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The role of thriving in mental health among people with intellectual and developmental disabilities during the COVID-19 pandemic in Canada

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Abstract

Background: The COVID-19 pandemic has had a negative impact on the mental health of people with intellectual and developmental disabilities. Numerous pandemic-related stressors experienced by people with intellectual and developmental disabilities may have impacted their ability to thrive, which has been linked to mental health outcomes. The current study examined the associations among COVID-19 stressors, thriving, and mental health problems among youth and adults with intellectual and developmental disabilities.

Method: Caregivers of 159 people with intellectual and developmental disabilities between 12 and 35 years of age from Canada completed an online questionnaire.

Results: A mediation analysis revealed that COVID-19 stressors were positively associated with mental health problems, and that thriving partially mediated this association.

Conclusion: Our findings suggest that experiences of thriving may be an important target for mental health support for people with intellectual and developmental disabilities.

KEYWORDS
COVID-19 pandemic, intellectual and developmental disabilities, mental health, positive youth development, stressors, thriving

1 | INTRODUCTION

Individuals with intellectual and developmental disabilities (e.g., intellectual disability, autism) often struggle with mental health problems (Mannion et al., 2014; Witwer & Lecavalier, 2008). Many also experience significant and pervasive support needs across life domains (Thompson et al., 2009), including health, education, and community involvement (Shogren et al., 2017). Further, people with intellectual and developmental disabilities have experienced considerable marginalisation from the mental health sector (Whittle et al., 2018) and from society more broadly (Emerson & Hatton, 2007; World Health Organization, 2011). Children and adults with intellectual and developmental disabilities have been disproportionally affected by the COVID-19 pandemic, with higher rates of COVID-19 positivity, mortality, and morbidity compared to the general population (Lunsky et al., 2021, 2022; Taggart et al., 2022). COVID-19-related stressors for individuals with intellectual and developmental disabilities include job loss, living in

congregated settings, financial issues, social isolation, and disruptions to daily care (Abilities Centre & The Canadian Disability Participation Project, 2020; Embregts et al., 2020; Lund et al., 2020). Given these stressors, it is not surprising that there is evidence for increased mental health problems among individuals in this population during this time (Amor et al., 2021; Drum et al., 2020; Rosencrans et al., 2021).

Stressors may impact mental health through multiple pathways. Examining factors related to thriving may improve our understanding regarding the link between stressors and mental health challenges. Benson and Scales (2009) define thriving as:

> An individual's pursuing a life path on which individual or functionally-valued behaviours grow (e.g., character, confidence, and caring) and move the person toward attainment of an 'idealised personhood' characterised by socially or structurally-valued behaviours such as contribution to self, family, community, and civil society.
>
> (Lerner et al., 2006, p. 90)

Indeed, the Centres for Disease Control and Prevention (CDC; 2021) suggests that the contributors to thriving may be linked to the impact of COVID-19-related stressors, such as connecting with others, being involved in one's community, and taking care of one's own body.

The Positive Youth Development (PYD) perspective has emerged as a positively oriented framework through which to study thriving (Lerner et al., 2005). There is also evidence that it can be a useful framework with which to examine positive outcomes in youth and adults with intellectual and developmental disabilities (Weiss & Burnham Riosa, 2015). The PYD perspective suggests that thriving is a process and that the growth of the 'Six Cs' represents thriving: *Competence* (i.e., a sense of positive self-worth and self-efficacy), *Caring* (i.e., a sense of sympathy or empathy), *Confidence* (i.e., a positive view of one's actions), *Connection* (i.e., positive bonds with people and institutions that are bidirectional), *Character* (i.e., respect for societal and cultural rules), and *Contribution* (i.e., helping oneself, family, community, and society; Lerner, 2004; Lerner, Lerner, et al., 2005; Roth & Brooks-Gunn, 2003).

The PYD framework posits that an alignment between one's *individual strengths* (e.g., adaptive behaviours) and *ecological resources* (e.g., environmental supports), fosters the Six Cs and experiences of thriving (Lerner, Lerner, et al., 2005). Among youth and young adults with intellectual and developmental disabilities, one study has linked social and communication skills (individual characteristics) and involvement in home, school, and community domains (ecological domains) to thriving (Weiss & Burnham Riosa, 2015). Moreover, these factors partially explained why those with intellectual disabilities and autism were reported to thrive less than those with intellectual disabilities alone (Weiss & Burnham Riosa, 2015). Similarly, outside of the developmental disabilities field, Theokas and Lerner (2006) reported that access to resources and supports in one's home (e.g., family quality time), school (e.g., extended day programs), and community (e.g., positive caring adults), are positively related to indicators of thriving.

