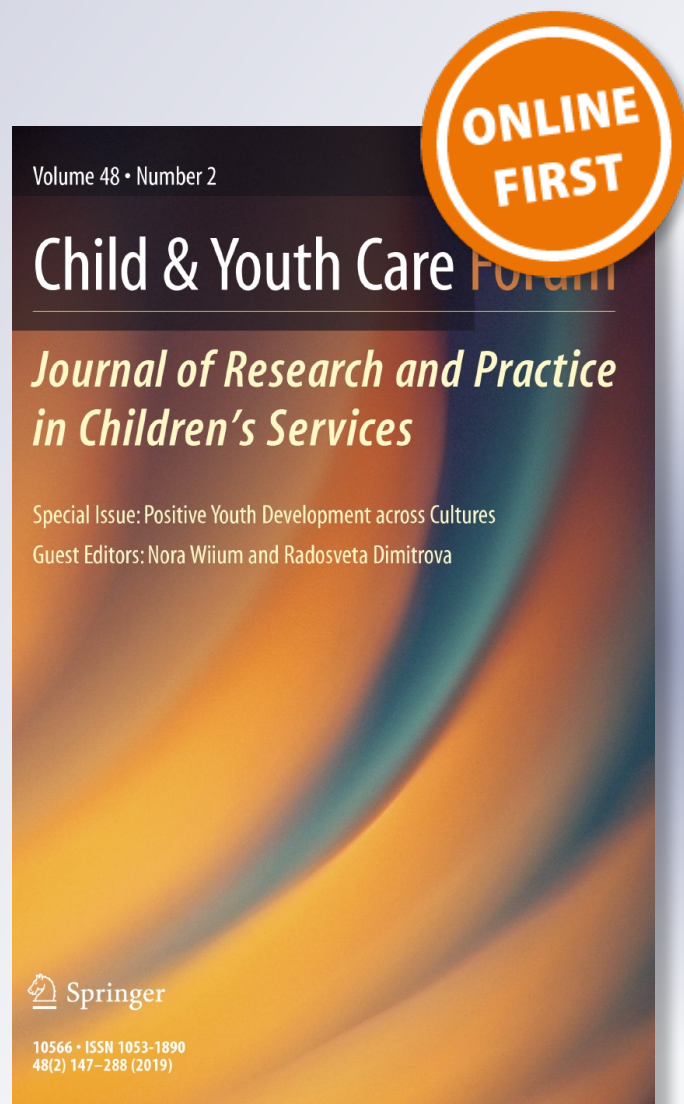# *Change and Predictability of Children's Behavioral Adjustment in Tanzanian Pre-primary Schools*

Theresia Julius Shavega, Cathy van Tuijl & Daniel Brugman

Volume 48 · Number 2

Child & Youth Care Forum

Journal of Research and Practice in Children's Services

Special Issue: Positive Youth Development across Cultures
Guest Editors: Nora Wiium and Radosveta Dimitrova

ONLINE FIRST

🖄 Springer

10566 · ISSN 1053-1890
48(2) 147–288 (2019)

🖄 Springer

Springer

ORIGINAL PAPER

Change and Predictability of Children's Behavioral Adjustment in Tanzanian Pre-primary Schools

Theresia Julius Shavega[1] · Cathy van Tuijl[2] · Daniel Brugman[2]

Abstract

Background Research in Western countries has shown the contribution of early teacher–child relationships and classroom emotional support on children's behavioral adjustment in pre-schools. Results with regard to the direction and strengths of the relationships seem inconclusive, moreover, such research is lacking in African countries.

Objective To examine the change and predictability of children's behavioral adjustment in Tanzanian pre-primary schools.

Method Longitudinal data were collected twice over a 1-year interval. Twenty teachers and their 310 children from 20 schools in the Ilala district, Dar es Salaam region, participated in the study. Methods used for data collection were teacher questionnaires and classroom observation.

Results Results showed that over time, children's aggressive behavior and teacher–child conflict decreased, whereas teacher–child closeness increased. Prosocial and anxious behavior remained stable. Multilevel and longitudinal analyses indicated that teacher–child closeness and conflict predicted children's aggressive behavior. Children's prosocial and anxious behavior predicted teacher–child closeness, while their prosocial, aggressive and anxious behavior at the individual level and anxious behavior at the aggregated class level predicted teacher–child conflict.

Conclusions Teacher–child relationships and children's behavior relate in a bidirectional way. If the relationship between a teacher and a child is characterized by conflict, children are more likely to develop difficult behavior and teachers find it more difficult to manage the children. These results imply that pre-primary teachers need to be trained on how to identify signs of behavioral problems in children and to establish an emotional supportive classroom environment and teacher–child closeness for a positive school trajectory in children.

Keywords Children's behavioral adjustment · Teacher–child relationship · Classroom emotional support · Longitudinal multilevel study

✉ Theresia Julius Shavega
theresia.shavega@out.ac.tz

Extended author information available on the last page of the article

🖄 Springer

Introduction

From the perspective of attachment theory, children's behavioral adjustment can be understood from the relationship with significant others like parents or teachers. In attachment theory, the relationship with significant others has been regarded as an emotional link that results in the child feeling more or less secure. Feeling secure enables children to explore their environment, to have positive expectations of others and themselves and to seek support when distressed (Feeney and Collins 2014). Insecure attachment has serious developmental consequences. For example, Belsky and Nezworski (1988) point out that a child who feels insecure is more likely to display conduct and relational problems. In this article, we focus on the child's behavioral adjustment during the transition from home to school in a Tanzanian context. The purpose of the present study was to investigate to what extent the early teacher–child relationship and classroom emotional support predict children's behavioral adjustment in Tanzanian pre-primary schools over a 1-year time interval. However, since the literature refers to bi-directionality for this topic (Myers and Pianta 2008), we also examined whether children's behavioral adjustment predicts the teacher–child relationship. This study is a follow-up to the cross-sectional study by Shavega et al. (2014) and combines a survey and an observational research method using a longitudinal and multi-level design.

Attachment Perspective

Bowlby (1969) focused on the lasting psychological connectedness as a consequence of the ties an infant develops to her mother or primary caregiver as a significant figure. According to Bowlby, if parents respond consistently to their children, children are more likely to develop a secure parent–child relationship, whereas if parents do not respond or respond inconsistently, children are more likely to develop insecure patterns of attachment. The last decades, research on attachment has included significant others, like teachers (Hamre and Pianta 2005). Research points out that the teacher–child relationship is a second influential factor in child development after parents and relatives. Teacher–child relationships are linked to many developmental outcomes such as learning school rules, establishing social relationships with unrelated children, conforming and adjusting to non-familiar situations (Baker 2006; Dobbs and Arnold 2009; Garner and Waajid 2008; Hamre and Pianta 2005). From an attachment view, a secure teacher–child relationship facilitates the transition from home to school (Dobbs and Arnold 2009; Yoleri 2016) contributing to a child's behavioral adjustment in school. According to Luce et al. (2017) and Mashburn et al. (2008), a positive teacher–child relationship (characterized by closeness) is linked to positive behavior outcomes, whereas a negative teacher–child relationship (characterized by conflict and/or dependency) is linked to poor behavior outcomes in children. However, many factors can play a role in children's behavioral adjustment at pre-school entry. Differences in adjustment can be due to children's temperament, attachment or parenting styles and/or a combination of these factors (Bates et al. 1998; Campbell et al. 2000). In addition, according to Perry and Weinstein (1998), school adjustment depends not only on child characteristics, since school and teacher characteristics also influence children's behavioral adjustment during their transition to school.

Recent research indicates that children's behavioral adjustment is a function of teacher–child relationships at a dyadic and a group level (Buyse et al. 2008, 2011; Hamre

et al. 2007; Shavega et al. 2014). Specifically, these studies found dyadic teacher–child relationships and the classroom emotional support the teacher provides to be associated with children's behavioral adjustment. Furthermore, teacher–child relationship and children's behavioral adjustment relate to each other in a bidirectional way (Myers and Pianta 2008; Zhang and Sun 2011). However, because of the cross-sectional nature of most studies, these multilevel studies are inconclusive with regard to the direction of the relationships between these multilevel characteristics and children's behavioral adjustment.

Most longitudinal studies have either studied the teacher–child relationship (e.g., Howes et al. 2000; O'Connor et al. 2010) or classroom emotional support (class level) (Curby et al. 2010) as a predictor of behavioral adjustment among pre-school children. One longitudinal study, done at the post-kindergarten level (Buyse et al. 2009), combined both levels. Longitudinal multilevel studies could help to understand the multiple predictors of children's behavioral adjustment at the individual and class level in the early years and the (in)stability of problem behavior. Moreover, longitudinal studies on behavioral adjustment have been carried out in a Western cultural context. Differences between cultural contexts can be found in the school environment, pre-primary school characteristics, and the way children are brought up at home and in school. For example, in a Tanzanian cultural context, obedience in children is highly valued and encouraged. In addition, the classes in Tanzania are very large, unlike Western pre-schools. Furthermore, in most cases during this period the children are taught by the same teacher(s). We anticipated that staying with the same children for two years would make teachers more familiar with the children and their behavioral adjustment, and therefore more likely to reliably report behavioral adjustment and their relationship with the child at both time points. There are qualitative studies (e.g., McGillicuddy-De Lisi and Subramanian 1994) and cross-sectional quantitative studies (e.g., Shavega et al. 2014) on children's behavioral adjustment in Tanzania. For example, Shavega et al. (2014) found that both individual-level and class-level characteristics correlated with children's behavioral adjustment in school. The next step, building on this knowledge, is to examine the direction of this relationship.

Children's Behavioral Adjustment

Generally, behavioral adjustment is defined as the ability of the child to adapt and to develop appropriate behavior (Grych and Fincham 1990). In this study, behavioral adjustment is defined as the ability of the child to regulate his/her own behavior in accordance to new contextual demands like school rules and norms, and to adapt to and cope with relatively unfamiliar people, such as new peers and teachers (Shavega et al. 2014). We assume that, in the second year of pre-primary school, children are better able to behaviorally adjust, in part because of the quality of the relationship established in the first year with the teacher.

