

8-1-2020

## **Social assistance and trajectories of child mental health problems in Canada: evidence from the National Longitudinal Survey of Children and Youth**

Jinette Comeau

*King's University College at Western University Canada, jcomeau5@uwo.ca*

Laura Duncan

*McMaster University*

Katholiki Georgiades

*McMaster University*

Li Wang

*McMaster University*

Michael H. Boyle

*McMaster University*

Follow this and additional works at: <https://ir.lib.uwo.ca/paedpub>

---

### **Citation of this paper:**

Comeau, Jinette; Duncan, Laura; Georgiades, Katholiki; Wang, Li; and Boyle, Michael H., "Social assistance and trajectories of child mental health problems in Canada: evidence from the National Longitudinal Survey of Children and Youth" (2020). *Paediatrics Publications*. 992.

<https://ir.lib.uwo.ca/paedpub/992>



# Social assistance and trajectories of child mental health problems in Canada: evidence from the National Longitudinal Survey of Children and Youth

Jinette Comeau<sup>1,2</sup> · Laura Duncan<sup>3,4,5</sup> · Katholiki Georgiades<sup>3,4</sup> · Li Wang<sup>3,4</sup> · Michael H. Boyle<sup>3,4</sup>

Received: 11 October 2019 / Accepted: 4 February 2020 / Published online: 2 March 2020  
© The Canadian Public Health Association 2020

## Abstract

**Objectives** To examine the link between stability and change in social assistance (SA) use and children's mental health trajectories to better understand whether social policies targeted at low-income families might be an effective population-based mechanism for preventing mental health problems among children at risk.

**Methods** The National Longitudinal Survey of Children and Youth ( $N = 8981$ ) is used to classify children into 5 categories based on their family's pattern of SA use from age 4–5 to 10–11: always or never on SA, a single transition on or off SA, or fluctuations on and off SA. Latent growth modelling is used to compare trajectories of emotional and behavioural problems among children with different patterns of SA exposure to their counterparts never on SA over this same time period.

**Results** Child emotional and behavioural problems are exacerbated over time in accordance with patterns of SA use: chronic SA use (behavioural) and moving onto SA (emotional and behavioural). These differential rates of change result in mental health disparities at age 10–11 that were not present at age 4–5. Children exposed to SA when they were age 4–5 but subsequently moved off continue to demonstrate elevated levels of emotional and behavioural problems at age 10–11.

**Conclusions** Successful social policies and interventions will require understanding the specific mechanisms through which SA undermines child mental health and how programs can be modified to reduce its negative consequences.

## Résumé

**Objectifs** Examiner le lien entre la stabilité et le changement dans le recours à l'aide sociale (AS) et les trajectoires de santé mentale des enfants pour mieux comprendre si les politiques sociales qui ciblent les familles à faible revenu pourraient constituer un mécanisme populationnel efficace pour prévenir les troubles de santé mentale chez les enfants à risque.

**Méthode** L'Enquête longitudinale nationale sur les enfants et les jeunes ( $N = 8\,981$ ) a servi à classer les enfants en 5 catégories fondées sur les tendances de recours à l'AS de leurs familles entre l'âge de 4 et 5 ans et de 10 et 11 ans : toujours ou jamais dépendu de l'AS; transition unique (AS commencée ou quittée une seule fois); ou fluctuations (AS commencée et quittée plusieurs fois). La modélisation à courbe de croissance latente a servi à comparer les trajectoires des problèmes affectifs et comportementaux d'enfants ayant différentes tendances d'exposition à l'AS à leurs homologues n'ayant jamais dépendu de l'AS sur le même intervalle.

---

**Electronic supplementary material** The online version of this article (<https://doi.org/10.17269/s41997-020-00299-1>) contains supplementary material, which is available to authorized users.

---

✉ Jinette Comeau  
jcomeau5@uwo.ca

<sup>1</sup> Department of Sociology, King's University College at Western University, London, ON, Canada

<sup>2</sup> Children's Health Research Institute, Division of Children's Health and Therapeutics, Lawson Health Research Institute, Western University, London, ON, Canada

<sup>3</sup> Offord Centre for Child Studies, McMaster University, Hamilton, ON, Canada

<sup>4</sup> Department of Psychiatry and Behavioural Neurosciences, McMaster University, Hamilton, ON, Canada

<sup>5</sup> Department of Health Research Methods, Evidence & Impact (formerly Clinical Epidemiology & Biostatistics), McMaster University, Hamilton, ON, Canada

**Résultats** Les problèmes affectifs et comportementaux des enfants sont exacerbés en fonction des tendances de recours à l'AS : recours chronique à l'AS (problèmes comportementaux) et accession à l'AS (problèmes affectifs et comportementaux). Ces taux de changement différentiels entraînent des disparités d'état de santé mentale à l'âge de 10 ou 11 ans qui n'étaient pas présents à l'âge de 4 ou 5 ans. Les enfants exposés à l'AS vers 4 ou 5 ans, mais qui en sont sortis continuent néanmoins de manifester des niveaux élevés de problèmes affectifs et comportementaux à l'âge de 10 ou 11 ans.

**Conclusions** Pour que les politiques et les interventions sociales soient efficaces, il faut comprendre les mécanismes spécifiques par lesquels l'AS nuit à la santé mentale des enfants et les modifications à apporter aux programmes pour en réduire les conséquences négatives.

