



Research article

Profiles and predictors of behavioral resilience among children in child welfare



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ABSTRACT

Children living in out-of-home care have experienced a multitude of adversities, often resulting in compromised functioning. The current study used Ontario Looking After Children (OnLAC) project data to estimate developmental trajectories of behavioral outcomes (i.e., conduct and emotional problems) over a 4-year period (i.e., ages 6–10 to 9–13) in 313 children living in out-of-home care. Predictors measured at baseline (e.g., sex) and across the subsequent 4-year period (e.g., parenting practices) were also investigated. Findings indicated that 64.2% and 58.6% followed resilient trajectories for conduct behaviors and emotional functioning, respectively. Predictors of resilient trajectories included internal developmental assets, number of children in the home, whether the child was receiving treatment, and positive parenting. Findings need to be interpreted with an understanding that children in out-of-home care have varying levels of functioning across various domains (e.g., educational, social) other than the ones measured here. Predictors were static and dynamic and cut across various contexts, emphasizing the importance of considering child functioning within an ecological model.

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Introduction

Childhood maltreatment can have a detrimental impact on a number of domains including psychological, behavioral, social, and cognitive and language skills (Oswald, Heil, & Goldbeck, 2010). Such difficulties may continue into later life, if left unaddressed (Cicchetti, 2013). While empirical investigations have provided valuable information on the development and treatment of such outcomes, research has also begun to focus on those who function well despite experiences of adversity (Luthar, Cicchetti, & Becker, 2000). This concept, known as resilience, is defined as “the capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability, viability, or development” (Masten, 2011, p. 494).

The study of resilience is applicable to children living in out-of-home care because they have experienced much adversity that could compromise their well-being (Sullivan & van Zyl, 2008). Children in out-of-home care tend to have higher rates of behavioral difficulties in comparison to maltreated children who remain in their homes and to non-maltreated children (Doyle, 2013; Sullivan & van Zyl, 2008). For instance, foster care children must face removal from their family in addition to a number of household transitions upon entering care, which have been linked to increased behavioral problems (McDonald, Allen, Westerfelt, & Piliaven, 1996).

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Despite experiencing adversities, some children in out-of-home care exhibit resilience often defined as few behavioral problems or as satisfactory performance in age-salient developmental tasks (e.g., emotion regulation; Bell, Romano, & Flynn, 2013; Jaffee, Caspi, Moffitt, Polo-Thomas, & Taylor, 2007; Walsh, Dawson, & Mattingly, 2010). Resilient children do not necessarily excel in their behavioral functioning but rather function in the average range, typically defined as scoring at or close to the normative mean on behavioral measures (Luthar et al., 2000). Also, resilience may not remain stable over time, and resilience in one domain (e.g., academic performance), does not necessarily indicate resilience in other domains (e.g., social relationships; Cicchetti, 2013; Luthar et al., 2000; Walsh et al., 2010). Finally, resilience is influenced by both internal (e.g., self-efficacy) and external (e.g., nurturing caregivers) factors (Masten, 2006).

Prevalence and Predictors of Resilience

Research indicates varying rates of resilience among maltreated children, ranging from 9.2% (Flores, Cicchetti, & Rogosch, 2005) to 48% (Dumont, Widom, & Czaja, 2007). This variability is likely explained by the range of definitions and methodologies that have been used to assess positive adaptation. Studies have collected data from different informants (e.g., child, teachers, caregivers) over different time periods (e.g., childhood, adolescence, adulthood). Diverse forms of reporting (e.g., prospective, retrospective, longitudinal) have also been used.

Turning to resilience predictors, these can be organized by means of an ecological model (Belsky, 1980; Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998; Lynch & Cicchetti, 1998) into several levels that are nested within one another and that have varying degrees of proximity to the individual. Two of these levels exert more direct influences on children's development and functioning, namely the *microsystem* (e.g., family environment) and *ontogenic development* (individual characteristics that influence adaptation). *Exosystem* influences refer to settings that do not involve the individual (e.g., caregiver's workplace), while *macrosystem* influences include broader cultural values and beliefs. Interactions between settings in which an individual is actively involved can also occur, which refer to *mesosystem* influences.

Child and family factors (microsystem influences) related to better outcomes among children in out-of-home care include regular and consistent contact with biological parents, placement type, developmental assets, and parenting practices. Children who maintain quality contact with biological parents have better outcomes (Knott & Barber, 2005), and those living with kin generally have greater placement stability and better opportunities to maintain contact with their extended family, community, and culture (Barber & Delfabbro, 2004). However, it is important to note that recent research (Font, 2014) concluded that children's initial level of functioning might be a selection factor such that higher functioning children (i.e., lower baseline internalizing and externalizing behavior problems, and higher math and reading scores) have a higher likelihood of entering kinship care. Finally, an emerging finding is the impact that developmental assets can have on outcomes (Bell et al., 2013; Filbert & Flynn, 2010; Scales, Benson, Leffert, & Blyth, 2000). Developmental assets represent internal (e.g., positive values) and external (e.g., boundaries/expectations) resources that contribute to a child's ability to thrive. Research has indicated that the greater the availability of these assets, the better a child's functioning is across a number of domains (Scales et al., 2000). For instance, Filbert and Flynn (2010) examined predictors (i.e., developmental assets, cultural assets) of prosocial behavior, self-esteem, educational performance, and behavioral difficulties among a sample of 97 10–17 year olds living in out-of-home care. The findings revealed that after controlling for sex, age, and cumulative risk, developmental assets significantly predicted a higher level of prosocial behavior, general self-esteem and educational performance, and a lower level of behavioral difficulties.

