



# Helping youth in care succeed: Influence of caregiver involvement on academic achievement

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## ABSTRACT

The current study examined the influence of the placement on academic outcomes in youth receiving out-of-home care. A two-level multilevel model was used to partition variance in youth in care's academic success scores into placement and child-specific levels of influence. Associations between caregiver involvement and academic success in youth in care were also examined. Assessment and Action Record (AAR) data from the Ontario Looking after Children (OnLAC) project were analyzed. The sample included data from 687 youth between 10 and 15 years of age ( $M$  age = 12.99 years,  $SD$  = 1.68), with slightly more boys ( $n$  = 389) than girls ( $n$  = 298). While individual differences in academic success were primarily attributable to child-specific effects (85%), 15% of the variance can be attributable to differences between placements. Results also suggested that caregivers who provided more academic support at home and a more positive literacy environment were also more likely to care for youth with higher levels of academic success. Surprisingly, caregiver school-based involvement was not significantly associated with academic achievement in youth in care. Lastly, higher levels of caregiver expectations within the placement and youth's own differential experience were both associated with more academic success. These results suggest that academic outcomes of youth in care may be influenced by the placement in which they live.

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## 1. Introduction

### 1.1. Helping children in care succeed: Understanding the influence of foster caregivers on academic outcomes

Annually across Canada, approximately 67,000 children and adolescents (youth) experience out-of-home care (Mulcahy & Tromé, 2010). Although youth in care show increased problems on a range of developmental outcomes, of particular concern is their difficulty with school (for a review see Trout, Hagaman, Casey, Reid, & Epstein, 2008). Relative to children residing with their biological families, youth or young persons in care are not only more likely to score significantly lower on standardized tests (Eckenrode, Laird, & Doris, 1993; Leiter & Johnsen, 1997), but they are also more likely to experience grade retention issues, expulsions, suspensions and absenteeism (for a review, see Stone, 2007). In fact, when examined over time, a significant relationship between maltreatment and worse academic outcomes has been noted (Leiter & Johnsen, 1997). The disproportionate number of youth in care who are failing to meet appropriate academic milestones is concerning, particularly since academic

success is predictive of higher levels of later well being and success (e.g., Attar-Schwartz, 2009; Schiff & Benbenishty, 2006; Tylor, Johnson, & Brownridge, 2008).

The extent to which youth experience academic success varies across individuals, with some demonstrating higher levels of achievement than others. To date, a number of child-specific and placement characteristics have been found to relate to higher academic success in youth in care. With respect to child-specific factors, youth in care with better impulse inhibition (e.g., Pears, Bruce, Fisher, Kim, and Yoerger, 2010) and emotion regulation (Schelble, Franks, & Miller, 2010), reduced externalizing behaviors (e.g., Bennett, Weigel, & Martin, 2002), higher language ability (e.g., Slade & Wissow, 2007), higher intelligence (e.g., Herrenkohl, Herrenkohl, & Egolf, 1994) and higher levels of academic engagement (Shonk & Cicchetti, 2001) are more likely to show higher levels of academic success. Similarly, type of maltreatment is also associated with academic outcomes of youth in care. Relative to those classified as neglect alone or sexually abused alone, youth with the experience of physical abuse are more likely to experience school-related suspensions or discipline (e.g., Eckenrode et al., 1993). However, for children with a history of neglect alone, they appear to be at a heightened risk for general deficits across multiple domains of academic success (e.g., Eckenrode et al., 1993; Kendall-Tackett & Eckenrode, 1996). Lastly, associations between placement and school transfers and academic achievement are inconclusive where some studies have cited a significant

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association (e.g., Zima et al., 2000) whereas others have not (e.g., Conger & Rebeck, 2001).

Aside from child-specific attributes and experiences, academic achievement may be influenced by placement characteristics. Specifically, there is some emerging evidence to suggest that placement type may be related to academic outcomes of youth in care. Relative to those placed in group care, youth in kinship or family-based foster care are more likely to demonstrate better academic outcomes (e.g., Berrick, Barth, & Needell, 1994; for a review see Stone, 2007). Specifically, youth living in therapeutic foster placements or group homes have been found to be three times more likely to repeat at least one grade when compared to those in kinship placements (Zima et al., 2000).

### 1.2. Understanding academic outcomes in children in care from a multilevel perspective

In sum, it appears that academic success in youth in care is influenced by both child placement and service factors. These observations challenge us to understand how these factors operate together to influence academic performance in youth in care. Perhaps this can be best understood through an ecological perspective where development occurs within a multilevel framework (Bronfenbrenner, 1979). The ecological model theorizes that children are directly and indirectly influenced by various reciprocal influences that are embedded within multiple layers of influence. Factors that are located in layers closest to the child have a more direct effect on development and therefore, have a stronger influence relative to those located in layers further away. Through a multilevel perspective, we can gain a better understanding of the extent to which youth in care cluster on academic achievement within foster care placements. Specifically, it can help us identify the extent to which differences between placements, can explain why youth in care show different patterns of academic achievement.

Although relatively sparse, there is some preliminary evidence to suggest that academic outcomes of youth in care can be conceptualized within a multilevel framework. In a sample of 4069 Israeli youth between 6 and 20 years of age, Attar-Schwartz (2009) demonstrated that approximately 12% of the variance in youth's academic achievement scores can be explained by differences between care institutions while the remaining 88% of the variance can be explained by differences between youth themselves. More importantly, youth from placements that are more short-term in nature, have higher levels of peer violence, and offer fewer after-school activities are more likely to care for youth with lower levels of achievement. The inclusion of these predictors accounted for approximately 39% of the variance at the institution level.

