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SOCIOLOGY | REVIEW ARTICLE

Defining and measuring indicators of successful transitions for youth aging out of child welfare systems: A scoping review and narrative synthesis

Sabrina Agnihotri^{1*}, Caroline Park², Roland Jones^{1,3}, Deborah Goodman⁴ and Mitesh Patel^{1,2,3}

Abstract: Youth aging out of child welfare systems face an abrupt transition to adulthood and expectation for self-sufficiency with few supports. The current study represents a scoping review and narrative synthesis that sought to identify indicators used to measure the success of aging out youth and their corresponding methods of assessment. A database search was conducted and 150 articles were included in the review. Results revealed eight broad indicators of successful transitions, including: education, employment, basic needs, social support and relationships, conduct and victimization, health, general living skills, and resilience and psychological empowerment. As a larger category, health was broken down into five subdomains of physical, mental health symptoms, reproductive/sexual health, substance use, and access to care/service utilization. Findings highlight the need for comprehensive tools and strengths-based approaches to assessing transitional gaps earlier in the aging out process. Given the interdependency of indicator outcomes, fulsome measurement can provide a window into a youth's future concerns.

Subjects: Sociology & Social Policy; Psychological Science; Political Psychology; Health & Development; Development Policy

Keywords: child welfare; transitions; scoping review; social justice; aging out youth

1. Introduction

The number of youth within child welfare systems (CWS) has been estimated to be over 62,000 in Canada (A. Jones et al., 2015), and over 420,000 in the United States (US Department of Health and Human Services, 2019). In North America, part of the CWS mandate is to provide services that supplement or substitute parental care and supervision. Children are often placed under the care of CWS in temporary foster care, which occurs most frequently due to concerns about parental abuse or neglect. CWS provide care and support for these children until they can return safely to their parent(s), or until an alternative permanent placement is secured.

However, a large number of youth who enter CWS care do not return to their parent(s) nor do they find an alternative permanent placement. Instead, they remain in the care of CWS until they reach age 18, at which point they are considered to be adults and no longer eligible for the same level of supports and services; a process often referred to as "aging out" (Keller et al., 2007; Petersen et al., 2014). Every year, approximately 18,000 out of 440,000 foster youth (4%) are said to have aged out of CWS in America (AFCARS Report #26 | Children's Bureau | ACF, n.d.), and a similar trend occurs in other developed nations, such as Canada, Britain and Australia (Reid, 2007).

Promoting pathways to improved quality of life for youth aging out of CWS is a significant social justice concern. Aged out youth face an abrupt transition to adulthood and an expectation for self-sufficiency at an earlier age, coupled with fewer supports than similar-aged peers in the general population (Krinsky, 2010). To address this, supports have been developed for these youth, such as Independent Living Programs and Title I of the Foster Care Independence Act in the United States, as well as various task forces within Canada to continually update provincial legislation (Gaetz et al., 2015). Despite this, many aged out youth experience poor outcomes after exiting care, such as poverty, low academic achievement, under/unemployment, early parenthood, homelessness, psychiatric concern, as well as worse overall health and less access to healthcare than their same-aged peers (Donkoh et al., 2006; Rome & Raskin, 2019). Most concerning, studies have consistently demonstrated significantly higher percentages of criminal justice system involvement during early adulthood in individuals who have a history of foster care, including arrests (31%–42%), convictions (15%–23%) and incarcerations (30%–45%; Courtney et al., 2007; Courtney & Dworsky, 2006; B. B. Crawford et al., 2018).

The inequities faced by aged out youth are perpetuated by service gaps and systemic barriers to access of crucial supports across multiple outcome domains (Braciszewski et al., 2018; Gomez et al., 2015; Sakai et al., 2014). While there has been significant growth over the past decade in research focused on examining and improving the transition process for aged out youth (Donkoh et al., 2006; Nesmith & Christophersen, 2014; Reid, 2007; Woodgate et al., 2017), most studies have focused on single outcomes, such as educational attainment (Jackson & Cameron, 2012), housing (Curry & Abrams, 2015), or criminal justice involvement (Barn & Tan, 2012). We posit that, in order to promote transitional success for these youth, it is necessary to first establish an evidence-based set of variables, or indicators, whose holistic measurement can define and reflect success in a comprehensive manner. The significance of such an approach is that it may facilitate the identification of critical needs and allow for appropriate supports to be placed well in advance of their exit from care.

A review of the extant literature finds no studies that have collated or reviewed such indicators for aged-out youth. On a global scale, there has been notable investment by researchers in improving the quality, quantity and accessibility of transitional services for youth aging out of the CWS (Barker et al., 2020; Woodgate et al., 2017). Many interventions for youth aging out of care have been explored and implemented, including those related to housing, employment, education, mentorship, independent living, and health (Braciszewski et al., 2018; Greeson & Thompson, 2017; Kirk & Day, 2011; Munson et al., 2015; Woodgate et al., 2017). Research focused on promoting wider policy change has also suggested extending the age of foster care from 18 to young adulthood as a way of improving transitional outcomes for youth by replicating the “safety net” that many youth in the general population receive from parental figures as they transition to young adulthood (Courtney & Hook, 2017). Despite the clear advancements in transitional services offered by the CWS over the past decade, there is a relative paucity in research focused on individualized assessment of transitional needs. Without such an approach, youth may be offered transitional services indiscriminately rather than tailored transitional services based on identified areas of need.

Thus, our work was guided by a global research question: how are successful youth transitions from CWS defined and measured within the literature? To address this, a scoping review was conducted with the following exploratory objectives: 1) identify indicators that have been used to measure the success of aged out youth, and; 2) summarize the methods and/or assessment tools that have been used to measure these indicators. The goals of this work were to provide a comprehensive narrative of indicators of successful transitioning and highlight areas for further study to better support youth prior to their aging out of CWS.

2. Methods

The primary methodology of the current study was that of a scoping review conducted using the five-stage framework outlined by Arskey and O'Malley (2005): (1) identify the research question; (2) identify relevant studies; (3) select the studies; (4) chart the data; (5) collate, summarize and report the results. A scoping review methodology was selected based on the broad, exploratory nature of the research question and objectives. This form of review methodology provided the flexibility to investigate a wide variety of literature in order to map out the range and extent of existing knowledge on a novel review topic. The strict and rigid eligibility criteria required of a systematic literature review were felt to be premature within the context of providing an initial mapping of definitions and measurement tools used to assess successful transitions for aging out youth."

Informed by the study question, relevant articles were identified using a search strategy that included the bibliographic databases of MEDLINE, Embase, and PsycINFO (OVID interface) from inception to Sept 2022. The search strategy was developed collaboratively between the coauthors (SA, CP and MP) and a trained librarian and carried out by co-author CP. To select studies, the following search terms (and/or variants) were used: child welfare or foster care AND transition to adult care or independent living (see Supplemental Material for full details). For the purpose of this review, an indicator was defined as an explicit and measurable item in the assessment of care. As such, all studies of youth who had aged out of care that described at least one of the following were included: (1) an indicator that was used to broadly define "successful transition," and/or (2) a method and/or assessment tool that was used to measure an indicator. Inclusion criteria were limited to relevant peer-reviewed empirical and review articles written in English. Studies were not excluded based on geography nor study design. Exclusion criteria included conference abstracts and psychometric validation papers.