With regard to the foster family, a positive caregiver–child relationship, characterized by parenting practices that involve praise, communication, and consistency, is important for behavioral adaptation among children in out-of-home care (Cheung, Goodman, Leckie, & Jenkins, 2011; Legault, Anawati, & Flynn, 2006). Research investigating the impact of foster caregiver training and years of experience on children's outcomes is scarce (Festinger & Baker, 2013), and studies indicate mixed findings (Chamberlain et al., 2008; Nash & Flynn, 2009). However, these variables might lead to a greater ability to support foster children in their recovery from trauma-related difficulties. Finally, foster family household size may play a role in child outcomes through its influence on parenting practices. Fewer children in the household might provide caregivers with more time to devote to each child. Limited research has found that a greater number of children in a foster home contribute to greater placement disruptions (Chamberlain et al., 2006).

Resilience Over Time

Although several studies have investigated the prevalence and predictors of resilience among maltreated children, fewer have tracked outcomes longitudinally (Dumont et al., 2007; Fergusson & Horwood, 2003; Helton & Bruhn, 2013; Jaffee et al., 2007; Jaffee & Gallop, 2007; Lansford et al., 2006; McGloin & Widom, 2001; Proctor, Skinner, Roesch, & Litrownik, 2010). Among the studies that have followed child outcomes over time, findings generally indicate that a substantial proportion of maltreated children are resilient over time, and a number of child (e.g., sex) and family (e.g., stable household) factors are related to resilience. For instance, in a U.S. study (Proctor et al., 2010), the behavioral adjustment of 279 children who entered foster care before the age of 4 years and had spent at least five months in care was tracked over an 8-year period. At baseline (age 4), 44.8% were in an out-of-home placement, 35.4% had been reunited with a biological parent, and 19.7% had been adopted. Growth mixture modeling identified three internalizing and four externalizing behavior trajectories. For internalizing behaviors, 66.7% had stable adjustment, 25.4% had mixed/decreasing adjustment, and 7.9% had increasing

adjustment. For externalizing behaviors, 46.6% had stable adjustment, 28.7% had mixed adjustment, 8.2% had increasing adjustment, and 16.5% had stable maladjustment. For trajectory correlates, caregiver-reported social competence and child-reported cognitive ability, placement stability, and low frequency of physical abuse predicted belonging on the stable or increasing adjustment trajectory for both outcomes (Proctor et al., 2010).

Study Objectives

The current study aimed to investigate behavioral resilience over time among children living in out-of-home care, and to identify predictors of resilient functioning. While studies have examined behavioral resilience, a limited number have used longitudinal methodology (Fergusson & Horwood, 2003; Jaffee & Gallop, 2007; Proctor et al., 2010), and no study to the best of our knowledge has examined distinct patterns or trajectories of behavioral resilience using a sample comprised entirely of children in out-of-home care. Also, children in the current study had been living in out-of-home care for at least one year at baseline, extending our understanding of the relationship between out-of-home care and behavioral outcomes as past findings (e.g., Proctor et al., 2010) have tended to use varied samples (i.e., combination of children in foster care, adopted children, and children living with their biological family). Use of a more homogeneous sample in the current study in part controlled for confounds that inherently exist within varied samples. Finally, while studies have examined the impact of early predictors on later behavior, the current study investigated predictors measured at single and multiple time points to capture dynamic effects on behavioral functioning, some of which have rarely been investigated previously (e.g., adverse life experiences).

Given these considerations, the first objective of the current study was to extend previous research including our own cross-sectional investigation of the prevalence and correlates of behavioral resilience (Bell et al., 2013) among a sample of 531 5–9 year old children living in out-of-home care, to examine behavioral trajectories of conduct and emotional problems among school-age children in out-of-home care, with a focus on trajectories that represent resilient functioning. The second objective was to examine predictors taken from various levels of the ecological model. Several variables were measured at one time point (i.e., baseline). These were demographics and variables in which little variation was anticipated over time. Additional predictors were those measured across the subsequent 4-year period. We focus on the school-age period because the majority of studies on behavioral functioning among maltreated samples have examined adolescence. However, school-age children may be particularly vulnerable to the development of behavioral problems, especially among those who have experienced early maltreatment by an attachment figure (Masten, Best, & Garmezy, 1990). Therefore, a focus on school-age children can provide insight into resilient functioning at an earlier developmental period and such findings can be useful for informing intervention efforts.

Based on past research (Bell et al., 2013; Walsh et al., 2010), we anticipated that children who were in kinship care, had fewer placement changes, maintained contact with biological parents, and had greater developmental assets would exhibit resilient behavioral functioning. Also, positive caregiver–child relationships (i.e., positive parenting), caregiver training, and greater years of experience fostering would contribute to behavioral resilience.

Method

Sample and Procedure

The Ontario Looking After Children (OnLAC) project was mandated in 2006 by the government of Ontario to assess ongoing service needs and to monitor the developmental progress of children who have been in out-of-home care for one year or more (Flynn, Ghazal, Legault, Vandermeulen, & Petrick, 2004). On an annual basis, the second Canadian adaptation of the Assessment and Action Record (AAR-C2) is used to collect data covering seven domains of functioning (e.g., health, education, identity, emotional and behavioral development; Flynn et al., 2004). This tool is administered by the child welfare worker as a structured conversational interview with the child (if over the age of 10) and the foster parent (or caregiver).

The present study used provincially representative OnLAC data from years 7 (2007–2008) to 11 (2011–2012). At year 7, we began with an initial sample of 877 5–9 year old children. From this sample, we selected children living in foster or kinship placements and who had complete data on the specific behavioral outcome for at least 3 out of 4 time points (years 8–11). Some of these children resided in the same household. In order to avoid dependence of observations, one child per household was selected (i.e., child with the most recent birthday), providing a final sample of 313 for conduct problems and 312 for emotional problems. The excluded and non-excluded cases were compared on several variables including age, sex, ethnicity, age at first placement, number of placements, and adverse life experiences. Significant differences were found on age (i.e., included children were significantly older) and number of placements (i.e., included children experienced fewer placements).