Taken together, it appears that differences between institutions can to some degree, account for why some youth receiving out-of-home care show better academic outcomes than others. This suggests that some of the variance in academic outcomes occurs because of differences between placements (i.e., youth in care cluster within placements and some placements have much higher rates of academic success than other placements). Arguably, then, policies and programs that target placement-level processes may have a noticeable effect on academic outcomes of youth in care. However, much of our understanding of placement factors is limited to structural characteristics, and is based on correlational data rather than studies that test the effects with randomized control trials or similar rigorous designs. What remain relatively unclear are aspects of everyday life that relates to higher levels of academic success of youth in care. In other words, our understanding of why youth in care from certain placements demonstrates better academic outcomes is limited. Understanding the processes that can help facilitate better academic outcomes is particularly useful, especially when implementing prevention and intervention strategies.

To date, it has been suggested by some that differential patterns of academic achievement of youth in care may be reflective of differences in caregiver capacity to respond appropriately to youth's academic needs (Stone, 2007). Indeed, there is some evidence from community samples to suggest this finding. For instance, significant associations between parental involvement and academic success have been consistently reported across studies, both from a cross-sectional (e.g., Grolnick & Slowiaczek, 1994) and longitudinal perspective (Hill et al., 2004). More importantly, these observations have been corroborated by numerous meta-analyses that have all reported a small to moderate effect of parental involvement on academic achievement (Fan & Chen, 2001; Hill & Tyson, 2009; Jeynes, 2003; Jeynes, 2007).

### 1.3. Influence of caregiver involvement with academics and academic achievement in youth in care

Evidently, it appears that caregiver involvement is crucial for academic success. Surprisingly, despite interest from educators, child-welfare practitioners and researchers alike, relatively little is known about how caregiver involvement influences academic outcomes of youth in care. To our knowledge, there has only been one study that has examined the influence of caregiver involvement on academic outcomes of youth in care. In a sample of 85 maltreated youth placed in out-of-home care and 56 matched, non-maltreated community youth, Pears et al. (2010) compared academic and social-emotional competence across the two groups. Findings suggest that across both domains, maltreated children lagged significantly behind their non-maltreated counterparts. Interestingly, despite finding some evidence to suggest that the effect of maltreatment on social competence is mediated by caregiver involvement with school-related activities, a similar mediating effect of caregiver involvement on academic competence was not found. Rather, children's own inhibitory control abilities explained why the experience of maltreatment is related to academic competency.

Based on findings from Pears et al. (2010), it is puzzling that the indirect effect of caregiver involvement on maltreatment and academic achievement was non-significant, particularly since research has consistently documented the positive effects of caregiver involvement (e.g., Hill & Tyson, 2009). Perhaps this finding reflects the possibility that caregiver involvement is a multidimensional construct where some aspects have not been mentioned previously. According to Grolnick and Slowiaczek (1994), parental involvement includes parental involvement with school-related activities, providing a positive home literacy environment (e.g., access to books, visits to the library), and expectations they hold around the value and utility of education. Extending Grolnick and Slowiaczek's theory, several researchers have also suggested that parental involvement with school-related activities can include behaviors that occur within the family to reinforce learning at home (e.g., Epstein, 1987). Thus, school-based involvement refers to parents' interactions with schools that promote academic success and can include strategies such as volunteering at school and involvement in school governance. Home-based involvement however, refers to parental reinforcement of learning at home and includes activities such as helping with homework and discussing school progress.

#### 1.3.1. Caregiver school- and home-based involvement

Although the conceptualization of parental involvement may vary across studies, there is some evidence to suggest that these dimensions have independent effects on academic achievement. With respect to parental involvement with school and home, aside from the study by Pears et al. (2010), research examining the influence of these domains on academic outcomes of youth in care is relatively sparse. However, significant associations have been demonstrated in community-based samples. For instance, for both parental home- and school-based involvement, more involvement predicted better

academic outcomes in children (e.g., Barnard, 2004; Hong, Yoo, You, & Wu, 2010; Petrill, Deater-Deckard, Schatschneider, & Davis, 2005).

Interestingly, when the independent effects of parental home- and school-based involvement are examined simultaneously, there is some preliminary evidence to suggest that parental home-based involvement may be a stronger predictor of children's academic outcomes. In a sample of 1205 urban elementary school children, earlier parental home-based involvement was found to predict later achievement in math and reading. With the effect of home-based involvement controlled for, the effect of parental school-based involvement on academic achievement was surprisingly non-significant (Izzo, Weissberg, Kaspro, & Fendrich, 1999). However, some inconsistencies have been noted in a recent meta-analysis were the association between school-based involvement and academic achievement appears to be stronger than that of home-based involvement in children attending middle school (e.g., Hill & Tyson, 2009). Although the effects of parental involvement appear to be moderated by developmental stage, nevertheless, existing evidence does illustrate the importance of these processes in understanding academic outcomes in children. Given these findings, it is reasonable to speculate that similar processes also operate on academic outcomes of youth in care.