In this study, teachers' perception of children's behavioral adjustment is investigated in terms of pro-social, anxious, and aggressive behavior. Pro-social behavior refers to coping or adapting behaviors that are acceptable to the teacher in the school setting, such as being able to cooperate with other children and following teachers' instructions (Shavega et al. 2014). Aggressive behavior refers to a range of unacceptable and unfriendly behavior, which is harmful to others (e.g., kicking, fighting and/or beating other children). A child with such behavior has an unfriendly relationship with other children, does not respect school rules and regulations and may sometimes act against teachers' instructions (Mantzicopoulos 2005; Shavega et al. 2014; Spilt 2010). Anxious behavior refers to a situation in

which a child tends to worry about everything, is withdrawn, and sometimes reticent (cf., Birch and Ladd 1998; Shavega et al. 2014; Spilt 2010). Aggressive and anxious behavior has been reported to limit children's ability to adapt to the school context (Baker et al. 2009; O'Connor et al. 2010; Shavega et al. 2014); these behavioral adjustment problems may continue over time in school life (Buyse et al. 2009). A child's characteristics such as aggressive behavior may provoke the teacher and create a conflictual relationship (Rudasill 2011). Therefore, we explored whether there exists a reciprocal relationship between teacher–child relationship and children's behavioral adjustment.

Literature reports that boys behave more aggressively than girls and girls behave more anxiously and pro-socially than boys (Hamre et al. 2007; Liu 2004). Furthermore, teachers consistently reported experiencing higher levels of conflictual relationships with boys than with girls (Hamre et al. 2007; Sette 2012). The differences in behavioral adjustment between boys and girls may affect the quality of their relationship with the teachers in school. In Tanzania, girls are expected to be more obedient than boys, which may affect the quality of the relationships. In this study, we examined whether the child's gender moderates the relationships between teacher–child relationships and children's behavioral adjustment in a Tanzania context.

Children's Behavioral Adjustment and Its Relationship to the Teacher–Child Relationship

Research has shown that the teacher–child relationship is an important factor in regulating children's behavior adjustment in school when the child starts schooling (Hamre and Pianta 2001). The quality of the relationship can be characterized by conflict and closeness that may persist over time (Graziano et al. 2007; Jerome et al. 2008). Teacher–child closeness has been reported to be linked to pro-social behavior such as peer liking (Baker 2006; Cadima et al. 2010; Palermo et al. 2007; Sette 2012), and to stimulate positive behavior in children who are at risk of developing poor school adjustment (Cadima et al. 2010; Hughes 2012; Stuhlman and Pianta 2002). Conversely, teacher–child conflict has been reported to be linked to aggressive behavior in children (Doumen et al. 2008; Palermo et al. 2007).

Longitudinal studies showed that the quality of early social relationships with teachers laid the foundations for later behavioral adjustment in school (Burchinal et al. 2002; Ladd and Birch 1997). Children who were reported to experience conflictual relationships with teachers in Year 1 demonstrated difficulties in behavioral adjustment in Year 2 and/or in the subsequent years in school (Hamre and Pianta 2001; Ladd and Burgess 1999; O'Connor et al. 2012; Pianta et al. 1995; Silver et al. 2005). A conflictual teacher–child relationship established when children enter pre-school becomes an important early indicator for later behavioral difficulties (Birch and Ladd 1998). In contrast, a harmonious relationship between a teacher and a child established early in pre-school was reported to be associated with a decrease in behavior problems (e.g., less aggression) in subsequent grades (Birch and Ladd 1998; Hughes and Kwok 2006; Meehan et al. 2003).

Studies acknowledge that the teacher–child relationship and children's behavioral adjustment act in a bidirectional way (Carr et al. 1991; Doumen et al. 2008; Myers and Pianta 2008; Patterson 1977; Zhang and Sun 2011). Birch and Ladd (1998) comment that aggressive behavior and a conflictual relationship may relate reciprocally since a child who engages in a conflictual relationship is more likely to be motivated to display aggressive behavior. In turn, teachers may find it difficult to establish and maintain a close relationship with an aggressive child, which may increase the chance of more unadjusted behavior

in children (Doumen et al. 2008; Myers and Pianta 2008). According to Ladd and Burgess (1999), a bidirectional relationship between a conflictual teacher–child relationship and problem behavior in children can lead to cycles of coercive interaction in which problem behavior and relational difficulties reinforce each other. Compliant and prosocial behavior of children, on the other hand, may elicit positive reactions from their teachers and this may strengthen the relationship with the teacher and furthermore enhance their prosocial behavior (Myers and Pianta 2008). Based on previous research, in the present study, we aim to establish the extent to which the early teacher–child relationship predicts later behavioral adjustment of children in Tanzania and vice versa.

Children's Behavioral Adjustment and Its Relationship to Classroom Emotional Support

From a bio-ecological framework, it has become clear that children's behavioral adjustment is also influenced by the broader context like classroom climate, and teacher sensitivity and emotional support at class level (Gazelle 2006; Mashburn et al. 2008; Rimm-Kaufman et al. 2002). For example, Gazelle's (2006) findings suggest that a lack of emotional support at the class level may contribute to anxiety in children, which in turn can lead to behavioral adjustment problems. Research indicates that a sensitive teacher who creates a supportive classroom environment is capable of helping children to behaviorally adjust positively (Ladd and Birch 1997; Rimm-Kaufman et al. 2002) and is more likely to regulate their problem behavior at the class level (Curby et al. 2010; Rimm-Kaufman et al. 2002). According to Brophy-Herb et al. (2007), positive classroom climate and teacher sensitivity may stimulate positive behavioral adjustment in children. Studies, partly longitudinal, revealed that teacher sensitivity and/or a positive climate enhances children's behavioral adjustment in pre-school over time (Curby et al. 2010). A multilevel study by Buyse et al. (2009) from grade one to three revealed that both, teacher–child closeness as rated by teachers, and classroom relational closeness as rated by teachers, predicted children's behavioral adjustment.

To sum up, the aforementioned longitudinal studies point out that the teacher–child relationship and/or classroom emotional support established as early as the child starts school has an effect on the child's behavioral adjustment at school in subsequent years. Furthermore, the literature revealed that teacher–child relationship and children's behavioral adjustment are related reciprocally. However, most of the literature refers to a Western cultural context, which differs from that in Tanzania. For example, McGillicuddy-De Lisi and Subramanian (1994) report that in contrast to mothers from the USA, Tanzanian mothers believe in direct instructions as a source of child development and social harmony. This may mean that self-determination in the Tanzania pre-primary school context is less emphasized than in Western cultures, consequently, obedience is highly encouraged. More emphasis on obedience may increase the social distance between teachers and children in pre-school, which may subsequently affect the teacher–child relationship and children's behavioral adjustment. In Tanzania, there is one cross-sectional study by Shavega et al. (2014) examining behavioral adjustment in young children. However, there is no longitudinal study addressing children's behavioral adjustment trajectory during the pre-school period in Tanzania. In addition, no study has addressed the possibility of the existence of a bidirectional relationship between teacher–child relationship and children's behavioral adjustment in Tanzania. This study, therefore, aims to fill the gap by examining the effect

of early teacher–child relationships and classroom emotional support on children's behavioral adjustment over time and vice versa.

In Tanzania, some classes have been reported to be overcrowded (Mtahabwa and Rao 2010), exceeding the national target of 40 children per class for primary schools (Ministry of Education and Culture (MoEC) 2006; SACMEQ 2011; UWAZI 2011). Studies showed that, in smaller classes, children's behavior is more easily manageable and teacher–child relationships are more positive than in larger classes (Bain and Achilles 1986; Blatchford et al. 2005). In this study, therefore, we examined whether class size moderated the relationships between teacher–child relationship and children's behavioral adjustment in the Tanzanian context.

The Present Study

The present study was designed to examine whether teacher–child relationships and classroom emotional support affect teachers' perception of children's behavioral adjustment in pre-primary schools over time. Based on bio-ecological and attachment theory, it further aimed to examine the existence of a bidirectional relationship between teacher–child relationship and children's behavioral adjustment. The study was guided by two main research questions: First, do the quality of the teacher–child relationship (closeness and conflict at the child level) and classroom emotional support (teacher-sensitivity and a positive climate at the class level) in Year 1 affect teachers' perception of children's behavioral adjustment (anxious, prosocial, and aggressive behavior) in Year 2? Second, do teachers' perceptions of children's behavioral adjustment (prosocial, anxious, and aggressive behavior) in Year 1 affect teacher–child relationship (closeness and conflict) in Year 2? Gender of the child and class size are hypothesized to moderate the relationships through cross-level interactions. Based on previous research, the following hypotheses guided this study:

According to the literature, teacher–child closeness (Baker 2006; Cadima et al. 2010) and teacher sensitivity and positive climate (Rimm-Kaufman et al. 2002) are linked to prosocial behavior. On the other hand teacher–child closeness, teacher sensitivity and positive climate are associated with a decrease of aggressive behavior (Hughes and Kwok 2006; Meehan et al. 2003). Based on these previous studies, in this study we propose that teacher–child closeness (individual level), teacher sensitivity and positive climate (class level) in Year 1 predict an increase of teachers' perception of children's prosocial behavior in Year 2 and a decrease in teachers' perception of aggressive and anxious behavior in Year 2, while Year 1 teacher–child conflict (individual level) predicts an increase in teachers perception of children's aggressive and anxious behavior in Year 2. In addition, closeness and conflict in Year 1 aggregated at the class level predict teachers' perception of behavioral adjustment in Year 2.

According to the literature, teacher–child relationship and children's behavioral adjustment act in a bidirectional way, i.e., teacher–child relationship can influence children's behavioral adjustment and vice versa (Carr et al. 1991). Sutherland and Oswald (2005) argued that aggressive children are likely to receive negative and coercive attention from the teachers, which implies a poor quality of the relationship between a teacher and a child. Based on these previous studies, in this study we hypothesize that teachers' perception of prosocial behavior (individual level) in Year 1, and teacher sensitivity and positive climate (class level) in Year 1 predict an increase of teacher–child closeness in Year 2 and a decrease in teacher–child conflict in Year 2, while teachers' perception of anxious and aggressive behavior (individual level) in Year 1 predict an increase of Year 2 teacher–child

conflict and a decrease of Year 2 teacher–child closeness. In addition, teachers' perception of prosocial, anxious, and aggressive behavior in Year 1 aggregated at class level predict teacher–child relationship in Year 2.