Characteristics of thriving related to the Six Cs have been linked to a lower degree of mental health problems in people with and without intellectual and developmental disabilities. For example, in people with intellectual and developmental disabilities, *competence*, in terms of social and adaptive skills (Hassiotis & Turk, 2012; Matson et al., 2006; Ratcliffe et al., 2015) and positive *connections* to peers and family (Lunsky & Benson, 2001; Scott & Havercamp, 2014) are negatively related to mental health problems. In addition, youth positive mental health has been linked to *contribution* to oneself (e.g., being physically active; Borland et al., 2022; Carmeli et al., 2009) and to community (e.g., work or volunteerism; Lysaght et al., 2009), as well as expressions of *caring* and moral *character* (e.g., empathy, justice, and honesty; Biggs & Carter, 2016; Niemiec et al., 2017). No one, however, has considered how these characteristics combine to reflect the broader experience of thriving or how they may be associated with fewer negative outcomes, especially within the context of such pandemic-related stressors.

One's ability to thrive may have been impacted during the pandemic, especially through restrictions on ecological resources. Measures implemented to control the spread of COVID-19 in Canada during the pandemic mostly involved the closure of in-person schooling, community activities, and day programs, as well as isolation from family and friends outside the home (Government of Canada, 2020). To date, no study has used a PYD approach to examine how COVID-19 stressors may be related to thriving and mental health among people with intellectual and developmental disabilities, and none have considered if one's level of thriving may explain the association between COVID-19 stressors and mental health problems in this population.

1.1 | The current study

Guided by a PYD framework, the current study aimed to understand the role that thriving plays for youth and young adults with intellectual and developmental disabilities in the face of a major life stressor, such as the pandemic. Given that thriving is a developmental process that can change in response to one's context (Lerneret al., 2005), we examined thriving as a potential mediator of the relationship between COVID-19 stressors and mental health problems. It was hypothesized that a greater impact of COVID-19 stressors would be associated with lower levels of thriving, which in turn would be associated with higher levels of mental health problems.

2 | METHOD

2.1 | Participants

Participants included 159 caregivers of people with intellectual and developmental disabilities, who were between 12 and 35 years of age

($M = 24.45$ years, SD = 5.38), from across Canada. Of the people with intellectual and developmental disabilities, there were 88 youth (between 12 and 25 years of age) and 71 adults (between 26 and 35 years of age). The majority of caregivers who responded to the survey were mothers (86%) and identified as White (89%). All youth and adults had a clinical diagnosis of intellectual disability or a diagnosis associated with intellectual disability (e.g., Down syndrome) by a registered health professional, verified through caregiver report. Similar approaches to verifying intellectual and developmental disabilities have been used in other studies (e.g., Cooper et al., 2017; Solish et al., 2010). Caregivers also reported whether the person with intellectual and developmental disabilities had additional clinical diagnoses (see Table 1 for details). Caregivers were recruited from a larger Special Olympics Canada study. Special Olympics is the largest community sport organisation for people with intellectual and developmental disabilities, with a mission to promote well-being and community involvement through sport among its approximately 40,000 participants across Canada (Special Olympics, n.d.). Additional demographic information is outlined in Table 1.