At year 7, children were 7.5 years ($SD = 1.3$) on average, and about half were boys (55.6%). Most were European-Canadian (67.4%), followed by First Nations (17.3%), African-Canadian (4.8%), and other (e.g., Asian, Latin American, 8.3%). The mean age at first placement was 3.1 years ($SD = 2.2$). The majority of children were in foster family placements (83.7%) in comparison to kinship care (16.3%). Children living in group homes and other placement types (e.g., residential facilities) were excluded. The average number of times children changed placements upon entry to care was 4.2 ($SD = 2.5$; range 0–13). Reasons for

admission to care were primarily maltreatment, namely neglect (77.0%), emotional harm (45.0%), physical harm (38.3%), domestic behavior (33.9%), and sexual harm (8.6%).

Measures

Outcomes. At each assessment year (years 8–11), foster caregivers responded to the Strengths and Difficulties Questionnaire (SDQ; Goodman, Ford, Simmons, Gatward, & Meltzer, 2000). This measure includes five items on conduct problems (e.g., often fights with other children or bullies them), and five items on emotional problems (e.g., often unhappy, depressed, or tearful). Each item is on a 3-point Likert scale ranging from 0 (*not true*) to 2 (*true*), with scores ranging from 0 to 10 (a higher score indicates greater frequency of the behavior). Each scale had acceptable to good internal consistency for our sample (average across the four years of assessment) with Cronbach's $\alpha = .77$ (conduct problems), and $\alpha = .70$ (emotional problems). Achenbach et al. (2008) provide further data on the validity and reliability of the SDQ.

Predictors. Foster caregivers and child welfare workers responded to items at baseline (year 7, 2007–2008), including the child's type of care (i.e., foster family or kinship care) and adverse life experiences (e.g., death of a birth parent, severe poverty; range 0–12), which included maltreatment (i.e., physical abuse, sexual abuse, emotional abuse, neglect). Workers also indicated the number of placement changes experienced since entering care and the child's age at first placement. Foster family predictors measured at baseline included worker reports of caregiver training, which was dichotomized to indicate whether the caregiver participated in any of the following training programs: OnLAC; Parent Resources for Information, Development, and Education (PRIDE); agency-specific training; foster parenting techniques; or another program. Finally, foster caregiver years of experience was a single worker-reported categorical item with possible responses consisting of 0 (*up to 3 years of experience*), 1 (*4 to 9 years of experience*), and 2 (*10 or more years of experience*).

Furthermore, at each subsequent assessment year (years 8–11), caregivers and child welfare workers reported on the child's contact with biological parents, change in worker, whether the child was receiving treatment, and developmental assets. Contact with birth parents was a dichotomous caregiver-reported variable coded 0 (*no contact*) or 1 (*regular contact*). Change in worker was also a dichotomous variable indicating whether or not the child had the same worker in the previous year (*no/yes*), and child receiving treatment was a dichotomous caregiver-reported variable, indicating whether or not the child received services from a psychologist/counselor, psychiatrist, and/or another mental health service provider in the previous year, coded 0 (*not in treatment*) or 1 (*in treatment*). Finally, each worker completed the Developmental Assets Scale (Scales, 1999). This includes a 20-item internal assets scale (Cronbach's $\alpha = .84$ for our sample) and a 20-item external assets scale (Cronbach's $\alpha = .74$ for our sample). The internal assets scale includes categories of commitment to learning (e.g., achievement motivation, school engagement), positive values (e.g., integrity, honesty), social competencies (e.g., planning and decision making), and positive identity (e.g., self-esteem, sense of purpose) while the external assets scale includes categories of support (e.g., caregiver support), empowerment (e.g., inclusion in community life, opportunity to contribute to family decisions), boundaries and expectations (e.g., at home, school, and in the neighborhood), and constructive use of time (e.g., participation in creative activities, youth programs). Workers rated each item as either Yes (*present*), Uncertain, or No (*absent*) for a score ranging from 0 to 20 for internal assets and 0 to 20 for external assets. Several research studies, making use of community samples, have established the validity and reliability of the asset scales (Scales, 1999). Few studies, however, have investigated the contribution of developmental assets to positive outcomes for children living in out-of-home care. One recent study (Bell et al., 2013) found that, among a sample of 531 5–9 year olds in out-of-home care, internal assets had a significant negative correlation ($p < .01$) with conduct and emotional problems and both internal and external assets had a significant positive correlation ($p < .01$) with prosocial behavior and academic performance.

Turning to foster family predictors measured across the subsequent 4-year period (years 8–11), workers indicated the number of children in the home and change in caregiver. Change in caregiver was a dichotomous variable indicating whether or not the same caregiver responded to the AAR in the previous year (*no/yes*). Finally, caregivers responded to positive parenting items. Positive parenting scales differed across years 8–11 based on the child's age. To capture positive parenting over time, a prorating procedure was used. At years 8 and 9, positive parenting included 5 items (e.g., how often do you and the child laugh together?) for children 0–9 years of age. Responses were coded 0 (*never*) to 4 (*many times each day*) with scores ranging from 0 to 20 while for children 10 to 17 years of age, positive parenting had 8 items (e.g., I speak to the youth in a warm and friendly way) coded 0 (*rarely or never*) to 2 (*often or always*) for a score ranging from 0 to 16. Scales were divisible by 2, so a score ranging from 0 to 24 was used. Specifically, the positive parenting scale for 0–9 year olds (range 0–20) was divided by 10 and multiplied by 12 to provide a score ranging from 0 to 24. Similarly, the scale for 10–17 year olds was divided by 2 and multiplied by 3 to provide a score ranging from 0 to 24. A similar procedure was used for positive parenting scales at years 10 and 11. Upon completion of this procedure, an overall mean score was calculated. Items were adapted from the Parenting Practices Scale (Strayhorn & Weidman, 1988), and have demonstrated good validity and reliability in their use within the NLSCY (Statistics Canada & Human Resources Development Canada, 1999).