**Keywords** Children · Mental health disparities · Poverty · Social assistance · Latent growth modelling

**Mots-clés** Enfants · Disparités d'état de santé mentale · Pauvreté · Aide sociale · Modélisation à courbe de croissance latente

## Introduction

With nearly 14% of children in countries such as Canada experiencing emotional or behavioural problems and few accessing specialized mental health services, identifying opportunities to prevent them at the population level is an important international policy focus (Waddell et al. 2014).

It is well established that economically disadvantaged children are at elevated risk for mental health problems (Reiss 2013). Although social assistance (SA) programs that provide income support should be effective at reducing health disparities related to economic disadvantage (Marmot 1999), evidence in this regard for children is limited, especially in Canada where only three studies have been conducted, restricted to data from Ontario (Offord et al. 1987), Alberta (Spady et al. 2001), and Québec (De Civita et al. 2007). Childhood is a critical period of development, and adversity experienced at this time is known to have negative consequences for outcomes in adulthood (Maggi et al. 2010). As many provincial SA programs are undergoing reforms with proposed changes that will restrict eligibility and reduce benefits (Government of Ontario 2018; Edmonton Social Planning Council 2019; Government of Saskatchewan 2019), evidence on the extent to which SA use is associated with children's mental health is needed to inform social policy and ensure that economically disadvantaged children have optimal environments to support their development.

In Canada, SA is a provincial jurisdiction that serves as a safety net by providing cash transfers to families experiencing extreme economic disadvantage (Government of Canada 2016). Across all provinces, eligibility for SA is based on financial need determined using a means test. Benefits are calculated based on the number of beneficiaries in a household and the cost of living in a given jurisdiction. Assistance may only be granted when the recipient is making reasonable effort to obtain employment; otherwise, they are subject to sanctions on their benefits. All provinces introduced reforms between 1994 and 1998 in an attempt to reduce SA participation rates.

Although the intensity of reforms varied across provinces, the direction of change was consistent, with benefits decreasing, eligibility requirements tightening, and pressure to participate in employability programs increasing (Boychuk 2015). Contemporarily, additional reforms are being proposed that will further restrict eligibility, reduce benefits, and increase work requirements (Government of Ontario 2018; Edmonton Social Planning Council 2019; Government of Saskatchewan 2019).

A limited body of evidence suggests that SA use elevates children's risk for mental health problems, including conduct/aggression problems (De Civita et al. 2007), depression/anxiety (Spady et al. 2001), and composite measures that represent the amalgamation of various child mental health problems (Offord et al. 1987; Lohman et al. 2004). As an indicator of economic disadvantage, SA may influence children's mental health directly through material deprivation. Additionally, the public perception of SA is negative, which exposes recipients to stigma and discrimination (Tach and Edin 2017) that could undermine children's mental health. SA may also influence children's mental health indirectly through parenting behaviours. For example, evidence suggests that parents in working poor families had higher educational attainment and better family functioning than parents in poor families dependent on SA (Williamson and Salkie 2005).

Conceptual and methodological limitations in the current literature need to be addressed if we are to get a better understanding of the association between SA and children's mental health for policy purposes. Notably, most studies have relied on cross-sectional data and only two have attempted to disaggregate the influence of different patterns of SA use on child mental health (Moore et al. 2002; Yoshikawa and Seidman 2001). Considering different patterns of SA use is important because they may have an association with children's mental health that is distinct from SA measured at a single occasion. For example, movement off SA may improve child mental health. In contrast, the effects of chronic stress emanating from long-term SA reliance may accumulate over time as children's

physiological response system becomes increasingly depleted (McEwen 2000). This suggests that mental health disparities between children in families always vs. never on SA may be exacerbated over time. To date, studies have not used the data or analytical techniques required to uncover these widening disparities if they exist. Growth curve modelling with longitudinal data, for example, provides an opportunity to examine whether there are differences in the rate of change of children's mental health problems that result in larger disparities at later vs. earlier points in their development.

Studies that consider stable and changing patterns of SA use are also characterized by limitations. Yoshikawa and Seidman (2001) report that internalizing and externalizing problems in children exposed to continuous SA use did not differ from their counterparts with temporary exposure. The authors do not compare continuous recipients with those never on SA; we believe that capturing the effects of continuous SA use on children's mental health requires isolating those who are most vs. least disadvantaged, an approach we adopt in this study. Moore et al. (2002) report that children in families that move onto SA have more mental health problems at age 10–11 than their counterparts never on SA. However, children in families that always vs. never receive SA did not differ. Limitations related to this study include the use of a composite measure of mental health problems which may obscure the effects of SA on specific types of mental health problems (i.e., emotional vs. behavioural problems), the limited time frame for assessing exposure to SA (4 years), and linking children's mental health outcomes to a single occasion when they are 10–11. We aim to extend these findings by (1) distinguishing between emotional and behavioural problems; (2) assessing patterns of SA use over an 8-year period; and (3) relating patterns of SA use to children's trajectories of mental health problems rather than an outcome measured at one occasion.

Although families receiving SA often experience poverty and other related disadvantages (Williamson and Salkie 2005), its association with children's mental health may be independent of these confounding influences. SA represents a program of "last resort" for families that have exhausted all other avenues for financial assistance (Government of Canada 2016). This suggests that families receiving SA may have specific characteristics that place children at risk for mental health problems and that distinguish them from working poor families not on SA, including lone parenthood, low parental education, early childbearing, and family dysfunction (Williamson and Salkie 2005). In Canada, immigrant background and rural residence are important demographic characteristics that are also associated with children's risk for mental health problems (Georgiades et al. 2019). To the extent that these confounding influences account for some or all of the association between SA and children's mental health, this association will be reduced when including these variables in our models.

