

ORIGINAL ARTICLE

Influence of the COVID-19 pandemic on executive skills in Canadians experiencing social vulnerability: A descriptive study

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Abstract

The objective of this study was to describe executive skills in clients experiencing social vulnerability in the context of COVID-19 from the perspective of social service agency staff. COVID-19 has required transformational changes to livelihood and day-to-day living. Socially vulnerable individuals are likely to be disproportionately impacted because many have experienced serious early childhood adversity, which may compromise their executive skills in adulthood. Using a cross-sectional survey, we collected data between 05 May 2020 and 03 July 2020, for this mixed methods study of 53 staff in two agencies in western Canada serving clients experiencing social vulnerability. The first case of COVID-19 in this jurisdiction was identified 05 March 2020. Using investigator-designed survey items, we captured executive skills in five areas: (a) planning tasks of daily living, (b) managing time, (c) keeping track of information and appointments, (d) managing emotions, and (e) managing self-control. Staff reported their clients struggled with executive skills and these struggles increased during COVID-19, particularly in the areas of managing daily tasks and emotional regulation. COVID-19 restrictions overwhelmed clients with the decisions required to maintain health, employment, and childcare. With the loss of structure and routine, clients lost track of time and delayed completion of tasks, which further increased stress. Disrupted goals and uncertainty about the future contributed to hopelessness for clients who were trying to regain control over their lives, which made it difficult to manage emotions. Some clients acted more impulsively because of the added stressors, lack of routine and access to friends and extended family. A better understanding of the impact of COVID-19 on socially vulnerable clients will inform social service agencies about areas to focus programming to support their socially vulnerable clients.

KEYWORDS

behaviour and behaviour mechanisms, COVID-19, executive skills, mental illness, social welfare, therapeutic alliance

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1 | INTRODUCTION

Globally, the coronavirus disease 2019 (COVID-19) pandemic has required transformational changes to livelihood and day-to-day living (Douglas et al., 2020; Vigo et al., 2020). Two systematic reviews speak to the negative effects of COVID-19 and associated response measures on the general population, including increasing symptoms of anxiety, depression, and psychological distress (Salari et al., 2020; Xiong et al., 2020). Other negative impacts include fears related to virus exposure, financial losses, frustration, loneliness, and social isolation (Khan et al., 2020; Serafini et al., 2020; Vigo et al., 2020). Families with children have faced additional challenges related to closure of schools and childcare centres, increased financial insecurity, and disrupted family dynamics (Masten & Motti-Stefanidi, 2020; Prime et al., 2020).

Socially vulnerable individuals and families are likely to be disproportionately impacted by the pandemic (Douglas et al., 2020; Siegel & Mallow, 2021; Wilke et al., 2020). For the purpose of this paper, social vulnerability was defined as living with low income, physical and mental illnesses, addictions, disability, family conflict and violence, risk of homelessness and social isolation, and often involvement in the legal system (Gathron, 2019). The path to social vulnerability and resilience is different for each individual and family and may include an intergenerational accumulation of risks (Lê-Scherban et al., 2018). The focus on COVID-19 in the health sector has dulled efforts to support the socially vulnerable and altered access to resources that could provide assistance for pre-existing structural inequalities that differentially pattern ability to absorb and adapt to crises like COVID-19 (Singu et al., 2020). By vesting responsibility for self and family in an individualistic view of society, in times of crisis, these structural inequalities undermine individual capacity to cope. Furthermore, ongoing implications of COVID-19 shutdowns and social distancing can place socially vulnerable populations at greater risk (Douglas et al., 2020; Siegel & Mallow, 2021). Community agencies continue to evaluate the rapidly changing situation and identify potential solutions to address the needs of socially vulnerable populations. Agencies adapted their approaches to fundraising within a recession, compounded by COVID-19 alongside public health restrictions. Reductions in agency funding to support socially vulnerable populations are also affected by research granting councils' reallocated priorities to mitigate the effects of the pandemic.

A large proportion of clients experiencing social vulnerability have experienced serious early childhood adversity (Perry et al., 2020), which may compromise their executive skills in adulthood (Lund et al., 2020). Executive function constitutes a cluster of skills including inhibition (self-regulation), working memory, and cognitive adaptability (Friedman et al., 2006) typically learned in early childhood (Shonkoff & Phillips, 2000). These skills are the basic building blocks of higher brain functions, including planning and goal orientation. Survival is an innate feature of human behaviour. To safeguard survival, the brains of those who experienced serious adversity in early childhood are programmed for an automatic threat response (Shonkoff & Phillips, 2000). When serious adversity in early childhood requires programming for an automatic threat response,

What is known about this topic?