Statistical Analyses

Trajectories for the behavioral outcomes were modeled across a 4-year period from 2008 (6–10 years of age) to 2011 (9–13 years of age) using a SAS procedure called PROC TRAJ. This method identifies trajectory groups or clusters of individuals

Table 1
Description of study variables.

| Variable | % | <i>M</i> (SD) | Range |
|-----------------------------------|------|---------------|-------|
| Sex | | | |
| Boys | 55.6 | – | – |
| Girls | 44.4 | – | – |
| Age | – | 7.5 (1.3) | 5–9 |
| Age at first placement | – | 3.1 (2.2) | 0–9 |
| Number of placements | – | 4.2 (2.5) | 0–13 |
| Type of placement | | | |
| Foster family | 83.7 | – | – |
| Kinship | 16.3 | – | – |
| Adverse life experiences | – | 4.9 (2.7) | 0–12 |
| Caregiver training | | | |
| No | 12.1 | – | – |
| Yes | 87.9 | – | – |
| Caregiver years fostering | | | |
| 0–3 years | 23.0 | – | – |
| 4–9 years | 53.4 | – | – |
| 10 or more years | 23.6 | – | – |
| Changes in caregiver | | | |
| No changes in caregiver | 70.9 | – | – |
| 1 change in caregiver | 18.2 | – | – |
| 2 changes in caregiver | 7.3 | – | – |
| 3 changes in caregiver | 5.2 | – | – |
| Contact with biological parents | | | |
| No contact | 16.6 | – | – |
| At 1 out of 4 years of assessment | 8.3 | – | – |
| At 2 out of 4 years of assessment | 15.7 | – | – |
| At 3 out of 4 years of assessment | 7.0 | – | – |
| At all 4 years of assessment | 52.4 | – | – |
| Changes in worker | | | |
| No change in worker | 37.7 | – | – |
| 1 change in worker | 32.3 | – | – |
| 2 changes in worker | 22.7 | – | – |
| 3 changes in worker | 6.1 | – | – |
| 4 changes in worker | 1.3 | – | – |
| Child receiving treatment | | | |
| No treatment received | 21.7 | – | – |
| At 1 out of 4 years of assessment | 20.4 | – | – |
| At 2 out of 4 years of assessment | 21.7 | – | – |
| At 3 out of 4 years of assessment | 26.8 | – | – |
| At all 4 years of assessment | 9.3 | – | – |
| Internal developmental assets | | 13.9 (3.2) | 3–20 |
| External developmental assets | | 16.1 (1.9) | 10–20 |
| Positive parenting | | 20.4 (2.4) | 12–24 |
| Number of children in home | | 2.2 (1.3) | 1–8 |

Note: *M*, mean; SD, standard deviation.

who follow a similar developmental pathway on an outcome of interest, in this case behavior (Nagin, 2005; Nagin & Odgers, 2010). Such analyses represent a person-based approach to analyzing development and allow for the provision of a “statistical snapshot of the key characteristics and behaviors of individuals following distinctive developmental pathways” (Nagin & Odgers, 2010, p. 112). The findings can be particularly useful for informing interventions regarding the identifying features of particular groups of individuals. Multiple models were tested, from a 1-group model to a 5-group model. The Bayesian Information Criterion (BIC) was used to establish the best fitting model (Shaw, Lacourse, & Nagin, 2005).

Upon determining the best number of groups, multinomial logistic regression in SPSS 22.0 was used to investigate predictors of group membership. Predictors included child sex, age at first placement, placement type, number of placements, adverse life experiences, caregiver training and years of experience. For continuous predictors measured across the 4-year period following baseline (i.e., internal and external assets, number of children in the home, and positive parenting), a mean score across the four years (2008–2011) was calculated. For contact with biological parents, a variable was computed, ranging from 0 (*no contact across all 4 years*) to 4 (*contact across all 4 years*). Similarly, change in worker was coded 0 (*no change in worker*) to 4 (*change in worker at all 4 years*), child receiving treatment was coded 0 (*no treatment*) to 4 (*in treatment across all 4 years*), and change in caregiver was coded 0 (*no change in caregiver*) to 4 (*change in caregiver at all 4 years*). These variables were treated as ordinal in the analyses. Table 1 provides descriptive information on all study variables.

SPSS Expectation Maximization (EM) was used to impute missing data for the selected sample, although it was relatively low (10–20%). Two variables (i.e., internal assets and number of children in the home) were log transformed due to a violation of linearity in the logit. However, findings for regression models using the transformed and the untransformed variables

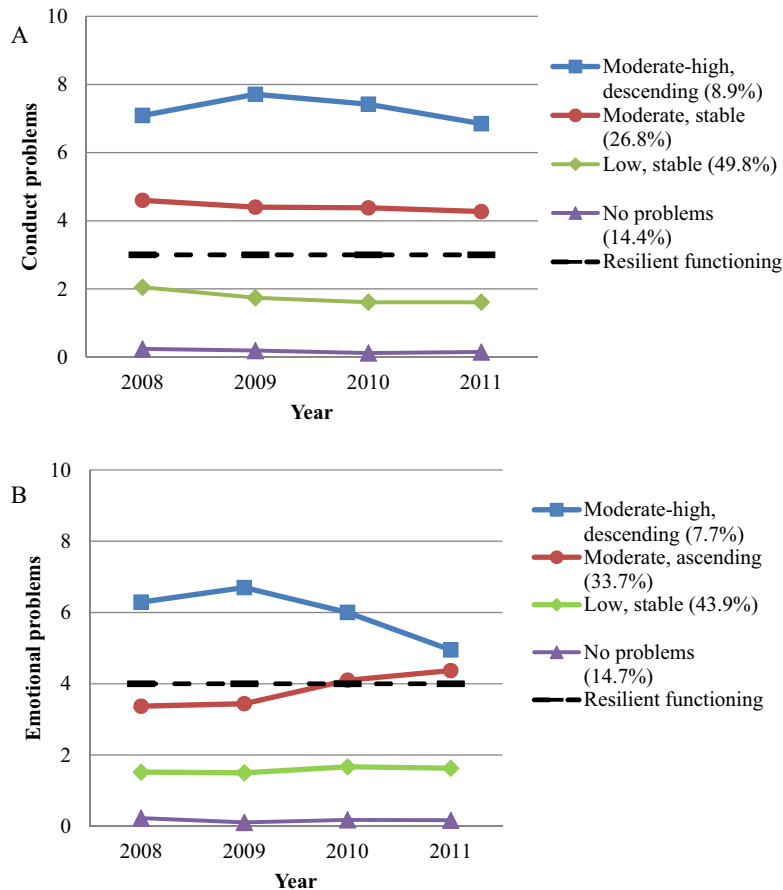


Fig. 1. Conduct and emotional problem trajectory groups from 2008 to 2011.