Literature reports that boys behave more aggressively than girls and teachers have been consistently reporting to experience more often a conflictual relationship with boys than with girls and vice versa (Hamre et al. 2007; Liu 2004). On the basis of this literature we hypothesize that gender of the child moderates the relationship between the teacher–child relationship and teachers' perception of behavioral adjustment (i.e., we expected a stronger positive relationship between teacher–child closeness and teachers' perception of prosocial behavior in girls than in boys and we expected a stronger positive relationship between a conflictual teacher–child relationship and teachers' perception of aggressive and anxious behavior in boys than in girls). Furthermore, studies report that in classes with a large class size, i.e. with a high teacher- child ratio, children behave aggressively, hence poor quality of relationship between teacher and child (O'Connor et al. 2012; Shavega et al. 2014). Therefore, based on this literature, in this study we assume that class size moderates the relationship between classroom emotional support and teacher–child relationship and teachers' perception of behavioral adjustment (i.e., we expected a higher and more positive relationship between teacher sensitivity and/or positive climate, teacher–child closeness and teachers' perception of prosocial behavior in children in smaller classes than in larger classes and we expected a more negative relationship between teacher sensitivity and/or positive climate, teacher–child conflict and aggressive and teachers' perception of anxious behavior in children in larger classes than in smaller classes).

Method

Participants

The study was conducted in pre-primary schools in the Ilala district, Dar es Salaam region, Tanzania. The original sample involved 320 children and 20 teachers from 20 schools; ten public and ten private schools participated in this study for Year 1 in June 2012 (for more details on the sampling procedures see Shavega et al. 2014). In this year, teachers reported on teacher–child relationships and children's behavioral adjustment, while information on classroom emotional support was obtained through observation using the Classroom Assessment Scoring System (CLASS) (Pianta et al. 2008).

A follow-up study after a 1-year interval was carried out in June 2013 with the same teachers and children who participated in the first study. Due to attrition, the sample was reduced to 310 children in the study for Year 2. Of the 10 missing children, one child was reported to be passed away and nine were reported to have shifted to other schools. Gender distribution among the children in the Year 2 study was male 156 (50.32%) and female 154 (49.68%). In this year the ages of the children ranged between 5 and 7 years ($M = 5.75$; $SD = .66$ years). The majority of the teachers were female (95%). Teachers' ages ranged between 20 and 60 years ($M = 32.90$, $SD = 8.78$). With regard to the teachers' educational level, the majority (70%) had received secondary education, 15% only primary education and 15% university education (Shavega et al. 2014). Generally, class size ranged from 18 to 98 children; in the public schools, it ranged from 26 to 98 (average of 47), while in the private schools it ranged from 23 to 57 (average of 35).

Procedures

The Student–Teacher Relationship Scale (STRS) (Pianta 1994) and the Prosocial Scale of the Pre-school Behavior Questionnaire (PPBQ) (Behar and Stringfield 1974; Tremblay et al. 1992) were cross-culturally adapted for this study. For the adaptation procedures,(see Shavega et al. (2014). CLASS was adopted from the CLASS Pre-K tool (Pianta et al. 2008).

Measures

The *Student–Teacher Relationship Scale* (*STRS*) is a measure developed to assess teachers' perceptions of their relationship with an individual child (age 3–12, dyadic relationship) in school (Pianta 1994). The measure consists of three constructs: closeness, conflict, and dependency. According to previous research, internal consistency scores ranged between .88 and .93 for closeness, between .88 and .91 for conflict and between .75 and .82 for dependency. The validity of the scale is supported by significant associations with classroom observation and children's behavioral adjustment (Doumen et al. 2008). In this study, we adapted two constructs: closeness and conflict. We did not include dependency because it was not viewed as culturally relevant among Tanzanian pre-primary children (Shavega et al. 2014). Closeness (6 items) tapped information on friendship and harmonious relationships displayed between a teacher and a child as perceived by a teacher. For example, "I have a good and warm relationship with this child", "Working with this child gives me self-confidence". The conflict subscale (5 items) assessed information on relationships characterized by disharmony or misunderstanding between a teacher and a child. An example of an item is "Working with this child drains my energy". The items were rated on a 5-point Likert scale ranging from "never" to "always". For the number of items, stability, and change over time of each scale see Table 1.

The behavioral adjustment measure assessed information on teachers' perception of children's behavioral adjustment in pre-primary schools.

The Prosocial Scale of the Pre-school Behavior Questionnaire (*PPBQ,* Behar and Stringfield 1974; Tremblay et al. 1992) was adapted and used in this study. This measure comprised of three constructs: prosocial behavior (11 items), anxious behavior (5 items),

Table 1 Psychometric characteristics of the measures, descriptive statistics and change over time (*N* teachers = 20, *N* children = 310)

Measures	Reliability			Change over time		
	N (*items*)	α 1(320)	α 2(310)	*M*1(*SD*)	*M*2(*SD*)	*T*(*M*1–*M*2)
Closeness (TCR)	6	.74	.81	3.88(.74)	4.01(.74)	− 3.46**
Conflict (TCR)	5	.69	.73	1.85(.65)	1.62(.56)	6.36**
Prosocial behavior (CBA)	11	.80	.85	1.43(.36)	1.45(.39)	− .73
Anxiety (CBA)	5	.67	.70	.64(.44)	.63(.44)	.11
Aggression (CBA)	9	.72	.81	.60(.38)	.55(.32)	2.55**
Teacher sensitivity (CES)	7			4.78(1.04)	4.86(.99)	− 1.26
Positive climate (CES)	7			4.81(1.08)	5.38(.86)	− 9.49**

TCR teacher–child relationship, *CBA* children's behavioral adjustment, *CES* classroom emotional support

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

and aggressive behavior (9 items). Prosocial behavior refers to friendly and acceptable behavior, which can help a child to get along with teachers and other children in a school successfully. An example of an item on this scale is "This child likes sharing". Anxious behavior refers to uncertainty, which limits a child's ability to engage and get along with other children and adults in the school context. An example of an item is "This child lives in isolation". Aggressive behavior involves a range of unfriendly and hostile behavior, which limits a child's ability to adjust to a school context, for example, "This child fights with other children (Shavega et al. 2014)". Children were rated using a 3-point Likert scale with options "does not apply", "sometimes applies", and "always applies". Internal consistency of the measure according to previous research was good for all sub-scales, ranging between .81 and .93 (Thijs, Koomen and van der Leij 2008).

Classroom Emotional Support is an observational scale used to measure teacher's emotional support given to the children in class. The measure was adopted from CLASS Pre-K tool (Pianta et al. 2008). This tool aims to measure teacher–child interaction at the class level. Classroom emotional support has four dimensions: teacher sensitivity, positive climate, negative climate, and regard for children's perspectives. Two subscales (teacher sensitivity and positive climate) were used in the current study because these two sub-scales seemed most appropriate in the Tanzanian cultural context. Negative climate and Regard for children's perspective were not used. We expected Regard for children's perspective not to work in overcrowded classes since teachers with more than 40 children in their classroom would not be able to attend to children's individual perspective. Moreover, it was expected that indications of a negative climate (e.g., whipping) in the Tanzanian culture are different and also have a different meaning compared to Western contexts.

Rating scales for the dimensions ranged from 1 to 7; 1 and 2 indicating low, 3, 4 and 5 indicating medium, and 6 and 7 indicating a high degree of emotional support. Behavioral indicators outlined in the CLASS Pre-K manual (Pianta et al. 2008) were used in this study. For example, teacher sensitivity comprises seven behavioral indicators, such as whether the teacher is responsive to and aware of the children who need extra support, is ready to assist the children, gives individualized support, offers timely help, allows free participation, children seek support from the teacher, and the extent to which a teacher provides comfort and encouragement to the children. Positive climate comprises seven behavioral indicators such as whether the teacher smiles at the child, laughs with the child, has eye contact, and a warm voice.

The first author was an eligible user of CLASS (Shavega et al. 2014). The observation involved four sessions in each classroom with a total of 2 h per session (see also Shavega et al. 2014). The main researcher and research assistant observed 20% of all classes for inter-observer reliability. Inter-observer intra-class correlations coefficients (ICCs) for teacher sensitivity and positive climate were .91 and .89 respectively, which indicates excellent agreement (Cicchetti et al. 2006). Previous studies report that adequate ICCs range between .78 and .97 (Hamre et al. 2008; Pianta et al. 2008). However, some studies reported relatively lower or high ICCs for teacher sensitivity and positive climate, which ranged between .75 and 1.00 respectively (Sandilos and Diperna 2011). The choice for the CLASS was based on the fact that it has proven to be a reliable and valid measure of the interaction quality of teachers in the classroom in many different contexts (ranging from the USA to many different countries in Europe). Moreover, the Positive Climate and Sensitivity of the teacher scales are relevant to our research questions. Reliable and valid alternatives for non-Western contexts are lacking. Since the Tanzanian context differs in a number of ways from Western contexts we only used scales which we expected were less affected by these differences. In this study we found that regardless of obedience in children,

teacher sensitivity and warmth of Tanzanian pre-primary teachers were important predictors of child behavioral adjustment and this finding is not only limited to small classes, but also it has a significant impact in larger classes as found in Tanzanian pre-primary classes .

Statistical Analyses

Teachers' perception of children's behavioral adjustment in Year 2 was predicted as a function of time, child characteristics and classroom characteristics in Year 1 and their cross-level interactions. In this study, variables were measured at three levels: time, individual, and class. Data were analyzed using IBM SPSS 20 software. SPSS Mixed model with repeated measures was used to examine changes in teachers' perception of children's behavioral adjustment. We restructured the data file matrix in order to arrange the time-related observations vertically (Heck et al. 2010; Peugh and Enders 2005; West 2009). This created two records for each case, representing Year 1 and Year 2. Predictor variables can be identified at the individual level (closeness, conflict, gender) and class level (teacher sensitivity, positive climate, and aggregated closeness and conflict, and class size). Teacher–child closeness and conflict were centered around the group mean and thereafter aggregated at the class level. Gender of the child and class size were used to build cross-level interactions.