Resilience theory suggests that socially vulnerable populations will be differentially impacted by large shocks like COVID-19.

Associations between the ability to absorb and adapt to COVID-19 may be associated with fragile executive skills.

What this paper adds

Large proportions of agency staff reported their clients struggled with executive skills and COVID-19 increased their struggles.

In the face of COVID-19 restrictions, clients were overwhelmed with the number of decisions to maintain health, employment, and childcare.

Disrupted goals and uncertainty about the future contributed to hopelessness for clients who were trying to regain control over their lives, which made it difficult to manage emotions.

neural programming for the development of executive function and other cognitive skills are jeopardised with lifelong consequences (Shonkoff & Phillips, 2000). The additional stressors associated with COVID-19 may interfere with the adult capacity to adapt, and socially vulnerable individuals who experienced serious adversity may revert to reliance on automatic threat responses instead of executive skills (Shonkoff & Phillips, 2000). There is an association between executive skills and mental health (Snyder et al., 2015). A systematic review and meta-analysis suggested the association between executive function impairment and depression is stronger for clients who are over age 39 years (Dotson et al., 2020). Similarly, another systematic review associated executive function impairment and health behaviours (e.g., adherence to treatment, nutrition, smoking, and risky driving) underlying leading causes of death (Reimann et al., 2020).

Many social service agencies provide diverse programming to improve resilience for clients experiencing social vulnerability, often with limited evidence of their effectiveness (Ungar & Theron, 2020). Resiliency is 'the capacity of a system to adapt successfully to significant challenges that threaten its function, viability, or development' (Masten, 2018, p. 12). In the context of COVID-19, we expanded this definition to address the process of sustaining adaptability in the face of significant shocks within a system (Béné, Newsham, Davies, Ulrichs, & Godfrey-Wood, 2014). Increasingly, social service agencies are strategically focusing their programming on developing executive skills such as setting goals, planning, managing time, and regulating emotions and behaviours (Perry et al., 2020). Indeed, programmes that focus on improving executive skills, which socially vulnerable clients may have been unable to fully develop as children, may contribute more to improving resiliency than education and treating mental and physical illnesses (Ungar & Theron, 2020). Clients experiencing

social vulnerability are already in crisis when they seek services. The unanticipated additional stressors associated with the pandemic may further compromise weak executive skills and ability to manage tasks of daily living, even with intensive community support.

2 | THEORETICAL FRAMEWORK

We applied Béné et al.'s (2014) social-ecological resilience theory to this study because its major tenets are based on system-wide shocks, such as the COVID-19 pandemic, and the effects of such shocks on communities. Béné et al. (2014) consider three interdependent dimensions of resilience: absorptive, adaptive, and transformative. With system-wide shocks, any population will first attempt to cope with the effects using absorptive capacities that resist the impact of the shock on individuals and systems. Absorbing the shock may be challenging for vulnerable populations who may be living in a state of chronic crisis with insufficient accumulation of resources (e.g., housing, food, clothing) and assets (e.g., social capital) to cope. When populations can no longer absorb the effects of the shock, they must adapt to incremental changes to maintain existing structures and functions. Again, populations with limited resources and assets would be least able to adapt and may require the greatest supports to cope with the stressor. Agencies that embraced flexibility and engaged with diverse community stakeholders had the greatest capacity for societal adaptive resilience (Béné et al., 2014). The final phase in Béné et al.'s theory (2014), system transformation, is required when previous adaptive practices are nonviable or unsustainable. In the COVID-19 pandemic, the characteristics of transformation remain unknown. At this time, it is unclear whether the availability of the COVID-19 vaccine will require systems adaptation or a shift to the higher transactional costs of transformation. In this study, we apply social-ecological resilience theory with the concepts of absorptive, adaptive, and transformative capacities to staff reports of the effects of the COVID-19 pandemic on executive skills in clients experiencing social vulnerability. The purpose of this study was to describe executive skills in clients experiencing social vulnerability in the context of COVID-19 from the perspective of social service agency staff. The research questions were: (a) What proportion of clients experiencing social vulnerability struggle with executive skills? (b) Do staff perceive that this proportion has changed since the start of COVID-19? (c) How has COVID-19 affected this change? An understanding of these issues may inform areas of need for additional supports now during COVID-19, and in the future to prepare socially vulnerable clients for potential system-wide shocks.