A modified narrative synthesis approach was used to chart the data, as well as summarize and report findings. This analytical methodology was chosen in anticipation that the articles would vary in terms of design and data outcomes (Deliz et al., 2020; Leamy et al., 2011; Popay et al., 2006). As per the framework outlined by Popay et al. (2006), the stages of narrative synthesis in the current study proceeded as follows: (1) developing the preliminary synthesis; (2) comparing themes within and between studies; and (3) thematic classification. First, data were extracted from relevant studies by coauthor CP to collect study information on author/year of publication, indicator(s) used to define successful transitions, variables used to measure these indicators, and assessment method(s)/measurement tool(s) used to evaluate those variables. After sorting and charting the data according to these aspects, thematic analyses were conducted to identify key ideas and concepts emerging from the reviewed literature. Categories were defined based on data trends and were not specified a priori. Emerging themes were then discussed amongst the research team, which included key stakeholders, to inform and validate study findings.

3. Results

Using the search terms, the initial search identified a total of 1,123; removal of duplicates resulted in 778 records being identified. From these articles, 150 articles were found to meet the search strategy criteria after screening titles, abstracts and full texts.

4. Indicators: Definitions

After reviewing the included studies, eight indicators of successful transitions emerged from the literature: (1) education; (2) employment; (3) basic needs (i.e. housing, income, and food security); (4) social support and relationships; (5) conduct and victimization; (6) health; (7) general living skills; (8) resilience and psychological empowerment. Health was subdivided into five subdomains: (i) physical; (ii) mental health symptoms; (iii) substance use/abuse; (iv) reproductive/sexual health, and; (v) access to care and service utilization. Table 1 outlines all indicators identified, the variables that were measured for each indicator, as well as the assessment method(s) and/or measurement tool(s) that were used. Table 2 illustrates the number of studies that were reviewed for each indicator, as well as the proportion out of the total 150 studies reviewed.

Table 1. Indicators of Successful Transitions

Indicator and Variables Measured	Measurement Tools Used All variables were measured using study-specific question-items unless indicated below. Validated tools are highlighted in BOLD.
<p>Education</p> <p>(1) Completion of high school or General Educational Development (GED) program (Ahrens et al., 2008; Ahrens et al., 2014; Barnow et al., 2015; Berzin, 2008; Cassarino-Perez et al., 2018; M. E. Collins & Ward, 2011; Courtney et al., 2001, Courtney et al., 2019; Courtney & Dworsky, 2006; Daining & DePanfilis, 2007; Donkoh et al., 2006; Everson-Hock E.S. et al., 2011; Garcia et al., 2012; Kerman et al., 2002; Liu et al., 2019; Miller et al., 2017; Pecora et al., 2006; Rome & Raskin, 2019; Shpiegel & Simmel, 2016; Dinisman et al., 2013; Villegas et al., 2014; C. R. White et al., 2015; T. T. White et al., 2018)</p> <p>(2) Participation in higher education—current enrollment in, or completion of, a post-secondary degree program (college/university), or technical/vocational program (Ahrens et al., 2008; Barnow et al., 2015; Berzin, 2008; Courtney et al., 2019; Courtney & Dworsky, 2006; Donkoh et al., 2006; Everson-Hock et al., 2011; Fowler et al., 2011; Pecora et al., 2006; Rome & Raskin, 2019; van Breda & Dickens, 2017; Villegas et al., 2014; C. R. White et al., 2015; T. T. White et al., 2018)</p> <p>(3) Highest level of education completed—highest educational degree obtained by the individual, e.g., college degree, Bachelor's degree, Master's degree (Ancitil et al., 2007; Cameron et al., 2018; Donkoh et al., 2006; Flynn & Tessier, 2011; van Breda & Dickens, 2017)</p> <p>(4) Years of education completed (Donkoh et al., 2006)</p>	<p>No tools used</p>
<p>Employment</p> <p>(1) Employment status, current/post—full-time and/or part-time, or unemployed (Barnow et al., 2015; Cameron et al., 2018; Cassarino-Perez et al., 2018; Courtney et al., 2019; Daining & DePanfilis, 2007; Donkoh et al., 2006; Dworsky & Gitlow, 2017; Everson-Hock et al., 2011; Fowler et al., 2011; Garcia et al., 2012; Kerman et al., 2002; Lockwood et al., 2015; Miller et al., 2017; Montgomery et al., 2006; Pecora et al., 2006; Rashid, 2004; Rome & Raskin, 2019; Scannapieco et al., 1995; Schwartz-Tayri & Spiro, 2017; Shpiegel & Simmel, 2016; Sutherland et al., 2009; Watt & Kim, 2019)</p> <p>(2) Employment stability—number of jobs held in past n year(s), length of time employed in current and/or past position(s; Ancitil et al., 2007; Courtney et al., 2001; Courtney & Dworsky, 2006; Daining & DePanfilis, 2007; Dickens, 2018; Donkoh et al., 2006; Fowler et al., 2011; Rome & Raskin, 2019; Schwartz-Tayri & Spiro, 2017)</p> <p>(3) Employment Earnings—total earnings from employment in the past year, hourly wages (Ancitil et al., 2007; Courtney et al., 2019; Courtney & Dworsky, 2006; Donkoh et al., 2006; Dworsky & Gitlow, 2017; Fowler et al., 2011; Lockwood et al., 2015; Rashid, 2004; Rome & Raskin, 2019; Schwartz-Tayri & Spiro, 2017)</p> <p>(4) Length of time to gaining full-time employment after discharge (Donkoh et al., 2006; Lemon et al., 2005; Montgomery et al., 2006)</p> <p>(5) Employment satisfaction (Ancitil et al., 2007; Schwartz-Tayri & Spiro, 2017)</p> <p>(6) Skill level of work (Haggman-Laitila et al., 2018)</p>	<p>No tools used</p>

(Continued)

Table 1. (Continued)

Indicator and Variables Measured	Measurement Tools Used All variables were measured using study-specific question-items unless indicated below. Validated tools are highlighted in BOLD.
Basic Needs	
<p>(1) Homelessness—current and/or previous episode of homelessness (Ahrens et al., 2014; Berzin, 2008; Berzin et al., 2014; Courtney et al., 2001; Courtney & Dworsky, 2006; B. L. B. L. Crawford et al., 2015; Daining & DePanfilis, 2007; Dworsky, Napolitano et al., 2013; Dworsky & Courtney, 2009; Everson-Hock et al., 2011; Fowler et al., 2009, Fowler et al., 2017, Fowler et al., 2019; Lemon et al., 2005; Lockwood et al., 2015; Montgomery et al., 2006; Munson et al., 2017; Patterson et al., 2015; Pecora et al., 2006; Schwartz-Tayri & Spiro, 2017; Shpiegel & Simmel, 2016; Watt & Kim, 2019), duration of homelessness (Patterson et al., 2015)</p> <p>(2) Housing stability—number of moves, ability to pay housing expenses, temporary housing, couch surfing (Berzin et al., 2011; Courtney et al., 2001, Courtney et al., 2019; Courtney & Dworsky, 2006; B. L. B. L. Crawford et al., 2015; Curry & Abrams, 2015; Donkoh et al., 2006; Montgomery et al., 2006; Rome & Raskin, 2019; Schwartz-Tayri & Spiro, 2017; Shah et al., 2017)</p> <p>(3) Living arrangement—living on their own, living with biological parents or other relatives, living with former foster parents, living with a friend, spouse or partner, living in an institution, living in abandoned building, homeless (Courtney et al., 2001; B. L. B. L. Crawford et al., 2015; Fowler et al., 2011; Rome & Raskin, 2019)</p> <p>(4) Housing independence—having independent living arrangements (Berzin et al., 2011; B. L. B. L. Crawford et al., 2015; Donkoh et al., 2006; Everson-Hock et al., 2011; Montgomery et al., 2006)</p> <p>(5) Neighbourhood quality—living in a neighborhood where gangs are present, buildings are in poor condition, or buildings have poor exteriors (Berzin et al., 2011)</p> <p>(6) Ability to pay living/housing expenses (Ahrens et al., 2014; Courtney et al., 2019; Courtney & Dworsky, 2006; Donkoh et al., 2006; Lockwood et al., 2015; Montgomery et al., 2006)</p> <p>(7) Receipt of financial assistance—public or private (Berzin, 2008; Berzin et al., 2011; Byrne et al., 2014; Cameron et al., 2018; Courtney et al., 2001, Courtney et al., 2019; Courtney & Dworsky, 2006; L. Jones, 2011; Kerman et al., 2002; Lockwood et al., 2015; Pecora et al., 2006; Peters et al., 2016; Rebbe et al., 2017; Shpiegel & Simmel, 2016; Trejos-Castillo et al., 2015)</p> <p>(8) Poverty status—household income-to-poverty ratio, lived in households with income at or below the poverty line (Berzin, 2008; Pecora et al., 2006; Southerland et al., 2009)</p> <p>(9) Food insecurity (Ahrens et al., 2014; Courtney & Dworsky, 2006; Lockwood et al., 2015; Shpiegel & Simmel, 2016)</p> <p>(10) Total income, savings, assets (Courtney et al., 2019; L. Jones, 2011; Rashid, 2004; Shpiegel & Simmel, 2016; Trejos-Castillo et al., 2015)</p> <p>(11) Financial well-being—debts (Courtney et al., 2019; Dinisman et al., 2013), financial hardships (Ancill et al., 2007; Courtney et al., 2019; Courtney & Dworsky, 2006; Lockwood et al., 2015; Peters et al., 2016; Schwartz-Tayri & Spiro, 2017; Shpiegel & Simmel, 2016; Dinisman et al., 2013)</p>	<p>(12) Housing instability scale, used in 1 study (Courtney et al., 2019)</p> <p>(13) Economic hardship scale, used in 1 study (Courtney et al., 2019)</p>