### 1.3.2. Home literacy environment

Another important dimension of parental involvement may be the extent to which parents provide a positive home literacy environment. Although research involving youth in care is relatively sparse, there is compelling evidence, drawn from community samples to suggest that the literacy environment is an important feature of learning and academic success (Johnson, Martin, Brooks-Gunn, & Petrill, 2008; Payne, Whitehurst, & Angell, 1994; Petrill et al., 2005; Rodriguez et al., 2009). A specific aspect of home literacy that has been found to relate to better academic outcomes is children's exposure to print, generally measured by the number of books accessible to children, and/or book-reading practices (e.g., Johnson et al., 2008; Payne et al., 1994; Petrill et al., 2005). Indeed results from a recent meta-analysis suggested that associations between print exposure and academic outcomes range between moderate to strong (Mol & Bus, 2011). Given the relative importance of the home literacy environment on children's academic outcomes, we expected to find similar processes to influence school success in youth in care.

### 1.3.3. Caregiver academic expectations

Lastly, academic achievement in youth in care may be influenced by their caregiver's academic expectations. Although there is relatively little research examining this relationship directly, research drawn from community-based families suggest that children's academic achievement is influenced by parental expectations. Specifically, higher academic achievement has been found to be generally associated with higher parental expectations concerning school. This has been consistently demonstrated across cross-sectional (e.g., Davis-Kean, 2005) and longitudinal studies (e.g., Dotterer, McHale, & Crouter, 2009; Rutchick, Smyth, Lopoo, & Dusek, 2009). More importantly, relative to other dimensions of parental involvement, parental expectations appear to have the strongest effect on academic achievement. This has been consistently documented across three meta-analyses employing samples from a range of different developmental stages, racial backgrounds and socio-economic status (Fan & Chen, 2001; Hill & Tyson, 2009; Jeynes, 2007).

Currently, existing studies have primarily employed a one-child design to examine the influence of parental expectations on academic outcomes. This strategy allows us to examine the general influence of parental expectations. However, parental expectations can operate on children's academic outcomes in different ways. Exposure to academic socialization within the family captures the extent to which all children from the same family experiences the same expectations from parents. This particular construct speaks more to the general academic climate

of the family and can account for why children from different families show various patterns of academic success. Alternatively, parents can also hold different expectations for various children from the same family. This differential treatment highlights the extent to which a child's own experience with parental expectations is dissimilar from that of their siblings.

To date, family-wide processes have not been differentiated from child-specific processes when examining associations between parental expectations and academic outcomes. However, there is some existing evidence to suggest that foster family- and child-specific experiences of youth in care can account for differences in adjustment. Similar to the way in which higher levels of parental negativity within the foster family accounted for higher levels of externalizing behaviors across foster families, children who experienced more differential negativity relative to their siblings from the same placement also displayed higher levels of externalizing behaviors (Cheung, Goodman, Leckie, & Jenkins, 2011). The findings suggest that both foster family-wide and child-specific processes can account for differences in child adjustment. Perhaps similar processes also operate on academic outcomes of youth in care. The present study examines whether associations between parental expectations and academic achievement in youth in care were attributable to similar placement- and child-specific processes.

### 1.4. Goal of the current study

The goal of the current study is to adopt a multilevel perspective to examine the relative importance of the placement in understanding academic outcomes in youth in care. Specifically, we were interested in examining whether caregiver involvement accounted for why some youth in care demonstrated better academic outcomes than others. To understand how different contexts can influence academic outcomes of youth in care, the simultaneous effects of each level of influence must be examined. Nested data structures where youth in care are layered within placements pose some unique analytic concerns. Traditional statistical methods (e.g., standard regression analysis) cannot adequately account for the correlation of children between groups where researchers often falsely report contextual effects as significant (i.e., type 1 error) since the standard error for group-level variables are typically underestimated. Multilevel modeling techniques have been developed to analyze hierarchical data structures (e.g., Raudenbush & Bryk, 2002; Snijders & Bosker, 1999), allowing us to simultaneously differentiate between placement-wide and child-specific levels of influence. Drawing on findings reported by Attar-Schwartz (2009), we expected significant variance at the placement and child-specific levels, with child-specific variance accounting for a higher proportion of the variance than placement variance.

Through the inclusion of predictor variables we can try to explain variance in our different classifications (placement, youth in care). For the current study, we were interested in examining whether certain placement-level processes predicted academic achievement in youth in care. Specifically the following hypotheses were tested: (1) caregiver home- and school-based involvement will explain why youth living in different placements show different patterns of academic achievement; (2) more positive placement literacy environments will explain differences between youth from different placements; and (3) child-specific experiences related to parental academic expectations will explain differences between youth in care from the same placement.

## 2. Method

### 2.1. Participants

Ontario Looking after Children (OnLAC) data collected through the Assessment and Action Record (AAR) from a large, urban child-

welfare agency were analyzed. The AAR tracks and monitors the developmental trajectories of children and adolescence in care (youth in care) across seven developmental domains; health, education, identity, family and social relationships, social presentation, emotional and behavioral development and self-care skills and transition to young adulthood (Flynn, Vincent, & Legault, 2009). Each AAR was completed by child-welfare workers, foster caregivers and youth in care over several sessions. Foster caregivers and youth in care were interviewed together and their responses were recorded by workers. Worker-specific questions were completed by workers privately or during interview sessions. The AAR is completed for each youth on an annual basis.

