-4.4	1.0-5.0	1.0-4.3
Mean	5.53	1.80	3.80	1.70	1.92	1.96	2.20
SD	0.90	0.91	0.70	0.63	0.66	0.91	0.83

Variable	8	9	10	11	12	13	14
1 Child CATSB acceptance							
2 Child CATSB rejection							
3 Teacher STRS closeness							
4 Teacher STRS conflict							
5 Teacher STRS dependency							
6 T-CRS acting-out externalizing							
7 T-CRS shy-anxious internalizing							
8 T-CRS poor learning skills	-						
9 T-CRS frustration tolerance	-0.61**	-					
10 T-CRS assertive social skills	-0.56**	0.20*	-				
11 T-CRS task orientation	-0.83**	0.58**	0.72**	-			
12 T-CRS peer social skills	-0.49**	0.35**	0.61**	0.61**	-		
13 Math proficiency score	-0.69**	0.47**	0.60**	0.73**	0.41**	-	
14 Language score	-0.69**	0.41**	0.51**	0.68**	0.35**	0.75**	-
Range	1.0-4.8	1.0-5.0	1.0-4.8	1.0-5.0	1.0-5.0	40-100	40-100
Mean	2.23	3.10	2.80	3.03	3.40	79.1	78.5
SD	0.93	0.88	0.95	1.00	1.05	14.0	14.2

** $p<.01$, * $p<.05$. The effect of gender was controlled for all correlations with Acting-out externalizing, and the effect of the main earner wage was controlled for all correlations with Poor learning skills and Language score.

As shown in Table 1, student appraisal of the teacher's availability/acceptance was positively associated with teacher perceptions of closeness in the relationship and negatively associated with teacher perceptions of the conflictual nature of the relationship, whereas student appraisal of teacher rejection was positively associated with teacher perception of the conflictual nature of the relationship but not with teacher perception of the closeness in the relationship. No significant associations were found between the teacher's sense that the student was too dependent and the student's appraisal of the teacher's availability/acceptance and rejection.

The three teachers' and the two students' attachment-like perceptions of their relationships (closeness, dependence, conflict, availability/acceptance, and rejection) were significantly related to the special-subject

teachers' reports on children's school adaptation, in the expected directions (secure associated positively with school adjustment strengths and academic achievement, and negatively with school adjustment difficulties, and *vice versa* for insecure).

4.2.2. Teacher-student Attachment-Like Relationships: a Person-Centered Approach

O'Connor et al., [29] emphasized the significance of a person-centered approach to the comprehension of teacher-student relationships in the course of the elementary school years. Cluster analysis has been suggested as a useful method for classifying patterns or profiles in a sample [9]. To examine the styles of teacher-student attachment-like relationships as defined by the way in which they are perceived and according to the

beliefs held about these relationships, we conducted a two-step cluster analysis. According to conventional guidelines, the most important advantage of using two-step clustering analysis is that it allows the automatic selection of the number of clusters [[24], p 279]. The *silhouette measure of cohesion and separation for cluster quality* is a measure of the overall goodness-of-fit of the clustering solution. It is based on the average distance between the objects, and can vary between -1 and +1. A silhouette measure of less than 0.20 indicates a poor solution quality, one between 0.20 and 0.50 a fair solution,

and values of more than 0.50 indicate a good solution [24]. In the present study, Two-Step cluster analysis yielded a two-group solution. The *silhouette measure of cohesion and separation for cluster quality* showed good (0.6) overall goodness-of-fit, indicating that two groups are statistically the optimal number-of-clusters solution. The two-cluster solution distribution also corresponds to the theoretical typology regarding schoolchildren's secure and insecure attachment styles [21]. Finally, this division produced a reasonable number of subjects in each cluster.