(Continued)

Table 1. (Continued)

Indicator and Variables Measured	Measurement Tools Used <i>All variables were measured using study-specific question-items unless indicated below. Validated tools are highlighted in BOLD.</i>
<p>Social Support and Relationships</p> <p>(1) Presence of at least one close familial or non-familial adult (Courtney et al., 2019)</p> <p>(2) Social support network characteristics—size (number of individuals providing any kind of support), density (degree of interconnecting ties between identified network members), and range (the diversity of member social categories or roles; Armstrong-Heimsoth et al., 2020; Blakeslee, 2015; Blakeslee & Keller, 2018; Courtney et al., 2019; L. Jones, 2012; Rosenberg, 2019)</p> <p>(3) Perceived level social support (Courtney et al., 2001; Daining & DePanfilis, 2007; L. Jones, 2012; Nesmith & Christophersen, 2014)</p> <p>(4) Type of support provided (Armstrong-Heimsoth et al., 2020; Blakeslee, 2015; Blakeslee & Keller, 2018; Courtney et al., 2019; Daining & DePanfilis, 2007; Hojer & Sjoblom, 2014; Rosenberg, 2019)</p> <p>(5) Relationship quality—frequency of contact, expressed feelings of closeness (M. E. Collins et al., 2010; Courtney et al., 2019; L. Jones, 2012; Nesmith & Christophersen, 2014)</p> <p>(6) Partner violence (Jonson-Reid et al., 2007; Katz et al., 2017)</p> <p>(7) Attachment style (Bederian-Gardner et al., 2018)</p>	<p>(8) SNAP (Blakeslee, 2015), used in 4 studies (Armstrong-Heimsoth et al., 2020; Blakeslee, 2015; Blakeslee & Keller, 2018; Rosenberg, 2019); Social Support Scale, used in 1 study (Courtney et al., 2019)</p> <p>(9) SSB (Vaux et al., 1987), used in 1 study (Daining & DePanfilis, 2007); MSPSS (Stewart et al., 2014), used in 1 study (Courtney et al., 2001); current support subscale of the Relationship Competency Assessment, used in 1 study (Nesmith & Christophersen, 2014)</p> <p>(10) SNAP (Blakeslee, 2015), used in 4 studies (Armstrong-Heimsoth et al., 2020; Blakeslee, 2015; Blakeslee & Keller, 2018; Rosenberg, 2019); SSB (Vaux et al., 1987), used in 1 study (Daining & DePanfilis, 2007); Social Support Scale, used in 1 study (Courtney et al., 2019)</p> <p>(11) Quality Youth Relationship Assessment, used in 1 study (Nesmith & Christophersen, 2014)</p> <p>(12) Bergman's Questionnaire on Dating Violence, used in 1 study (Jonson-Reid et al., 2007); eight-question version of the CTS (Straus et al., 1996), used in 1 study (Katz et al., 2017)</p> <p>(13) ECR-S (Wei et al., 2007), used in 1 study (Bederian-Gardner et al., 2018)</p>
<p>Conduct and Victimization</p> <p>(1) History of arrests (Barth et al., 2010; Berzin, 2008; Courtney et al., 2001; Courtney et al., 2019; Courtney & Dworsky, 2006; B. B. Crawford et al., 2018; Cusick et al., 2012; Daining & DePanfilis, 2007; Kerman et al., 2002; Lockwood et al., 2015; Miller et al., 2017; Ryan et al., 2007; Shpiegel et al., 2017; Southerland et al., 2009; Watt & Kim, 2019; Yang et al., 2017)</p> <p>(2) History of incarceration (Barth et al., 2010; Berzin, 2008; Courtney et al., 2001; Courtney et al., 2019; Courtney & Dworsky, 2006; B. B. Crawford et al., 2018; Daining & DePanfilis, 2007; Kerman et al., 2002; Lockwood et al., 2015; Miller et al., 2017; Ryan et al., 2007; Southerland et al., 2009; Watt & Kim, 2019; Yang et al., 2017)</p> <p>(3) Type of arrest—misdemeanor, felony (Barth et al., 2010; Courtney et al., 2001; Ryan et al., 2007; Yang et al., 2017)</p> <p>(4) Severity of crime (Barth et al., 2010; Courtney et al., 2001; B. B. Crawford et al., 2018; Ryan et al., 2007; Yang et al., 2017)</p> <p>(5) Delinquency (Ahrens et al., 2008; Courtney et al., 2001; Courtney et al., 2019; Courtney & Dworsky, 2006; Lemon et al., 2005; Rebbe et al., 2017, p. 201; Shpiegel & Simmel, 2016; Southerland et al., 2009)</p> <p>(6) Deviancy (Fowler et al., 2011)</p> <p>(7) Externalizing and internalizing problem behaviours (J. J. Lee et al., 2018; Ringeisen et al., 2009; Southerland et al., 2009)</p> <p>(8) Victimization (Courtney et al., 2019; Jonson-Reid et al., 2007)</p> <p>(9) Official records used in 2 studies (Ryan et al., 2007; Yang et al., 2017)</p>	<p>(10) Self Report Delinquency Scale (Elliott et al., 1985), used in 1 study (Southerland et al., 2009)</p> <p>(11) DIS (conduct disorder section); L. N. L. N. Robins et al., 1982), used in 1 study (Fowler et al., 2011)</p> <p>(12) Externalizing, Internalizing, and Total Problems subscales of the YSR (Achenbach, 1991) or ASR (Achenbach & Rescorla, 2003), used in 3 studies; (J. J. Lee et al., 2018; Ringeisen et al., 2009; Southerland et al., 2009)</p>

(Continued)

Table 1. (Continued)