The current sample included cross-sectional data collected in the years 2006, 2007, 2008 and 2009 ( $n = 687$ ). For children with longitudinal data, only their earliest OnLAC assessment was included in the sample. Youth ranged between 10 and 15 years of age ( $M$  age = 12.99 years,  $SD = 1.68$ ), with slightly more boys ( $n = 389$ ) than girls ( $n = 298$ ). Type of placement ranged between family-based to group care.

## 2.2. Deriving youth's placement membership

The current study utilized a sibling design to examine similarities and differences of foster siblings living in the same foster care placement. Since foster siblings living in the same placement was not explicitly identified in the OnLAC dataset, placement membership was determined by cross-referencing foster caregiver specific variables. Youth were identified as living in the same placement if foster caregivers had the same initials and matched on several key items such as gender, health, training, smoking and religiosity. The same family ID was assigned to youth from the same placement, thus there were 493 placements (e.g., foster families) in the sample. The majority of placements fostered one youth ( $n = 341$ , 69%) with 152 placements (31%) caring for multiple youth. Thus, our data was partially nested in that some data was drawn from siblings who lived in the same placement. Therefore, sibling data was not independent because they can be influenced by the placement in which they live. To account for this nested data structure, multilevel modeling was used to analyze the data (refer to Data analysis section).

## 2.3. Measures

### 2.3.1. Academic success

A multi-informant measure, based on worker and foster-parent report of youth's academic success, was created. Particularly since different informants (e.g., caregivers, children themselves) have been found to provide different assessments regarding children's behaviors (Achenbach, McConaughy, & Howell, 1987), combining responses across foster caregivers and workers ensures the most accurate assessment of youth's academic success. Although it is possible to examine the unique perspectives of caregivers and workers separately, for methodological purposes stated above, a multi-informant measure was used for the current study.

Workers responded on two questions on the AAR that assessed youth's academic success. They were asked to indicate the extent to which youth's educational performance matched their ability. Possible responses ranged from 1 (performance matches his/her ability) to 3 (performance seriously below ability). Items were reversed-coded so that higher scores reflected more academic success relative to ability. Workers were also asked to rate the extent to which the young person in care acquired new skills and interests related to education. Possible responses ranged from 1 (many) to 4 (none). Items were again reverse-coded so that higher numbers reflected higher levels of skill acquisition.

Foster caregivers assessed each youth's academic achievement in reading, writing composition, mathematics, science and overall academic performance. Based on their knowledge of the youth's school

work, including annual report cards, foster caregivers were asked to rate the level of performance across these subject areas. Responses ranged from 1 (very well or well) to 3 (poor or very poorly). Items were reversed-coded so that higher scores reflected higher academic performance.

A multi-informant measure of youth's academic success was constructed based on worker and foster-parent reports. All informant reports were first standardized and turned into z scores so that scores could be compared. Items showed a high level of internal consistency,  $\alpha = .81$ , with the exception of one ('foster parent's rating of youth's performance in science') which was subsequently removed. A mean score based on the remaining six items was created for all youth. Academic success mean scores were standardized (refer to Table 1).

### 2.3.2. Youth age and gender

Youth's age and gender were obtained from service records. Child age (standardized) was coded in years. Boys were coded as 0 (reference category) and girls were coded as 1.

### 2.3.3. Externalizing behaviors

To assess youth's externalizing behaviors, foster caregivers were asked to complete five items from the conduct subscale of the Strengths and Difficulties Questionnaire (SDQ, Goodman, Ford, Simmons, Gatward, & Meltzer, 2000). Example of items included 'often fights with other children or bullies them' or 'often loses temper'. Possible responses ranged from 1 (not true) to 3 (true). Positive items were reverse coded so that higher scores reflected more difficulties. The scale showed acceptable internal consistency,  $\alpha = .70$ . A mean score based on the five items was created for all youth. Scores were standardized.

### 2.3.4. Caregiver home-based involvement

Youth were asked to respond on three items that assessed the extent to which foster caregivers provided academic support at home. These items included 'If I have problems at school, my caregivers are ready to help', 'My caregivers encourage me to do well in school' and 'How often do your caregivers check your homework or provide help with homework?' Possible responses ranged from 1 (rarely or never) to 3 (all or most of the time). Since internal consistency between items was low, rather than constructing a mean score, they were summed together. Scores were then averaged across siblings from the same foster placement to create an average measure of academic support within the foster placement (youth from the same placement will have the same score; for singletons, the placement average was equivalent to the youth's raw score). Foster placement average scores were standardized.

**Table 1**  
Summary statistics of predictor variables (standardized).

Variable	Mean score	Standard deviation	Range
Outcome measure			
Academic success	0	1	−3.26–2.69
Child-specific predictors			
Age	0	1	−1.78–1.20
Externalizing behaviors	0	1	−2.26–3.82
Deviation score: caregiver academic expectations	0	1	−4.51–5.55
Placement-specific predictors			
Placement average: home-based involvement	0	1	−4.48–2.10
Placement average: placement literacy	0	1	−2.26–1.38
Placement average: school-based involvement	0	1	−2.22–3.54
Placement average: caregiver academic expectations	0	1	−3.10–2.82



### 2.3.5. Caregiver school-based involvement

The extent to which foster caregivers were involved with the youths' school activities was assessed. From a list of 8 different types of activities ranging from spoken to, visited or corresponded with young person's teacher to fundraising, caregivers were asked to identify the school-related activities they participated in. Again, internal consistency between items was low and items were summed to create a count of the number of activities that the parent had done with the child's school. We averaged across all youth from the same placement to create an average measure of caregiver involvement within the placement. Placement average scores were standardized.