2.2 | Measures

2.2.1 | COVID-19 stressors

The impact of COVID-19 stressors was assessed using an intellectual disability version of the Epidemic—Pandemic Impact Inventory—Brief Form (EPII-Brief Form; Grasso et al., 2020). The EPII-Brief Form is a 32-item adult self-report measure used to assess the impact of the COVID-19 pandemic across different domains. With the permission of the creators of the measure, we adapted the EPII-Brief Form by removing items that would likely not be relevant for youth and adults with intellectual and developmental disabilities (e.g., 'Childcare or babysitting was unavailable to me when needed,' 'A child, teenager, or young adult I care for could not go to school or needed home instruction'). We also added in items relevant for adolescents and young adults from the EPII-Adolescent Adaptation (EPII-A; Morris et al., 2020), such as items relevant to attending school and family life (e.g., 'Unable to attend important school events,' 'Parent/caregiver had increased mental health problems or symptoms'). We also adapted some items to include stressors that may be particularly relevant for people with intellectual and developmental disabilities, such as being unable to attend their school/day program and being unable to access respite or personal care supports. Finally, because the larger survey was caregiver report, the original instructions of the EPII were adapted slightly to allow for caregiver report: 'Since the COVID-19 pandemic began, what has changed for [Person's name]?'. At the beginning of the survey, the timeline of the COVID-19 pandemic was defined as March 2020 to Present (between October 2021 and March 2022 depending on when the respondent completed the survey). The final 24-item tool spans nine domains of COVID-19 stressors: (1) work and employment (e.g., Negative work changes [e.g., laid off, lost hours]), (2) education and training (e.g., Unable to go to school or day program), (3) home life (e.g., More conflict with family members), (4) social activities (e.g., Did not talk to or see family or friends while separated), (5) economic (e.g., Had trouble getting places due to less access to public transportation or concerns about safety), (6) emotional health and well-being (e.g., Problems with access or getting mental health treatment or therapy), (7) physical health problems (e.g., Increased health problems not related to COVID-19), (8) physical distancing and quarantine (e.g., Isolated or quarantined due to possible exposure to COVID-19, symptoms, or increased risk), and (9) infection history (e.g., Tested positive for COVID-19 and had severe symptoms). For each item, caregivers reported whether the pandemic had impacted the person in the way described by choosing: 0 = 'Not Applicable/Did not happen', 1 = 'Happened but no impact on [Person's name]', 2 = 'Some impact on [Person's name]', 3 = 'A lot of impact on [Person's name]', and 4 = 'Extreme impact on [Person's name]'. To obtain an overall COVID-19 impact score, a mean score was calculated across the 24 items, with higher scores indicating a greater impact of COVID-19 stressors. The measure demonstrated good internal consistency with the present sample (Cronbach's $\alpha = .84$), with scores ranging from 0.13 to 2.71 ($M = 1.09$, Median = 1.04, SD = 0.58). The internal consistency within domains varied: work and employment Cronbach's $\alpha = .15$, economic Cronbach's $\alpha = .32$, home life Cronbach's $\alpha = .38$, infection history Cronbach's $\alpha = .50$, physical distancing and quarantine Cronbach's $\alpha = .51$, social activities Cronbach's $\alpha = .57$, emotional health and well-being Cronbach's $\alpha = .61$, physical health problems Cronbach's $\alpha = .64$, and education and training Cronbach's $\alpha = .77$. Although some of the Cronbach's Alpha's are quite low, this was expected given that a person may have not experienced all stressors within a domain and some domains only consist of two or three stressors.

2.2.2 | Thriving

Thriving was measured using the Six Cs of PYD derived from Lerner, Lerner, et al., (2005). Caregivers reported their level of agreement with the six global statements (Table 2) about the youth's or adult's competence, confidence, character, connection, caring, and contribution using a 5-point scale from 1 ('Strongly Disagree') to 5 ('Strongly Agree'). A mean score for thriving was calculated, with higher scores representing higher levels of thriving. These items have been used to assess thriving in youth and young adults with intellectual and developmental disabilities with good internal consistency (Cronbach's $\alpha = .85$; Weiss & Burnham Riosa, 2015). This measure also exhibited good internal consistency in the present study (Cronbach's $\alpha = .86$), and scores ranged from 1.5 to 5 ($M = 3.95$, Median = 4.00, SD = 0.73).

2.2.3 | Mental health problems

Since the current sample consists of youth and adults, the youth and adult versions of the Strengths and Difficulties Questionnaire (SDQ;

TABLE 1 Participant demographics ($N = 159$).