Indicator and Variables Measured	Measurement Tools Used All variables were measured using study-specific question-items unless indicated below. Validated tools are highlighted in BOLD.
<p>Health, Physical Health</p> <p>(1) Self-reported general health (Ahrens et al., 2008; Cameron et al., 2018; Courtney et al., 2001, Courtney et al., 2019; Courtney & Dworsky, 2006; Schwartz-Tayri & Spiro, 2017)</p> <p>(2) Mortality (Murray et al., 2020)</p> <p>(3) Number of ER visits and hospitalizations (Courtney & Dworsky, 2006)</p> <p>(4) Physical health symptoms (Ancil et al., 2007)</p> <p>(5) Presence of health condition or disability that limits activity (Ahrens et al., 2014; Courtney & Dworsky, 2006; Rebbe et al., 2018)</p> <p>(6) Presence of cardiovascular risk factors—dyslipidemia, hypertension, diabetes, smoker, or BMI > 30 (Ahrens et al., 2014; Rebbe et al., 2018)</p> <p>(7) Presence of chronic illness—seizure disorder, ADHD, asthma, blood-borne infectious disease such as HIV (Ahrens et al., 2014; Patterson et al., 2015)</p> <p>(8) Body mass index (BMI; Ahrens et al., 2008)</p> <p>(9) Level of physical activity (Ahrens et al., 2008)</p>	<p>(1) GHRI (Read et al., 1987), used in 1 study (Courtney et al., 2001)</p> <p>(2) SF-12, PCS (Ware et al., 1996), used in 1 study (Ancil et al., 2007)</p> <p>(3) IPAQ-SF (Craig et al., 2003), used in 1 study (Ahrens et al., 2008)</p>

(Continued)

Table 1. (Continued)

Indicator and Variables Measured	Measurement Tools Used All variables were measured using study-specific question-items unless indicated below. Validated tools are highlighted in BOLD.
<p>Health, Mental Health Symptoms</p> <p>(1) Number, type, and severity of psychiatric diagnoses—depression (major depression, dysthymia), substance use disorders (alcohol abuse/dependence, or substance abuse/dependence), anxiety disorders (generalized anxiety disorder, panic syndrome, PTSD, social phobia), manic disorder (bipolar disorder), psychosis (schizophrenia, mood disorder with psychotic features), ADHD, oppositional defiant disorder, conduct disorder, adjustment disorder, bulimia. (Ancitil et al., 2007; Courtney & Dworsky, 2006; García et al., 2012; Havlicek et al., 2013; Jackson Foster et al., 2015; Lockwood et al., 2015; Miller et al., 2017; Patterson et al., 2009; Raghavan et al., 2017; Ringeisen et al., 2009; Valdez et al., 2014; Villegas & Pecora, 2012; C. R. White et al., 2015)</p> <p>(2) Depressive symptoms (Ahrens et al., 2008; Courtney et al., 2019; Courtney & Dworsky, 2006; Everson-Hock et al., 2011; Havlicek et al., 2013; Jackson Foster et al., 2015; Miller et al., 2017; Munson & McMillen, 2010, 2009; Patterson et al., 2015; Raghavan et al., 2009; Rebbe et al., 2017; Ringeisen et al., 2009; Southerland et al., 2009; Valdez et al., 2014; C. R. White et al., 2015)</p> <p>(3) Trauma symptoms (Courtney & Dworsky, 2006; Jackson Foster et al., 2015; Miller et al., 2017; Patterson et al., 2015; Raghavan et al., 2009; Rebbe et al., 2017; Ringeisen et al., 2009; Southerland et al., 2009; Valdez et al., 2014)</p> <p>(4) Anxiety (U. L. Collins, 2016; Curry, 2017; Franz et al., 2019; Jaffee et al., 2018)</p> <p>(5) Stress (Courtney et al., 2019; Daining & DePanfilis, 2007; Munson & McMillen, 2009)</p> <p>(6) Suicidal ideation (Ahrens et al., 2008)</p> <p>(7) Personality disorder symptoms (Scheffers et al., 2019)</p> <p>(8) Mental health symptoms (Ancitil et al., 2007; Ringeisen et al., 2009; Southerland et al., 2009; Villegas & Pecora, 2012)</p> <p>(9) Clinical need for mental health services (Ringeisen et al., 2009; Southerland et al., 2009)</p> <p>(10) Receipt of mental health services (Courtney & Dworsky, 2006; Lemon et al., 2005; Montgomery et al., 2006)</p> <p>(11) Psychological distress (Courtney et al., 2001; Dinisman et al., 2013; Fowler et al., 2011; Havlicek et al., 2013)</p> <p>(12) Emotion dysregulation (Valdez et al., 2014)</p> <p>(13) Sleep (Fusco & Kulkarni, 2018)</p> <p>(14) Life satisfaction (Dinisman et al., 2013; Everson-Hock et al., 2011; J. J. Lee et al., 2018; Munson & McMillen, 2009; Refaelli et al., 2019; Schwartz-Tayri & Spiro, 2017; Dinisman et al., 2013)</p>	<p>(1) CIDI or CIDI-SF (Wittchen, 1994), used in 9 studies (Ancitil et al., 2007; Courtney & Dworsky, 2006; García et al., 2012; Havlicek et al., 2013; Jackson Foster et al., 2015; Lockwood et al., 2015; Southerland et al., 2009; Villegas & Pecora, 2012; C. R. White et al., 2015); DIS (L. N. L. N. Robins et al., 1982), used in 4 studies study (Havlicek et al., 2013; Miller et al., 2017; Raghavan et al., 2009; Valdez et al., 2014); MINI (Sheehan et al., 1997), used in 1 study (Patterson et al., 2015)</p> <p>(2) CIDI (depressive disorders section); Wittchen, 1994), used in 7 studies (Courtney & Dworsky, 2006; Havlicek et al., 2013; Jackson Foster et al., 2015; Rebbe et al., 2017; Ringeisen et al., 2009; Southerland et al., 2009; C. R. White et al., 2009); D-ARK of the DOM (Walter et al., 2003), used in 5 studies (Miller et al., 2017, p. 20; Munson & McMillen, 2010, 2009; Valdez et al., 2014; Yoon et al., 2019); DASS (Ng et al., 2007), used in 1 study (Courtney et al., 2019); DIS (depressive disorders section); L. N. L. N. Robins et al., 1982), used in 2 studies (Miller et al., 2017; Raghavan et al., 2009); MINI (depressive disorders section); Sheehan et al., 1997), used in 1 study (Patterson et al., 2015); CES-D (Van Dam & Earleywine, 2011), used in 1 study (Ahrens et al., 2008)</p> <p>(3) CIDI (PTSD section); Wittchen, 1994), used in 3 studies (Courtney & Dworsky, 2006; Jackson Foster et al., 2015; Rebbe et al., 2017); DIS (PTSD section); L. N. L. N. Robins et al., 1982), used in 2 studies (Raghavan et al., 2009; Valdez et al., 2014); MINI (PTSD section); Sheehan et al., 1997), used in 1 study (Patterson et al., 2015); the intrusive and dissociation sections of the TSI (McDevitt-Murphy et al., 2005), used in 1 study (Ringeisen et al., 2009)</p> <p>(4) CIDI (GAD section); Wittchen, 1994), used in 2 studies (Havlicek et al., 2013; Jackson Foster et al., 2015); anxiety subscale of the DASS (Ng et al., 2007), used in 1 study (Courtney et al., 2019)</p> <p>(5) PSS-10 (Andreou et al., 2011), used in 2 studies (Daining & DePanfilis, 2007; Munson & McMillen, 2009); stress subscale of DASS (Ng et al., 2007), used in 1 study (Courtney et al., 2019)</p> <p>(6) PDQ-4+ (Davison et al., 2001), used in 1 study (Scheffers et al., 2019)</p> <p>(7) SF-12, MCS (Ware et al., 1996), used in 4 studies (Ancitil et al., 2007; Ringeisen et al., 2009; Southerland et al., 2009; Villegas & Pecora, 2012)</p> <p>(8) MHI or MHI-5 (Rumpf et al., 2001), used in 3 studies (Courtney et al., 2001; Dinisman et al., 2013; Havlicek et al., 2013); BSI (Boulet & Boss, 1991), used in 1 study (Fowler et al., 2011)</p> <p>(9) Affect dysregulation subscale from the IASC (Briere & Runtz, 2002), used in 1 study (Valdez et al., 2014)</p> <p>(10) SLSS (Huebner, 1991), used in 4 studies (Dinisman et al., 2013; Munson & McMillen, 2009; Refaelli et al., 2019; Dinisman et al., 2013); Qol-Q, used in 1 study (J. J. Lee et al., 2018)</p>