### 2.3.6. Placement literacy environment

A general index of the placement literacy environment was measured by the number of books accessible to youth in the placement. Foster caregivers were asked to report the number of books owned by each youth. Possible responses ranged between 1 (None) and 4 (more than 25). Scores from individual youth from the same placement were averaged to create a placement mean score. Mean scores were standardized.

### 2.3.7. Foster caregiver academic expectations

Two items were used to assess caregivers' academic expectations of youth in care. First, caregivers were asked to indicate how important it was to them that youth in their care achieved good grades in school. Possible responses ranged between 1 (not important at all) to 4 (very important). Second, caregivers were asked to indicate the level of formal education they expected youth in their care to achieve. Caregivers selected from a list of 5 possible responses ranging from 1 (primary or elementary school) to 5 (university). Both items were standardized and found to be significantly correlated,  $r = .38, p < .05$ . An aggregate score, combining the two items was created for each youth.

Individual scores across youth from the same placement were averaged to create a mean score of caregiver academic expectation. This placement average measure indexed the absolute level of caregiver expectation within a placement and provided a general measure of the academic climate within the placement. The youth in care's deviation from the placement mean was also calculated by subtracting individual scores from the placement mean. This measure captured the unique level of academic expectation experienced by individual youth relative to other children from the same placement. Positive scores represented lower academic expectations from caregivers, whereas a negative score indicated higher expectations. As the deviation score does not vary for placements caring for one youth (i.e., the deviation score for placements caring for one child it will always be zero), this is only relevant for a follow-up analysis completed for multiple-youth placements. Placement average scores and deviation scores were standardized.

## 2.4. Missing data

Of the 687 participants who were included in the sample, 72 had missing data. Missing data ranged from no missing data for child age and gender to a high of 9.2% missing data for youth's differential expectation scores. Little's MCAR test revealed that data was not missing completely at random,  $\chi^2(116) = 219.60, p < .05$ . Analysis of the pattern of missing data revealed that academic expectations and support scores had a substantial amount of missing data (>5%). Although missingness related to academic expectation scores (both placement average and differential scores) were not associated with other factors, academic support scores were. Specifically, youth with higher levels of academic expectation scores,  $t(29) = -2.9, p = .01$ , more access to books,  $t(42) = 3.6, p < .05$ , higher academic success scores,  $t(37) = 4.1, p < .05$ , and lower levels of externalizing behaviors,

$t(40) = -2.3, p = .03$ , were also more likely to have missing information concerning academic support. Pattern of missing data was not associated with other placement and child-specific factors.

Given this pattern of missing data, missingness was addressed through the method of random multiple imputation introduced by Rubin (1987). Essentially, multiple data sets are generated where missing values are replaced with 'plausible' values estimated from observed data. Results across individual data sets are combined using rules developed by Rubin to produce estimates and standard errors that reflect the uncertainty in the imputation process. SPSS 17 was used to carry out the multiple imputation procedure. All variables were imputed at the child level by including child-level variables. Placement average scores were subsequently created based on individual imputed data sets. Results for all fixed effects were essentially the same for pre and post imputation.

## 2.5. Analysis description and plan

Multilevel analysis was used to examine the simultaneous influence of placement and child-specific effects on youth's academic success. A two-level hierarchical model, accounting for youth nested within placement was used to analyze the data (e.g., Raudenbush & Bryk, 2002; Snijders & Bosker, 1999). These models allowed us to partition variance in youth's academic scores into distinct between placement and child-specific variance components. The between-placement variance measures the extent to which youth's scores varies across placements while the child-specific variance measures the residual variation between youth. By simultaneously estimating these two variance components, the attribution of variation to each level is more accurate. Higher values for the two variances indicate greater differences between placements and youth respectively. However, one caveat to consider is that the separate identification of the placement and child-variance components is based only on placements with two or more youth. Data from singletons in the sample were still retained as their data contributes to the identification of other model parameters (e.g., fixed effects). A useful statistic when interpreting the magnitude of the placement and child-specific variance components is the intraclass correlation coefficient (ICC). Specifically, the family-level ICC is interpreted as the correlation in academic scores between two youth from the same placement. Higher values therefore indicate greater degrees of similarity in academic success between youth from the same placement.

The association between placement predictor variables and youth's academic scores was assessed with increasingly complex models. Model 1, also known as a "null model", is the simplest model and includes no predictors. The null model allows us to calculate the ICC to establish the relative importance of placement and child-specific variance components in explaining variation in youth's academic scores. Model 2 includes child age, gender and externalizing behavior covariates as standard control variables. Model 3 additionally includes three placement-level predictors. Specifically, we examined whether caregiver school- and home-based involvement and placement literacy scores accounted for between-placement differences in children's academic scores. Model 4 additionally examines the association between youth's academic success and caregiver academic expectations. To differentiate between general academic expectations held by caregivers from expectations directed towards individual youth, the placement mean of academic expectation and youth's deviation from the mean are both included in the model. The placement mean operationalizes the absolute level of caregiver expectation and the deviation from the placement mean captures differences in caregiver expectations across youth from the same placement. For placements caring for one youth, this second variable does not vary and so its effect is identified solely from placements with multiple youth. All four multilevel models were estimated with Iterated Generalised Least Squares (IGLS) procedures as

implemented in the MLwiN 2.20 statistical software package (Rasbash, Leckie, Pillinger, & Jenkins, 2010).