Table 2. Cluster analysis for teacher-student attachment-like variables

Teacher-student attachment-like relationships variables	Teacher-student attachment-like groups				t-values (df=98)
	Secure attachment-like style (N=72)		Insecure attachment-like style (N=28)		
	M	(SD)	M	(SD)	
Child CATSB acceptance	5.90	0.60	4.50	0.75	8.20***
Child CATSB rejection	1.33	0.30	2.94	0.80	-12.9***
Teacher STRS closeness	4.00	0.70	3.54	0.70	2.20*
Teacher STRS conflict	1.50	0.40	2.24	0.70	-6.30***
Teacher STRS dependence	1.84	0.65	2.20	0.67	-1.90 [#]

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [#] $p < 0.06$

Table 2 shows the two groups. The first group (n=72, 72%) was labeled secure teacher-student attachment-like style. The group is characterized by higher levels of student appraisal of teacher's availability/acceptance and of teacher's feelings of closeness to students, and by lower levels of student appraisal of teacher's rejection and of teacher's sense of a conflictual and dependent nature of relationships with students. The second group (n=28, 28%) was labeled insecure teacher-student attachment-like style. The group is characterized by lower levels of student appraisal of teacher's availability/acceptance and of teacher's feelings of closeness to students, and by higher levels of student appraisal of teacher's rejection and of teacher's feelings of a conflictual and dependent nature of relationships (dependence just close to significant, $p < 0.06$), with students.

To examine potential demographic differences within the attachment-like groups, T-tests analyses were conducted to assess whether students have a secure attachment-like relationship with their teacher and those having insecure attachment-like relationships differed with regard to age, main earner wage, and ratio of

residents per room. None of the results were statistically significant. A 2 (attachment-like styles, secure/insecure) x 2 (gender) χ^2 analysis, conducted to assess whether boys and girls differ on their clustering into attachment-like style groups, proved non-significant. A 2 (attachment-like styles, secure/insecure) x 2 (age, middle-childhood/early-adolescent) χ^2 analysis, conducted to assess whether middle-childhood students and early-adolescent students differ on their clustering into attachment-like styles groups, also proved non-significant.

4.2.3. Differences between Students Having Secure Teacher-Student Attachment-Like Style and Those Having Insecure Teacher-Student Attachment-Like Style in School Adaptation

T-tests analyses, conducted to assess whether students having secure attachment-like relationships with their teacher and those having insecure attachment-like relationships with their teacher differed with regard to their school adaptation and academic achievement, were found to be significant for all the subscales.

Table 3. T-test for the differences between the secure and the insecure teacher-student attachment-like style groups in school adaptation variables

Teacher-student attachment-like relationships variables	Teacher-student attachment-like groups				t-values (df=98)
	Secure attachment-like style (N=72)		Insecure attachment-like style (N=28)		
	M	(SD)	M	(SD)	
T-CRS acting-out externalizing	1.65	0.70	2.74	1.10	-5.36***
T-CRS shy-anxious internalizing	2.01	0.70	2.50	0.80	-2.30*
T-CRS poor learning skills	1.90	0.90	3.05	1.00	-5.30***
T-CRS frustration tolerance	3.23	0.80	2.70	0.90	2.80**
T-CRS assertive social skills	2.92	1.00	2.44	0.90	2.01*
T-CRS task orientation	3.35	1.00	2.22	0.9	4.70***
T-CRS peer social skills	3.63	1.00	2.82	0.77	3.61***
Math proficiency score	81.20	13.65	73.40	13.58	2.56*
Language score	81.62	11.80	70.44	16.73	3.70***

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [#] $p < 0.06$

As shown in Table 3, children with secure attachment-like relationships with their teacher showed a lower tendency to use acting-out (externalizing), shy-anxious (internalizing) problem behaviors than did children with insecure attachment-like relationships, and had a lower

tendency to exhibit difficulty in learning self-regulation. Moreover, children with secure teacher-student attachment-like relationships were characterized by a higher level of student frustration tolerance, class task orientation, assertiveness, and social skills with peers than

were children with insecure attachment-like style. Finally, the secure group of students showed higher math proficiently and language skills than the insecure group did.

5. Discussion

The purpose of the present study was to examine students' and teachers' perceptions and beliefs about their attachment-like relationships, and their associations with the children's school adaptation reported by special-subject teachers as third-party observers. We used two statistical approaches to analyze the data: (a) variable-centered correlations that helped us identify the unique relations between students' socio-emotional and academic school adaptation and a specific attachment-like relationship dimension, and (b) a two-step cluster analysis, which enabled us to examine the differences between the clustering solution of the secure and the insecure teacher-student attachment-like groups.