(Continued)

Table 1. (Continued)

Indicator and Variables Measured	Measurement Tools Used All variables were measured using study-specific question-items unless indicated below. Validated tools are highlighted in BOLD.
<p>Health, Substance Use</p> <p>(1) Substance use/abuse—type, frequency, amount (Ahrens et al., 2008; Berzin, 2008; Courtney et al., 2019; Daining & DePanfilis, 2007; Everson-Hock et al., 2011; Fowler et al., 2011; Miller et al., 2017; Narendorf & McMillen, 2010; Patterson et al., 2015; Rebbe et al., 2017; Shpiegel & Simmel, 2016; Stott, 2012; Thompson & Hasin, 2011)</p> <p>(2) Tobacco and/or nicotine use—current and/or history of regular use (Ahrens et al., 2008; Shpiegel et al., 2016; Thompson & Hasin, 2011)</p> <p>(3) Alcohol use/abuse—frequency, amount (Courtney et al., 2019; Everson-Hock et al., 2011; Fowler et al., 2011; Miller et al., 2017; Narendorf & McMillen, 2010; Patterson et al., 2015; Rebbe et al., 2017; Shpiegel & Simmel, 2016; Stott, 2012; Thompson & Hasin, 2011)</p> <p>(4) Marijuana use (Berzin, 2008; Courtney et al., 2019; Everson-Hock et al., 2011; Fowler et al., 2011; Miller et al., 2017; Narendorf & McMillen, 2010; Patterson et al., 2015; Rebbe et al., 2017; Shpiegel & Simmel, 2016; Stott, 2012; Thompson & Hasin, 2011)</p> <p>(5) Use of other illegal drugs—methamphetamines, cocaine, ecstasy, other club drugs (e.g., GHB, Rohypnol, Ketamine), heroin, psychedelics, inhalants (e.g., gas, glue, spray paint, Freon), and other so-called hard drugs (Ahrens et al., 2008; Berzin, 2008; Courtney et al., 2019; Daining & DePanfilis, 2007; Everson-Hock et al., 2011; Miller et al., 2017; Narendorf & McMillen, 2010; Patterson et al., 2015; Rebbe et al., 2017; Stott, 2012; Thompson & Hasin, 2011)</p> <p>Inappropriate use of prescription and/or OTC drugs (Courtney et al., 2019; Stott, 2012; Thompson & Hasin, 2011)</p>	<p>(1) CIDI (substance use sections; Wittchen, 1994), used in 1 study (Rebbe et al., 2017); DIS or modified version of DIS (L. N. L. N. Robins et al., 1982), used in 2 studies (Fowler et al., 2011; Narendorf & McMillen, 2010); CASI-A (Meyers et al., 1995), used in 2 studies (Miller et al., 2017; Narendorf & McMillen, 2010); MAP (Marsden et al., 1998), used in 1 study (Patterson et al., 2015)</p> <p>(2) CIDI (substance use sections; Wittchen, 1994), used in 1 study (Rebbe et al., 2017); DIS or modified version of DIS (L. N. L. N. Robins et al., 1982), used in 2 studies (Fowler et al., 2011; Narendorf & McMillen, 2010); CASI-A (Meyers et al., 1995), used in 1 study (Miller et al., 2017); MAP (Marsden et al., 1998), used in 1 study (Patterson et al., 2015)</p> <p>(3) CIDI (substance use sections; Wittchen, 1994), used in 1 study (Rebbe et al., 2017); CASI-A (Meyers et al., 1995), used in 2 studies (Miller et al., 2017; Narendorf & McMillen, 2010); MAP (Marsden et al., 1998), used in 1 study (Patterson et al., 2015)</p>

(Continued)

Table 1. (Continued)

Indicator and Variables Measured	Measurement Tools Used All variables were measured using study-specific question-items unless indicated below. Validated tools are highlighted in BOLD.
<p>Health, Reproductive/Sexual Health</p> <p>(1) STI diagnosis—chlamydia, gonorrhea, syphilis, genital herpes, genital warts, Human Papilloma Virus, pelvic inflammatory disease, cervicitis or mucopurulent cervicitis, urethritis, HIV infection or AIDS, or any other STI. (Ahrens et al., 2008; Ahrens et al., 2013; Rebbe et al., 2018)</p> <p>(2) Sexual health risk behaviours—consistency of condom use (Ahrens et al., 2013; Courtney & Dworsky, 2006; Stott, 2012; Yoshioka-Maxwell & Rice, 2019), number of sexual partners (Ahrens et al., 2013; Rebbe et al., 2018; Stott, 2012), having sex with a partner infected with a STI (Ahrens et al., 2013; Courtney & Dworsky, 2006; Rebbe et al., 2018), having transactional/exchange sex (Ahrens et al., 2012; Ahrens et al., 2013; Yoshioka-Maxwell & Rice, 2019), drug use with sex (Yoshioka-Maxwell & Rice, 2019), and other promiscuous behaviour (Everson-Hock et al., 2011)</p> <p>(3) Pregnancy and/or parenthood status—ever been pregnant or made a woman pregnant and/or ever given birth to or fathered a child (Y/N; Berzin, 2008; Courtney & Dworsky, 2006; Daining & DePanfilis, 2007; Dworsky & Courtney, 2010; Everson-Hock et al., 2011; Font et al., 2019; Lockwood et al., 2015; Miller et al., 2017; Oshima et al., 2013; Putnam-Hornstein et al., 2016; Spiegel et al., 2017; Stott, 2012), number of children (Daining & DePanfilis, 2007; Everson-Hock et al., 2011)</p> <p>(4) Use of contraceptives—birth control (pill, patch, Norplant sticks, Dep-Provera shot) and other barrier methods (diaphragm, cervical cup, or IUD; Stott, 2012)</p>	<p>(1) YRBS (Brener et al., 1995), used in 1 study (Yoshioka-Maxwell & Rice, 2019)</p>
<p>Health, Access to Care and Service Use</p> <p>(1) Health insurance status (Ahrens et al., 2014; Courtney et al., 2001; Courtney et al., 2019; Courtney & Dworsky, 2006; Dworsky, 2006; Ahrens et al., 2013; Kerman et al., 2002; Kruszka et al., 2012; Pecora et al., 2006; Raghavan et al., 2009)</p> <p>(2) Access to a regular family doctor (Courtney et al., 2019)</p> <p>(3) Self-reported difficulty accessing medical care (Courtney et al., 2001; Kruszka et al., 2012; Montgomery et al., 2006)</p> <p>(4) Receipt of medical care when needed (Ahrens et al., 2014; Courtney et al., 2001, Courtney et al., 2019; Courtney & Dworsky, 2006; Lemon et al., 2005)</p> <p>(5) Time since last physical examination (Ahrens et al., 2014)</p> <p>(6) Medical service use (Courtney et al., 2019)</p> <p>(7) Mental health and social service use (Courtney et al., 2001; Courtney & Dworsky, 2006; Havlicek et al., 2013; McMillen & Raghavan, 2009; Ringelsen et al., 2009; Villagrana, 2017; Villagrana et al., 2018)</p>	<p>(8) CASA or modified version CASA (Ascher et al., 1996), used in 2 studies (McMillen & Raghavan, 2009; Ringelsen et al., 2009)</p>