	M (SD) or *n* (%)
Age	24 (5.38)
Gender	
Male	100 (63)
Female	58 (37)
Non-binary/third gender	1 (0.6)
Additional clinical diagnoses	
Autism	56 (35)
Down Syndrome	45 (29)
Prader-Willi Syndrome	3 (2)
Fragile X Syndrome	3 (2)
Cerebral Palsy	8 (5)
Fetal Alcohol Syndrome/Fetal Alcohol Spectrum Disorder	12 (8)
Williams Syndrome	2 (1)
Tourette Syndrome	2 (1)
Noonan Syndrome	3 (2)
Attention Deficit Hyperactivity Disorder	11 (7)
Anxiety Disorder	8 (5)
Epilepsy or Other Seizure Disorders	7 (4)
Other (e.g., Rett Syndrome, Acquired Brain Injury)	35 (22)
Current living situation	
Parent(s)	132 (83)
Grandparents or siblings without parents	2 (1)
Roommates or partner/spouse	2 (1)
Alone	8 (5)
Residential care	7 (4)
Other (e.g., foster home)	8 (5)
Caregiver's highest level of education[a]	
No certificate, diploma or degree	2 (1)
High school certificate	26 (17)
Apprenticeship, trades, or college diploma	57 (36)
Bachelor or associate's degree	54 (34)
Master's degree or higher	19 (12)
Family income[b]	
≤ $49,999	25 (17)
$50,000–$99,999	48 (32)
$100,000–$199,999	49 (32)
≥ $200,000	11 (7)
Prefer not to disclose	18 (12)
Family financial management	
We are in deep financial trouble	3 (2)
We have some financial difficulties	13 (8)
We do not manage very well	3 (2)
We get by alright	52 (33)
We manage quite alright	47 (30)
We manage very well	41 (26)

Note: Demographic characteristics are describing the people with intellectual and developmental disabilities unless otherwise specified.
[a]One case missing.
[b]Eight cases missing.

Goodman, 1997) were used to measure severity of mental health problems. The SDQ is a 25-item scale divided into five subscales each with five items. For the purposes of this study, only three of the subscales were used: Hyperactivity (e.g., Constantly fidgeting or squirming), Emotional Symptoms (e.g., Many worries, often seems worried), and Conduct Problems (e.g., Often lies or cheats), to focus more specifically on mental health symptoms and removing the Peer Problems and Prosocial Behaviour subscales (Totsika et al., 2011). The only difference in the youth and adult versions of the SDQ are some slight variations in the wording used within items (e.g., 'Restless, overactive, cannot stay still for long' vs. 'Restless, overactive, finds it hard to sit down for long', respectively). Caregivers rated how true each statement was for the youth or adult on a 3-point scale from 0 ('Not True') to 2 ('Certainly True'). In both versions, all items are summed to get a total score, with higher scores reflecting greater severity of mental health problems. Total scores on the youth and adult versions of the SDQ were combined to create one mental health problems variable, with scores ranging from 0 to 29 ($M = 9.74$, Median = 9.00, SD = 5.63). Past researchers have used this measure with caregivers of autistic youth and adults and it demonstrated good internal consistency with a mean Cronbach α of .76 (Findon et al., 2016). The internal consistencies for both versions of the SDQ with the current sample were good (Youth SDQ Cronbach's $\alpha = .87$; Adult SDQ Cronbach's $\alpha = .84$).

2.2.4 | Potential covariates

Covariates included the age and gender (female vs. male; Table 1) of the person with intellectual and developmental disabilities as well as their individual strengths (i.e., adaptive behaviour and communicative ability), given the reported associations in PYD literature between thriving and individual strengths among youth (Lerner et al., 2005). We also covaried for family financial resources, to control for physical resources within the home environment (Theokas & Lerner, 2006).

Adaptive behaviour

Adaptive behaviour was measured using the Waisman Activities of Daily Living Scale (W-ADL; Maenner et al., 2013), which was developed and validated for use with caregivers of youth and adults with intellectual and developmental disabilities. The W-ADL is a 17-item scale that is used to measure an individual's independence in doing a variety of activities, such as doing household tasks, grooming, and drinking from a cup. Caregivers

TABLE 2 Item descriptions for each component of thriving (six Cs), mean, and percent agreement.

Six Cs	Items	*M* (percent agreement)[a]
Competence	[Person's name] has the skills to succeed in school, in social situations with friends and adults, in play, and at home. [Person's name] knows how to behave and does what is needed to do well.	3.64 (64%)
Confidence	[Person's name] believes that they can succeed and do what is needed to do well in the family, in school, in social situations with friends and adults, in play and in other areas that are important to them (for example, sports, music, religious activities).	3.81 (73%)
Connection	[Person's name] has positive relationships with their parents, siblings, and other family members, and with friends, teachers, coaches, or mentors.	4.35 (89%)
Character	[Person's name] knows what is 'right and wrong' and 'does the right thing'. [Person's name] is open to others' perspectives and believes in social justice for all. [Person's name] is honest.	3.89 (71%)
Caring	[Person's name] cares about other people. They are concerned about whether others have what they need (shows sympathy) and shows a sense of compassion (empathy). [Person's name] is both sympathetic and empathetic to others.	4.18 (85%)
Contribution	[Person's name] tries to do things to help the family, to help neighbours, and to help the community. [Person's name] tries to also help themselves by staying healthy (eating right, exercising, getting enough sleep).	3.84 (72%)