We examine the association between stable and changing patterns of SA use and children's trajectories of mental health to test the following hypotheses: (1) Over time, children in families that always receive SA, move onto SA, or fluctuate on and off SA will experience a greater increase in mental health problems than their counterparts who never receive SA; (2) the rate of change in mental health problems among children in families who move off SA will be similar to their counterparts who never receive SA; and (3) the differential rate of change in mental health problems associated with different patterns of SA use (except moving off) will lead to larger disparities in child mental health problems at age 10–11 vs. 4–5.

## Methods

### Sample

The National Longitudinal Survey of Children and Youth (NLSCY; Statistics Canada 2007) was implemented in 1994/1995 and is a prospective study of 22,831 children aged 0–11 nested in 13,439 families, with a maximum of 4 children selected at random for inclusion in the survey. Information was provided by the person most knowledgeable (PMK) of the child, usually a mother. Of the 22,831 children enlisted at baseline, 16,903 were selected for biennial follow-up interviews until 2008/2009 when the NLSCY was discontinued. We restricted our analyses to 8981 children living in 6875 families who were aged 4–5 or less at baseline, allowing us to follow three cohorts of children across 4 consecutive cycles when they were aged 4–5, 6–7, 8–9, or 10–11, the ages at which their mental health was assessed. Supplementary Table 1 outlines the structure of the NLSCY and our selected sample. Of the 8981 children included in our sample, 6317 (70.3%) participated in all 4 assessment points. Compared with these children, the 2664 children who missed 1 or more assessment points were more likely to be exposed to poverty, lone parenthood, family dysfunction, and SA at baseline.

### Variables

**Emotional and behavioural problems** When children were between the ages of 4–11, PMKs rated their emotional and behavioural problems on a 3-point scale (0 = never/not true; 1 = sometimes/somewhat true; 2 = often/very true). Emotional problems were assessed using 7 items related to depression/anxiety such as "is unhappy, sad, or depressed" and "is nervous, high-strung, or tense". Behavioural problems were assessed using 6 items related to aggression such as "gets into many fights" and "is cruel, bullies, or is mean to others". Items were summed to create a scale ranging from 0 to 14 for emotional problems ( $\alpha = 0.760$ ) and 0–12 for behavioural

problems ( $\alpha = 0.738$ ). The full list of emotional and behavioural items and additional details regarding the validation of the scales are available (Statistics Canada 2007).

**Social assistance** Represents families who received income from a government SA program in the 12 months prior to their interview (no = 0; yes = 1). If the family received SA at all or none of the four assessments when children were aged 4–5 to 10–11, children were classified as always or never on SA, respectively. If the family did not receive SA when children were aged 4–5 but received it at a later assessment, children were classified as moving onto SA. The opposite procedure was used to classify children as moving off SA. Children were classified in the fluctuating SA category if their family experienced multiple spells on and off it during the study period.

**Time-varying covariates** The low-income cut-off (LICO) established by Statistics Canada identifies a poverty threshold for a family of a given size living in a community of a given size. It indicates whether total household income is less than or equal to the LICO (1) or above it (0). Lone-parent status distinguishes between lone-parent families (1) and two-parent families (0). Parental education represents the highest level of schooling obtained by either parent (range 0–20 years). Rural residence is based on population size and density (urban = 0; rural = 1). The family dysfunction scale includes 12 items with 4 response categories (0 = strongly agree; 1 = agree; 2 = disagree; 3 = strongly disagree) that measure various aspects of family functioning, including the quality of relationships, problem solving, communication, and affective involvement. Items were summed to create a scale ranging from 0 to 36, a higher score indicating more family dysfunction ( $\alpha = 0.88$ ). The full list of items and additional details regarding the validation of the family functioning scale are available (Statistics Canada 2007).

**Time-invariant covariates** All models were adjusted for immigrant background (both parents born in Canada = 0; one or both parents born outside of Canada = 1), the child's biological mother's age at birth (range 14–54 years), province of residence at baseline to account for differences in the structure of SA programs, and the child's sex (0 = male; 1 = female) to account for sex-related differences in the risk for behavioural (boys) and emotional (girls) problems (Zahn-Waxler et al. 2008).

## Analysis

We used latent growth modelling to compare initial levels, rates of change, and end levels of emotional and behavioural problems among children in the always, move on, move off, or fluctuating SA categories to their counterparts never on SA

(Bollen and Curran 2006). In this type of analysis, the intercept can be specified to represent levels of emotional and behavioural problems at age 4–5 (initial levels) or 10–11 (end levels). The slope represents the rate of change in emotional and behavioural problems from age 4–5 to 10–11 and its value is the same regardless of how the intercept is specified. Whereas time-invariant covariates were included as predictors of the intercept and slope growth parameters, repeated measures of time-varying covariates were included as contemporaneous predictors of children's mental health outcomes to control for concomitant changes in their family characteristics alongside changes in SA use.

All models were estimated in MPlus version 8.3 (Muthén and Muthén 2019). Full information maximum likelihood (FIML) was used to handle missing data, a model-based procedure that estimates parameters on the basis of the available complete data as well as the implied values of the missing data given the observed data (Schlomer et al. 2010). FIML was implemented with robust standard errors to account for the complex survey design and a sandwich estimator was used to adjust for the clustering of children within families. All models were estimated with sampling weights to account for the unequal probability of selection and attrition of respondents over time (Statistics Canada 2007).

