Roles of Family Stress, Maltreatment, and Affect Regulation Difficulties on Adolescent Mental Health During COVID-19

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Abstract

This study examines the indirect effects of affect dysregulation and suppression on the associations between family stress from confinement, maltreatment, and adolescent mental health during COVID-19. We examined both adolescent and caregiver perspectives to yield a more well-rounded understanding of these associations than afforded in previous research. Using both adolescent ($N=809$, $M_{age}=15.66$) and caregiver ($N=578$) samples, family stress from confinement, exposure to physical and psychological maltreatment, affect dysregulation and suppression, and youth internalizing and externalizing symptoms were measured in the summer of 2020, following three months of stay-at-home orders due to COVID-19. Affect dysregulation partially accounted for the associations between family stress from confinement and psychological maltreatment on both internalizing and externalizing symptoms for youth and caregiver report. Suppression partially accounted for the associations between family stress and maltreatment on internalizing and externalizing symptoms in the youth sample, but only for internalizing symptoms in the caregiver sample. Understanding family predictors of adolescents' mental health concerns and their underlying mechanisms, affect dysregulation and suppression, can inform mental health interventions during and following the COVID-19 pandemic.

Keywords Maltreatment · Affect dysregulation · Suppression · Mental health · Family stress

The welfare of youth and their families should be a top priority as we navigate the disruptions to daily life caused by the coronavirus disease 2019 (COVID-19) pandemic. Prior to the pandemic, maltreatment was a serious public health problem, with roughly 34 per 1000 adolescents in Canada involved in investigations for some form of maltreatment (e.g., psychological, physical, sexual, and/or neglect; Trocmé, 2010). Although incidences of reported maltreatment to children's aid services have decreased during the pandemic, researchers have cautioned this may be due to reduced access to typical reporting systems rather than a true decline in maltreatment (Cabrera-Hernández & Padilla-Romo, 2020). In fact, given that many families are highly stressed and confined at home, there is strong reason to expect marked increases in maltreatment during the

COVID-19 pandemic (Cuartas, 2020). This raises serious concerns about the mental health of the next generation of Canadians, as maltreatment is a robust risk factor of both internalizing (e.g., depression, anxiety) and externalizing (e.g., conduct disorder, oppositional defiant disorder) problems (Cicchetti, 2016; Moretti et al., 2014).

Although most research on the deleterious effects of maltreatment on mental health outcomes focuses on exposure in childhood (e.g., Kaplow & Widom, 2007), there is some evidence that maltreatment experienced in adolescence has similar negative effects, particularly for internalizing problems (e.g., Moretti & Craig, 2013). Prior to COVID-19, adolescence was recognized as a period of increased risk for multiple forms of maltreatment (Sedlak et al., 2010). At the same time, it is the developmental period in which we see the highest rates of both internalizing and externalizing problems (e.g., Schwarz, 2009). As both parents and adolescents face increased stress (e.g., financial, health), lack of social support and isolation (e.g., decreased access to support networks), COVID-19 may provide an ecologically salient point in time to study the impact of maltreatment on adolescent mental health outcomes. To further this

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understanding, other potential predictors of maltreatment and mental health difficulties during COVID-19, such as family stress from confinement, must also be considered. Given expressed concerns with increased maltreatment due to family stress during COVID-19 (Cuartas, 2020), gaining a better understanding of the processes by which maltreatment may be impacting adolescents at this time may aid in the development and implementation of effective treatment for both families and individual adolescents. The current study addresses these gaps in the literature by examining whether affect regulation difficulties (i.e., affect dysregulation and suppression) mediate the associations between family stress from confinement and maltreatment on mental health problems in youth during the pandemic. We examined both adolescent and caregiver perspectives to yield a more well-rounded understanding of these associations than afforded in previous research. We hope this research informs interventions to reduce youth's mental health problems during and following the pandemic.