[a]Responses of 4 or higher were considered to have agreed with the item.

rated the youth's or adult's ability on a 3-point Likert scale (0 = 'Does not do that at all', 1 = 'Does with help', and 2 = 'Independent or does on own'). Total scores were calculated across the 17 items and ranged from 0 to 34 ($M = 23.19$, Median = 24.00, SD = 6.21), with higher scores indicating greater adaptive behaviour. This scale has demonstrated excellent internal consistency with intellectual and developmental disabilities samples in the past (Cronbach's $\alpha = .91$; Weiss & Burnham Riosa, 2015). Similarly, the internal consistency of this measure was high in the present study (Cronbach's $\alpha = .90$).

Communicative ability

Communicative ability was measured using a 3-item scale, where caregivers reported on how well the person with intellectual and developmental disabilities is able to understand spoken language or alternative communication, use spoken language or alternative communication, and carry on a conversation (based on a one-item scale by Mazurek et al., 2012; Sterzing et al., 2012). Caregivers indicated their responses on a 4-point Likert scale (0 = 'Cannot do this at all', 1 = 'Has a lot of trouble', 2 = 'Has little trouble', and 3 = 'Has no trouble'). This scale has been used with caregivers of individuals with intellectual and developmental disabilities and demonstrates good internal consistency (Cronbach's $\alpha = .83$; Weiss & Burnham Riosa, 2015). This scale also demonstrated good internal consistency with the current sample (Cronbach's $\alpha = .87$), and mean scores ranged from 0.33 to 3 ($M = 2.39$, Median = 2.67, SD = 0.69).

Financial resources

Financial resources were measured using one item where caregivers indicated how their family is managing financially by choosing one of six phrases (1 = 'We are in deep financial trouble', 2 = 'We have some financial difficulties', 3 = 'We don't manage very well', 4 = 'We get by alright', 5 = 'We manage quite alright', 6 = 'We manage very well'; National Centre for Social Research, 2003). Responses ranged from 1 to 6 ($M = 4.57$, Median = 5.00, SD = 1.23; see Table 1 for the distribution).

2.3 | Procedure

Data collection occurred from October 2021 to March 2022 as part of a larger online study about the experience of Special Olympics athletes during the COVID-19 pandemic. Participants were recruited through Special Olympics Canada email lists, social media advertisements, and a research database. From October 2021 to March 2022 the COVID-19 restrictions within and across Canadian provinces varied. For instance, in October 2021 many restrictions across provinces were lifted, however, in December 2021 the arrival of the Omicron variant resulted in many of the restrictions being reinstated and lessened over time until March 2022 (Lawson et al., 2022). Provinces also differed in their pandemic response based on metrics such as the number of hospitalizations, infection rate, and vaccine uptake. All

caregivers were invited to complete a survey on Qualtrics via a secure link and informed consent was obtained from all participants. The online survey took caregivers approximately 30 minutes to complete. Caregivers who were recruited from participating in past research received a $15 Amazon e-gift certificate for participating in the current study. Caregivers who were newly recruited for the current study had the option to enter a raffle to have a chance at receiving one of 10 $50 Amazon e-gift certificates. Ethical approval for this study was obtained from York University prior to data collection. Prior thriving research with Special Olympics demonstrated a range of possible thriving experiences in people with intellectual disabilities (from low to high levels; Weiss & Burnham Riosa, 2015).

2.4 | Data analysis

Statistical analyses were performed using IBM SPSS Version 28. Prior to testing the hypotheses, statistical assumptions of normality, linearity, and homoscedasticity were inspected, and no major violations were noted. Each variable was also inspected for outliers, resulting in one data point being removed. Descriptive analyses were conducted to examine the degree of impact across the different COVID-19 stressor domains for the youth and adults with intellectual and developmental disabilities. Pearson correlations were run between potential covariates (age, gender, financial resources, adaptive behaviour, and communicative ability), COVID-19 stressors, thriving, and mental health problems. There was no evidence of collinearity when examining standard regression collinearity (variance inflation factor estimates) and multicollinearity diagnostics (Condition Index/Variance Portions). The PROCESS macro (Hayes, 2012) was used to test the hypothesis that thriving would mediate the association between the impact of COVID-19 stressors and mental health problems, while controlling for covariates. In this analysis, PROCESS Model 4 was used. Bootstrapping was used to obtain a confidence interval for the indirect effect. If the lower and upper limit of the confidence interval did not contain zero, the mediation was considered significant (Preacher & Hayes, 2008). An alpha of .05 was used for all analyses and 95% confidence intervals were provided for the regression analyses.