were the same, so for ease of interpretation, the untransformed models are presented. Adequate statistical power ($>.80$) was maintained, and a probability level of .05 was used to establish statistical significance.

Results

Based on the Bayesian information criterion (BIC) index, the best-fitting model for conduct problems was a 4-group model ($BIC = -2156.25$; Fig. 1a), compared to the 2-group ($BIC = -2211.33$), 3-group ($BIC = -2174.10$), and 5-group ($BIC = -2160.04$) models. Two of the four trajectory groups represented behavioral resilience, defined as normative range scores on this measure. This was determined using U.K. general population norms (in the absence of Canadian norms, Flynn, Vincent, & Legault, 2009). Normative scores were 0–3 for boys and 0–2 for girls (possible range 0–10). The resilient groups were the *No conduct problems* group, comprising about 1 in 6 children (14.4%; $n = 45$) who had no problems over a 4-year period and the *Low, stable conduct problems* group (49.8%; $n = 156$). These children had few conduct problems over time. The two remaining groups were the *Moderate, stable conduct problems* group consisting of about 1 in 4 children (26.8%; $n = 84$) who had a moderate level of conduct problems that remained stable over a 4-year period. The *Moderate-high, descending conduct problems* group included the least number of children (8.9%; $n = 28$) who exhibited moderately high levels of conduct problems initially, but there seemed to be a decreasing trend over time.

Turning to emotional problems, based on the BIC index, the best-fitting model was a 4-group model ($BIC = -2148.59$; Fig. 1b), compared to the 2-group ($BIC = -2171.17$), 3-group ($BIC = -2151.17$), and 5-group ($BIC = -2151.61$) models. Two of the four trajectory groups represented behavioral resilience, defined as normative range scores on this measure. This was a score of 0–3 for boys and 0–4 for girls (possible range 0–10). The resilient groups were the *No emotional problems* group, comprising about 1 in 6 children (14.7%; $n = 46$) who had no emotional problems over a 4-year period, and the *Low, stable emotional problems* group (43.9%; $n = 137$). Children in this latter group had few emotional problems over time. The two remaining trajectory groups included the *Moderate, ascending emotional problems* group, comprising about one third of children (33.7%; $n = 105$) who had moderate initial levels of emotional problems that increased over time, and the *Moderate-high, descending emotional problems* group, comprising the fewest children (7.7%; $n = 24$) who had moderately high levels of emotional problems initially which declined over time. Given the similarity among the trajectory groups identified for

Table 2
Predictors of conduct problem trajectories.

| | No problems ^a | | Low, stable ^a | | Moderate, stable ^a | |
|--|--------------------------|-----------|--------------------------|-----------|-------------------------------|-----------|
| | OR | 95% CI | OR | 95% CI | OR | 95% CI |
| Baseline (year 7) predictors | | | | | | |
| Sex ^b | .88 | .20–3.89 | .94 | .28–3.21 | 1.71 | .53–5.51 |
| Age at first placement | .94 | .66–1.34 | .93 | .68–1.26 | .86 | .65–1.15 |
| Number of placements | .85 | .63–1.14 | .88 | .70–1.10 | .94 | .76–1.15 |
| Kinship placement ^c | 1.85 | .17–19.53 | 1.50 | .19–11.64 | 1.65 | .23–12.06 |
| Adverse life experiences | 1.07 | .78–1.45 | 1.16 | .90–1.50 | 1.19 | .93–1.53 |
| Caregiver training ^d | 1.54 | .15–16.35 | .83 | .11–6.16 | 1.51 | .21–10.78 |
| Caregiver years fostering ^e | | | | | | |
| 4–9 years | .74 | .10–5.36 | 1.32 | .28–6.35 | .76 | .17–3.43 |
| 10 or more years | .25 | .02–2.61 | .50 | .08–3.25 | .25 | .04–1.49 |
| Year 8–11 predictors | | | | | | |
| Changes in caregiver | .34 | .11–1.12 | .95 | .49–1.84 | 1.28 | .70–2.33 |
| Changes in worker | .80 | .38–1.66 | .78 | .43–1.44 | .83 | .47–1.46 |
| Contact with biological parents | 1.57 | .98–2.52 | 1.30 | .89–1.89 | 1.23 | .87–1.73 |
| Child receiving treatment | .20 ^{**} | .10–.40 | .47 ^{**} | .28–.80 | .66 | .40–1.07 |
| Internal assets | 1.38 [*] | 1.03–1.87 | 1.29 [*] | 1.02–1.63 | 1.08 | .87–1.34 |
| External assets | 1.04 | .64–1.70 | 1.14 | .77–1.68 | 1.33 | .92–1.92 |
| Positive parenting | 1.29 | .94–1.76 | 1.35 [*] | 1.04–1.76 | 1.17 | .91–1.49 |
| Number of children in home | .62 | .36–1.06 | .62 [*] | .41–.93 | .70 | .48–1.02 |

Note: OR, odds ratio; CI, confidence interval.

Reference groups: ^amoderate-high, descending group; ^bgirls; ^cfoster family placement; ^dno training; ^eup to 3 years.

Model controlled for baseline conduct problems.