3 | METHODS

3.1 | Design

We conducted a concurrent, exploratory mixed methods study (Johnson & Christensen, 2017) and applied the STROBE checklist

for cross-sectional studies (von Elm et al., 2007). The University of Calgary, Conjoint Health Research Ethics Board (REB-2020-0814) approved the study. Consent to participate and permission to use the data in future studies was embedded in the electronic survey and completed prior to answering the questions.

3.2 | Setting

We collected data for this study between 05 May 2020, and 03 July 2020, in a large urban centre (population >1.2 million) in western Canada. The first case of COVID-19 in this jurisdiction was identified on 05 March 2020. In Canada, the federal government COVID-19 response focused on travel restrictions, protecting international borders, and managing supplies such as testing kits, ventilators, and personal protective equipment (Detsky & Bogoch, 2020). Each province has jurisdiction over health and determined strategies for containment and risk mitigation. Provinces mandated social distancing, masks in public, contact tracing, work from home, sizes of gathering, and closure of schools, universities, and non-essential businesses. These restrictions, including social distancing, were applied across sectors. During the period of data collection, there was tremendous uncertainty about how to safely provide services to socially vulnerable populations.

We collaborated with two not-for-profit agencies that provide services for individual adults and families with children who are experiencing social vulnerability and are voluntarily seeking support for their mental health, parenting, and strengthening core relationships. CUPS Calgary Society (formerly Calgary Urban Project Society) provides integrated (health, education, and housing) services focused on enhancing the ability of clients to absorb and adapt to the effects of past and current adversity to promote resiliency. Catholic Family Service (CFS) of Calgary provides programming and services designed to break cycles of vulnerability by enhancing mental health and wellbeing, empowering parents and promoting children's healthy development, and enabling success in school. The ratio of staff to clients varies depending on the intensity and duration of services. With a strong therapeutic relationship (Ginn et al., 2020), agency staff typically co-develop goals with their clients and then optimise services to build upon their strengths and achieve goals. Progress to achieving client goals is monitored using a range of reliable and valid measures of resiliency, which are collected at key milestones during client engagement with the agency.

Most social service agencies in the jurisdiction where this study was conducted have a strong behavioural neuroscience foundation because of the pioneering efforts of the Alberta Family Wellness Initiative (<https://www.albertafamilywellness.org/>), a 15-year philanthropic investment to connect research to policy and practice to improve the lives of children and families, especially those with mental illness and addictions. The primary communication tool of this initiative is the Core Brain Story video, which is a vehicle to make complex research concepts accessible to the public and service providers. Using metaphors to represent complex concepts,

the video explains the importance of positive early relationships and the development of executive skills. With 19 self-paced modules, the Core Brain Story certification provides a deeper understanding of early brain development and consequences for lifelong health. Many social service agencies in this jurisdiction strongly support Core Brain Story certification as part of employment, and at CUPS and CFS this training is mandatory. In alignment with behavioural neurosciences, agency staff supports their clients to understand and develop their executive skills. Thus, agency staff was well-positioned to provide information about their clients' executive skills and the impact of COVID-19 on those skills.

Given emerging and dynamic epidemiological knowledge of COVID-19 prevention and availability of technology, system adaptations were implemented quickly to ensure services for vulnerable clients were safe and sustained. These system adaptations included a rapid shift to remote service delivery refocusing efforts on supporting clients to navigate and access services and resources (rather than deliver them), and re-evaluating expectations of progress toward goals. When remote service delivery was not possible, staff were provided with personal protective equipment to provide services in person, either in office or in client homes. Agencies followed the provincial Medical Officer of Health screening protocols.

3.3 | Participants

Eligible participants were staff currently employed at an agency providing services to clients living with social vulnerability. We chose to survey staff to reduce the burden on clients who were suffering from serious stressors prior to the pandemic. Also, this study was conducted near the onset of the pandemic. This meant that access to clients to conduct a survey was constrained because agencies were in the process of equipping clients with computers to engage with programmes and services remotely. We included staff who had direct or remote contact with clients. Senior leaders sent an initial email and two reminder emails to their staff at CUPS ($N = 140$) and CFS ($N = 80$) to invite participation via a link to an online survey.