### 3. Results

Model 1, the null model, partitions variation in children's academic success scores into placement and child-specific levels of influence (refer to Table 2). The placement ICC was .154 ( $= .154 / (.154 + .845)$ ), indicating that the correlation between youth from the same placement is, on average .154 and that approximately 15% of the variation in youth's scores can be explained by differences between placements. The remaining 85% of variation can be explained by differences between youth themselves. This suggests that relative to child-specific effects, differences between placements appear to be a smaller source of variation in children's academic scores. Although there is a degree of similarity between youth from the same placement, there is a larger degree of dissimilarity.

In Model 2, the control variables child age, gender and externalizing behaviors were entered into the model as covariates. Results suggested that younger, relative to older children, displayed higher levels of academic success. For every year of age, there is a .321 standard deviation decrease in children's academic success. Girls, relative to boys showed higher levels of academic success. Lastly, youth with less externalizing behaviors showed higher levels of academic achievement.

The inclusion of child age, gender and externalizing behavior into the model explained approximately 14% ( $= (.0845 - 0.723) / 0.845$ ) of the variance at the child level. Moreover, these child-level predictors also accounted for variance at the placement level. It is likely that certain placements were more likely to work with youth with a specific profile. Therefore, the inclusion of child-level predictors also accounted for variance at the placement level. In fact, the inclusion of child age, gender and externalizing behaviors into the model accounted for approximately 34% ( $= (.0154 - 0.102) / 0.154$ ) of the variance at the placement level. This suggests that the age, gender and externalizing behavior profile of youth in care varies across placements, where some placements are more likely to work with a certain age group, gender and/or externalizing behavior profile. Significant placement-level variance seen in Model 1 is no longer significant in Model 2.

In Models 3, and 4, the variables of interest were entered as covariates. Caregiver school- and home-based involvement and placement literacy scores were entered into Model 3. Caregiver home-based involvement was found to be significantly associated with youth's academic success scores. Specifically, youth from placements that offered more caregiver home-based involvement showed higher levels of

academic success relative to those who received less involvement. Moreover, youth from placements with better literacy environments also showed higher levels of achievement. Interestingly, caregiver school-based involvement was not significantly associated with youth's academic success. The inclusion of these variables accounted for approximately 44% of the variance at the placement level.

In Model 4, we examined the effects of caregiver academic expectations on youth's academic success. To differentiate between the absolute levels of caregiver academic expectations from the extent to which expectations experienced by a particular youth was different from others in the placement, placement average and deviation scores were entered into the model. Results demonstrated that both the placement average of caregiver academic expectations and deviation scores were significantly associated with children's academic success. Placements that hold higher academic expectations of all youth were more likely to foster higher achieving youth. The inclusion of the placement average of caregiver expectations into the model accounted for an additional 47% of the remaining variance at the placement level. However, having accounted for the absolute level of caregiver academic expectations, youth who experienced higher expectations relative to other youth in the same placement showed higher levels of academic success. Taken together, it appears that both caregiver academic expectations within a placement and youth's own unique experiences with caregiver academic expectations are associated with academic achievement.

### 4. Discussion

The current study examined the simultaneous influence of placement and child-specific levels of effects on academic achievement in youth in care. From a multilevel perspective, two important findings emerged from the current study. First, there is preliminary evidence to suggest that differences in youth in care's academic achievement can be explained by differences across placements and differences between youth themselves. Specifically, the current study demonstrated that approximately 15% of the variance in youth's academic success scores is attributable to differences between placements whereas the remaining variance in youth's scores can be explained by differences between children themselves. Second, caregiver involvement, particularly home-based involvement, placement literacy environment and academic expectations predicted academic success in youth in care. In the following sections, each of these findings will be discussed.

**Table 2**

Parameter estimates from a series of two-level hierarchical models of academic success in youth in care (N = 687).

	Model 1	Model 2	Model 3	Model 4
<i>Fixed part parameters</i>				
Intercept	−0.008 (0.040)	−0.100 (0.048)	−0.083 (0.047)	−0.058 (0.046)
<i>Placement level</i>				
Caregiver -e			0.123 (0.037)*	0.107 (0.038)*
Placement literacy: placement average			0.136 (0.037)*	0.098 (0.037)*
Caregiver school-based involvement: placement average			0.064 (0.037)	0.068 (0.036)
Academic expectations: placement average				0.253 (0.037)*
<i>Child level</i>				
Child age		−0.224 (0.035)*	−0.248 (0.036)*	−0.258 (0.036)*
Child gender (ref. boy)		0.205 (0.074)*	0.197 (0.072)*	0.171 (0.070)*
Externalizing behaviors: SDQ scores		−0.234 (0.035)*	−0.217 (0.034)*	−0.193 (0.034)*
Academic expectations: deviation score				−0.109 (0.034)*
<i>Random part parameters</i>				
Placement level variance	0.154 (0.069)*	0.102 (0.056)	0.057 (0.052)	0.030 (0.049)
Child level variance	0.845 (0.076)*	0.723 (0.065)*	0.716 (0.063)*	0.663 (0.059)*

Notes: \* coefficients are significant at  $p < .05$ .