^{*} $p < .05$.

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

^{***} $p < .001$.

conduct and emotional problems, a chi-square analysis was used to test for co-morbidity among these outcomes. Significant findings were revealed ($\chi^2(9, N = 305) = 63.50, p < .001$) indicating that comorbidity of conduct and emotional problems was present.

Furthermore, given the relative stability of conduct and emotional problem trajectory groups over time, post hoc cross-sectional (i.e., 2008, 2009, 2010, 2011) one-way ANOVAS were used to test whether the age of the current sample (i.e., 5–9 years at baseline) was too inclusive, such that differences sensitive to developmental period could not be detected. Specifically, the impact of child age and trajectory group was tested in addition to the interaction between age and trajectory group. Non-significant findings were found for all but one interaction for emotional problems in 2008 ($F(10, 244) = 2.46, p = .008$). For those following non-resilient trajectories (i.e., *Moderate, ascending and Moderate-high, descending emotional problems*), emotional problems were greater for older children while for those following resilient trajectories (i.e., *No emotional problems, Low, stable emotional problems*) emotional problems did not differ as a function of the child's age.

Table 2 presents findings from the multinomial logistic regression for conduct problems ($\chi^2(51, N = 313) = 243.83, p < .001, R^2 = .34$). Using the *Moderate-high, descending conduct problems* group as the reference, significant predictors of behavioral resilience (i.e., the *No conduct problems* or *Low, stable conduct problems* groups) were child receiving treatment, internal assets, positive parenting, and household size. Specifically, with every additional year that a child received treatment, the odds of belonging to one of the resilient trajectory groups (compared to the *Moderate-high, descending conduct problems* group) decreased significantly by 80% (OR = .20) for the *No conduct problems* group and by 53% (OR = .47) for the *Low, stable conduct problems* group. Every additional child in the foster home resulted in a decrease in the odds of belonging to the *Low, stable conduct problems* group, by 38% (OR = .62). For internal assets, every one-unit increase on this scale significantly increased the odds of belonging to the *No conduct problems* group by 38% (OR = 1.38) and by 29% (OR = 1.29) for the *Low, stable conduct problems* group (compared to the *Moderate-high, descending conduct problems* group). The final significant variable was positive parenting. With every one-unit increase on this scale, there was a 35% (OR = 1.35) increase in the odds of belonging to the *Low, stable conduct problems* group, compared to the *Moderate-high, descending conduct problems* group.

Table 3 presents findings from the multinomial logistic regression for emotional problems ($\chi^2(51, N = 312) = 205.55, p < .001, R^2 = .285$). Using the *Moderate-high, descending emotional problems* group as the reference, age at first placement was a significant baseline predictor of behavioral resilience. Specifically, every one-year increase in age at first placement resulted in a 52% (OR = 1.52) increase in the odds of belonging to the *No emotional problems* group and a 39% (OR = 1.39) increase in the odds of belonging to the *Low, stable emotional problems* group. For predictors measured across the 4-year period, changes in caregiver, child receiving treatment, and internal assets were significantly related to behavioral resilience (i.e., the *No emotional problems* or *Low, stable emotional problems* groups). With every additional change in caregiver, the odds of belonging to the *No emotional problems* group (compared to the *Moderate-high, descending emotional problems* group) decreased significantly by 75% (OR = .25). Furthermore, with every additional year that a child received treatment, the odds of belonging to one of the resilient groups (compared to the *Moderate-high, descending emotional problems* group) decreased significantly by 69% (OR = .31) for the *No emotional problems* group and by 39% (OR = .61) for the *Low, stable emotional problems*

Table 3
Predictors of emotional problem trajectories.

| | No problems ^a | | Low, stable ^a | | Moderate, ascending ^a | |
|--|--------------------------|-----------|--------------------------|-----------|----------------------------------|-----------|
| | OR | 95% CI | OR | 95% CI | OR | 95% CI |
| Baseline (year 7) predictors | | | | | | |
| Sex ^b | 1.60 | .41–6.19 | 1.35 | .45–4.07 | 1.48 | .52–4.23 |
| Age at first placement | 1.52 [*] | 1.09–2.11 | 1.39 [*] | 1.06–1.83 | 1.22 | .94–1.57 |
| Number of placements | 1.01 | .76–1.35 | .90 | .72–1.12 | .96 | .78–1.18 |
| Kinship placement ^c | 4.93 | .48–51.06 | 5.16 | .65–40.79 | 2.10 | .27–16.37 |
| Adverse life experiences | .96 | .74–1.24 | .96 | .78–1.18 | .95 | .78–1.16 |
| Caregiver training ^d | 1.93 | .29–12.88 | .93 | .18–4.76 | .52 | .11–2.53 |
| Caregiver years fostering ^e | | | | | | |
| 4–9 years | 1.20 | .20–7.22 | 1.09 | .27–4.49 | 1.19 | .31–4.55 |
| 10 or more years | 2.13 | .24–19.33 | 1.03 | .18–5.78 | .82 | .16–4.13 |
| Year 8–11 predictors | | | | | | |
| Changes in caregiver | .25 [*] | .09–.73 | .62 | .34–1.13 | .60 | .35–1.06 |
| Changes in worker | 1.35 | .66–2.74 | .73 | .41–1.30 | .92 | .53–1.60 |
| Contact with biological parents | .65 | .42–1.03 | .76 | .52–1.11 | .70 [*] | .49–1.00 |
| Child receiving treatment | .31 ^{***} | .17–.59 | .61 [*] | .37–.99 | .98 | .61–1.57 |
| Internal assets | 1.26 | .95–1.67 | 1.30 [*] | 1.04–1.63 | 1.10 | .89–1.36 |
| External assets | 1.01 | .61–1.67 | .82 | .55–1.24 | .99 | .67–1.46 |
| Positive parenting | 1.27 | .95–1.71 | 1.13 | .89–1.43 | 1.18 | .93–1.45 |
| Number of children in home | 1.22 | .67–2.23 | 1.54 | .97–2.46 | 1.29 | .82–2.03 |

Note: OR, odds ratio; CI, confidence interval.