Maltreatment, Affect Regulation Difficulties, and Mental Health

One way that maltreatment affects adolescents' mental health is through disruptions to their ability to regulate and/or tolerate negative emotional experiences, a set of abilities collectively termed affect regulation (Thompson, 2019). Two potential affect regulation outcomes of maltreatment include affect dysregulation (i.e., difficulty regulating and/or tolerating negative emotions; Cicchetti, 2016) and suppression (i.e., tendency to avoid or suppress negative emotions; Sistad et al., 2021). From an attachment perspective, affect regulation develops in the context of dynamic interactions between adolescents and their caregivers (Bowlby, 1973). Notably, a caregiver's ability to recognize and validate their youth's emotional experiences, and thus provide a secure base, is thought to form the foundation of affect regulation (Stevens, 2014). Adolescents who can effectively regulate their affect are better equipped to manage difficult situations and stressors, thereby buffering against mental health difficulties (see Troy & Mauss, 2011, for a review). If caregivers are unable to provide sensitive responses to an adolescent's distress, however, youth may try to cope on their own, possibly resulting in affect dysregulation and/or suppression (Gross & Cassidy, 2019). Maltreated adolescents are at elevated risk for affect dysregulation (see Gruhn & Compas, 2020, for a meta-analytic review), in part due to the absence of sensitive interactions with caregivers (Kim & Cicchetti, 2010). Affect dysregulation has been shown to mediate the association between maltreatment and mental health problems in children, adolescents, and adults (Kim & Cicchetti, 2010; Moretti & Craig, 2013). Moreover, when maltreatment

occurs from a primary caregiver, adolescents can be left feeling intimidated by the very attachment figure who is supposed to protect and support them (Kim & Cicchetti, 2010); this dramatically elevates their risk of suppression as they may learn that emotional outbursts lead to more physical or emotional pain. Indeed, a recent meta-analysis found maltreatment to be linked to both affect dysregulation and suppression (Gruhn & Compas, 2020). Although suppression has been shown to mediate the association between maltreatment and perceived stress in adults (e.g., Hong et al., 2018), its role in an indirect pathway to mental health difficulties in adolescents has been less explored.

Family Stress from Confinement During COVID-19

The associations between maltreatment, affect regulation difficulties, and mental health problems in adolescents may be particularly pronounced in the context of COVID-19. The reasons for this are three-fold. First, public health responses to the pandemic (e.g., self-isolation, social distancing) have limited the extent to which adolescents and caregivers can leave their households. Being confined at home, especially under periods of stress, can exacerbate conflict and prevent family members from getting respite from a potentially tense environment (Rousseau & Miconi, 2020; Spinelli et al., 2020). Moreover, the loss of daily routines and increased contact between family members may highlight normative developmental differences between adolescents and adults, such as differences in sleep or work schedules and leisure activities (e.g., screen time). These conflicting lifestyles may generate additional conflict, while putting pressure on caregivers to be the primary or sole source of regulation for youth. Caregivers also face increased stress from finances, health anxiety, isolation and loneliness, and reduced social support, which compound the stress that they face at home (Pereda & Díaz-Faes, 2020; Rodriguez et al., 2021; Wu & Xu, 2020). In turn, this may render caregivers more likely to use coercive or punitive strategies to police their adolescents to meet their school and personal obligations (see Stith et al., 2009). Second, the COVID-19 pandemic may represent a "double hit" for adolescents; not only are they experiencing elevated overall stress from the pandemic (e.g., Ellis et al., 2020), like their caregivers, they may be facing increased family stress from being confined at home (Craig et al., 2021). This may undermine their ability to regulate their affect, as the pandemic presents stress beyond their developmental capacity to manage. Third, for many Canadian adolescents, social interactions with individuals outside of the home are severely restricted, which is incongruent with adolescents' need for autonomy.

To add, adolescents may be cut-off from social networks, which can be a key protective factor for mental health difficulties (Roach, 2018). As many adolescents rely on teachers, school counsellors, peers, and romantic partners as sources of support (Collins & Laursen, 2004; Levitt et al., 1993), barriers to accessing these supports under conditions of maltreatment and family stress may exacerbate affect regulation difficulties and mental health problems.