5.1. Variable-centered Approach

According to hypothesis a, children's appraisal of teachers as rejecting and teachers' reports on the conflictual nature of their relationships with students correlate with higher levels of children's behavior problems (externalizing and internalizing) and self-regulation learning problems, and with lower levels of frustration tolerance, social skills, and academic achievement. Moreover, children's appraisal of teachers as accepting, and to a lesser extent teachers' reports on closeness in their relationships with the students, correlate with children's lower levels of behavior problems (externalizing and internalizing) and self-regulation learning problems, and with higher levels of frustration tolerance, task orientation, and social skills. Finally, as expected, teachers' reports on dependence in the nature of their relationships with the students correlate with children's higher levels of externalizing behavior problems and self-regulation learning problems, and with lower levels of task orientation.

The fact that the teachers' reports on the closeness of their relationships with their students correlate only with two of the school adaptation dimensions is an indication of the great significance of the homeroom teacher as a secure base figure in the children's appraisal. Similar findings by Murry and Murry [26] showed that teachers' report on closeness in their relationships with their students was a weak predictor of consequent school-related adaptation. Research in the area of social support suggests that the perception of support by an individual has a more powerful effect on adjustment than does the actual level of support provided [7,18]. This position is theoretically based on works in the field of attachment and social support showing that representations of availability and support are more coherently associated with outcomes than are the levels of support actually received [19]. According to this approach, it is not the supportive interactions themselves but the child's cognitive representations of "caregiver" availability that affect outcomes [37]. Another possible methodological explanation is that the relationships with the homeroom teachers are different from those with the special-subject

teachers who functioned as third-party observers, the only commonality being the child's cognitive representations. Therefore, developing further understanding about children's perceptions of their attachment-like relationships with their teachers, and how these perceptions are associated with actual school adjustment and functioning, can help clarify the importance of these reports.

5.2. Person-centered Approach

Confirming hypothesis b, the two-step cluster analysis allowed us to identify distinct secure and insecure profiles of teacher-child attachment-like relationships. The *secure* group (n=72) showed higher levels of availability/acceptance and emotional closeness, and lower levels of rejection, conflict, and dependence. The *insecure* group (n=28) showed higher levels of rejection, conflict, and dependence, and lower levels of availability/acceptance and emotional closeness. Furthermore, the two groups did not differ in their age, socio-economic status indices, gender, or their belonging to middle-childhood or early-adolescent developmental stages.

Furthermore, the three teachers' and the two students' attachment-like perceptions of their relationships (closeness, dependence, conflict, availability/acceptance, and rejection) were related to each other in five significant associations in the expected directions (children's positive/secure perceptions positively correlated with teacher's positive/secure perceptions and negatively with teacher's negative/insecure perceptions). No significant associations were found between students' positive and negative appraisal of the teachers and teacher reports regarding dependence. This can be explained by the Israeli cultural milieu, characterized by strong sense of involvement [36]. In such a context, student dependence may be more acceptable and considered less maladaptive than is the case in more individualistic cultures. If this interpretation is correct, we expect dependence to be better tolerated by teachers, attesting to a weaker relation with actual teacher-student relationship, and therefore less related to the students' appraisal of the teacher, and *vice versa*.

The possible application of attachment theory to the classroom setting postulates the homeroom teacher in a comparable role to that of an "attachment figure of convenience" for his or her students [42]. The findings of the present study demonstrate the possible integration of features used to measure parent-child attachment relationships into the evaluation of teacher-child relationship quality. The findings are partly consistent with those regarding the contribution of parent-child secure attachment to children's school adaptation [see [17]], suggesting a possible contribution of the homeroom teacher as a security-enhancing attachment figure for the children's psychosocial adaptation to school. Consistent with hypothesis c, children from the secure cluster group exhibited more flexible coping strategies in the classroom. Specifically, they showed an adequate ability to meet teacher's requests, which was reflected in a lower tendency to use acting-out behaviors (externalizing) that express anger or distress, and a lower tendency to use shy-anxious behaviors, which inhibit the expression of

negative affect behaviors (minimizing). Furthermore, they showed a greater ability than did their insecure peers to direct their exploration energy to the school environment, which was reflected in adequate engagement in their main academic, age-appropriate developmental tasks: coping with school learning demands (better learning self-regulation capabilities and task orientation). Finally, children in the secure group showed a stronger sense of security and social adaptation to the classroom than did their insecure peers, which manifested itself in adequate ability to regulate negative emotions (higher frustration tolerance) and to integrate into their school peer groups (higher assertiveness and peer social skills). Consequently, they showed also higher ability to cope with the normative learning demands, reflected in slightly better language and math scores.