Reference groups: ^amoderate-high, descending group; ^bgirls; ^cfoster family placement; ^dno training; ^eup to 3 years.

Model controlled for baseline emotional problems.

^{*} $p < .05$.

^{***} $p < .001$.

group. Finally, every one-unit increase on the internal assets scale significantly increased the odds of belonging to the *Low, stable emotional problems* group by 30% (OR = 1.30).

Discussion

The findings revealed distinct groups of children in terms of behavioral functioning. Children tended to exhibit moderately high, moderate, low, or absent levels of behaviors, and these rates were relatively stable over time. A considerable proportion of the children were behaviorally resilient. About 6 in 10 were in either the *No problems* or *Low, stable* group for conduct (64.2%) and emotional (58.6%) problems. The rates of behavioral resilience were surprising however, given past research indicating that foster children tend to exhibit many behavioral problems (Doyle, 2013; Sullivan & van Zyl, 2008). However, a study by Proctor et al. (2010) reported similar findings. About 6 in 10 (66.7%) of the children in their sample had stable adjustment on internalizing behaviors (similar to emotional problems in the current study) and almost 5 in 10 (46.6%) had stable adjustment on externalizing behaviors (similar to conduct problems in the current study). The rates of behavioral resilience in the current study may be a function of placement stability in that the average time living with the same foster family was about 3 years at baseline ($M = 2.9$, $SD = 2.1$). The sample in Proctor et al. (2010) also had relatively stable placements (54.7% had the same caregiver at all five time points). This stable environment may have reduced behavioral problems that were present upon entry to care; a time often characterized by a number of transitions and crises (Perkins-Mangulabnan & Flynn, 2006). Furthermore, Rubin, O'Reilly, Luan, and Localio (2007) found that regardless of initial behavioral problems at time of entry to care, placement stability had a significant impact on child behavioral well-being. It is also possible that children who were faring poorly initially were placed with caregivers who had more expertise in dealing with problematic behaviors; therefore, upon assessment, these behaviors would be improved (Oosterman, Schuengel, Slot, Bullens, & Doreleijers, 2007).

Regarding the stability of behaviors, additional years of data might reveal greater changes, as indicated by the preliminary trends that were visible (i.e., *Moderate-high, descending conduct problems*, *Moderate, ascending and Moderate-high, descending emotional problems*). Furthermore, the measure of behavior used (i.e., Strengths and Difficulties Questionnaire) assessed behaviors through caregiver reports on five items. A longer scale, such as the Child Behavior Checklist (CBCL), might have revealed more variability.

For predictors of trajectory group membership, there was one significant variable measured at baseline (i.e., age at first placement). Specifically, children who were of an older age at first placement were more likely to exhibit resilient emotional functioning. Previous research investigating the impact of age at first placement has been mixed. For example, Holtan, Rønning, Handegård, and Sourander (2005) found that age at first placement did not significantly predict behavioral problems, while Kolko et al. (2010) found that foster children placed at a younger age demonstrated heightened levels of posttraumatic stress (PTS) symptoms. Children placed at a younger age might be more vulnerable to PTS symptoms as they have not yet developed coping mechanisms to deal with such experiences (Kolko et al., 2010). Placement at a younger

age compromises key developmental tasks that are more likely to have already been attained in children of an older age (e.g., attachment, emotional regulation; Arvidson et al., 2011; Romano, Babchishin, Marquis, & Frechette, 2014). This finding also might imply that placement at a younger age is a proxy for severe adversity, given that child welfare workers exhaust all other options prior to removal of a child from their home; however, further investigation of the complex relationship between age at first placement and child outcomes is needed.

Surprisingly, placement type was a non-significant predictor of resilient trajectory group membership. A recent meta-analysis of 102 studies (Winokur, Holtan, & Batchelder, 2014) comparing children placed in kinship and non-kinship homes on safety, permanency, and well-being outcomes concluded that those placed with kin fared better on several outcomes, including for example, behavioral problems, adaptive behaviors, and well-being. The authors' caution, however, that such findings did not control for baseline behavioral functioning and caregiver reports may be biased, particularly among kinship caregivers. In the current study, baseline functioning on conduct and emotional problems was controlled for, which may have influenced the non-significant finding. Furthermore, few studies have investigated the impact of placement type on outcomes over time (Winokur et al., 2014); therefore, it is possible that differences in behavior might diminish over time especially among those children in stable placements.

Regarding foster family variables measured at baseline, foster caregiver training and years of experience were also non-significant predictors. An empirical review (Festinger & Baker, 2013) concluded that there is a lack of evidence regarding the effectiveness of current foster parent training programs. While the typical training received (e.g., PRIDE) may provide important information, supplemental training for dealing with behavioral difficulties is likely needed (Chamberlain et al., 2008; Nash & Flynn, 2009). Such was the case in the current study in that foster parent training was not specific to changing child behaviors. Alternatively, other variables (e.g., caregiver characteristics) may have mediated the impact of these variables. For example, positive parenting may transcend the knowledge that comes from training and years of experience (Sinclair & Wilson, 2003). Finally, the measures of training and experience used in the current study were limited in that they did not control for the quality or effectiveness of foster caregivers.

Considering predictors measured across the 4-year period following baseline, significant variables were child receiving treatment, internal assets, number of children in the home, positive parenting, and changes in caregiver. Number of years receiving treatment predicted less adaptive functioning. While we were lacking information with regard to the reason services were accessed and the severity of the issue(s), it is likely that children who remained in treatment for longer periods were the ones struggling the most with such difficulties as conduct or emotional problems. These children were also experiencing greater conduct and emotional problems at baseline as evidenced by significant correlations between baseline conduct problems and child receiving treatment ($\rho(313) = .37, p < .01$) and baseline emotional problems and child receiving treatment ($\rho(312) = .32, p < .001$). However, to further clarify this relationship, it will be important for future research to incorporate additional information including the specific reasons for accessing services from a mental health professional.