Integrating Caregiver and Adolescent Perspectives

In general, research has investigated the associations between maltreatment, affect regulation difficulties, and mental health challenges through reports from a single perspective, either of adolescents or their caregivers (Hong et al., 2018; Kim & Cicchetti, 2010; Moretti & Craig, 2013). Most research on affect regulation in adolescents has relied on youth self-report (e.g., Moretti & Craig, 2013). Yet, adolescents with affect regulation difficulties may struggle to report on their emotional experiences, and thus, examining both caregiver and adolescent samples may provide a more well-rounded understanding of the associations between maltreatment, affect regulation difficulties, and mental health problems than a single report. In parallel, most research on the association between family stress during COVID-19 and adolescent mental health has relied on caregiver self-report (e.g., Brooks et al., 2020; Spinelli et al., 2020). Given that caregivers' reports on family stress may be biased by their own perceived stress related to health, finances, and working from home, incorporating adolescent perspectives may provide a more comprehensive understanding of this association. Furthermore, caregivers and adolescents may have unique and complementary strengths in reporting on different symptom domains. For example, one study found that caregivers were more reliable in reporting on their youth's presenting mental health issues, while adolescents were more reliable in reporting on family and environmental problems (Hawley & Weisz, 2003). Adolescents have been found to both overestimate (Rescorla et al., 2013) and underestimate (Salbach-Andrae et al., 2009) their mental problems. It is also possible that caregivers perceive their own policing of youth's behavior via yelling, intimidation, and threats to be normative, whereas youth may experience these behaviors as harmful. In sum, neither caregiver nor adolescent reports are infallible. Research that considers both perspectives can thus provide a more well-rounded understanding of the associations between family stress from confinement, maltreatment, affect regulation difficulties,

and adolescents' mental health difficulties than afforded in previous research.

The Present Study

Although the associations between maltreatment, affect dysregulation, and mental health problems are well-delineated, there is markedly less research on the role of suppression. Further, the COVID-19 pandemic provides a salient period during which families are facing increased conflict at home due to stay-at-home orders. This additional stress may have differential impacts on both maltreatment and its subsequent associations with youth affect regulation and mental health. Accordingly, the present study used reports from large samples of Canadian adolescents and caregivers to investigate whether affect regulation difficulties account for the associations between family stress from confinement and maltreatment on adolescent mental health problems during COVID-19. We had three primary hypotheses. 1) We anticipated a positive association between adolescent- and caregiver-reported family stress from confinement and maltreatment (Stith et al., 2009). 2) We also hypothesized direct paths between family stress from confinement and maltreatment to both adolescent internalizing and externalizing symptoms (Cicchetti, 2016; Moretti et al., 2014). 3) We hypothesized that the direct paths linking family stress from confinement and maltreatment to mental health difficulties would have a partial indirect effect through affect dysregulation and suppression (Kim & Cicchetti, 2010; Moretti & Craig, 2013).

Methods

Participants and Procedure

Adolescent Sample Participants ($N=809$) were adolescents aged 12–18 years old ($M=15.66$, $SD=1.37$, 56.7% identified female) who lived in Canada. Consistent with Canadian demographics (Statistics Canada, 2018), the sample was 74.3% White, 5.1% Asian (East and Southeast), 6.5% Indigenous/Métis/First Nations, 1.9% Black, and 8.6% other ethnicities (e.g., Hispanic, mixed ethnicity). The sample also included adolescents from all provinces and territories except Nunavut. In total, 17.4% of adolescents reported engaging in some form of therapy in the past four months. More information about the sample can be found in (Craig et al., 2021).

Caregiver Sample A second, unrelated sample ($N=578$, 94.6% female) were self-identified caregivers of adolescents

(ages 12–18) who lived in Canada. Caregivers were aged 30 to 67 ($M=45.12$, $SD=5.83$) and majority White (85.6%), with 3.5% Asian (East and Southeast), 5.9% Indigenous/Métis/First Nations, 1.2% Black, and 3.8% other/mixed ethnicities. Most were biological mothers (90.5%) or fathers (3.1%), however, the sample also included adoptive mothers (2.3%), stepmothers (2.0%), and foster or kinship carers (2.2%). Participants were recruited from all provinces and territories except Nunavut.