3.4 | Survey

The investigator-designed survey (see Supplementary file) included closed and open-ended questions in five areas of executive skill: (a) planning to accomplish tasks of daily living, (b) managing time, (c) keeping track of information and appointments, (d) managing emotions, and (e) managing self-control and thinking before acting. In the closed-ended questions, we asked staff to estimate the proportion of their clients who were struggling with executive skills in each area. We categorised staff responses as $<50\%$ or $\geq 50\%$. Then, we asked staff whether this was a change in executive skill since the start of the pandemic: "Since 05 March 2020, has the proportion of your clients/patients struggling to manage

their emotions in order to achieve goals, complete tasks, or control and direct behaviour 1 (*decreased*), 2 (*stayed the same*), or 3 (*increased*). We collapsed the change categories as 1 (*decreased or stayed the same*) and 2 (*increased*). For each executive skill, we asked an associated open-ended question, "How has COVID-19 affected this change?" An expert in survey item design reviewed the survey, which was pilot tested by the study team. After revisions to clarify wording on a few items and to verify skip patterns, agencies distributed an email invitation with links to the survey in the online platform, Qualtrics^{XM} (Provo, UT, USA) to potential participants.

3.5 | Data analyses

Data were downloaded from Qualtrics and imported to IBM SPSS for Windows, version 26 (IBM Corp.) and cleaned. Nearly one-quarter of surveys were incomplete or had missing values because participants were not forced to answer questions before continuing to the next item; missing values were not replaced. Descriptive statistics were presented as means/standard deviations and frequencies/percentages. Thematic analysis (Boyatzis, 1998) was used to code responses to open-ended questions in each area of executive skill.

4 | RESULTS

4.1 | Participants

A total of 68 agency staff started the survey (29% response rate which includes indeterminants); 53 surveys with complete data were included in the analyses. On average participants were 43.84 ($SD = 11.94$; range 23–70) years and most were women (88.5%). Participants were social service professionals (53.8%), health professionals (9.6%), administrators (9.6%), or other (26.9%, including early childhood professionals).

4.2 | Staff-reported proportions of their clients struggling with executive skills

See Table 1 for staff-reported proportions of their clients struggling with executive skills and proportions of clients whose struggling increased since the start of COVID-19.

4.3 | Contributors to increased client struggling since COVID-19

In the open-ended questions, staff reported their perceptions of contributors to clients struggling with executive skills since the start of COVID-19. See Table 1.

TABLE 1 Staff-reported proportions of clients struggling with executive skills and proportions of clients with increased struggling since COVID-19 with contributors to increased struggling

Client executive skill	N	≥ 50% of clients struggling with the executive skill	Proportion of clients with increased struggling since COVID-19	COVID-19-related contributors to increased client struggling ^d
		n (%)	n (%)	Contributor
Manage plans for tasks of daily living	53	35 (66.01%)	35 (66.0%)	In the face of COVID-19 restrictions, clients were overwhelmed with the number of decisions to maintain health, employment and childcare
Manage their time	52	33 (63.5%)	22 (43.1%) ^a	With the loss of structure and routine, clients lost track of time and tended to delay completion of tasks
Keep track of information and appointments	49	20 (40.8%)	11 (23.9%) ^b	Day-to-day tasks were overwhelming, and clients could not keep track
Manage emotions	49	31 (63.3%)	30 (62.5%) ^c	Disrupted goals and uncertainty about the future contributed to hopelessness for clients who were trying to regain control over their lives, which made it difficult to manage emotions
Exhibit self-control and think before acting	49	20 (40.8%)	8 (16.7%) ^c	Some clients acted more impulsively because of added stressors, lack of routine and access to friends and extended family

^an = 51.^bn = 46.^cn = 48.^dContributors were synthesised from staff-reported perceptions of COVID-19-related struggles in their clients.

4.3.1 | Manage plans for tasks of daily living

Staff reported that closure of childcare centres and schools and navigating new structures and process to access supports was challenging for clients who were already struggling to meet their basic needs for food, shelter, and clothing. Staff noted their clients in chronic crisis were 'struggling to follow-through on tasks' and were 'overwhelmed with their children at home while trying to do schoolwork.' With limited access to devices to complete programmes remotely or barriers to navigating English language websites and programming, '...clients most affected are the ones who have been unable to continue with the program.'