Regarding developmental assets, our hypothesis was partially confirmed in that greater internal assets predicted behavioral resilience for conduct problems. These findings are in line with research conducted with community and foster care samples (Scales et al., 2000) and suggest that supporting a child's development in multiple domains is beneficial to their functioning. For children in child welfare, it would seem important to strengthen identified assets and put resources in place to promote assets that the child does not have. Surprisingly, external assets did not significantly predict behavioral resilience. One explanation may be that other included variables mediated the relationship between external assets and the outcomes. Another possibility might be the relevance of the external asset items to the current sample, which refer to influences outside of the home (e.g., caring neighborhood, participation in sports/clubs). Such variables may not be as salient for younger children as much of their time is spent in the home.

Furthermore, our hypothesis that contact with biological parents would predict membership to a resilient trajectory was not confirmed. Previous research has indicated that regular and consistent quality contact with biological parents is associated with more adaptive child outcomes as this enables the preservation of key attachment relationships (Fernandez, 2006). However, in the current study, the variable assessing contact with biological parents did not capture the quality of such contact, but rather the frequency. Therefore, it is possible that this variable might not have had an impact on child behavioral resilience if the quality of such interaction were low.

Turning to foster family variables, a greater number of children in the home decreased the odds of resilient functioning for conduct problems. Studies investigating the impact of household size on foster child outcomes are scarce, but we can speculate that more children in the home leaves caregivers less time to devote to each child individually. The child may not have an opportunity to develop a meaningful relationship with the caregiver, resulting in behavioral difficulties or the exacerbation of pre-existing problems. Also, caring for additional children puts a strain on the psychosocial, health, and financial resources of the foster caregiver (Barth et al., 2008), which might lead to a reduction in parenting quality.

Our hypothesis was partially confirmed in that positive parenting increased the odds of resilient functioning on conduct problems. Research has indicated that a positive caregiver-child relationship is critical to child well-being in out-of-home care (Cheung et al., 2011; Legault et al., 2006). For maltreated children, living in a supportive and high-quality family environment can work to buffer the negative effects of such experiences (Masten & Shaffer, 2006). However, positive parenting was not significantly associated with emotional problems. The measure of positive parenting did not assess the quality of these caregiver-child interactions, but rather their frequency. It is likely that the quality of the caregiver-child attachment relationship has more of an impact on the child's emotional well-being rather than the frequency of positive interactions.

Finally, a greater number of changes in caregiver across the study period significantly reduced the likelihood of a child following a *No emotional problems* (i.e., resilient trajectory). This speaks to the detrimental impact of disruptions in caregivers. Children who lack a consistent caregiver experience a host of negative outcomes (e.g., internalizing/externalizing behaviors, attachment disorder), and multiple caregiver changes are common among children in foster care (Oosterman et al., 2007; Proctor et al., 2010). However, such a relationship might be bi-directional, such that a child's problematic behaviors could lead to caregiver instability (Proctor et al., 2010). This is possible in the current study, given that child behavior and changes in caregiver were measured concurrently; however, this implies that these variables continue to influence one another over time.

Study Limitations

The current study had several limitations worth noting. First, we are limited in our ability to identify causal relationships. In particular, the stability of the placement and outcome measures as well as the correlational nature of the analyses contributed to this limitation. Second, the AAR does not collect information on the socio-economic status of the foster families, limiting the generalizability of the findings. However, the AAR is completed by an estimated 90% of intended children and youth in a given year giving the data a high degree of provincial representativeness. Third, we relied on caregiver and worker reports for predictor and outcome variables, thus reporting biases may have been present (e.g., social desirability). Furthermore, it is possible that our measure of positive parenting was influenced by the child's current behavioral functioning such that those children with fewer problems elicited greater positive parenting. Fourth, while the adverse life experiences scale captured maltreatment and other adversities, we were unable to investigate the severity and chronicity of these experiences due to limitations in the data set. Also, due to data set limitations, we were unable to track the reasons for placement changes the children experienced prior to or during the study period. This should be considered when interpreting the study findings. Finally, it is important to note that we focused on behavioral resilience due to research indicating that a number of children in out-of-home care struggle with behavioral difficulties. Results should be interpreted with an understanding that they are part of a broader process that encompasses multiple domains and competencies.

Study Implications

The study findings reveal that examining behavioral outcomes over time among children in child welfare is important, given that distinctive groups of children were found, indicating heterogeneity among this population. While a considerable number of children were behaviorally resilient over time (58.6–64.2%), it is important to keep in mind that the focus was on one domain of functioning (i.e., behavioral). Therefore, the results need to be interpreted in terms of a broader context where children in out-of-home care might have varying levels of functioning across other equally important domains (e.g., educational, social, cognitive). In addition, our findings indicate the importance of adapting a developmental perspective when assessing outcomes of children in out-of-home care given that key developmental processes may be disrupted upon removal from the family home.

The current study also identified a number of variables that promote behavioral resilience. These variables are static and dynamic and cut across various contexts (i.e., within the child, within the foster family, with regard to the child welfare experience), emphasizing the importance of considering child functioning within an ecological model. With regard to child welfare practice, such findings indicate that maltreated children in out-of-home care require supports across multiple contexts (e.g., school, home) and from multiple individuals with whom they interact (e.g., foster caregiver, teachers, child welfare worker). Moreover, these supports need to be evaluated on a regular basis to ensure that both a child's strengths and weaknesses are addressed, given the current findings indicating stability of adaptive and maladaptive behaviors over time. Targeting specific strengths and difficulties within a child's annual plan of care would likely contribute to improved outcomes. Finally, the findings indicate it is important to pay close attention to the interrelationships among individuals within these contexts (e.g., foster caregiver and biological parents) as such relationships likely have an impact on a child's behavior as well.

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