Procedure All participants were recruited through online advertisements on social media platforms (e.g., Facebook, Twitter, Instagram, Reddit) from June 17 to July 31, 2020. Advertisements were only placed for Canadian IP addresses and indicated that the study was about teen mental health and relationships during COVID-19. To ensure competency, youth were required to answer two questions pertaining to the risks and benefits of the study, as well as two questions regarding the purpose of the outlined study. A total of 168¹ adolescents were unable to answer at least one of the questions correctly and were excluded from the study. All adults consented to their own participation. Due to anonymous data, we were unable to match parent and youth data, thus, two independent samples were collected. All participants who completed the survey were entered into a draw for a \$250 electronic gift certificate to an online store. The study protocol was approved by the authors' Institutional Research Boards.

Measures

The *Ontario Child Health Study Scales* (OCHS, Duncan et al., 2019) is a 52-item caregiver- or self-report measure of adolescent emotional and behavioral problems in the past four months. The current study examined the Conduct Disorder, Oppositional Defiant Disorder, Depression, and Anxiety scales. Items were rated on a three-point Likert scale from 0 (*never or not true*) to 2 (*often or very true*). The current study combined the Conduct Disorder and Oppositional Defiant Disorder scales into an Externalizing scale, and the Depression and Anxiety scales into an Internalizing scale. Internal consistency for all scales was good for adolescent and caregiver report ($\alpha=0.68$ – 0.88 , $\alpha=0.76$ – 0.86 respectively).

The *COVID-19 Stress Scale* (Findlay et al., 2020) is a self-report scale on COVID-19 related stressors, of which one item was used in the current study. Participants were asked how concerned they were about the impact of COVID-19 on “family stress from confinement” which was rated on a four-point Likert scale from 1 (*Not at all*) to 4 (*Extremely*).

The *Conflicts Tactics Scale* (CTS; Straus, 1979) is a widely used self-report questionnaire that assesses physical and psychological maltreatment in relationships. We used a modified version of the CTS (Moretti & Craig, 2013) that measures adolescents' experiences of psychological and physical aggression in their relationships with caregivers (e.g., “Done to you by your parent”). Consistent with past research, we assessed perpetration of aggression from caregiver to child as a maltreatment screener (Moretti & Craig, 2013). Psychological and physical violence scales were each comprised of seven items rated on a 4-point Likert scale from 1 (*Never*) to 4 (*Always*). We used the mean score for each subscale in the analysis. The scale has been validated using large clinical and community Canadian samples (Goulter et al., 2021). The scales had good reliability for adolescent and caregiver reports ($\alpha=0.85$ – 0.90 , $\alpha=0.78$, respectively).

The *Affect Regulation Checklist* (ARC; Moretti, 2003) is a 12-item self-report measure adapted from a scale of emotion regulation (Gross & John, 2003). The measure has been validated using two large Canadian sample (Goulter et al., 2021). We focused on the 4-item affect dysregulation subscale (e.g., “It's very hard for me to calm down when I get upset”) and the 5-item suppression subscale (e.g., “I try hard not to think about my feelings”), scored on a 5-point Likert Scale from 1 (*Not like me*) to 5 (*A lot like me*). Both scales had good reliability in both adolescent and caregiver reports ($\alpha=0.77$ – 0.79 , $\alpha=0.79$ – 0.89 , respectively).