We further explored whether a bidirectional relationship existed between teacher–child relationship and children's behavioral adjustment. To establish this relationship, we tested whether teacher–child relationship in Year 2 was predicted as a function of time, children's behavioral adjustment (individual level) (prosocial, anxious, and aggressive behavior), classroom emotional support in Year 1 and their cross-level interactions. This was also tested in a longitudinal and multilevel analysis. Time was nested within the individual level (children's behavioral adjustment) and the individual level was nested within the class level (teacher sensitivity and positive climate). Procedures for data analysis and file restructuring were the same as mentioned above. Predictor variables were Year 1 child level (prosocial, anxious, and aggressive behavior), Year 1 class level (teacher sensitivity and positive climate) and the aggregated prosocial, anxious, and aggressive behavior at the class level. Gender of the child and class size were used to build cross-level interactions.

To test our hypotheses we developed a hierarchical regression model. We ran the null model by calculating the intra-class correlation (ICC) to examine whether there was variance in children's behavioral adjustment and teacher–child relationship to be explained at each level. No predictor variable was added in this model. The null model is a basic condition which helps researchers to decide whether to continue with multilevel analysis or not to continue, on the basis of the ICC cut-off of 5% (see Heck et al. 2010). In Model 1, we introduced time as the only predictor variable. Time was used to determine whether teachers' perception of behavioral adjustment and teacher–child relationship variables changed from Year 1 to Year 2 and whether the initial intercept and random slope of time varied within and among individuals and between schools.

To test Hypothesis 1, we added two predictor variables from the child level; first we added Year 1 teacher–child closeness in Model 2 and subsequently, we added Year 1 teacher–child conflict in Model 3 while controlling Year 1 teacher–child closeness. This was done since we believed that, the influence of teacher–child closeness on children's behavior differs from that of teacher–child conflict. Second, we added predictor variables from the class level: Year 1 teacher sensitivity and Year 1 positive climate in Model 4, while controlling for variables at the child level. Third, we added the aggregated

teacher–child closeness and conflict variables while controlling for variables of Level 2 and Level 3, which were presented in Model 5. To test Hypothesis 2, first we added predictor variables at the individual level; Year 1 prosocial behavior in Model 2 and subsequently we added Year 1 anxious and aggressive behavior in Model 3. Second, we added predictor variables at the class level; Year 1 teacher sensitivity and Year 1 positive climate in Model 4 while controlling for variables at the individual level. Third, we added the aggregated prosocial, anxious, and aggressive behavior in Model 5. To test Hypothesis 3, we used two moderator variables, the gender of the child and class size, to establish cross-level interaction terms. Only statistically significant variables were used to build cross-level interactions. Variables in model 2, 3, 4, 5 and their cross-level interactions were used to explain the observed differences in children's initial behavior adjustment level on one hand, and initial teacher–child relationship on the other hand (intercept) and their slopes or growth (linear growth rate). Full maximum likelihood was used to fit the model because it shows how well the regression coefficients and variance estimates fit the sample data (Sheck and Ma 2011).

Results

Descriptive Statistics

Mean Change, Stability and Concurrent Relationships Among Variables

The mean score was used to examine the change in the variables from Year 1 to Year 2.

There was a slight decrease in aggressive behavior but no change in prosocial and anxious behavior in Year 2. Mean levels of teacher–child closeness slightly increased in Year 2 whereas conflict slightly decreased. Positive climate slightly increased in Year 2 whereas teacher sensitivity did not change (Table 1).

Concurrent relationships at the individual level showed that most correlations between teacher–child relationship (closeness and conflict) and children's behavioral adjustment (prosocial, anxious, and aggressive behavior) were in the expected directions (Table 2). Contrary to our expectation, we found negative bivariate concurrent relationships between aggregated teacher–child closeness and teacher sensitivity and positive climate at both time points (Table 3). We further explored the bivariate correlations at the item level. We found one item of teacher–child closeness, which reads "The child seems to feel secure and confident while s/he is with me", which at the class level was moderately significantly and negatively related to teacher sensitivity ($r = -.41$, $p < .01$) and positive climate ($r = -.39$, $p < .01$). This item might have affected the overall bivariate correlation among the variables. The item was deleted because it did not behave as expected.

Results of zero-order correlations (Table 2) showed that overall the relationships between teacher–child relationships in Year 1 and children's behavioral adjustment in Year 2 were stronger than the associations between children's behavioral adjustment in Year 1 and teacher–child relationship in Year 2.

We further compared the means on these variables as obtained in this study with those obtained in a Western context. For example, the mean for teacher–child closeness in this study was $M = 4.01$, $SD = .74$, while in the Western study was as follows; $M = 4.40$, $SD = .61$ (Mashburn et al. 2006). The mean for teacher sensitivity in this study was $M = 4.86$, $SD = .99$ and for positive climate was $M = 5.38$, $SD = .86$. In the Western study

Table 2 Zero order correlation of variables between child characteristics and teacher–child relationship (level 1) at two measurement points

Variables	1	2	3	4	5	6	7	8	9	10
1. Closeness T1	–									
2. Conflict T1	−.39**	–								
3. Prosocial T1	.38**	−.55**	–							
4. Anxiety T1	−.39**	.37**	−.39**	–						
5. Aggression T1	−.32**	.61**	−.56**	.27**	–					
6. Closeness T2	**.64****	−.30**	.32**	−.22**	−.26**	–				
7. Conflict T2	−.30**	**.47****	−.25**	.25**	.31**	−.19**	–			
8. Prosocial T2	.30**	−.38**	**.52****	−.26**	−.35**	.35**	−.33**	–		
9. Anxiety T2	−.29**	.35**	−.33**	**.45****	.21**	−.21**	.32**	−.46**	–	
10. Aggression T2	−.33**	.36**	−.33**	.22**	**.53****	−.24**	.35**	−.46**	.22**	–

Correlations indicating stability are in bold

**p < .01

Table 3 Bivariate correlations of key variables across two measurement occasions (closeness and conflict are centered and aggregated at classroom level)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Level 2, time 1														
1. Closeness	–													
2. Conflict	–.48**	–												
Outcome variables at time 1														
3. Prosocial	.32**	–.39**	–											
4. Anxiety	–.30**	.39**	–.39**	–										
5. Aggression	–.29**	.44**	–.56**	.27**	–									
Level 3 at time 1														
6. Teacher sensitivity	–.17**	–.18**	–.02	.05	–.23**	–								
7. Positive climate	–.33**	.09	.17**	.14*	.05	.87**	–							
Level 2 at time 2														
8. Closeness	**.85****	–.48**	.27**	–.19**	–.26	–.08	–.14**	–						
9. Conflict	–.51**	**.47****	–.18**	.35**	.31**	–.21**	–.07	–.49**	–					
Outcome variables at time 2														
10. *Prosocial*	.24**	–.33**	**.52****	–.26**	–.35**	.13**	.02	.33**	–.27**	–				
11. *Anxiety*	–.27**	.31**	–.33**	**.45****	.21**	.06	.04	–.26**	.26**	–.46**	–			
12. *Aggression*	–.29**	.33**	–.33**	.22**	**.53****	–.06	.00	–.24**	.42**	.46**	.23**	–		
Level 3 at time 2														
13. Teachers sensitivity	–.38**	–.08	.02	.02	–.11	**.49****	.53**	–.34**	.25**	.06	.00	.05	–	
14. Positive climate	–.42**	–.16**	.00	.02	–.11	.45**	**.45****	–.23**	.17**	.07	–.07	.06	.81**	–

Bold shows stability of variables from Year 1 to Year 2

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

the mean for teacher sensitivity was $M = 5.13$, $SD = .93$ (Jamison et al. 2014) and for positive climate was $M = 5.54$, $SD = .63$ (Hamre et al. 2012). The results of these comparisons show that teacher–child closeness, teacher sensitivity, and positive climate in Tanzania seem to be lower than in Western cultures. Cohen's effect size values ($d = -.57$, $-.67$, and -21 respectively) suggest medium and small effects (Cohen 1992).

Inferential Analyses

Before testing the hypotheses, we examined in the preliminary analysis the unconditional mean model (null model), which revealed a significant grand mean for all behavioral adjustment variables (anxious, prosocial, and aggressive behavior) and teacher–child relationship variables (closeness and conflict). It also revealed a sufficient ICC for each level, which was above the cut-off point of 5%. In the analysis with child adjustment as the dependent variable, only aggressive behavior revealed a significant change in Year 2: it decreased. The analysis with teacher–child relationship as the dependent variable revealed a significant change in Year 2: teacher–child closeness increased and teacher–child conflict decreased. The findings are in line with the mean score output which indicated a slight decrease in the mean level of aggressive behavior and teacher–child conflict and an increase of teacher–child closeness (Table 1). Results of the longitudinal multilevel regression models for aggressive behavior are summarized and presented in Table 4. Prosocial and anxious behavior did not reveal a significant change in Year 2. Further multilevel analysis was therefore not performed for these variables. Results of the longitudinal multilevel

Table 4 Model summary for longitudinal and multilevel data: outcome variable is Year 2 aggressive behavior

Parameters	Null model $\beta(SE)$	Model 1 $\beta(SE)$	Model 2 $\beta(SE)$	Model 3 $\beta(SE)$	Model 4 $\beta(SE)$	Model 5 $\beta(SE)$
Fixed part						
ICC_1 = 47.8						
ICC_2 = 26.4						
ICC_3 = 25.8						
Intercept	.58(.05)**	.60(.0)**	.61(.05)**	.60(.05)**	.80(.20)**	.84(.15)**
Time		−.06(.20)*	−.05(.02)*	−.05(.02)*	−.05(.02)*	−.05(.02)*
Year 1 Closeness			−.13(.03)**	−.07(.03)*	−.07(.03)*	−.07(.03)*
Year 1 Conflict				.23(.03)**	.23(.03)**	.23(.03)**
Year 1 Teacher sensitivity					−.20(.08)*	−.04(.07)
Conflict aggregate						.24(.09)*
Random part						
Residual	.08(.01)**	.07(.00)**	.07(.00)**	.07(.00)**	.07(.00)**	.07(.00)**
Variance	.04(.01)*	.04(.00)*	.04(.00)*	.04((.01)*	.02(.00)*	.03(.01)*
Variance	.04(.00)**	.04(.00)**	.03(.00)**	.02(.00)**	.02(.00)**	.02(.00)**
Model summary						
−2 Restrictive log	436.659	430.260	411.731	361.770	356.810	343.739

ICC intra-class correlation coefficient, ICC_1 for level 1, ICC_2 for level 2, ICC_3 for level 3

*$p < .05$; **$p < .01$

regression model for teacher–child closeness and conflict are summarized and presented in Tables 5 and 6.