3 | RESULTS

3.1 | Negative impact of the COVID-19 pandemic

Descriptive analyses were run to examine which domains of COVID-19 stressors had the greatest impact on the youth and adults with intellectual and developmental disabilities. Eleven percent of the sample experienced a lot/extreme impacts related to social activities ($M = 1.61$, Median $= 1.33$, SD $= 0.88$), 19% to physical distancing and quarantine ($M = 1.53$, Median $= 1.50$, SD $= 1.20$), 12% to physical health problems ($M = 1.52$, Median $= 1.33$, SD $= 0.95$), 14% to education and training ($M = 1.34$, Median $= 1.25$, SD $= 1.15$), 6% to emotional health and well-being ($M = 1.12$, Median $= 1.00$, SD $= 0.98$), and 4% to work and employment ($M = 0.99$, Median $= 1.00$, SD $= 0.99$). Finally, less impact was reported in the domains of home life ($M = 0.61$, Median $= 0.00$, SD $= 0.79$; 3% a lot/extreme impact), economic ($M = 0.54$, Median $= 0.00$, SD $= 0.85$; 2% a lot/extreme impact), and infection history ($M = 0.22$, Median $= 0.00$, SD $= 0.54$; 1% a lot/extreme impact).

3.2 | Pearson correlations

Pearson correlations between the potential covariates (i.e., age, gender, financial resources, adaptive behaviour, and communicative ability), predictor variables (i.e., COVID-19 stressors and thriving), and the dependent variable (i.e., mental health problems) were first examined (Table 3). Mental health problems were significantly associated with age, adaptive behaviour, financial resources, thriving, and COVID-19 stressors. Gender and communicative ability were not significantly related to mental health problems. Thriving was significantly associated with age, adaptive behaviour, communicative ability, and COVID-19 stressors, with correlations ranging from small to moderate in size. Adaptive behaviour was moderately associated with communicative ability and weakly associated with COVID-19 stressors. Age was moderately correlated with adaptive behaviour and COVID-19 stressors and weakly correlated with communicative ability. Additionally, financial resources were weakly correlated with COVID-19 stressors. Gender was not significantly correlated with any of the variables. Based on these correlations, age, adaptive behaviour, communicative ability, and financial resources were included as control variables in the mediation analysis.

3.3 | Mediation analysis

A mediation analysis (Hayes Process model 4) was conducted to determine whether thriving mediates the association between COVID-19 stressors and mental health problems while controlling for age, financial resources, and individual strengths (i.e., adaptive behaviour and communicative ability).

The overall model of COVID-19 stressors, control variables, and thriving (potential mediator) accounted for 43% of the variance in mental health problems $F(6, 151) = 19.28$, $p < .001$. As seen in Figure 1, prior to entering thriving, the total direct effect (path c) of COVID-19 stressors on mental health problems was significant, $t = 6.05$, $p < .001$, CI $= 3.15$ to 6.22. COVID-19 stressors were also related to thriving (path a), $t = -3.04$, $p = .003$, CI $= -0.49$ to -0.10, and thriving emerged as a significant predictor of mental health problems (path b), $t = -6.76$, $p < .001$, CI $= -4.98$ to -2.73. The indirect effect of thriving in the association between COVID-19 stressors and mental health problems was significant (*indirect effect* $= 1.14$, SE $= .46$, CI $= 0.28$–2.04), such that a greater impact of COVID-19 stressors was related to lower levels of thriving (path a), which in turn was related to higher levels of mental health problems (path b). The

TABLE 3 Correlations among covariates, predictor variables, and the dependent variable.