#### 4.1. Understanding academic success in youth in care from a multilevel perspective

Findings from the current study support the notion that academic success in youth in care can be conceptualized from an ecological perspective (Bronfenbrenner, 1979), where multiple levels of influence can account for why some youth show better academic outcomes than others. Specifically, we found evidence to demonstrate that approximately 15% and 85% of variance in youth's academic scores are attributable to differences between placements and youth themselves, respectively. This suggests that although there is a degree of similarity in academic achievement between youth from the same placement, there is a larger degree of dissimilarity. Aside from placement-level processes that operate on all youth from the same placement, unique experiences of individual children also influence school success. This observation aligns closely with results reported by Attar-Schwartz (2009). Despite marked differences between the Israeli and Canadian child-welfare context, results across both studies suggest that differences between placements or care institutions accounted for approximately 12–15% of the variance in youth's academic outcomes. This highlights the importance of considering the out-of-home placement when understanding school outcomes in youth in care.

It is interesting to note that once child age, gender and externalizing scores were entered into the model, placement-level variance becomes non-significant. Specifically, the inclusion of these variables accounted for approximately 34% of the variance at the placement level. This suggests that certain placements are more likely to care for youth with certain age, gender and/or externalizing profiles. This speaks to the possibility that not only are more difficult youth being cared for by certain placements, but they are also displaying worst academic outcomes. Although it remains unclear as to whether more difficult youth do worse in school or if doing poorly in school results in higher levels of problematic behaviors, current results nevertheless suggests that these youth in care are particularly vulnerable to academic failure.

Lastly, current findings contribute to the larger body of literature that suggests out-of-home placements have a significant association on adjustment in youth in care across multiple domains. For instance, in addition to academic outcomes, differences between placements can also account for differences in youth's externalizing outcomes (e.g., Cheung et al., 2011). Significance of a placement-level effect across multiple developmental domains is particularly important as it argues for the inclusion of policy and intervention and prevention strategies that target processes at the placement level. Although child-specific effects remain the largest, nevertheless, improving placement-level outcomes may also have a noticeable effect on child outcomes.

#### 4.2. Influence of caregiver involvement on academic success

Given the relative importance of understanding placement-level processes on academic success in youth in care, our second goal was to identify possible mechanisms related to higher achievement. Specifically we focused on different aspects of caregiver involvement: home- and school-based involvement, placement literacy environment and academic expectations.

##### 4.2.1. Importance of caregiver involvement

In support of our original hypothesis, results from the current study suggests that caregivers who provided more academic support at home were more likely to care for youth with higher levels of academic achievement. This observation dovetails well with others studies that have reported similar findings across different samples involving children from the community (e.g., Barnard, 2004). Interestingly, contrary to our expectations, school-based involvement did

not emerge as a significant predictor of youth's academic scores. However, these results do converge with those reported by Pears et al. (2010) where authors did not find any evidence to suggest that associations between out-of-home care and academic achievement can be explained by caregiver school-based involvement.

Perhaps these patterns of results reflect the possibility that youth in care may benefit more from home-based involvement than caregiver involvement concerning school activities. This notion is supported by existing studies that involve community-based samples where home-based involvement has been found to be a stronger predictor of academic outcomes than school-based involvement (e.g., Izzo et al., 1999). It is possible that within the context of out-of-home care, higher levels of home-based involvement reflect better relationships shared between caregivers and youth. Often, placements characterized by high quality caregiver–youth relationships are more stable and permanent in nature (e.g., Orme & Buehler, 2001). Thus, the feeling of security and support from caregivers may be essential for facilitating higher levels of academic success in youth in care. More importantly, when compared to the support offered through school-based involvement, perhaps support offered through home-based involvement is more responsive to the individual needs of youth in care. Since many youth in care have specialized academic needs (e.g., Stone, 2007), caregivers may be better able to provide the appropriate supports (e.g., tutoring, homework remedies) through home-based involvement. Clearly, more research is required to understand how caregiver home- and school-based involvement operate together to influence academic outcomes of youth in care. Nevertheless, current results suggest that caregiver involvement, especially at home, may be essential to improving academic outcomes of youth in care.

##### 4.2.2. Importance of the placement literacy environment

In support of our original hypothesis, the placement literacy environment, particularly that of printed text, also appears to be important for academic success in youth in care. This is supported by our finding that higher academic achievement is related to higher amounts of books accessible to youth in their placements. This study extends the importance of home literacy to youth receiving out-of-home care and contributes to the wealth of literature that has documented the associations (e.g., Johnson et al., 2008) and long-term influences (e.g., Rodriguez et al., 2009) of home literacy on academic outcomes.

##### 4.2.3. Importance of caregiver expectations

We distinguished between the absolute levels of caregiver expectations from differential expectations experienced by individual youth from the same placement. In support of our original hypothesis, results suggest that both higher levels of absolute and differential expectations, in placements with multiple youth, predicted more academic success.

Associations between caregiver expectations and academic achievement in community-based samples are well documented. In fact, when examined over time, the effects of earlier caregiver expectations predicted later academic achievement by operating through children's reading abilities (Davis-Kean, 2005). However, what is novel about current findings is that over and above the effects of caregiver expectations within the same placement, children's differential experiences also predicted higher academic achievement. Although the influence of differential experiences within foster placements on child outcomes have been examined by previous studies (Cheung et al., 2011), this is the first one to examine how absolute and differential experiences with caregiver expectations influence academic outcomes in children, generally.