The findings emphasize that children from the insecure cluster group are unable to use their teachers as secure bases of convenience. Similarly to children who have insecure parent-child attachment, these children exhibit greater difficulty in directing their exploration energy into their main academic and social developmental tasks, manifested as weaker task orientation, higher deficiencies in learning self-regulation capabilities (poor learning skills), and a lower ability to integrate into their peer groups (weaker assertiveness and peer social skills). Furthermore, children in the insecure group cluster appear to have a low sense of security in the classroom, manifested in a diminished ability to regulate negative emotions (lower frustration tolerance). They are more likely to use various coercive strategy behaviors, such as expressing anger and distress, or engaging in exaggerated displays of emotional acting-out, (externalizing) in order to coerce the availability of their teachers. Alternatively, they tend to exhibit a higher tendency to engage in behaviors that reflect a sense of helplessness or despair regarding the teacher's availability by inhibiting or minimizing expressions of negative affect (internalizing). As a result, they show a lower ability to cope with the normative learning demands, reflected in slightly lower language and math scores.

5.3. Study Limitations

The present study has several limitations. First, the findings are based on concurrent associations, and therefore the direction of the effects remains unclear. Second, the concurrent association may also be related to a third factor, such as the teacher's age or level of empathy, or the child's temperament which affect both the contexts of the child's adaptation to school and the teacher-child relationship. Furthermore, the literature indicates that children's prior behavior problems as well as social and academic abilities are related to teacher-child relationship quality, raising the concern of a third variable bias. Studies that assess similar research questions using longitudinal designs and control for prior assessments of each of the outcomes are called for. Finally, the use of one special-subject teacher reports concerning the students' school adaptation raises concerns of relationship effects, and calls for incorporating new data sources, such as peer evaluations of the children's school adaptation.

5.4. Study Implications

Despite the above limitations, the findings of the present study add to a growing body of research that highlights the importance of relationship processes in schools at the theoretical level, as well as the importance of developing educational counseling programs based on teacher-child relationships [31,32]. Our findings confirm Pianta's [31] suggestion that intervention, rather than beginning by modifying the teacher's behavior, should initially focus on teachers' representations of their close relationships with students through a consultation intervention designed to increase reflective qualities. Hughes [13] suggested investing placed more effort on interventions designed to enhance teaching and class climate management practices, using the classroom system approach rather than the teacher-student dyadic approach. According to Hughes [13], although the classroom management intervention approach may help improve various teacher-students dyadic relations, troubled teacher-student affiliations can occur also in a classroom with largely positive climates. Consistent with the above insight, Spilt, Koomen, Thijs & Van der Leij [39] emphasized the importance for interventions designed to enhance problematic teacher-student dyadic relationships.

The present study suggests two-stage enhancing problematic teacher-student relationship interventions. In the first stage, a school professional (educational psychologist or counselor) uses the study teacher-student attachment-like relationships measurements (Child CATSB and Teacher STRS) to identify the insecure teacher-student pairs (teachers reported closeness below 4, dependence above 2, conflict above 2, student appraisal of teacher's acceptance below 4.5, and rejection above 3), taking into consideration cultural milieu. In the second stage, the educational counselor can implement, for example, individual Spilt et al., [39] teacher intervention counseling sessions that include (a) the use of the Teacher Relationship Interview – TRI [31] in order to bring out the teachers' relational models vis-à-vis their relationships with student with whom they have insecure attachment-like relationships; and (b) consultants helping teachers associate their representations with their day-to-day interactions with the students, to form exclusive relational profiles that reflect strengths and weaknesses in the aspects of sensitivity, secure base, perspective taking, negative and positive affect, etc.; and (c) consultant-teacher sessions focused on using the teacher-student narrative profile of relationships to improve these relationships. According to the findings of Spilt et al., [39], teachers in general benefitted from this intervention program by achieving greater closeness and sensitivity, and fewer conflicts in their relationships in the classroom.

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