Hypothesis 1: Year 1 Teacher–Child Relationship and Year 1 Classroom Emotional Support are Predictors of Year 2 Children's Aggressive Behavior

We tested whether Year 1 teacher–child closeness and Year 1 teacher–child conflict predicted Year 2 aggressive behavior in children. Results showed that Year 1 teacher–child closeness significantly predicted Year 2 aggressive behavior in children (Table 4, Model 2). Then we introduced Year 1 teacher–child conflict while controlling for Year 1 teacher–child closeness. Results indicated that Year 1 teacher–child conflict significantly predicted positively Year 2 aggressive behavior, while the relationship between Year 1 teacher–child closeness and Year 2 aggressive behavior in children weakened (Table 4, Model 3). In Model 4 we introduced level three (class level) variables: Year 1 teacher sensitivity and Year 1 positive climate while controlling for variables at Level 2 to examine whether they predicted Year 2 aggressive behavior at classroom level in addition to variables at the individual level (Table 4, Model 3). Year 1 teacher sensitivity predicted negatively Year 2 aggressive behavior in children (Table 4, Model 4). No relationship was found between positive climate and aggressive behavior; this was therefore not reported in Table 4.

We tested whether the aggregated teacher–child closeness and conflict in Year 1 predicted children's aggressive behavior in Year 2 while controlling for teacher–child closeness and conflict and teacher sensitivity. Results indicated that time, teacher–child closeness and conflict and the aggregated teacher–child conflict predicted Year 2 aggressive behavior in children (Table 4, Model 5). This indicates that in classes with a higher class-level mean of Year 1 teacher–child conflict, Year 2 aggressive behavior increased compared to classes

Table 5 Model summary for longitudinal and multilevel data: outcome variable is Year 2 teacher–child closeness

Parameters	Null model β(SE)	Model 1 β(SE)	Model 2 β(SE)	Model 3 β(SE)
Fixed part				
ICC_1 = 38%				
ICC_2 = 34%				
ICC_3 = 28%				
Intercept	3.94(.10)**	3.75(.11)**	2.99(.17)**	3.31(.18)**
Time		.13(.03)**	.13(.03)**	.13(.03)**
Year 1 Prosocial			.49(.09)**	.32(.10)*
Year 1 Anxiety				−.29(.07)**
Random part				
Residual	.21(.01)**	.20(.01)**	.20(.01)**	.20(.00)**
Variance	.19(.01)*	.19(.06)*	.15(.00)*	.14((.05)*
Variance	.15(.02)**	.16(.02)**	.13(.02)**	.13(.07)**
Model summary				
−2 Restrictive log	1133.613	1121.242	1090.117	1073.254

ICC intra-class correlation coefficient, ICC_1 for level 1, ICC_2 for level 2, ICC_3 for level 3

*$p < .05$; **$p < .01$

Table 6 Model summary for longitudinal and multilevel data: outcome variable is Year 2 teacher–child conflict

Parameters	Null model β(SE)	Model 1 β(SE)	Model 2 β(SE)	Model 3 β(SE)	Model 4 β(SE)	Cross-level interaction β(SE)
Fixed part						
ICC_1=65%						
ICC_2=21%						
ICC_3=14						
Intercept	1.74(.07)**	2.08(.09)**	2.08(.08)**	2.17(17)**	1.29(.56)**	1.29(.56)*
Time		−.23(.03)**	−.23(.03)**	−.23(.03)**	−.19(.03)**	−.19(.03)**
Year 1 Pro-social			−.56(.07)**	−.32(.08)**	−.31(.07)**	−.32(.07)**
Year 1 Aggressive				.40(.07)	.33(.07)**	.06(.20)
Anxiety aggregated					.56(.20)**	.56(.21)*
Year 1 Aggressive×class size						.30(.14)*
Random part						
Residue	.28(.07)**	.19(.01)**	.19(.01)**	.19(.01)**	.13(.01)	.14(.01)**
Variance	.09(.03)*	.09(.03)*	.06(.00)*	.03(.01)*	.01(00)	.01(.01)*
Variance	.06(.01)**	.08(.01)**	.05(.01)**	.03(.01)**	.04(.01)**	.04(.01)**
Model summary						
−2 Restrictive log	1039.069	1000.274	948.073	919.978	612.608	608.511

ICC intra-class correlation coefficient, ICC_1 for level 1, ICC_2 for level 2, ICC_3 for level 3

X denotes cross-level interaction

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

with a lower class-level mean of conflict (Table 4, Model 5). However, after introducing the aggregated teacher–child conflict in Model 5, the relationship between Year 1 teacher sensitivity and aggressive behavior disappeared. The aggregated teacher–child closeness was not significant; it was therefore not reported in the table. Year 1 conflict did not predict Year 2 aggressive behavior. Class level predictors of Year 2 aggressive behavior were Year 1 teacher sensitivity and aggregated conflict (separately).

Hypothesis 2: Year 1 Children's Behavioral Adjustment (Individual Level) and Classroom Emotional Support (Class Level) are Predictors of Year 2 Teacher–Child Closeness and Conflict

Year 1 child adjustment predicted Year 2 teacher–child relationships: namely prosocial behavior predicts both Year 2 conflict and closeness, anxious behavior predicts Year 2 closeness and aggressive behavior predicts Year 2 conflict. We tested whether the aggregated prosocial, anxious, and aggressive behavior in Year 1 predicted Year 2 teacher–child closeness and conflict. The results showed that only aggregated anxious behavior predicted teacher–child conflict. This indicates that in classes with a higher class level mean of Year 1 child anxiety, Year 2 teacher–child conflict increased compared to classes with a lower class level mean of child anxiety (Table 6, Model 3); the aggregated pro-social and aggressive behavior was not significant.

Hypothesis 3: Gender of the Child and Class Size are Moderator Variables

We examined whether child gender moderated the relationships between the teacher–child relationships and children's behavioral adjustment within classes, and whether class size moderated the relationship between classroom emotional support, teacher–child relationship and children's behavioral adjustment between classes. Results revealed an interaction effect between aggressive behavior and class size (Table 6, interaction effect). The relationship between Year 1 aggressive behavior and Year 2 teacher–child conflict was stronger in classes with larger class size than in classes with smaller class size (Fig. 1). No interaction effect was found in other variables.

Discussion

The current study examined the relationships among teachers' perception of children's behavioral adjustment, teacher–child relationships, and classroom emotional support in a Tanzanian pre-primary school context over the time-span of one year. This study aimed at determining the extent to which the teacher–child relationships and classroom emotional support established in Year 1 enabled children to adapt their behavior in a positive way in Year 2. The study also aimed to establish the extent to which children's behavioral adjustment in Year 1 predicted teacher–child relationships over time.

We hypothesized that teacher–child closeness (individual level) in Year 1, teacher sensitivity and positive climate (class level) in Year 1 would predict an increase in prosocial behavior and a decrease in aggressive and anxious behavior in Year 2, and that teacher–child conflict in Year 1 would predict an increase in aggressive and anxious behavior in Year 2. The results partially supported our hypotheses. On the individual level, the teacher–child relationship in Year 1 did not predict Year 2 prosocial or anxious behavior
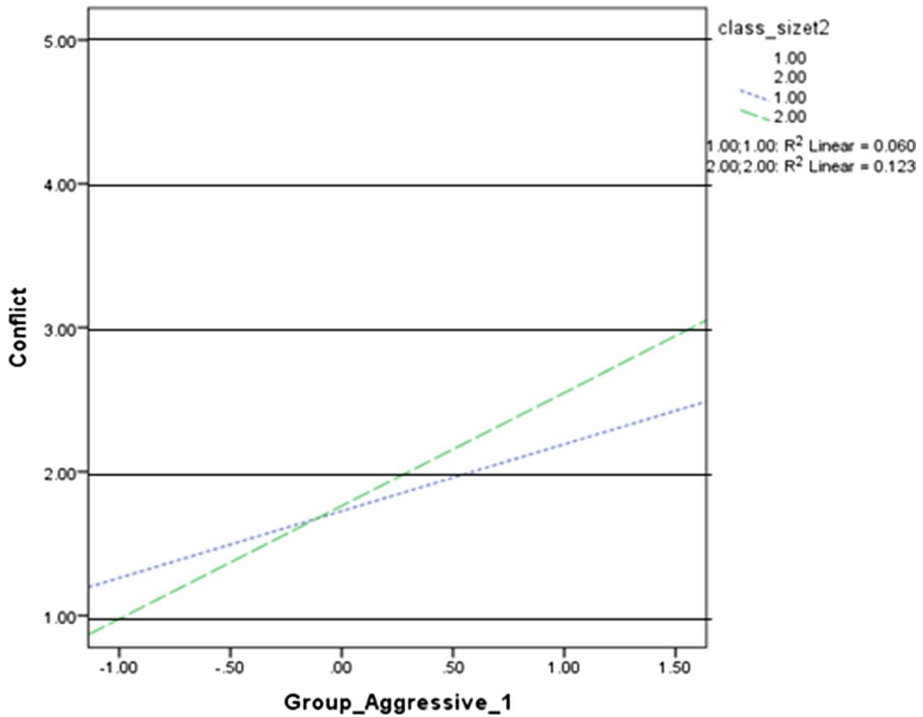
Fig. 1 Interaction effect between aggressive behavior and class size. 1. Represents class size from the lowest through 40. 2. Represents class size from 41 through the highest

but it did contribute to Year 2 aggressive behavior. On the class level, Year 1 teacher sensitivity and aggregated conflict were predictors of Year 2 aggressive behavior but only separately (Table 4, Model 3). This result suggests that harmonious and friendly teacher–child relationships in Year 1 are important in redirecting inappropriate behavior in children over time, which may enable children to adapt their behavior appropriately in the subsequent year (Hamre and Pianta 2001). The finding is consistent with findings from longitudinal studies conducted in a Western cultural context (Hughes and Kwok 2006; Ladd and Birch 1997; Silver et al. 2005): these relationships and interactions matter similarly across cultures. However, the ability of teachers to engage in positive relationships with pre-schoolers may be more or less difficult given the differences in contexts such as class size.