In the face of rapidly changing COVID-19 restrictions, clients were overwhelmed with the number of decisions required to sustain health, employment, and childcare. Balancing restrictions, with additional direct responsibilities of childcare, home schooling, caregiving for extended family members, employment, and their own self-improvement undermined their ability to cope with stress. In addition, COVID-19 restrictions compromised usual sources of support. Also contributing to stress was 'the Food Bank and other basic needs supports, which were disrupted or changed their service accessibility.' Some clients lost their job, were temporarily laid off, or had work hours cut, which further increased financial pressures. The resultant

anxiety and hopelessness about the future 'affected their ways of managing and prioritising their daily and simple plans.'

4.3.2 | Manage time

Staff reported that 'Time management is always a struggle with our clients...' and many clients 'don't have the skill or motivation to create and live by a schedule and routine.' During the initial stages of the lockdown, some clients welcomed the break from intensity of attending programmes and that 'a routine and schedule were perhaps optional and should be flexible to reflect they were on "holidays."' Many clients felt 'a bit lost in a mainly self-directed environment' and struggled to cope when the 'reality of managing their own time/life as well as their child's time hit them.' With the loss of structure and routine, many clients tended to delay completion of tasks 'because there is no urgency to complete tasks.' In addition, clients lost track of time as they struggled with increased day-to-day responsibilities of childcare, homeschooling, and their own work. Staff noted the 'extra time it takes to do everything [such as] grocery shopping, medical appointments and errands' with COVID-19 protocols. Navigating COVID-19 protocols and trying to complete programmes remotely required that clients had 'to plan a

lot more and without childcare they [had] far less support to be able to manage their time.'

4.3.3 | Keeping track of information and appointments

For some clients, COVID-19 protocols resulted in 'most of their appointments [being] cancelled' often because they were 'unable to attend meetings.' Some clients appreciated 'the slow down and time spent with their children and have connected with the world in a positive way, [while] others have struggled with being overwhelmed and their inboxes and 'to do' lists [are] getting longer and longer with very little help and just can't manage 'one more thing.' For others, the 'lack of busy-ness and appointments and irrelevance of time ... has made it hard to remember the appointments that do exist.' Others may have intentionally missed face-to-face appointments 'as they feared to get infected if they leave the house.' For the immigrant sub-population, keeping track of appointments or responding to requests to confirm appointments may be 'due to low English skills' rather than COVID-19. When staff took time to assist families to track appointments with email or telephone reminders as well as planning about how to successfully complete the appointment, 'the families feel well supported and they will keep track of important information and appointments.'

4.3.4 | Manage emotions

With COVID-19, clients were 'feeling emotionally drained by having to accomplish more or the same amount of tasks while having added responsibilities such as childcare and homeschooling.' With the eventual realisation that progressing towards their goals still mattered and was desirable to them, but with extra steps in the process and fewer or disrupted supports, '[m]any [clients] are exhausted and feel overwhelmed and very alone with their struggles.' One staff member stated, 'This may be particularly true for clients who are engaged in programming designed to help them regain control over their lives, which was lost through previous and current experiences with adversity. In addition, the pandemic may exacerbate 'symptoms of trauma' and result in 're-triggering of [feelings of] powerlessness' and symptoms of mental illness. It was common for staff to note increased anxiety about health and finances, depression, and family conflict. For some families, this conflict led to separation and additional challenges for mothers who now must parent alone, or with fewer breaks that had previously been provided by other natural supports. For example, staff reported, 'restrictions on personal contact has had the most impact and created more stress with being unable to connect in person with family members.' At the same time, restrictions prevented clients from engaging 'in activities that promoted emotion regulation [such as] exercise and socialisation.'

Clients were afraid to take public transit 'which was no longer safe' to participate in programmes. Feeling 'burnt out' with the

required volume of video-conferencing and reduced access to professional supports, exacerbated clients' inability to cope with the added stressors of the pandemic. Isolated and lonely, client 'emotions build up and [were] expressed in unhelpful ways.'

Staff recognised 'a pattern of helplessness that has been evident in [clients] trying to determine how to achieve goals and move forward... It appears some individuals are not able to access their executive functioning because the [pandemic] restrictions come forefront.' Disrupted goals and uncertainty about the future contributed to hopelessness, particularly for clients who are trying to regain control over their lives. Staff reported their clients felt grief and loss 'about losing out on the things they [and their children] had been looking forward to.' Overall, COVID-19 added 'more to clients' plates making it difficult to deal with their emotions.' Staff noted that 'emotion regulation is often reduced when faced with higher anxiety and pressures.'