## Results

Table 1 presents the distribution of children and descriptive characteristics across the SA categories by child age. Between the ages of 4–5 and 10–11, the majority (80.4%) of children are never exposed to SA, whereas 2.9% are always exposed to it. With respect to change in SA use, 8.5% move off it, 5.4% fluctuate on and off it, and 2.8% move onto it. At age 4–5, levels of emotional and behavioural problems, lone parenthood, poverty, and family dysfunction are generally lowest for families never on SA. Whereas levels of lone parenthood and poverty increase in families who move onto SA, the opposite is observed for those who move off SA. Among families that fluctuate on and off SA, poverty decreases but lone parenthood increases.

Table 2 presents results from latent growth models that examine the association between patterns of SA use and children's trajectories of emotional and behavioural problems, unadjusted and adjusted for various socio-economic and demographic characteristics. Figures 1 and 2 illustrate children's trajectories of emotional and behavioural problems as a function of their family's pattern of SA use. The association between patterns of SA use and trajectories of emotional and behavioural problems is reduced after introducing covariates in our models, but significant differences from children never on SA remain.

**Table 1** Descriptive characteristics of children from age 4–5 to 10–11 by pattern of social assistance use

|                    | Mental health outcomes |                      | Time-varying covariates     |                   |                 |                    | Time-invariant covariates |   |                           |  |
|--------------------|------------------------|----------------------|-----------------------------|-------------------|-----------------|--------------------|---------------------------|---|---------------------------|--|
|                    | Emotional problems     | Behavioural problems | Parental years of education | Income ≤ LICO (%) | Lone parent (%) | Family dysfunction | Rural residence (%)       | One or both parents born outside Canada (%) | PMK age at birth of child |  |
| Always (2.9%)      |                        |                      |                             |                   |                 |                    |                           |   |                           |  |
| Age 4–5            | 2.05 (1.94)            | 1.26 (1.99)          | 10.75 (1.80)                | 92.5              | 76.4            | 11.70 (6.41)       | 11.2                      | 49.6  | 26.02 (5.81)              |  |
| Age 6–7            | 2.57 (2.48)            | 1.97 (2.41)          | 10.95 (1.73)                | 96.0              | 75.3            | 10.64 (4.90)       | 6.3                       |   |                           |  |
| Age 8–9            | 2.74 (2.48)            | 1.63 (2.02)          | 11.14 (2.05)                | 91.8              | 72.9            | 10.59 (4.36)       | 9.5                       |   |                           |  |
| Age 10–11          | 2.48 (2.43)            | 1.54 (2.34)          | 11.48 (2.21)                | 91.8              | 71.1            | 10.03 (4.64)       | 8.3                       |   |                           |  |
| Never (80.4%)      |                        |                      |                             |                   |                 |                    |                           |   |                           |  |
| Age 4–5            | 1.84 (1.92)            | 1.61 (1.91)          | 13.68 (2.30)                | 13.0              | 7.4             | 7.84 (5.04)        | 15.1                      | 24.3  | 29.43 (4.73)              |  |
| Age 6–7            | 2.16 (2.14)            | 1.36 (1.75)          | 13.76 (2.24)                | 10.0              | 9.2             | 8.08 (4.92)        | 13.4                      |   |                           |  |
| Age 8–9            | 2.46 (2.28)            | 1.30 (1.74)          | 14.06 (2.27)                | 8.5               | 11.3            | 8.32 (4.94)        | 13.0                      |   |                           |  |
| Age 10–11          | 2.41 (2.27)            | 1.08 (1.59)          | 14.36 (2.21)                | 9.2               | 12.4            | 8.13 (4.92)        | 12.5                      |   |                           |  |
| Move on (2.8%)     |                        |                      |                             |                   |                 |                    |                           |   |                           |  |
| Age 4–5            | 2.01 (1.96)            | 1.88 (2.11)          | 12.35 (2.17)                | 32.3              | 22.5            | 8.98 (5.43)        | 21.4                      | 29.4  | 27.32 (5.32)              |  |
| Age 6–7            | 2.48 (2.48)            | 1.93 (2.28)          | 12.29 (1.98)                | 49.4              | 29.6            | 10.36 (6.01)       | 16.5                      |   |                           |  |
| Age 8–9            | 2.94 (2.69)            | 1.65 (2.10)          | 12.31 (2.17)                | 49.6              | 40.8            | 9.78 (4.98)        | 18.6                      |   |                           |  |
| Age 10–11          | 3.70 (3.56)            | 1.74 (2.43)          | 12.85 (2.47)                | 56.6              | 50.9            | 8.90 (5.43)        | 19.0                      |   |                           |  |
| Move off (8.5%)    |                        |                      |                             |                   |                 |                    |                           |   |                           |  |
| Age 4–5            | 2.34 (2.15)            | 1.81 (1.99)          | 11.83 (1.91)                | 77.2              | 59.7            | 8.81 (5.51)        | 12.5                      | 31.9  | 25.55 (5.19)              |  |
| Age 6–7            | 2.72 (2.45)            | 1.76 (2.08)          | 12.16 (1.90)                | 62.5              | 49.4            | 8.75 (4.91)        | 11.2                      |   |                           |  |
| Age 8–9            | 3.23 (2.66)            | 1.65 (2.23)          | 12.51 (1.98)                | 41.8              | 44.6            | 8.86 (5.26)        | 13.6                      |   |                           |  |
| Age 10–11          | 3.09 (2.72)            | 1.35 (1.99)          | 13.14 (2.25)                | 34.3              | 40.7            | 8.54 (4.79)        | 13.2                      |   |                           |  |
| Fluctuating (5.4%) |                        |                      |                             |                   |                 |                    |                           |   |                           |  |
| Age 4–5            | 2.17 (2.27)            | 1.64 (2.19)          | 12.19 (1.76)                | 52.3              | 35.6            | 8.82 (5.80)        | 15.3                      | 32.7  | 27.29 (5.61)              |  |
| Age 6–7            | 2.70 (2.33)            | 1.42 (2.03)          | 12.14 (1.92)                | 54.8              | 48.0            | 9.45 (5.23)        | 15.0                      |   |                           |  |
| Age 8–9            | 3.13 (2.62)            | 1.40 (1.91)          | 12.37 (1.95)                | 56.6              | 52.2            | 9.63 (5.60)        | 16.3                      |   |                           |  |
| Age 10–11          | 2.83 (2.65)            | 1.25 (1.90)          | 12.78 (2.14)                | 44.9              | 48.9            | 9.67 (5.68)        | 12.6                      |   |                           |  |