When Year 1 teacher–child relationship is characterized by misunderstanding and conflict it may lead to more aggressive behavior in the child in the subsequent year in the Tanzanian context. This may be the case especially when the child keeps the same teacher over the period of 2 years: other studies support this argument (Palermo et al. 2007; Sette 2012). Year 1 teacher–child conflict proved to have a positive strong relationship with aggressive behavior, as its introduction in the model reduced the strength of Year 1 teacher–child closeness.

We further hypothesized that Year 1 classroom emotional support would predict a decrease in Year 2 aggressive behavior. We examined the influence of the interaction between teacher and children in class as a group through observation, rather than looking at a dyadic teacher–child relationship through teacher's reports. After the inclusion of

Year 1 individual closeness and conflict scores, Year 1 teacher sensitivity had a negative relationship with Year 2 aggressive behavior. The outcome implies that having a sensitive teacher in Year 1 was related to less aggressive behavior in Year 2, meanwhile, teachers were able to help children to adapt positively in Year 2.

We also hypothesized that teacher–child closeness and conflict in Year 1 aggregated at the class level would predict children's behavioral adjustment in Year 2. Our findings partly supported this hypothesis. Year 2 aggressive behavior was much stronger in classes with a higher class-level mean of conflict than in classes with a lower class-level mean of conflict. In classes with more conflictual relationships with the teacher, children showed more aggressive behavior compared to classes with less conflictual relationships with the teacher. This indicates that, also in the Tanzanian culture, the behavioral adjustment of an individual child is not only predicted by a conflictual relationship with the teacher at the individual level but also at the class level. A negative classroom atmosphere, such as numerous conflictual relationships in a class, may contribute to poor adjustment in many children in the class, despite positive dyadic teacher–child relationships (Ladd and Birch 1997). This may imply that, if a large proportion of children experience a conflictual relationship with the teacher in class, the dyadic teacher–child relationship cannot buffer aggressive behavior in the children. A teacher may find it difficult to help children with behavioral adaptation problems (i.e., aggressive behavior) in a class with a higher class-level mean of conflict (cf. Pianta and Stuhlman 2004). This might be among the contributing factors in Tanzanian pre-primary schools to unadjusted child behavior over time due to large class size and related negative classroom atmosphere.

We further hypothesized that individual predictors like child adjustment and predictors on the class level (both teacher and aggregated child predictors) in Year 1 could predict the teacher–child relationship in Year 2. Year 1 child adjustment was predictive of Year 2 teacher–child relationship but differently for prosocial, anxious and aggressive behavior. Year 1 prosocial behavior predicted an increase in Year 2 teacher–child closeness (Table 5, Model 2), and a decrease in Year 2 teacher–child conflict (Table 6, Model 2). In this study, it implies that children who were perceived to display prosocial behavior as early as they started schooling were more likely to elicit positive reactions from their teachers, which might have stimulated positive relationships with teachers over time. Previous work with older students has shown that teacher's opinions of students remain relatively stable over time. For example, according to teachers' perception, children who had a close relationship with their teacher maintained this relationship and those who experienced conflicts continued with less positive relationships (Cadima et al. 2010; Ladd and Birch 1997). On the individual level, anxious behavior predicts Year 2 closeness.

Aggressive behavior in Year 1 predicted an increase in Year 2 teacher–child conflict: i.e., teachers who reported children to display aggressive behavior in Year 1 also reported more conflict with these children in Year 2. This may imply that aggressive behavior in children during school entry stimulated conflictual relationship with a teacher (Doumen et al. 2008; Myers and Pianta 2008). Findings in this study showed that teacher–child conflict and aggressive behavior related in a bidirectional way over time. This implies that a child who displays aggressive behavior during school entry is more likely to provoke a teacher, which may elicit conflictual relationship with a teacher, which in turn may motivate a child to display aggressive behavior (cf. Birch and Ladd 1998). This further suggests that a conflictual teacher–child relationship and aggressive behavior may stimulate each other, which may lead to cycles of coercive interaction over time (Ladd and Burgess 1999). In addition to the predictive value of aggressive behavior at the child level in teacher–child conflict, the aggregated child anxious behavior at the class level also predicted an increase

in Year 2 teacher–child conflict. When a class has many children with anxious behavior it may contribute to a disharmonious relationship between children and a teacher.

Cross-level interaction revealed that the relationship between teacher–child conflict and aggressive behavior was stronger in classes with a larger class size compared to classes with smaller class size. This implies that in large classes it is difficult for a teacher to manage children with aggressive behavior, which may subsequently lead to conflict between teacher and children (Blatchford et al. 2005). In Tanzania, this might be the case as studies reported large class size in pre-primary schools (Mtahabwa and Rao 2010), which exceeds the normal limit of 40 children for primary level (MoEC 2006).

Among the unexpected findings in this study was a negative bivariate correlation between teacher–child closeness and teacher sensitivity on the one hand, and positive climate on the other hand. This may mean that some items in the STRS measure are culturally sensitive, i.e., are better applicable in smaller classrooms than in the overcrowded classrooms. It might be that teacher's sensitivity to being effective presupposes some kind of managerial style to keep discipline in the class, i.e., in a Tanzanian context attention to the whole group/class is more needed than attention to every individual.

Nonetheless, in the multilevel longitudinal model, Year 1 teacher sensitivity predicted Year 2 aggressive behavior in the expected direction. The classroom emotional support and teacher–child closeness variables may need to be examined more closely to check if they are operationalized in a way that is appropriate to the African context, and more specifically to Tanzania.

In sum, both individual-level (teacher–child relationship/children's behavioral adjustment) and class-level characteristics in Year 1 predicted Year 2 aggressive behavior in children and Year 2 teacher–child relationship respectively. In this study, the relationship between teacher–child conflict and aggressive behavior was found to relate in a bidirectional way. This implies that relational difficulties and aggressive behavior in a child may reinforce more aggressive behavior in a child and more conflictual relationships with teachers over time (Myers and Pianta 2008). Moreover, a child who displays aggressive behavior and experiences a conflictual relationship with a teacher may become more difficult for a teacher to manage. This study emphasized the importance of considering both individual characteristics and classroom characteristics in explaining children's behavioral adjustment in school over time.

Strengths and Limitations

This is the first longitudinal and multilevel study on teachers' perception of children's behavioral adjustment in the Tanzanian cultural context. The study highlighted the prediction of the early teacher–child relationship (individual level) and aggregated teacher–child conflict (class level) on aggressive behavior over time. The study confirmed that teacher–child conflict and aggressive behavior act in a bidirectional way. We used teacher reports and observation methods in contrast to the other longitudinal multilevel study (Buyse et al. 2008), which used teacher reports only. Using different informants and methods indicates methodological strength. We were able to have teachers and children participating in this study at both time points. It was our assumption that the teacher would be familiar with the children's behavioral adjustment and would be therefore able to report appropriately on their behavioral adjustment and his/her relationship with a child at both time points. The teacher's perception of a child is an important factor, even if it is inaccurate, since it will lead teachers to react in a specific way and thereby it will have an

effect on the relationship with an individual child. Since in overcrowded classes it might be difficult for a teacher to assess all children, teachers should be aware that to support children especially those facing behavioral adjustment problems, a positive relationship is important.

The present study is an extension of the previous cross-sectional study (Shavega et al. 2014). In the current study, we investigated the in(stability) and direction of teachers' perception of children's behavioral adjustment over time. In addition, we explored whether teachers' perception of children's behavioral adjustment is predicted by teacher–child relationship and classroom emotional support. Obviously, these questions could not be answered using a cross-sectional design.

This study also has limitations: first, teachers rated both teacher–child relationship and children's behavioral adjustment, which may be associated with informant bias. The teacher's perception of a child is an important factor, even if it is inaccurate, since it will lead teachers to react in a specific way and thereby it will have an effect on the relationship with an individual child. To avoid this bias in the future, independent measures are needed, e.g., parents should provide information about their relationship with their children. Second, a 1-year interval is relatively short for a longitudinal study. To have a clearer picture of children's behavioral trajectories in the future, a multi-wave study is needed. This might also create the possibility of children's behavior being rated by different teachers. Third, further examination of the use of the CLASS tool in an African context, with large class sizes and a different child-rearing style is necessary. Fourth, on the one hand, the findings indicated stability of individual differences, and on the other a slightly positive growth of the group as a whole. These findings do not take into account the fact that the teacher's standards might change from Year 1 to Year 2. It might be that teachers expect higher levels of adaptive behavior in children and their relationship with children in Year 2 than in Year 1 in order to rate the children the same way in Year 2. If the standards set by the teachers are higher, there might be an improvement in children's behavior, even though they do not seem to change according to teacher ratings (cf. prosocial and anxious behavior). Independent observations that are blind to class level can solve this problem. In this study overcrowded classes seem not a problem, but sometimes it might be difficult for a teacher to assess all children facing behavioral adjustment problems, so a better way is needed to identify such children. Furthermore, we didn't assess the child's baseline before entering the pre-primary class and we didn't take into account the normal developmental curve of these participants during the pre-primary school years. Next study of this nature should address these weaknesses.

Implications for Practice

The study has highlighted the predictive value of teacher–child relationship (at the individual level) and variables at the class level (classroom emotional support) on teachers' perception of children's behavioral adjustment in pre-primary schools over one year period. This study suggests that an initial teacher–child relationship characterized by conflict at the child level and lack of emotional support at class level are significant predictors for aggressive behavior during pre-primary school, which may last longer than observed in the current study. Furthermore, this study suggests that teacher–child conflict and aggressive behavior relate in a bidirectional way: aggressive behavior also predicts a more conflictual teacher–child relationship over time. In addition, many children who experience a difficult relationship with a teacher (such as conflict) in class may affect the classroom

atmosphere negatively, which in turn can have a negative influence on the children who are less difficult. Persistence of a coercive relationship between teacher–child conflict and aggressive behavior may cause peer rejection, truancy, poor academic performance, and/ or becoming more aggressive, which may lead to maladaptive behavior during their school career. Teachers should, therefore, be aware that the classroom environment, especially teacher–child interaction at the class level, may negatively affect a child even when they have a positive relationship at the dyadic level.