4.3.5 | Exhibit self-control and think before acting

Clients experiencing social vulnerability 'are not able to recognise that the benefits of self-control outweigh the momentary feelings of satisfaction when faced with choices, and therefore act impulsively.' Added to the pressures of 'living in close proximity with family 24/7 puts pressures on all family members and relationships.' Thus, some clients 'act out of desperation' because of lack of routine and access to friends and extended family. Although there was no categorisation of clients by age, staff reported more impulsive and 'desperate' behaviour from their younger clients.

4.4 | Integrating quantitative and qualitative results

Two-thirds of staff reported that $\geq 50\%$ their clients struggled to manage plans for daily living and two-thirds of staff reported the proportion of their clients who struggled with this executive skill increased since the start of the pandemic. These struggles were associated with pandemic-related changes to resources and services they relied on to manage their day-to-day lives. With COVID-19, clients had more to balance when they were already in crisis and had difficulties coping with day-to-day decisions.

Two-thirds of staff reported that $\geq 50\%$ of their clients struggled to manage their time, and about two-fifths of staff reported that the proportion of clients who struggled to manage this executive skill increased since the start of the pandemic. With the loss of structure and routine, clients lost track of time and tended to delay completion of tasks. Clients were overwhelmed at the prospect of continuing to achieve their goals with the additional burden of childcare, homeschooling, and work (educational programming and employment).

Two-fifths of staff reported that $\geq 50\%$ of their clients struggled to keep track of information and appointments, and nearly a quarter of staff reported that the proportion of their clients who struggled in this area increased since the start of the pandemic. At the start

of the pandemic, many appointments and educational programmes were cancelled or paused. Given lack of schedules and routines associated with schools and employment in the early phases of the pandemic, many clients missed appointments that may have benefited them. When staff took extra time to remind clients via personal telephone call or email, they reduced 'no shows.'

Two-thirds of staff reported that $\geq 50\%$ of their clients struggled to manage their emotions to achieve their goals, complete tasks, or control and direct behaviour. Two-thirds of staff reported that the proportion of their clients who struggled to manage their emotions increased since the start of the pandemic. In addition to existing mental illness and addiction that prompted clients to seek services, the additional burden of balancing childcare, homeschooling children, and work (educational programmes and employment) overwhelmed their ability to cope. The ability to cope was further eroded by disruption of access to professional and natural supports that clients relied on. Client ability to manage emotions was compromised with COVID-19 and often resulted in increased family conflict, and sometimes separation.

Despite increased struggles to manage emotions since the start of COVID-19, only two-fifths of staff reported that $\geq 50\%$ of their clients struggled with behavioural self-control. Less than one-fifth of staff reported that the proportion of clients who struggled in this area increased since the start of the pandemic. Some clients acted more impulsively because of added stressors, lack of routine and access to friends and extended family due to COVID-19 restrictions.

5 | DISCUSSION

To our knowledge, this study is the first to describe the potential influences of COVID-19 on executive skills in clients experiencing social vulnerability. A large proportion of social services staff reported that their socially vulnerable clients struggled with executive skills including planning for daily living, managing time, keeping track of information and appointments, and emotional and behavioural self-regulation. In the jurisdiction where this study was conducted, staff worked with their clients to co-develop goals to strengthen executive skills and promote resilience and independence. Regardless of goals and supports to strengthen executive skills, a large proportion of staff reported that their clients' struggled with executive skills increased since the start of the COVID-19. These results suggest that the pandemic further challenged the developing but weak executive skills in clients experiencing social vulnerability. A large proportion of staff reported that their clients struggled most in the areas of planning for daily living, managing time, and emotional regulation. Staff reported their clients struggled least in the areas of keeping track of information and behavioural regulation. A large proportion of staff reported the greatest increases in their clients' struggles were with planning for daily living and emotion regulation. Less than half of staff reported increased client struggles with managing time, and fewer than one in five staff reported increased client struggles

with keeping track of information and behavioural regulation since COVID-19. It is difficult to compare these results with other studies because of the dearth of research in this area. For example, there is one study of US college students that links poor executive skills with procrastination (Rabin et al., 2011). Without comparative data, it is unknown if clients experiencing social vulnerability were disproportionately impacted by the pandemic (Douglas et al., 2020; Siegel & Mallow, 2021; Wilke et al., 2020). Our results suggest that efforts to support clients experiencing social vulnerability are critical to increase the ability to absorb and adapt to crises like COVID-19 (Singu et al., 2020). For example, reminders for client appointments, which scaffolds executive skills, may enable the ability to plan and achieve goals.