A well developed and well researched social phenomenon that may be helpful in understanding the effects of differential expectations is social comparison. Social comparison theory posits that



social comparison information is routinely used for a variety of self-regulating functions such as self-enhancement, self-assessment and improvement (Festinger, 1954). Not only are individuals more likely to compare themselves to others who are more similar, but also with those found in their local context (e.g., Wills, 1991). Thus, it is likely that siblings compare themselves across multiple domains, including parental treatment. Indeed, preliminary evidence suggests that comparative processes operate between siblings and that specific parenting towards one child leads to opposite effects on the target child and sibling, a phenomenon coined the 'sibling barricade' effect (Feinberg, Neiderhiser, Simmens, Reiss, & Heatherington, 2000; Reiss et al., 1995). These patterns of results may be attributable to social comparisons between siblings where Sibling 2 is more likely to perceive him/herself as better off when Sibling 1 receives harsher punitive parenting.

Perhaps similar social comparisons operate on academic achievement in youth in care, particularly when there is the presence of differential expectations from caregivers. Given that the causal relationship between parental expectations and children's academic aspirations has been documented in educational literature (e.g., Rutchick et al., 2009), differential expectations may influence the development of youth's motivation and aspirations for academic achievement. Although highly speculative, it may be possible that for youth who experience higher levels of caregiver expectations, they are more likely to internalize higher aspirations which in turn results in higher academic achievement. However, for siblings who are expected to achieve less, they are more likely to internalize lower academic aspirations for themselves which results in lower academic achievement. This observation aligns closely with the 'sibling barricade' effect which has been demonstrated across multiple outcomes such as depression, social responsibility and cognitive agency (Feinberg et al., 2000). However, it is also possible that caregivers may hold lower expectations because youth themselves have lower cognitive ability. Clearly, these observations are very preliminary and additional research utilizing a longitudinal design is required to disentangle these issues. Nevertheless, current results suggest that differential expectations may operate on academic outcomes of youth in care.

#### 4.3. Implications for policy and practice

Current results have important implications for policy and practice. Perhaps most compelling is the suggestion that placements may be an important influence on academic achievement of youth in care. In addition to providing individualized academic support to youth in care, future intervention strategies may consider targeting the placement. Given that approximately 15% of the variance in youth's academic outcomes can be attributable to differences between placements, interventions that target specific placement-level processes may have a noticeable effect.

From a policy perspective, current results highlight the importance of shifting existing policies so that governance and allocations of funds includes recognizing the contributions of the placement to academic success in youth in care. Within the provincial context of Ontario, the majority of efforts aimed to improve academic outcomes of youth in care target primarily children themselves. Although this is important, current results also suggest that placement-level processes play an important role in academic success. Future policies may consider targeting individual youth along with the placement in which they live to achieve optimal development.

Given the importance of the placement, the current study also identified three possible processes that can help improve academic outcomes of youth in care: caregiver home-based involvement with school, caregiver academic expectations and literacy environment of the placement. Programs that target these placement-level processes can encourage caregivers to take a more active role in youth's academic experiences by remaining more involved and knowledgeable

about school-related activities. This involvement can help caregivers identify difficulties earlier on so that issues and problems can be addressed accordingly. Teaching caregivers effective ways to assist with homework and promoting the literacy environment in the placement are also possible areas of intervention. Perhaps most important is highlighting the importance of caregiver expectations and helping caregivers increase their academic expectations of youth under their care. Although it is important that expectations match ability, helping caregivers recognize the importance of holding higher expectations may be crucial in facilitating better academic outcomes of youth in care.

#### 4.4. Limitations and directions for future research

There are several caveats to be mindful of when interpreting results from the current study. The current study involves cross-sectional data and therefore, results are unable to speak to the issue of causality. For instance, although it is possible that more caregiver involvement results in higher academic achievement, it is also equally possible that higher achieving youth may elicit more involvement from their caregivers. Without analyses that involve longitudinal data, it is impossible to examine this issue further. Directions for future research may consider incorporating a research agenda that adopts a longitudinal perspective to examine the causal relationship between parental involvement and academic outcomes of youth in care.

The context of youth in care may also be more complex than the simple hierarchical structure of youth nested within placement. Given that youth from the same placement may be monitored by different workers and that workers tend to monitor children from multiple families, placement and worker levels may be crossed. To account for this possibility, a two-level cross-classified model could have been used to fit the data (e.g., Rasbash & Goldstein, 1994; Raudenbush, 1993). However, constraints of a small sample size in the current study did not allow us to examine possible worker effects. Similarly, we were unable to explain why placement-level variance exists (i.e., random effects) because of limited amounts of variance captured by the model. Future studies, utilizing larger sample sizes can address some of these concerns.

Given that placing biological siblings in the same placement has been found to be associated with better outcomes in children in care (e.g., Linares, Li, Shrout, Brody, & Pettit, 2005), it is likely that some foster siblings are also biological siblings. However, we did not have biological relatedness information and was unable to account for possible genetic effects in our sample. It is likely that any genetic effects would have been modeled as part of the child-specific effect.

Despite these constraints, the current study nevertheless provides a stepping-stone towards understanding why placements are important for academic success in youth in care. We found evidence to suggest that differences between placements accounted for differences between youth in academic achievement. More importantly, caregiver home-based involvement, caregiver expectations and literacy environment of the placement were all associated with higher academic achievement in youth in care. These results highlight the importance of targeting placement-level processes when promoting better academic outcomes of youth in care.

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