Analysis

To ensure our predictors were associated with our outcomes, correlations between our variables of interest were examined using SPSS 27.0 (IBM, 2020). Using Mplus 8.0 (Muthén & Muthén, 2019), two path analysis models (one for adolescents, one for caregivers) were run in which family stress from confinement was set to have an indirect effect on adolescent internalizing and externalizing symptoms through maltreatment, affect dysregulation, and suppression. Both youth and parent path analysis models controlled for youth age and gender, as well as weeks since the beginning of the pandemic (i.e., number of weeks since March 1, 2020). For the parent analysis we also included parent age, gender, and socioeconomic status as control variables. All models were estimated using full information maximum likelihood (FIML) with robust standard errors. FIML provides estimates of the variance–covariance matrix for all available data and retains individuals with missing data. Models were evaluated according to the most commonly used critical values for the fit indices, including a non-significant Chi-square (X^2), a root mean square error of approximation (RMSEA) below 0.10 (Schermelleh-Engel et al., 2003), and comparative fit index (CFI) above 0.90 (Hu & Bentler, 1999).

¹ Not included in the 809 participants.

Table 1 Descriptive Table for Adolescent and Caregiver Sample Demographics

Scale	Adolescent report		Caregiver report	
	%/ <i>M (SD)</i>	Range	%/ <i>M (SD)</i>	Range
Youth age	15.66 (1.37)	12–18	14.63 (1.77)	12–18
Caregiver age			45.12 (5.83)	30–67
Youth gender				
Female	56.7%		55.2%	
Male	38.7%		43.9%	
Trans/ Nonbinary individuals	5.1%		0.9%	
Caregiver gender				
Female			94.6%	
Male			5.0%	
Trans/ Nonbinary individual			0.3%	
Ethnicity				
Caucasian	74.1%		85.6%	
Asian (East and Southeast)	8.7%		3.5%	
Indigenous/Métis/First Nations	6.7%		5.9%	
Black	2%		1.2%	
Other/Mixed	8.6%		2.8%	
Lives with				
Parents	95.2%			
Foster/ group/ other	4.9%			
Family composition				
Two caregivers	69.7%		72.8%	
One caregiver	22.1%		21.6%	
Other	8.2%		5.5%	
School attendance in spring				
Online	83.8%		90.1%	
Mixed (online and in person)	7.5%		N/A	
In person	2.0%		3.6%	
None	6.7%		6.2%	
Psychological maltreatment	1.59 (.62)	1.00–4.00	1.33 (.28)	1–2.67
Physical maltreatment	1.12 (.29)	1–3.71	1.06 (.16)	1–2.71
Family stress due to confinement	2.64 (1.05)	1.00–4.00	2.37 (.88)	1.00–4.00
Affect dysregulation	12.05 (4.83)	4.00–20.00	10.39 (4.81)	4.00–20.00
Internalizing symptoms	15.63 (7.60)	.00–30.00	9.79 (6.29)	.00–28.00
Externalizing symptoms	6.28 (4.14)	.00–26.00	5.57 (4.51)	.00–25.00

Parameters were examined using standardized coefficients in Mplus (STDXY). Modification indices were examined to determine whether additional parameters were required in the models.

Results

Descriptive Statistics

Adolescent Sample Descriptive data for the demographics and variables of interest can be found in Table 1. Physical maltreatment had a skew of 3.8 and kurtosis of 19.75.

Except for physical maltreatment, all variables of interest had a skew and kurtosis within the acceptable range (George & Mallery, 2010). A count variable of total psychological and physical maltreatment by caregivers was created by coding responses “none” or “rarely” as 0 and “often” or “always” as 1 and summing across items to identify how many ways youth were experiencing maltreatment. Of the youth that completed the maltreatment measure ($n = 718$), 46% of youth reported experiencing at least one form of psychological maltreatment either “often” or “always” (see Table 2 for a break down of all items). More specifically, 12.5% of youth reported one form, 8.4% reported two forms, 7.5% reported three forms, 4.9% reported four forms, and 12.8% reported experiencing five or more forms