(Continued)

Table 1. (Continued)

Indicator and Variables Measured	Measurement Tools Used <i>All variables were measured using study-specific question-items unless indicated below. Validated tools are highlighted in BOLD.</i>
General Living Skills (1) Life skills (L. Jones, 2012; Nollan et al., 2000) (2) Relationship skills (Nesmith & Christophersen, 2014) (3) Financial literacy (Trejos-Castillo et al., 2015) (4) Self-care skills and resources (Flynn & Tessier, 2011) (5) Decision-making skills (Olson et al., 2017)	(1) ACLSA or ACLSA-Short Version (ACLSA-SV) ; Nollan et al., 2002, used in 2 studies (L. Jones, 2012; Nollan et al., 2000) (2) Relationship Competency Assessment, used in 1 study (Nesmith & Christophersen, 2014) (3) Housing and Money Management subscales from the ACLSA ; Nollan et al., 2002, used in 1 study (Trejos-Castillo et al., 2015) (4) AAR-C2-2006 (Flynn et al., 2009), used in 1 study (Flynn & Tessier, 2011) (5) Mincemoyer and Perkins' "Making Decisions in Everyday Life" Instrument (Mincemoyer & Perkins, 2003), used in 1 study (Olson et al., 2017)
Resilience and Psychological Empowerment (1) Resilience (L. Jones, 2012) (2) Coping strategies (Chesmore et al., 2017) (3) Developmental assets (Anderson & Williams, 2018; Flynn & Tessier, 2011) (4) Locus of control, self-efficacy, motivation, participatory behaviour (Batista et al., 2018) (5) Self-esteem (Yoon et al., 2019) (6) Self-determination (Powers et al., 2018) (7) Future expectations (Dinisman et al., 2013)	(1) CYRM (Liebenberg et al., 2012), used in 1 study (Armstrong-Heimsoth et al., 2020); Resilience Scale, used in 1 study (L. Jones, 2012) (2) CCSC (Ayers et al., 1996), used in 1 study (Chesmore et al., 2017) (3) Development Asset Assessment modified from the DAP or items from the DAP (Institutes, 2004), used in 2 studies (Anderson & Williams, 2018; Flynn & Tessier, 2011) AAR-C2-2006 (Flynn et al., 2009), used in 1 study (Flynn & Tessier, 2011) (4) Ozer and Schotland's (2011) psychological empowerment instrument, used in 1 study (Batista et al., 2018) (5) Rosenberg Self-Esteem Scale (R. W. R. W. Robins et al., 2001), used in 1 study (Yoon et al., 2019) (6) Arc Self-Determination Scale (Wehmeyer, 1995), used in 1 study (Powers et al., 2018) (7) Future Expectations Scale for Adolescents (McWhirter & McWhirter, 2008) and My Future Questionnaire , used in 1 study (Dinisman et al., 2013)
General Health Rating Index (GHRI) of the RAND-36; SF-12, physical component summary (SF-12, PCS); International Physical Activity Questionnaire—Short Form (IPAQ-SF); Composite International Diagnostic Interview (CIDI); Composite International Diagnostic Interview—Short Form (CIDI-SF); Diagnostic Interview Schedule (DIS); Mini International Neuropsychiatric Interview (MINI); Depression-Aransas Scale (D-ARK); Depression Outcomes Module (DOM); Depression Anxiety Stress Scales (DASS); Center for Epidemiologic Studies Depression Scale (CES-D); Trauma Symptoms Inventory (TSI); Personality Diagnostic Questionnaire-4+ (PDQ-4+); SF-12, mental component summary (SF-12, MCS); Perceived Stress Scale (PSS-10); Mental Health Inventory (MHI); Mental Health Inventory—5-item (MHI-5); Brief Symptom Inventory (BSI); Inventory of Altered Self-Capacities (IASC); Student's Life Satisfaction Scale (SLSS); Quality of Life Questionnaire (QoL-Q); Comprehensive Addiction Severity Index for Adolescents (CASI-A); Maudsley Addiction Profile (MAP); Youth Risk Behavior Survey (YRBS); Child and Adolescent Services Assessment (CASA); Service Assessment for Children and Adolescents (SACA); Support Network Assessment for Practice (SNAP); Social Support Behaviors Scale (SSB); Multidimensional Scale of Perceived Social Support (MSPSS); Conflict Tactics Scale (CTS); Experience in Close Relationship Scale—Short Form (ECR-S); Youth Self Report (YSR); Adult Self Report (ASR)	

Table 2. Number of studies reviewed per indicator

Indicator	Number of studies (%)
Health	
• Mental health symptoms	69(46)
• Substance use/abuse	51(34)
• Reproductive/sexual	32(21)
• Access to care/service utilization	27(18)
• Physical	18(12)
Basic Needs	86(57)
Conduct and Victimization	55(37)
Employment	47(31)
Education	43(29)
Social Supports and Relationships	25(17)
Resilience and Psychological Empowerment	9(6)
General Living Skills	6(4)

5. Indicators: Measurement

Refer to Table 1 for full details and references to studies utilizing non-validated tools and/or study-specific question items. References to validated tools are provided in the summary of measurement tools below.

5.1. Education

Completion of high school or a GED program and/or higher education were two items from study questionnaires that were most commonly used to measure education as an indicator of successful aging out. A limited number of studies reported the highest level and number of years of education completed by the participant.

5.2. Employment

Employment was found to be commonly measured throughout all studies in a number of ways, including: *employment status* (full-time, part-time, or unemployed), *employment stability* [including number of jobs held in past *n* year(s) and length of time employed in current and/or past position(s)] and *annual earnings/hourly wages*. Less frequently used indicators included: *length of time to gaining full-time employment after discharge from formal care*, *skill level of work* (skilled work, semi-skilled work, unskilled work), and *employment satisfaction*.

5.3. Basic Needs

Over half of the studies reviewed (57%) included housing, income and food security as indicators of successful aging out, which the current review combined into a single category of basic needs. Housing security was most commonly measured via *episodes of homelessness and housing stability* (i.e., number of moves since leaving care). Only one study used a composite “housing instability index,” which measured all of the aforementioned components (Courtney et al., 2019). Income security was commonly measured using the *ability of the youth to pay living expenses, receipt of financial assistance from public and private sources, poverty status, total income/assets*, and *level of debt and perceived financial hardship*, with only one study using a validated “economic hardship index” to measure income security (Courtney et al., 2019). Food insecurity was measured through self-report by documenting whether a youth engaged in the *receipt of food assistance, being*

worried about whether food would run out before there was money to buy more, and delaying paying a bill in order to buy food.

5.4. Social Support and Relationships

Social support was primarily measured by examining the youth's *social network characteristics* (including network size), *perceived level of social support*, and *types of support received* (e.g., emotional, informational, and concrete). *Social network characteristics* were frequently measured using a standardized tool known as the Support Network Assessment for Practice (SNAP (Blakeslee, 2015)), a social support scale that includes questions about the number of supportive people in a youth's life and the frequency of contact. The *perceived level of social support* of youth was measured using the Social Support Behaviors Scale (SSB (Vaux et al., 1987)), the Multidimensional Scale of Perceived Social Support (MSPSS (Stewart et al., 2014)), or the current support subscale of the Relationship Competency Assessment (Nesmith & Christophersen, 2014). *Types of support received* were most often measured using the SNAP and SSB.