Notes: (1) LICO Statistics Canada's low-income cut-off; (2) PMK person most knowledgeable; (3) estimates are means with standard deviations in parentheses unless noted otherwise

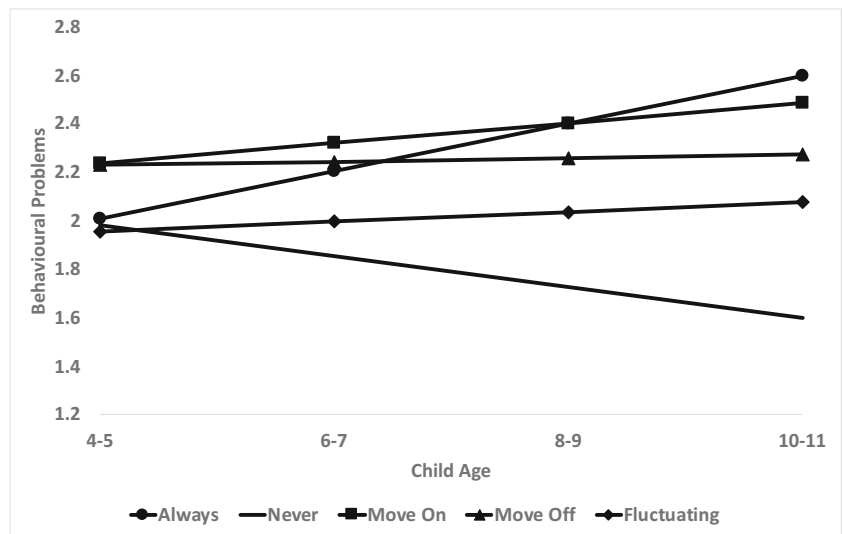
**Table 2** Latent growth models estimating trajectories of behavioural and emotional problems by pattern of SA use, unadjusted and adjusted for confounding influences

|   | Behavioural problems |                   | Emotional problems |                   |
|---|----------------------|-------------------|--------------------|-------------------|
|   | Unadjusted           | Adjusted          | Unadjusted         | Adjusted          |
| <b>Always</b>                                     |                      |                   |                    |                   |
| Intercept at age 4–5                              | 0.028 (0.251)        | 0.028 (0.254)     | 0.170 (0.200)      | −0.163 (0.199)    |
| Linear slope                                      | 0.104*** (0.029)     | 0.098** (0.031)   | 0.008 (0.057)      | 0.044 (0.058)     |
| Intercept at age 10–11                            | 0.649** (0.231)      | 0.615** (0.238)   | 0.219 (0.260)      | 0.100 (0.283)     |
| <b>Move on</b>                                    |                      |                   |                    |                   |
| Intercept at age 4–5                              | 0.285 (0.196)        | 0.253 (0.190)     | −0.030 (0.194)     | −0.148 (0.183)    |
| Linear slope                                      | 0.046 (0.050)        | 0.042 (0.048)     | 0.158* (0.077)     | 0.167* (0.077)    |
| Intercept at age 10–11                            | 0.559* (0.251)       | 0.506* (0.232)    | 0.915* (0.458)     | 0.855* (0.437)    |
| <b>Move off</b>                                   |                      |                   |                    |                   |
| Intercept at age 4–5                              | 0.296** (0.110)      | 0.247* (0.116)    | 0.493*** (0.137)   | 0.194 (0.146)     |
| Linear slope                                      | 0.011 (0.022)        | 0.007 (0.023)     | 0.034 (0.029)      | 0.060* (0.030)    |
| Intercept at age 10–11                            | 0.363** (0.122)      | 0.289** (0.117)   | 0.697*** (0.169)   | 0.552*** (0.164)  |
| <b>Fluctuating</b>                                |                      |                   |                    |                   |
| Intercept at age 4–5                              | −0.006 (0.161)       | −0.026 (0.153)    | 0.360* (0.170)     | 0.216 (0.173)     |
| Linear slope                                      | 0.030 (0.027)        | 0.020 (0.027)     | 0.019 (0.039)      | 0.019 (0.041)     |
| Intercept at age 10–11                            | 0.175 (0.133)        | 0.092 (0.130)     | 0.474* (0.204)     | 0.332 (0.204)     |
| <b>Time-invariant covariates</b>                  |                      |                   |                    |                   |
| <b>Child sex (female)</b>                         |                      |                   |                    |                   |
| Intercept at age 4–5                              |                      | −0.473*** (0.059) |                    | −0.112 (0.063)    |
| Linear slope                                      |                      | 0.018 (0.012)     |                    | 0.019 (0.016)     |
| Intercept at age 10–11                            |                      | −0.367*** (0.056) |                    | −0.275 (0.122)    |
| <b>One or both parents born outside of Canada</b> |                      |                   |                    |                   |
| Intercept at age 4–5                              |                      | −0.464*** (0.084) |                    | −0.113 (0.094)    |
| Linear slope                                      |                      | 0.032 (0.017)     |                    | −0.027 (0.024)    |
| Intercept at age 10–11                            |                      | −0.269*** (0.083) |                    | 0.000 (0.082)     |
| <b>PMK age at birth of child</b>                  |                      |                   |                    |                   |
| Intercept at age 4–5                              |                      | −0.009 (0.007)    |                    | −0.035*** (0.007) |
| Linear slope                                      |                      | −0.001 (0.001)    |                    | 0.002 (0.002)     |
| Intercept at age 10–11                            |                      | −0.017** (0.006)  |                    | −0.024** (0.009)  |
| <b>Time-varying covariates</b>                    |                      |                   |                    |                   |
| Parental education                                |                      | −0.002 (0.010)    |                    | 0.013 (0.012)     |
| Income ≤ LICO                                     |                      | 0.013 (0.056)     |                    | −0.071 (0.063)    |
| Lone parent                                       |                      | 0.080 (0.071)     |                    | 0.302*** (0.077)  |
| Family dysfunction                                |                      | 0.027*** (0.003)  |                    | 0.042*** (0.005)  |
| Rural residence                                   |                      | −0.004 (0.049)    |                    | −0.108* (0.056)   |
| <b>Residual variances</b>                         |                      |                   |                    |                   |
| Intercept at age 4–5                              | 1.996*** (0.109)     | 1.839*** (0.105)  | 1.857*** (0.131)   | 1.725*** (0.127)  |
| Linear slope                                      | 0.033*** (0.006)     | 0.033*** (0.005)  | 0.065*** (0.007)   | 0.062*** (0.007)  |
| Intercept at age 10–11                            | 1.808*** (0.131)     | 1.705*** (0.126)  | 3.587*** (0.187)   | 3.405*** (0.179)  |