Table 2 Maltreatment Items by Scale

Scale	Youth report			Caregiver report		
	Never N (%)	Rarely N (%)	Often/ Always N (%)	Never N (%)	Rarely N (%)	Often/ Always N (%)
Physical						
Threw something that could hurt	634 (88.3%)	69 (9.6%)	15 (2.1%)	477 (96.8%)	15 (3.0%)	<1%
Pushed or shoved	617 (86.1%)	85 (11.9%)	15 (2.1%)	463 (93.9%)	29 (5.9%)	<1%
Punched or hit with something that could hurt	659 (91.9%)	47 (6.6%)	11 (1.6%)	477 (96.8%)	13 (2.6%)	<1%
Beat up	688 (96.1%)	25 (3.5%)	<1%	484 (98.2%)	<2%	<1%
Grabbed	593 (82.7%)	93 (13.0%)	31 (4.3%)	415 (84.3%)	69 (14%)	8 (1.6%)
Slapped	632 (88.3%)	67 (9.4%)	17 (2.4%)	471 (95.9%)	18 (3.7%)	<1%
Kicked	685 (95.5%)	28 (3.9%)	<1%	451 (98%)	<2%	<1%
Psychological						
Insulted or swore at person	320 (44.6%)	228 (31.8%)	170 (23.7%)	284 (57.6%)	182 (36.9%)	27 (5.5%)
Called fat or ugly (insulted physical appearance)	540 (75.3%)	103 (14.4%)	95 (13.2%)	478 (97%)	14 (2.8%)	<1%
Destroyed something belonging to other person	351 (90.8%)	49 (6.8%)	17 (2.4%)	474 (96.1%)	17 (3.4%)	<1%
Stomped out of the room, house, or yard during a disagreement	406 (56.6%)	167 (23.3%)	144 (20.1%)	248 (50.4%)	219 (44.5%)	25 (5.1%)
Said something to spite	386 (53.9%)	183 (25.6%)	147 (20.5%)	322 (65.6%)	155 (31.6%)	14 (2.8%)
Threatened to hit or throw something	590 (82.3%)	80 (11.2%)	47 (6.6%)	451 (91.9%)	36 (7.3%)	<1%
Shouted or yelled	189 (26.4%)	245 (34.2%)	283 (39.4%)	98 (20.0%)	275 (56.0%)	118 (24.1%)
Said something to hurt and humiliate	422 (58.9%)	161 (22.5%)	134 (18.6%)	383 (78.0%)	97 (19.8%)	11 (2.2%)
Threatened to abandon or kick out of the house	589 (82.1%)	68 (9.5%)	60 (8.3%)	442 (90.4%)	43 (8.8%)	<1%

Table 3 Correlation Table for all Variables of Interest

	1	2	3	4	5	6	7	8	9
1. Psychological maltreatment		.56***	.17***	.37***	.18***	.26***	.49***	.03	-.07
2. Physical maltreatment	.63***		.09*	.21***	.13***	.13**	.32***	-.05	-.12
3. Family stress from confinement	.30***	.13***		.24***	.29***	.37***	.33***	.04	-.05
4. Affect dysregulation	.38***	.21***	.37***		.41***	.63***	.69***	.03	-.04
5. Affect suppression	.30***	.15***	.21***	.45***		.39***	.36***	-.01	.05
6. Internalizing symptoms	.46***	.26***	.41***	.75***	.53***		.55***	.06	.06
7. Externalizing symptoms	.49***	.35***	.25***	.54***	.35***	.54***		.04	-.07
8. Weeks since beginning of pandemic	.08*	0.03	.13***	.14***	-.01	.07*	0.06		
9. Youth Age	-.04	-.12**	.00	.06	.01	.09**	-0.01	-0.09*	

* $p < .05$ ** $p < .01$, *** $p \leq .001$, bottom left is youth report, top right is caregiver report

of psychological abuse either “often” or “always” in the past four months. In terms of physical maltreatment, 7.9% of youth reported experiencing at least one form of physical maltreatment “often” or “always”. More specifically, 5.3% reported at least one form and 2.6% reported experiencing two or more forms “often” or “always.”

Bivariate correlations (see Table 3) showed that all variables of interest were associated in the expected directions. Specifically, family stress from confinement was positively associated with both physical and psychological maltreatment. Family stress from confinement and both types of

maltreatment were positively associated with adolescents’ affect dysregulation, suppression, and externalizing and internalizing symptoms.