With services designed to increase resiliency in vulnerable populations, agency staff reported that despite clients' intentions to work toward their goals, COVID-19 restrictions thwarted their intentions. Some clients attempted to absorb the threats associated with COVID-19. However, when absorptive capacity was exceeded, lack of executive skills interfered with clients' ability to adapt to COVID-19. At this point, clients disengaged from services, or required more intensive efforts by staff to sustain engagement. Consistent with Maslow (1971), socially vulnerable clients were unable to engage in self-actualising activities and focused instead on basic needs and safety (Ginn et al., 2017).

When large stressors, such as pandemics or natural disasters occur, most of the population has absorptive and adaptive capacity and can persist with their way of life (Béné et al., 2014). This is less true for socially vulnerable populations, who may need to adjust their expectations of normal and have sustained periods of adaptation long after the immediate COVID-19 threat is a distant memory. Béné et al. (2014) speak to inequity in the inability of vulnerable populations to absorb and adapt to system-wide shocks because they have not accumulated assets and resources to enable them to do so. Combined with compromised executive skills, these vulnerable clients quickly lose the ground they have gained in trying to better their lives. The results from this study suggest that investment in programming to improve executive skills in socially vulnerable individuals may ultimately improve capacity to cope with current shocks like COVID-19. In families raising children, supports for parents to teach executive skills may reduce social vulnerability in subsequent generations.

From a sociological perspective, COVID-19 protocols assume individual responsibility to curtail the spread of the virus. Yet, those living with low income, mental illness and social isolation may not have the reserves to add this responsibility to their day-to-day lives. Indeed, clients must focus on meeting their own basic needs and the needs of their family before they can consider personal growth (Maslow, 1971) and adopting a social responsibility lens to address the needs of others (Adorjan, 2020). During COVID-19, the social services agencies in the present study pivoted existing structural supports for their vulnerable clients away from personal growth toward simply navigating dynamically changing ways to access supports to meet day-to-day basic needs.

5.1 | Strengths and limitations

This study is limited by the low response rate, small sample, and unknown representativeness of the staff providing services to socially vulnerable populations. This study was a starting place to explore the influence of large system shocks such as the COVID-19 pandemic on executive skills in a socially vulnerable population. Increased COVID-related work demands may have negatively biased agency staff perceptions of their clients' executive skills; their survey responses may not represent the perspective of their clients. Future research should include client self-report using reliable and valid measures of executive skills over time. Also, it is unknown how COVID-19 has affected the executive skills in the larger population. Future research should compare executive skills in the general population with vulnerable populations.

5.2 | Implications for practice and future research

During major shocks such as COVID-19, systems concerns are focused on capacity and sustainability of health systems. However, improving executive skills in socially vulnerable populations may reduce the potential burden on the health system by increasing the ability to absorb the impact of COVID-19 and adapt to new ways of life.

With the growing economic crisis that will be exacerbated by COVID-19, it seems likely that many social services agencies will continue to struggle to provide support for socially vulnerable populations. For vulnerable families, supports to help parents develop their own executive skills at the same time as supporting parents to develop these skills in their young children may buffer the effects of future shocks to society. At the moment, larger-scale system supports should include affordable housing, eviction moratoriums, and unemployment assistance to prevent desperation that can increase susceptibility to emotional and behavioural dysregulation. With this approach, the demand on clients and agencies to respond to crises in meeting basic needs may be reduced—enabling clients, and the organisations that support them, to retain as much focus as possible on adaptation and personal growth.

DATA SHARING

Data will be available through Policy Wise Secondary Analysis to Generate Evidence data repository.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

AUTHORS' CONTRIBUTIONS

Benzies conceptualised the study, designed the survey, analysed data, and wrote the first draft of the manuscript. Perry and Williams

recruited participants and distributed the survey and interpreted results. All authors read and approved the final version of the manuscript.

ETHICS APPROVAL

The University of Calgary, Conjoint Health Research Ethics Board (REB-2020-0814) approved the study.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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