With respect to relationships, the most frequently reported indicators included: *relationship quality*, *partner violence* and *attachment style*. *Relationship quality* was measured using the Quality Youth Relationship Assessment (Nesmith & Christophersen, 2014), which evaluates the quality of the participant's current most supportive relationship, as well as non-standardized measurement of "familial closeness" (Courtney et al., 2019) and questions about the length/consistency of relationships and expressed feelings of closeness/support. The Bergman's Questionnaire on Dating Violence (Bergman, 1992) and the Conflict Tactics Scale (CTS (Straus et al., 1996)) were used to measure *partner violence*. *Attachment style* (i.e. patterns of behaviour within relationships) was measured in only one study using the Experience in Close Relationship Scale—Short Form (ECR-S (Wei et al., 2007)).

5.5. Conduct and Victimization

History of arrest and/or incarceration (including the number and type of arrest), and *delinquency* were the most frequently measured items of this indicator. Two studies used objective data to collect information about arrests and incarceration. Ryan et al. (2007) used official arrest records from the Department of State Police, while Yang et al. (2017) collected data using the British Columbia Corrections' computerized system, Corrections Network (CORNET), that contains information pertaining to each offender's movement in and out of custody as well as the exact criminal offense, date of conviction, and sentence type (Ryan et al., 2007; Yang et al., 2017). *Delinquency* was measured by asking if participants had engaged in any one of a variety of criminal behaviours (e.g., using a weapon, hurting someone in a fight, stealing, selling drugs, etc.). The Self Report Delinquency Scale (Elliott et al., 1985) developed for the National Youth Survey was used to measure delinquent behaviour in one study (Southerland et al., 2009). *Deviancy, externalizing and internalizing problem behaviours*, and *victimization* were noted as important indicators by authors in some studies, but were not empirically measured.

5.6. Health

Health as an indicator was subdivided into five subcategories: (i) physical; (ii) mental health symptoms; (iii) substance use; (iv) reproductive/sexual and; (v) access to care/service utilization.

Physical. Physical health was measured using validated tools, such as the SF-12 physical component summary (Ware et al., 1996) and International Physical Activity Questionnaire—Short Form (IPAQ-SF (Craig et al., 2003)), as well as via individual outcomes, for example, number of ER visits and hospitalizations (Courtney & Dworsky, 2006), presence of cardiovascular risk factor (s; Ahrens et al., 2014; Rebbe et al., 2018), presence of a functionally-limiting health condition, disability and/or a chronic illness (Ahrens et al., 2014; Courtney & Dworsky, 2006; Patterson et al., 2015; Rebbe et al., 2018), or all-cause mortality (Murray et al., 2020). Physical health was also found to be captured under the umbrella of "general health" and was most frequently measured

using Likert scales, though one study used the validated General Health Rating Index (GHRI (Read et al., 1987)).

Mental Health Symptoms. Forty-six percent of the studies reviewed (refer to Table 2) included psychiatric symptoms as a key indicator. Overall, the Composite International Diagnostic Interview (CIDI) and CIDI-Short Form (CIDI-SF (Wittchen, 1994)) were most frequently used to document the type and severity of psychiatric diagnoses, whereas the Diagnostic Interview Schedule (DIS; (L. N. L. N. Robins et al., 1982)) and the Mini International Neuropsychiatric Interview (MINI (Sheehan et al., 1997)) were found to be frequently selected. More specifically, for depressive symptoms, relevant sections of the CIDI, DIS, MINI, the Depression-Arkansas Scale (D-ARK (Walter et al., 2003)), the Depression Anxiety Stress Scales (DASS (Ng et al., 2007)), and the Center for Epidemiologic Studies Depression Scale (CES-D (Van Dam & Earleywine, 2011)) were used. Anxiety and stress symptoms were captured using relevant sections of the CIDI and DASS, as well as the Perceived Stress Scale (PSS-10 (Andreou et al., 2011)) and DASS stress subscale (Ng et al., 2007), whereas trauma symptoms were measured using relevant sections of the CIDI, DIS and MINI, and the Trauma Symptoms Inventory (TSI (McDevitt-Murphy et al., 2005)). For general mental health, one study used the SF-12 mental component summary (Ware et al., 1996).

Psychological distress was found to be measured using the Mental Health Inventory (MHI) and MHI-5 (Rumpf et al., 2001), as well as the Brief Symptom Inventory (BSI (Boulet & Boss, 1991)), versus one study, which identified dysregulation (i.e. difficulty with the management and control of emotional responses) and measured this variable using the affect dysregulation subscale of the Inventory of Altered Self-Capacities (IASC (Briere & Runtz, 2002)). One study examined personality disorder symptoms, which were captured using the Personality Diagnostic Questionnaire-4+ (PDQ-4+ (Davison et al., 2001)). The presence of suicidal ideation and receipt of mental health services were typically measured using dichotomous variables (Yes/No), whereas clinical need for mental health services was measured using Likert scales. Finally, life satisfaction was measured using the Student's Life Satisfaction Scale (SLSS (Huebner, 1991)), Quality of Life Questionnaire (QOL-Q), in addition to Likert scales.

Substance Use. Current/lifetime substance use (including types of substances used, frequency of use, and amount used at any given time) was measured across several studies. The substance use sections of the CIDI and DIS, Comprehensive Addiction Severity Index for Adolescents (CASI-A (Meyers et al., 1995)), and Maudsley Addiction Profile (MAP (Marsden et al., 1998)) were used to formally evaluate substance use and diagnose substance abuse/dependence with particular regards to use of tobacco/nicotine, alcohol, marijuana, other illicit drugs, and inappropriate use of prescription and/or over-the-counter drugs.

Reproductive/Sexual Health. Diagnosis with a sexually transmitted infection (STI); risky sexual health behaviours (i.e. consistency of contraceptive use, number of sexual partners, having sex with a partner infected with a STI, having transactional sex, and drug use with sex); and pregnancy and/or parenthood status were most frequently measured. In one study, sexual risk behaviours were measured using select variables from the Youth Risk Behavior Survey; these included a series of dichotomized variables such as ever having sex, condom use at last sexual encounter, drug use with sex at last sexual encounter, exchange sex over the lifetime, exchange sex over the last 3 months, condom use with exchange sex, and ever having an STI test (YRBS (Brener et al., 1995)). Across most studies, early pregnancy/parenthood was defined as becoming pregnant or parenting a child prior to age 20, though some studies used less than 18 years of age.

Access to Care/Service Utilization. Access to care was most frequently defined as having health insurance, but also encountering difficulty with accessing medical care (e.g., unable to afford care, inconvenient hours, not knowing where to go, etc.). Service use was most frequently captured using the Child and Adolescent Services Assessment (CASA) and a modified version of the CASA (Ascher et al., 1996); however, studies also documented the length of time since participants last

used a mental health and/or social service, or last visited a medical doctor. In one study, the number of billing claims for mental health services was used to measure mental health service use (Villagrana, 2017).

5.7. General Living Skills

A broad range of general living skills, including *relationship, financial literacy and self-care skills* were most commonly measured using the Ansell-Casey Life Skills Assessment (ACLSA (Nollan et al., 2002)). Other noted measurement tools included the Relationship Competency Assessment, Assessment and Action Record from Looking after Children (AAR-C2-2006 (Flynn et al., 2009)) and Mincemoyer and Perkins' Making Decisions in Everyday Life instrument (Mincemoyer & Perkins, 2003).