	Covariates				Predictor variables		Dependent variable
	2 ($n = 159$)	3 ($n = 158$)	4 ($n = 159$)	5 ($n = 159$)	6 ($n = 159$)	7 ($n = 159$)	8 ($n = 159$)
1. Age	−0.10	0.39***	0.20**	0.08	−0.42***	0.20**	−0.20**
2. Gender[a]	-	−0.03	0.02	−0.06	−0.005	−0.02	0.005
3. Adaptive behaviour	-	-	0.44***	0.08	−0.16*	0.42***	−0.19*
4. Communicative ability	-	-	-	0.05	−0.03	0.46***	−0.08
5. Financial resources	-	-	-	-	−0.23**	0.03	−0.20**
6. COVID-19 stressors	-	-	-	-	-	−0.24**	0.49***
7. Thriving	-	-	-	-	-	-	−0.51***
8. Mental health problems	-	-	-	-	-	-	-

[a]Point biserial correlations, female = 1 and male = 2.
*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

strength of the direct relation between COVID-19 stressors and mental health problems decreased, however, it remained significant (path c′), $t = 5.06$, $p < .001$, CI = 2.16–4.94, suggesting that thriving partially mediated this association.

4 | DISCUSSION

To our knowledge, the current study is the first to examine the links between the experience of COVID-19 stressors, thriving, and mental health problems among youth and adults with intellectual and developmental disabilities. This study highlighted that the pandemic has negatively impacted people within this population across multiple domains of life, including their health, education, and connections with family and friends. Our findings suggest a clear link between the experience of a greater impact of COVID-19 stressors and mental health problems among youth and adults with intellectual and developmental disabilities; however, some people are doing better than others and one explanation for this is their level of thriving, which emerged as a partial mediator. Some of the commonly reported COVID-19 stressors included negative work changes, being unable to attend school or day programs, increased isolation from family and friends, decreased access to respite care, and being less physically active. The experience of these stressors may have limited their access to resources and opportunities to cultivate positive developmental factors (e.g., confidence, connection, and contribution), consequently, making them less likely to thrive. This notion is consistent with PYD literature, which suggests that the more people have access to resources and positive experiences (e.g., learning, autonomy, and connection with others) within their home, school, and community environments, the more likely they will be to develop positively and experience aspects of thriving (Eccles & Gootman, 2002; Gambone & Connell, 2004; Lerner, 2004; Theokas et al., 2005; Theokas & Lerner, 2006). The link between thriving and mental health problems in the current study is also consistent with the literature demonstrating a negative association between aspects of thriving and mental health problems among youth and adults without intellectual and developmental disabilities (Geldhof et al., 2014; Holsen et al., 2017; Jeličić et al., 2007; Keyes et al., 2010; Theokas & Lerner, 2006). It is important to note, however, that the current study is cross-sectional, and therefore, the directionality of these associations within the mediation cannot be established with certainty.

Our results also suggest that the impact of COVID-19 stressors have a direct association with the mental health of youth and adults with intellectual and developmental disabilities. This finding adds to the body of literature suggesting that the pandemic has had a negative impact on the mental health of people with intellectual and developmental disabilities (Amor et al., 2021; Drum et al., 2020; Rosencrans et al., 2021). Similar stressors to those that were reported by caregivers for the people with intellectual and developmental disabilities in the current study have been reported in studies that explored the first-person perspectives and experiences of people with intellectual and developmental disabilities during the pandemic (Embregts et al., 2020; Lake et al., 2021). Given the pre-existing vulnerability of people with intellectual and developmental disabilities (Cooper et al., 2007; Lunsky et al., 2013; Mannion et al., 2014; Witwer & Lecavalier, 2008), it is likely that the experience of pandemic stressors further exacerbated their risk for poor mental health outcomes. To reduce the burden of pandemics among vulnerable people and improve outcomes, policymakers must consider not only medical factors with regards to health, but also social factors (Butler-Jones & Wong, 2016; Federico et al., 2020; Lake et al., 2021), such as employment, education, and increased access to care.

Thriving may be an important target for the mental health supports provided to people with intellectual and developmental disabilities. This can be done through involvement in community-based programs (e.g., mentoring programs, sport programs; Catalano et al., 2004; Holt et al., 2017), where opportunities are created to engage in activities to learn new information, build connections, foster self-determination and self-efficacy, as well as practice adaptive skills (e.g., coping, self-management, and life skills); important building blocks in the promotion of positive developmental factors (i.e., the Six C's) that can lead to thriving. For people with intellectual and