\* $p \leq 0.05$ \*\* $p \leq 0.01$ \*\*\* $p \leq 0.001$ 

Notes: (1) *LICO* Statistics Canada's low-income cut-off; (2) *PMK* person most knowledgeable; (3) children in the always, move on, move off, and fluctuating categories are compared with those never on SA; (4) models additionally controlled for province of residence; (5) coefficients are unstandardized; (6) standard errors are in parentheses

**Fig. 1** Trajectories of behavioural problems by pattern of social assistance use



Notably, with the exception of children who move off of SA (0.247;  $p \leq 0.05$ ), there are no differences in behavioural problems at age 4–5 among children in the always, move on, and fluctuating categories compared with their counterparts never on SA. Compared with children never on SA, children in families always on SA experience a greater increase in behavioural problems over time (0.098;  $p \leq 0.01$ ), which leads to greater levels of behavioural problems at age 10–11 (0.615;  $p \leq 0.01$ ). Children who move onto (0.506;  $p \leq 0.05$ ) and those who move off (0.289;  $p \leq 0.01$ ) SA also exhibit higher levels of behavioural problems at age 10–11 compared with their counterparts never on SA.

At age 4–5, there are no differences in emotional problems between children in all of the SA categories and their counterparts never on SA in the adjusted models. Compared with children never on SA, children who move onto (0.167;  $p \leq 0.05$ ) or off (0.060;  $p \leq 0.05$ ) SA experience a greater increase in emotional problems over time, which leads to

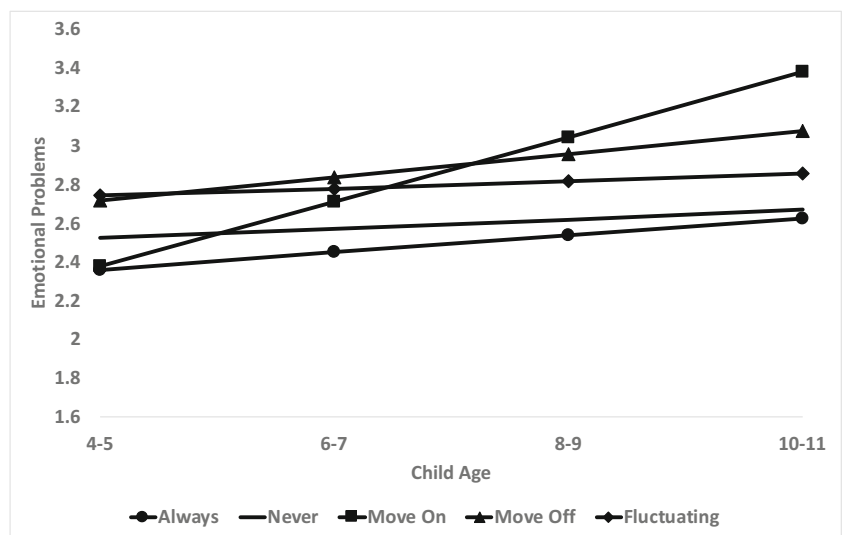
greater levels of emotional problems at age 10–11 (move on 0.855,  $p \leq 0.05$ ; move off 0.552,  $p \leq 0.001$ ).