5.8. Resilience and Psychological Empowerment

The indicator of resilience was assessed using several different measurement tools, including: the Child and Youth Resilience Measure (CYRM (Liebenberg et al., 2012)), which is a measure of the resources available to individuals (i.e. individual, relational, communal and cultural) that may bolster their resilience; the Children's Coping Strategies Checklist (CCSC (Ayers et al., 1996)), a measure of coping strategies, and; the Developmental Assets Profile (DAP (Institutes, 2004)), a tool used to account for the internal strengths and external supports of youth and their growth in key developmental areas over time. The DAP specifically measures external assets (e.g., support, empowerment, boundaries, expectations) and internal assets (e.g., commitment to learning, positive values, social competencies, positive identity) that are critical to promoting resilience and achieving positive outcomes. One study used a composite resilience scale, which summed values across eight domains: employment, schooling, housing, marriage, substance use, criminal justice involvement, optimism, and their perception of how well prepared they were for independent living (L. Jones, 2012). Outcomes in these domains were seen as measures of adaptation to early adulthood, and were used as proximate measures of resilience (L. Jones, 2012).

Psychological empowerment was measured through various domains, including: *locus of control, self-efficacy, motivation, participatory behaviour, self-esteem, self-determination, and future expectations*. Ozer and Schotland's (2011) Psychological Empowerment Instrument was used to measure *perceived control, self-efficacy, motivation, and participatory behaviour*. *Self-esteem* was measured using the Rosenberg Self-Esteem Scale (R. W. R. W. Robins et al., 2001), versus *self-determination*, which was measured using the Arc Self-Determination Scale (Wehmeyer, 1995). *Future expectations* were measured using the Future Expectations Scale for Adolescents (McWhirter & McWhirter, 2008) and the My Future Questionnaire (Dinisman et al., 2013).

6. Discussion

No studies to date have collated evidence-based variables, or indicators, whose holistic measurement can support the identification of transitional needs for youth aging out of care.

The current scoping review and narrative synthesis of existing literature on these youth summarized eight global indicators (i.e. education, employment, basic needs, social support and relationships, conduct and victimization, health, general living skills, resilience and psychological empowerment) and their various methods of measurement. Overall, a broad range of indicators were identified, supporting the recognition that youth aging out of care are not a homogenous group. Comprehensive measurement across multiple, well-operationalized indicators can facilitate the tailoring of individualized care plans and congruent evaluation of ongoing needs.

Despite the advantage of such an approach, no validated tools were found that assessed indicators collectively. With regard to individual indicators, basic needs and mental health symptoms were most commonly evaluated. Basic needs (i.e. housing, income and food security) were examined in 57% of the reviewed articles, predominantly by identification of homelessness, housing stability and financial assistance/hardships, with only two studies using validated tools.

The variability in measurement and reporting of basic needs may reflect dissensus among researchers regarding its specific definition and key components, even with a shared understanding of the crucial impact this indicator plays in transitional success. In contrast, greater consistency was observed in the measurement of mental health. Youth aging out of care experience a myriad of mental health concerns, reflected in nearly half (46%) of the reviewed studies including mental health symptoms as part of the assessment of successful transitioning from care. The CIDI, CIDI-SF, DIS, and MINI were the most cited tools for measurement of mental health symptoms, with collective emphases on depression, anxiety and trauma. These findings highlight the need for establishing greater unity in indicator definitions for assessing transitional needs in order to improve communication and advocacy for these youth.

In creating such a unified framework, one must also consider the vast network of interconnected relationships between indicator outcomes. For example, poor education and employment outcomes have been shown to contribute to financial distress, and may also promote social exclusion and criminal justice system involvement for aging out youth (Arnau-Sabates & Gilligan, 2015; Barn & Tan, 2012), which can then lead to difficulty obtaining future employment and other economic opportunities (J. S. J. S. Lee et al., 2015). In addition, housing instability in the form of frequent moves between foster homes affects the ability of a youth to form stable, meaningful relationships (Heineman, 2008; Rome & Raskin, 2019), and, in turn, has negative effects on mental health, education, and employment outcomes (Fowler et al., 2011; Rosenberg & Kim, 2018; Rosenberg & Kim, 2018; 76). Housing instability has also been evidenced to directly impact offending and behavioural outcomes, increase risk of victimization and substance use, and lead to overall poor health and access to healthcare (Barn & Tan, 2015; B. B. Crawford et al., 2018; Kushel et al., 2007; J. J. Lee et al., 2018). These examples of the interacting, dynamic relationships between indicator outcomes are by no means comprehensive, but illustrate the calamity from which youth aging out of CWS enter into a network of poor outcomes across multiple domains. Thus, the current findings support comprehensive measurement of indicators as a means of providing insight into current needs to be addressed prior to transitioning, while also uncovering areas of future concern to support earlier intervention.

The current review also revealed scant existing strengths-based approaches to measuring success for aging out youth. Although closely related, mental health symptoms were differentiated from resilience and psychological empowerment in the categorization of indicators. This distinction provides an opportunity to include assessments of the dynamic qualities and processes that contribute to a youth's ability to adapt to change (Luthar et al., 2000), as well as gain mastery over issues of concern to them (Ozer & Schotland, 2011; Rappaport, 1987). Furthermore, positive recognition of general living skills, such as self-care and decision-making, can reduce stigmatic labelling of aging out youth and facilitate empowerment (McCashen, 2017). Of note, only 10% of the reviewed studies investigated these two indicators, in comparison with 37% of studies that employed risk-based assessments of past misconduct and victimization as an indication of reduced transitional success. Based on these findings, we suggest that concurrent assessment of the potential for youth to overcome adversity, while also acknowledging concerns, may better facilitate the development of transitional competencies.

7. Limitations

Our findings should be considered within the context of several limitations. First, the ecological validity of solely using quantitative tools for measuring successful transitioning out of CWS remains to be seen. A youths' lived experience can provide a depth of insight that is, perhaps, better captured through qualitative tools or mixed-methods approaches. Measurement tools developed in collaboration with youth have also been found to be critical in enhancing youths' understanding and awareness of their transition plan, self-determination, autonomy, and access to needed supports (Mitchell et al., 2015; Munson et al., 2015). Second, in scoping the literature, we did not formally evaluate the quality of evidence, as our main objective was to collate evidence and data from a wide range of study designs and methods. Third, our search protocol also

excluded studies that were not written in English and the majority of studies included were conducted in the United States; therefore, our findings may not have captured the full range of definitions and measurement tools used across varied sociocultural contexts (i.e., non-English-speaking regions and countries) and may not be fully representative of the challenges and outcomes experienced by aged out youth in other geographical contexts. Finally, there exists an overrepresentation of racialized children and youth within CWS; however, the impact of race on determining indicators and the unique needs of racialized youth were not addressed in this study and remains vitally important for future research.

8. Recommendations

This review summarizes eight broad indicators that have been used to define and measure successful transitions for youth aging out of CWS and into adulthood. These include: education, employment, basic needs, social support and relationships, conduct and victimization, health, general living skills, and resilience and psychological empowerment. Based on our findings, we recommend that this wide range of indicators be used to guide the assessment of needs for aging out youth in order to support their success identify gaps in care.

Furthermore, despite the importance of conducting tailored, needs-based assessments for youth prior to aging out, there is currently no validated tool that collates these indicators for comprehensive assessment. We recommend further studies be conducted that examines the utility of a universal mode of assessment that can better support advocacy efforts, as well as improve our understanding of a youths' future concerns, given the interdependency of indicator outcomes related to successful transitions. The use of strengths-based indicators, such as general life skills, resilience and psychological empowerment, in the assessment of aging out youth also remains a key area of future research.

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Supplementary material

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