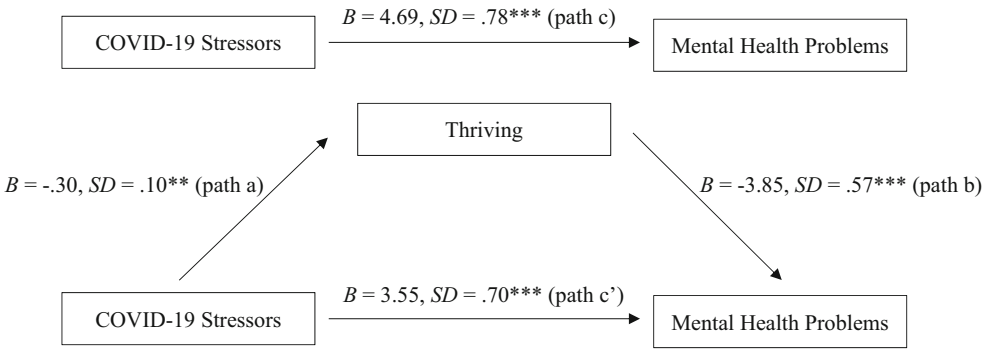

FIGURE 1 Thriving as a mediator of COVID-19 stressors and mental health problems ($n = 158$). $^{*}p \leq .05$; $^{**}p \leq .01$; $^{***}p \leq .001$.

developmental disabilities, increasing social bonds has been linked to greater quality of life and fewer mental health problems (Bramston et al., 2005; Lunsky & Benson, 2001). In addition, social and adaptive skill programs for youth and adults with intellectual and developmental disabilities have been associated with improved social, adaptive, and self-determination skills, self-control, and coping self-efficacy, as well as decreased problem behaviours (Behroz-Sarcheshmeh et al., 2017; Carter & Hughes, 2005; Shogren et al., 2018; Walsh et al., 2018). Informally, being able to implement opportunities for youth and adults with intellectual and developmental disabilities to foster aspects of thriving, such as connecting with family members and friends, caring for others, and contributing to themselves (e.g., self-care) or the household (e.g., helping with household tasks) may also be helpful.

4.1 | Limitations and future directions

There are some limitations to consider with the current research. First, the sample consisted of caregivers of youth and adult athletes with intellectual and developmental disabilities who participated in Special Olympics. Although Special Olympics samples have been found to be representative of youth with intellectual disabilities in the general population (Lloyd et al., 2022), it is possible that the current sample does not reflect the broader community of people with intellectual and developmental disabilities. For instance, although athletes ranged in their level of caregiver-reported thriving, it is possible that this sample does not reflect the experience of thriving in the larger population of youth and adults with intellectual and developmental disabilities outside of Special Olympics. In addition, 83% of people with intellectual and developmental disabilities were residing with their parents at the time of study completion. It is possible that those living with family may have had a different experience of COVID-19-related stressors compared to those living on their own or in residential care. Therefore, replication using the same measures in a larger and more diverse sample of people with intellectual and developmental disabilities outside of Special Olympics is warranted. Second, responses were collected from caregivers, which may impact the accuracy of the data being collected on the constructs of interest due to possible biases or lack of awareness. While a caregivers' perspectives can be useful, it is only one component, and future research can expand on this work by using self-report measures or other data collection methods (e.g., interviews, photo-elicitation techniques, etc.) to assess these constructs. In addition, our COVID-19 stressor scale was adapted, however, it was not possible to carry out an additional validity assessment of the new measure. As such, the interpretation of results needs to be tempered until its validity can be fully established. It is also important to consider that mental health problems were operationalised in the current study as a combination of internalising and externalising problems (i.e., emotional problems, conduct problems, and hyperactivity), however, mental health is a multidimensional complex construct that may not be fully captured through this study's measure. Finally, we must interpret the results of the current study with caution with respect to any causal inferences, as the data were cross-sectional and correlational in nature. An important next step for future research is to assess the long-term impact of COVID-19 stressors on thriving and mental health problems. It will also be important to identify protective factors that may be associated with resilience in the face COVID-19 stressors, such as one's individual strengths or resources and supports in their environment.

5 | CONCLUSIONS

The current study lends support to the literature demonstrating that COVID-19 stressors have an important impact on the mental health of youth and adults with intellectual and developmental disabilities. Our findings suggest that the association between COVID-19 stressors and mental health problems is partially explained by one's level of thriving. Preventing mental health problems is not the same as actively promoting positive development and thriving (Lerner, 2000), though the two are related. A PYD approach to interventions involves building one's strengths, such as those in the community, home, or school (Benson, 1997). As we move out of the intensive stages of the pandemic, policymakers and clinicians may want to focus on bolstering access to resources and supports within the environments of people with intellectual and developmental disabilities, to allow for greater opportunities for positive experiences to cultivate positive developmental factors, and ultimately thrive.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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