The residual variances at the bottom of Table 2 indicate that significant variation in the intercepts and slopes of behavioural and emotional problems remains to be explained.

### Discussion

Our results suggest that SA is not effective at reducing disparities in children’s mental health and may actually exacerbate them. Consistent with hypotheses 1 and 3, chronic exposure and moving onto SA appear to have serious implications for children’s behavioural and emotional problems because they increase at a greater rate compared with their counterparts never on SA, leading to larger disparities at age 10–11 vs. 4–5. Although previous research demonstrates that movement onto SA undermines children’s mental health (Moore et al. 2002), no

**Fig. 2** Trajectories of emotional problems by pattern of social assistance use





other studies report similar findings for chronic SA use. This may be due to the comparison groups in their analysis (i.e., persistent vs. temporary exposure; Yoshikawa and Seidman 2001), the limited time frame SA was assessed, or the amalgamation of emotional and behavioural problems into a composite measure (Moore et al. 2002). Our concern is that these methodological limitations have muted the influence of chronic SA exposure and obscured its association with children's behavioural problems, findings that have serious policy implications. Indeed, a continuation of the divergent trajectories observed in this study raise concerns about children's well-being in adulthood, with consequences for their functioning in school, work, and other domains of life (Kessler et al. 2007).

Chronic SA use exacerbated child behavioural but not emotional problems over time. Previous research suggests that the influence of persistent economic disadvantage is stronger for behavioural vs. emotional problems (Comeau and Boyle 2018), but it is not known whether these differential links with specific types of mental health problems would continue into adolescence. Emotional problems such as depression/anxiety emerge later in adolescence (Bongers et al. 2003) and, because children's mental health is measured between the ages of 4–11, it may be too early to identify any potential influence of chronic SA use on emotional problems.

Our results do not support hypothesis 2. Emotional and behavioural problems are higher at age 10–11 among children who move off SA compared with their counterparts never on SA, suggesting that exposure early in the life course may carry over to influence later mental health problems. Drawing upon literature demonstrating that economic disadvantage has a stronger influence on younger vs. older children (Duncan et al. 2012), we believe our results suggest that the timing of SA exposure may be important for understanding its association with children's mental health, highlighting the need for more longitudinal research to identify the influence of SA exposure at different points in the life course. Additionally, these results may suggest that families who move off SA do not have adequate resources to support children's mental health. Also contrary to our hypotheses is that no differences are observed between children in families that fluctuate on and off SA and those never on SA in our adjusted models. These children may experience more dramatic changes in family characteristics compared with their peers in the other SA categories, and identifying the reasons why families fluctuate on and off SA may provide a more nuanced examination of its association with children's mental health.

The mental health disparities associated with SA use observed in this study are not attributable to poverty, lone parenthood, family functioning, or other family characteristics. This suggests that there may be certain features of SA programs or the experiences of families with these

programs that exacerbate child mental health problems over time. Successful social policies and interventions will require understanding the specific mechanisms through which SA undermines child mental health and how programs can be modified to reduce its negative consequences. Evidence on adult SA recipients suggests that the work requirements, limited income benefits provided, and stigma associated with its use may contribute to its negative health consequences (Sod-Erdene et al. 2019). These implications for adults may extend to children because they create detrimental environments for their development, thus may be important avenues for policy change. Children might also benefit from social policies that reduce their length of exposure to SA but, because even previous SA use may undermine children's mental health, ensuring the economic well-being of families after SA should be considered. In light of our results that suggest a transition onto SA undermines children's mental health, social policies aimed at preventing the need for SA altogether (e.g., higher minimum wage) may be effective at supporting children's mental health. Given the importance of early childhood environments for optimal development across the life course, programs and social policies should be targeted at children in low-income families as early as possible to prevent the negative cumulative impact of SA use.

We make conceptual and methodological contributions to the literature on SA and child mental health by using nationally representative longitudinal data, considering stability and change in SA use, and using latent growth modelling to examine whether child trajectories of mental health diverge or converge as a function of their family's pattern of SA use. There are also limitations that need to be considered when interpreting our results. The non-experimental design of the NLSCY and omission of control variables (e.g., child abuse and neglect, parental substance abuse and criminality) not available in the data preclude causal inferences regarding the association between patterns of SA use and children's mental health. As with all longitudinal data, sample attrition and differences between families included vs. excluded in our sample may have biased our results. We use sampling weights to adjust for non-response over time and, given that those excluded vs. included from our sample are more disadvantaged, we believe any potential biases would mute our results not exaggerate them. The NLSCY's last cycle was in 2008/2009; thus, our results may not be relevant to current SA reforms. Future research should evaluate the effects of these reforms on children's well-being.

### Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

## References

- Bollen, K. A., & Curran, P. J. (2006). *Latent curve models: a structural equation perspective*. New Jersey: John Wiley & Sons, Inc.
- Bongers, I. L., Koot, H. M., Van der Ende, J., & Verhulst, F. C. (2003). The normative development of child and adolescent problem behavior. *Journal of Abnormal Psychology, 112*(2), 179.
- Boychuk, G. W. (2015). Federal policies, national trends, and provincial systems: a comparative analysis of recent developments in social assistance in Canada, 1990–2013. In D. Béland & P. Daigneault (Eds.), *Welfare reform in Canada: provincial social assistance in comparative perspective* (pp. 35–52). Toronto: University of Toronto Press.
- Comeau, J., & Boyle, M.H. (2018). Patterns of poverty exposure and children's trajectories of externalizing and internalizing behaviors. *Social Science and Medicine - Population Health, 4*, 86–94.
- De Civita, M., Pagani, L. S., Vitaro, F., & Tremblay, R. E. (2007). Does maternal supervision mediate the impact of income source on behavioral adjustment in children from persistently poor families? *Journal of Early Adolescence, 27*(1), 40–66.
- Duncan, G. J., Magnuson, K., Kalil, A., & Ziol-Guest, K. (2012). The importance of early childhood poverty. *Social Indicators Research, 108*, 87–98.
- Edmonton Social Planning Council (2019) 2019 Alberta provincial budget fact sheet. Available: <https://www.edmontonsocialplanning.ca/index.php/resources/digital-resources/a-espcc-documents/a06-newsletters/a06b-fact-sheets/1080-2019-alberta-budget-factsheet/file>
- Georgiades, K., Duncan, L., Wang, L., Comeau, J., Boyle, M. H., & 2014 Ontario Child Health Study Team. (2019). Six-month prevalence of mental disorders and service contacts among children and youth in Ontario: evidence from the 2014 Ontario Child Health Study. *Canadian Journal of Psychiatry, 64*(4), 246–255.
- Government of Canada. (2016). Social assistance statistical report: 2009–13. Employment and Social Development Canada. Catalogue No. SP-968-11-16. Available: <https://www.canada.ca/en/employment-social-development/services/social-assistance/reports/statistical-2009-2013.html>
- Government of Ontario. (2018). Ontario's government for the people announces compassionate wind down of basic income research project. Available: <https://news.ontario.ca/mcys/en/2018/08/ontarios-government-for-the-people-announces-compassionate-wind-down-of-basic-income-research-projec.html>
- Government of Saskatchewan. (2019). New income support program launched for people in need in Saskatchewan. Available: <https://www.saskatchewan.ca/government/news-and-media/2019/june/18/income-support-program>
- Kessler, R. C., Amminger, P. G., Aguilar-Gaxiola, S., Alonso, J., Lee, S., & Ustun, T. B. (2007). Age of onset of mental disorders: a review of recent literature. *Current Opinion in Psychiatry, 20*(4), 359–364.
- Lohman, B. J., Pittman, L. D., Levine Coley, R., & Chase-Lansdale, P. L. (2004). Welfare history, sanctions, and developmental outcomes among low-income children and youth. *The Social Service Review, 78*(1), 41–73.
- Maggi, S., Irwin, L. J., Arjumand, S., & Hertzman, C. (2010). The social determinants of early child development: an overview. *Journal of Paediatrics and Child Health, 46*, 627–635.
- Marmot, M. (1999). Acting on the evidence to reduce inequalities in health. *Health Affairs Project Hope, 18*(3), 42–44.
- McEwen, B. S. (2000). The neurobiology of stress: from serendipity to clinical relevance. *Brain Research, 886*, 172–189.
- Moore, K. A., Gleib, D. A., Driscoll, A. K., Zaslow, M. J., & Redd, Z. (2002). Poverty and welfare patterns: implications for children. *Journal of Social Policy, 31*(2), 207–227.
- Muthén, L. K., & Muthén, B. O. (2019). *Mplus User's Guide. Eighth Edition*. Los Angeles: Muthén & Muthén.
- Offord, D. R., Boyle, M. H., & Jones, B. R. (1987). Psychiatric disorder and poor school performance among welfare children in Ontario. *Canadian Journal of Psychiatry, 32*, 518–525.
- Reiss, F. (2013). Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. *Social Science & Medicine, 90*, 24–31.
- Schlomer, G. L., Bauman, S., & Card, N. A. (2010). Best practices for missing data management in counseling psychology. *Journal of Counseling Psychology, 57*(1), 1–10.
- Sod-Erdene, O., Shahidi, F. V., Ramraj, C., Hildebrand, V., & Siddiqi, A. (2019). Is social assistance boosting the health of the poor? Results from Ontario and three countries. *Canadian Journal of Public Health, 1–9*.
- Spady, D. W., Schopflocher, D. P., Svenson, L. W., & Thompson, A. H. (2001). Prevalence of mental disorders in children living in Alberta, Canada, as determined from physician billing data. *Archives of Pediatrics & Adolescent Medicine, 155*, 1153–1159.
- Statistics Canada. (2007). *Microdata user guide: National Longitudinal Survey of Children and Youth, Cycle 8*. Ottawa: Special Surveys Division.
- Tach, L., & Edin, K. (2017). The social safety net after welfare reform: recent developments and consequences for household dynamics. *Annual Review of Sociology, 43*, 541–561.
- Waddell, C., Shepherd, C., Schwartz, C., & Barican, J. (2014). *Child and youth mental disorders: prevalence and evidence-based interventions*. Vancouver: Children's Health Policy Centre, Simon Fraser University.
- Williamson, D. L., & Salkie, F. (2005). Welfare reforms in Canada. *Journal of Children and Poverty, 11*(1), 55–76.
- Yoshikawa, H., & Seidman, E. (2001). Multidimensional profiles of welfare and work dynamics: development, validation, and associations with child cognitive and mental health outcomes. *American Journal of Community Psychology, 29*(6), 907–936.
- Zahn-Waxler, C., Shirtcliff, E. A., & Marceau, K. (2008). Disorders of childhood and adolescence: gender and psychopathology. *Annual Review of Clinical Psychology, 4*, 275–303.

**Publisher's note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.