Given the knowledge of children's behavioral trajectories, preventive interventions can be targeted to improve teacher–child relationships, especially with aggressive and anxious pre-schoolers, which is more likely to stimulate positive behavioral adjustment for children. Specific attention to early teacher–child relationships at the individual level and teacher–child interactions at the class level should focus on helping children who are showing early signs of behavioral adjustment problems, notably aggressive behavior. The issue of teacher sensitivity and positive climate in the class is of great importance in helping children with difficult behavior.

Furthermore, to enhance positive behavioral adjustment in children, teacher training should focus on the importance of establishing a good teacher–child relationship at the outset and providing a positive classroom environment for the children. We suggest that the teacher-training curriculum should include contents of the quality of the teacher–child relationship at the child level and at the class level.

Compliance with Ethical Standards

Conflict of interest Theresia J. Shavega, Cathy van Tuijl, and Daniel Brugman declare that they have no potential conflict of interest on this study.

Ethical Approval The study was approved by the Utrecht University's Faculty of Behavioral and Social Sciences who introduced a researcher to the Regional Administrative Secretary (RAS) in Dar es Salaam Tanzania through a written letter. Permission to conduct a study in the country was issued by RAS. RAS introduced the researcher to the heads of schools, who introduced the researcher to a pre-primary class teacher.

Informed Consent Informed consent was sought from the teachers and they agreed to participate in the study. The class teacher sought informed consent from the parents to whether they should allow their children to participate in the study or not. Only children who received their parents' consent, participated in the study.

References

Bain, H. P., & Achilles, C. M. (1986). Interesting developments in class size. *Phi Delta Kappan, 67*(9), 662–665.

Baker, J. A. (2006). Contributions of teacher–child relationships to positive school adjustment during elementary school. *Journal of School Psychology, 44*(3), 211–229. https://doi.org/10.1016/j.jsp.2006.02.002.

Baker, J. A., Clark, T. P., Crowl, A., & Carlson, J. S. (2009). The influence of authoritative teaching on children's school adjustment: Are children with behavioral problems differentially affected? *School Psychology International, 30*(4), 374–382. https://doi.org/10.1177/0143034309106945.

Bates, J. E., Pettit, G. S., Dodge, K. A., & Ridge, B. (1998). Interaction of temperamental resistance to control and restrictive parenting in the development of externalizing behavior. *Developmental Psychology, 34*(5), 982–995. https://doi.org/10.1037/0012-1649.34.5.982.

Behar, L., & Stringfield, S. (1974). A behavior rating scale for the pre-school child. *Journal of Developmental Psychology, 10*(5), 601–610.

Belsky, J., & Nezworski, T. (Eds.). (1988). *Clinical Implications of Attachment*. London: Lawrence Erlbaum Associates.

Birch, S. H., & Ladd, G. W. (1998). Children's interpersonal behavior and the teacher–child relationship. *Developmental Psychology, 34*(5), 934–946. https://doi.org/10.1037/0012-1649.

Blatchford, P., Bassett, P., & Brown, P. (2005). Teachers' and pupils' behavior in large and small classes: A systematic observation study of pupils aged 10 and 11 years. *Journal of Educational Psychology, 97*(3), 454–467. https://doi.org/10.1037/0022-0663.97.3.454.

Bowlby, J. (1969). Disruption of affectional bonds and its effects on behavior. *Canadian's Mental Health Supplements, 59,* 12.

Brophy-Herb, H. E., Lee, R. E., Nievar, M. A., & Stollak, G. (2007). Preschoolers' social competence: Reactions to family characteristics, teacher behavior and classroom climate. *Journal of Applied Developmental Psychology, 28,* 134–148. https://doi.org/10.1016/j.appdev.2006.12.004.

Burchinal, M. R., Peisner-Feinberg, E., Pianta, R. C., & Howes, C. (2002). Development of academic skills from preschool through second grade: Family and classroom predictors of developmental trajectories. *Journal of School Psychology, 40*(5), 415–436. https://doi.org/10.1016/S0022-4405(2)00107-3.

Buyse, E., Verschueren, K., & Doumen, S. (2011). Preschoolers' attachment to mother and risk for adjustment problems in kindergarten: Can teachers make a difference? *Social Development, 20*(1), 33–50. https://doi.org/10.1111/j.1467-9507.2009.00555.x.

Buyse, E., Verschueren, K., Doumen, S., van Damme, J., & Maes, F. (2008). Classroom problem behavior and teacher–child relationships in kindergarten: The moderating role of classroom climate. *Journal of School Psychology, 46,* 367–391. https://doi.org/10.1016/j.jsp.2007.06.009.

Buyse, E., Verschueren, K., Verachtert, P., & van Damme, J. (2009). Predicting school adjustment in early elementary school: Impact of teacher–child relationship quality and relational classroom climate. *The Elementary School Journal, 110*(2), 119–141. https://doi.org/10.1086/605768.

Cadima, J., Leal, T., & Burchinal, M. (2010). The quality of teacher–student interactions: Associations with first graders' academic and behavioral outcomes. *Journal of School Psychology, 48*(6), 457–482. https://doi.org/10.1016/j.jsp.2010.09.001.

Campbell, S. B., Shaw, D. S., & Gilliom, M. (2000). Early externalizing behavior problems: Toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology, 12*(3), 467–488.

Carr, E. G., Taylor, J. C., & Robinson, S. (1991). The effects of severe behavior problems in children on the teaching behavior of adults. *Journal of Applied Behavior Analysis, 24*(3), 523–535. https://doi.org/10.1901/jaba.1991.21-523.

Cicchetti, D., Bronen, R., Spencer, S., Haut, S., Berg, A., Oliver, P., et al. (2006). Rating scales, scales for measurement, issue of reliability: Resolving some critical issues for clinicians and researchers. *Journal of Nervous and Mental Disease, 194,* 557–564.

Claessens, L. C., van Tartwijk, J., van der Want, A. C., Pennings, H. J., Verloop, N., et al. (2017). Positive teacher–students relationships go beyond the classroom, problematic ones stay inside. *The Journal of Education Research, 110*(5), 478–493. https://doi.org/10.1080/00220671.2015.1129595.

Cohen, J. (1992). Quantitative method in psychology: A power primer. *Psychological Bulletin, 112*(1), 155–159. https://doi.org/10.1037/0033-2909.112.1.155.

Curby, T. W., Grimm, K. J., & Pianta, R. C. (2010). Stability and change in early childhood classroom interactions during the first two hours of a day. *Early Childhood Research Quarterly, 25*(3), 373–384. https://doi.org/10.1016/j.ecq.2010.02.004.

Dobbs, J., & Arnold, D. H. (2009). The relationship between preschooler teachers' reports of children's behavior and their behavior towards those children. *School Psychology Quarterly, 24*(2), 95–105.

Doumen, S., Verschueren, K., Buyse, E., Germeijs, V., Luyckx, K., & Soenens, B. (2008). Reciprocal relations between teacher–child conflict and aggressive behavior in kindergarten: A three-wave longitudinal study. *Journal of Clinical Child & Adolescent Psychology, 37*(3), 588–599. https://doi.org/10.1080/15374410802148079.

Feeney, B. C., & Collins, N. L. (2014). A new look at social support: A theoretical perspective on thriving through relationships. *Personality and Social Psychology Review, 19*(2), 113–147. https://doi.org/10.1177/088868314544222.

Garner, P. W., & Waajid, B. (2008). The association of emotion knowledge and teacher–child relationship to preschool children's school related development competency. *Journal of Applied Developmental Psychology, 29,* 89–100.

Gazelle, H. (2006). Class climate moderates peer relations and emotional adjustment in children with an early history of anxious solitude. A child × environment model. *Developmental Psychology, 42*(6), 1179–1192.

Graziano, P. A., Reavis, R. D., Keane, S. P., & Calkins, S. D. (2007). The role of emotion regulation in children's early academic success. *Journal of School Psychology, 45*(1), 3–19. https://doi.org/10.1016/j.jsp.2006.09.002.

Grych, J. H., & Fincham, F. D. (1990). Marital conflict and children's adjustment: A cognitive-contextual framework. *Psychological Bulletin, 108*(2), 267–290.

Hamre, B. K., Mashburn, A. J., Pianta, R. C., & Locasle-Crouch, J. (2008). *Classroom assessment scoring system Pre-k: Technical appendix*. Baltimore, MD: Paul H. Brokers Publishing Co.

Hamre, B. K., & Pianta, R. C. (2001). Early teacher–child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development, 72*(2), 625–638. https://doi.org/10.1111/1467-1467.00301.

Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first grade classroom make a difference for children at risk of school failure? *Child Development, 76,* 949–967.

Hamre, B. K., Pianta, R. C., Burchinal, M., Field, S., LoCasale-Grouch, J., Downer, J. T., et al. (2012). A course on effective teacher–child interactions: Effect on teacher beliefs, knowledge, and observed practice. *American Educational Research Journal, 49*(1), 88–123. https://doi.org/10.3102/0002831211434596.

Hamre, B. K., Pianta, R. C., Downer, J. T., & Mashburn, A. J. (2007). Teachers' perceptions of conflict with young students: Looking beyond problem behavior. *Social Development, 17*(1), 115–136. https://doi.org/10.1111/j.1467-9507.2007.00418.x.

Heck, R. H., Thomas, S. L., & Tabata, L. N. (2010). *Multilevel and longitudinal modeling with IBM SPSS*. New York: Routledge Taylor and Francis Group.

Howes, C., Phillipsen, L. C., & Peisner-Feinberg, E. (2000). The consistency of perceived teacher–child relationships between preschool and kindergarten. *Journal of School Psychology, 38*(2), 113–132. https://doi.org/10.1016/S0022-4405(99)00044-8.

Hughes, J. N. (2012). Teacher-student relationships and school adjustment: Progress and remaining challenges. *Attachment and Human Development, 14*(3), 319–327. https://doi.org/10.1080/14616734.2012.672288.

Hughes, J. N., & Kwok, O. (2006). Classroom engagement mediates the effect of teacher–student support on elementary students' peer acceptance: A prospective analysis. *Journal of School Psychology, 43*(6), 465–480. https://doi.org/10.1016/j.jsp.2005.10.001.

Jamison, K., Cabell, S. Q., LoCasale-Crouch, J., Hamre, B., & Pianta, R. C. (2014). Classroom assessment scoring system: Infant version. *Early Education and Development, 25*(4), 553–572.

Jerome, E. M., Hamre, B. K., & Pianta, R. C. (2008). Teacher–child relationships from kindergarten to sixth grade: Early childhood predictors of teacher-perceived conflict and closeness. *Social Development, 18*(4), 917–945. https://doi.org/10.1111/j.1467-9507.2008.00508.x.

Ladd, G. W., & Birch, S. H. (1997). The teacher–child relationship and children's early school adjustment. *Journal of School Psychology, 35*(1), 61–79. https://doi.org/10.1016/S0022-4405(96)00029_5.

Ladd, G. W., & Burgess, K. B. (1999). Charting the relationship trajectories of aggressive, withdrawn, and aggressive/withdrawn children during early grade school. *Child Development, 70*(4), 910–929. https://doi.org/10.1111/1468-8624.00066.

Liu, J. (2004). Childhood externalizing behavior: Theory and implications. *Journal of Child and Adolescence Psychiatric Neuroscience, 17*(3), 93–103.

Mantzicopoulos, P. (2005). Conflictual relationships between kindergarten children and their teachers: Associations with child and classroom context variables. *Journal of School Psychology, 43*(5), 425–442. https://doi.org/10.1016/j.jsp.2005.09.004.

Mashburn, A. J., Hamre, B. K., Downer, J. T., & Pianta, R. C. (2006). Teacher and classroom characteristics associated with teachers' ratings of prekindergartners' ratings and behaviors. *Journal of Psychoeducational Assessment, 24*(4), 367–380. https://doi.org/10.1177/0734282906290594.

Mashburn, A. J., Pianta, R. C., Hamre, B. K., Downer, J. T., Barbarin, O. A., Bryant, D., et al. (2008). Measures of classroom quality in prekindergarten and children's development of academic, language, and social skills. *Child Development, 79*(3), 732–749. https://doi.org/10.1111/j.1467-8624-2008.01154.x.

McGillicuddy-De Lisi, A. V., & Subramanian, S. (1994). How do children develop knowledge? Beliefs of Tanzanian and American mothers. In S. Harkness & C. M. Super (Eds.), *Parents' cultural beliefs system: Their origins, expressions and consequences* (pp. 143–168). London: The Guilford Press.

Meehan, B. T., Hughes, J. N., & Cavell, T. A. (2003). Teacher–student relationships as compensatory resources for aggressive children. *Child Development, 74*(4), 1145–1157. https://doi.org/10.1111/1467-8624.00598.

MoEC. (2006). *Education sector development programme: Primary education development plan II (2007–2011)*. Dar es Salaam: MoEC.

Mtahabwa, L., & Rao, N. (2010). Pre-primary education in Tanzania: Observations from urban and rural classrooms. *International Journal of Educational Development, 30*(3), 227–235. https://doi.org/10.1016/j.ijedudev.2009.10.002.

Myers, S. S., & Pianta, R. C. (2008). Developmental commentary: Individual and contextual influences on student–teacher child relationships and children's early problem behavior. *Journal of Clinical Child and Adolescent Psychology, 37*(3), 600–608. https://doi.org/10.1080/15374410802148160.

O'Connor, E. E., Collins, B. A., & Supplee, L. (2012). Behavior problems in late childhood: The roles of early maternal attachment and teacher–child relationship trajectories. *Attachment and Human Development, 14*(3), 265–288. https://doi.org/10.1080/14616734.2012.672280.

O'Connor, E. E., Dearing, E., & Collins, B. A. (2010). Teacher–child relationship and behavior problem trajectories in elementary school. *American Educational Research Journal, 48*(10), 120–162. https://doi.org/10.3102/0002831210365008.

Palermo, F., Hanish, L. D., Martin, C. L., Fabes, R. A., & Reiser, M. (2007). Preschoolers' academic readiness: What role does the teacher–child relationship play? *Early Childhood Research Quarterly, 22*(4), 407–422. https://doi.org/10.1016/j.ecreq.2007.04.002.

Patterson, G. R. (1977). Accelerating stimuli for two classes of coercive behavior. *Journal of Abnormal Child Psychology, 5*(4), 335–350.

Perry, K. E., & Weinstein, R. S. (1998). The social context of early schooling and children's schools adjustment. *Educational Psychologist, 33*(4), 177–194. https://doi.org/10.1207/s15326985ep3304_3.

Peugh, J. L., & Enders, C. K. (2005). Using the SPSS mixed procedure to fit cross-sectional and longitudinal multilevel models. *Educational and Psychological Measurement, 65*(5), 717–741. https://doi.org/10.1177/0013164405278558.

Pianta, R. C. (1994). Patterns of relationships between children and kindergarten teachers. *Journal of School Psychology, 32*(1), 15–31. https://doi.org/10.1016/0022-4405(94)90024-4.

Pianta, R. C., LaParo, K. M., & Hamre, B. K. (2008). *Classroom assessment scoring system manual: Pre-K*. Baltimore: Brookes Publishing Co.

Pianta, R. C., Steinberg, M. S., & Rollins, K. B. (1995). The first two years of school: Teacher–child relationships and deflections in children's classroom adjustment. *Development and Psychopathology, 7*(2), 295–312. https://doi.org/10.1017/S0954579400006519.

Pianta, R. C., & Stuhlman, M. W. (2004). Teacher–child relationships and children's success in the first year of school. *School Psychology Review, 33*(3), 444–458.

Rimm-Kaufman, S. E., Early, D. M., Cox, M. J., Saluja, G., Pianta, R. C., Bradley, R. H., et al. (2002). Early behavioral attributes and teachers' sensitivity as predictors of competent behavior in the kindergarten classroom. *Applied Developmental Psychology, 23,* 451–470. https://doi.org/10.1016/S0193-3973(02)00128-4.

Rudasill, K. M. (2011). Child temperament, teacher–child interactions, and teacher–child relationships. A longitudinal investigation from first to third grade. *Early Childhood Research Quarterly, 26*(2), 147–156. https://doi.org/10.1016/j.ecresq.2010.07.002.

SACMEQ. (2011). *Quality of primary school input in Tanzania mainland*. Policy No. 2, Dar es Salaam.

Sandilos, L. E., & Diperna, T. C. (2011). Interrater reliability of classroom assessment scoring system-pre-k (CLASS pre-k). *Journal of Early Childhood and Infant Psychology, 6,* 65–85.

Sette, S. (2012). *The social adjustment in preschool age: The role of socio-emotional competence and teacher–child relationship quality on peer acceptance*. PhD Dissertation, Sapienza, Universita Di Roma, Italy.

Shavega, T. J., van Tuijl, C., & Brugman, D. (2014). Children's behavioral adjustment in pre-primary schools in Tanzania: A multilevel approach. *Early Education and Development, 25*(3), 356–380. https://doi.org/10.1080/10409289.2013.807722.

Sheck, D. T. L., & Ma, C. S. (2011). Longitudinal data analysis using linear mixed models in SPSS: Concepts, procedures and illustrations. *The Scientific World Journal, 11,* 42–78. https://doi.org/10.1100/tsw.2011.2.

Silver, R. B., Measelle, J. R., Armstrong, J. M., & Essex, M. J. (2005). Trajectories of classroom externalizing behavior: Contributions of child characteristics, family characteristics, and the teacher–child relationship during the school transition. *Journal of School Psychology, 43*(1), 39–60. https://doi.org/10.1016/j.jsp.2004.11.003.

Spilt, J. L. (2010). *Relationships between teachers and disruptive children in kindergarten: An exploration of different methods and perspectives and the possibility of change*. PhD Dissertation. Amsterdam University. Amsterdam, the Netherlands.

Stuhlman, M. W., & Pianta, R. C. (2002). Teachers' narrative about their relationships with children: Associations with behavior in classrooms. *School Psychology Review, 31*(2), 148–163.

Sutherland, K. S., & Oswald, P. O. (2005). The relationship between teacher and students behavior in class-room for student with emotional and behavior disorders: Transactional process. *Journal of Child and Family Studies, 14*(10), 1–14. https://doi.org/10.1007/s10826-005-1106-2.

Thijs, J. T., Koomen, H. M. Y., & van der Leij, A. (2008). Teacher child relationship and pedagogical practices: Considering the teachers' perspective. *School Psychology Review, 37*(2), 244–260.

Tremblay, R. E., Vitaro, F., Gagnon, C., Piché, C., & Royer, N. (1992). A pro-social scale for the preschool behavior questionnaire: Concurrent and predictive correlates. *International Journal of Behavioral Development, 15*(2), 227–245. https://doi.org/10.1177/016502549201500204.

UWAZI. (2011). *Primary school in Dar es Salaam: Overcrowded and without sufficient text books.* No. 3, Dar es Salaam.

West, B. T. (2009). Analyzing longitudinal data with the linear mixed models procedure in SPSS. *Evaluation and the Health Professions, 32*(2), 207–228. https://doi.org/10.1177/0163278709338554.

Yoleri, S. (2016). Teacher–child relationship in preschool period: The role of child temperament and language skills. *International Electronic Journal of Elementary Education, 9*(1), 2010–2024.

Zhang, X., & Sun, J. (2011). The reciprocal relations between teachers' perceptions of children's behavior problems and teacher–child relationship in the first preschool. *The Journal of Genetic Psychology, 172*(2), 176–198. https://doi.org/10.1080/00221325.2010.528077.

Affiliations

Theresia Julius Shavega[1] · Cathy van Tuijl[2] · Daniel Brugman[2]

Cathy van Tuijl
C.vantuijl@uu.nl

Daniel Brugman
dan.brugman@gmail.com

[1] The Open University of Tanzania, P.O. Box 23409, Dar es Salaam, Tanzania

[2] Utrecht University, Utrecht, The Netherlands