Caregiver Sample Descriptive data for the demographics and variables of interest for the caregiver data can be found in Table 1. Except for physical maltreatment, all variables of interest had a skew and kurtosis in the acceptable range (George & Mallery, 2010). As above, we examined maltreatment as reported by caregivers as a count variable across seven physical and nine psychological types of maltreatment.

Fig. 1 **a** Youth Report Path Analysis Model for Internalizing and Externalizing Symptoms. Note. * $p < .05$, *** $p \leq .001$, dotted lines represent non-significant paths; model controls for youth age, gender, and weeks since beginning of the pandemic. **b** Caregiver Report Path Analysis Model for Internalizing and Externalizing Symptoms. Note. *** $p \leq .001$, dotted lines represent non-significant paths; model controls for parent age and gender, youth age and gender, socioeconomic status, and weeks since beginning of the pandemic

As shown in Table 2, 41.2% of caregivers reported perpetrating at least one form of psychological maltreatment either “often” or “always”. This included 13.2% of caregivers who reported one form, 9.7% reporting two forms, 5.3% reporting three forms, 5.1% reporting four forms, and 7.8% reporting five or more forms of psychological abuse either “often” or “always” in the last four months. For physical maltreatment, only 1.7% of caregivers reported at least one form of physical maltreatment either “often” or “always”. Physical maltreatment had a skew of 5.54 and kurtosis of 42.84.¹

Caregiver reported correlations for all variables of interest can be found in Table 3. Similar to the youth sample, family stress from confinement, affect dysregulation, suppression, physical maltreatment, psychological maltreatment, internalizing symptoms, and externalizing symptoms were all significantly associated in the expected directions.

Path Analysis Models

Adolescent Sample Once both psychological and physical maltreatment were entered into the model, physical maltreatment did not predict either internalizing or externalizing symptoms and was thus removed from analyses. In the adolescent sample (see Fig. 1a for parameters), the path model fit the data well $\chi^2(5) = 9.25$, $p = 0.16$, CFI = 0.99, RMSEA = 0.03 [95% CI 0.00, 0.06]. The model explained 42% of the variance in externalizing symptoms and 66% of the variance in internalizing symptoms. It also explained 28% of the variance in affect dysregulation and 12% of the variance in suppression. We examined indirect effects from family stress from confinement through affect regulation difficulties (i.e. affect dysregulation, affect suppression) to internalizing and externalizing symptoms, and then through

a double indirect effect from family stress from confinement to psychological maltreatment to affect regulation difficulties (i.e. affect dysregulation, suppression) finally predicting internalizing and externalizing symptoms.

Family stress from confinement had an indirect effect through affect dysregulation on internalizing ($\beta = 0.14$, $p \leq 0.001$) and externalizing symptoms ($\beta = 0.10$, $p \leq 0.001$). In addition, family stress from confinement had an indirect effect through suppression on internalizing symptoms ($\beta = 0.03$, $p \leq 0.001$) but not externalizing symptoms ($\beta = 0.01$, $p = 0.07$). Family stress from confinement had an indirect effect through psychological maltreatment and affect dysregulation for internalizing ($\beta = 0.05$, $p \leq 0.001$) and externalizing ($\beta = 0.04$, $p \leq 0.001$). Family stress from confinement also had an indirect effect through psychological maltreatment and suppression for internalizing ($\beta = 0.03$, $p \leq 0.001$) and externalizing ($\beta = 0.01$, $p = 0.04$).

Caregiver Sample Once both psychological and physical maltreatment were entered into the model, physical maltreatment did not predict either internalizing or externalizing symptoms and was thus removed from analyses. In the caregiver reported model (see Fig. 1b), the model fit the data well $\chi^2(4) = 4.97$, $p = 0.29$, CFI = 0.99, RMSEA = 0.02 [95% CI 0.00, 0.07]. The model explained 51% of variance of internalizing symptoms and 57% of the variance of externalizing symptoms. It also explained 18% of the variance in affect dysregulation and 13% of the variance in suppression. We examined the same indirect effects as laid out above.

Family stress from confinement had an indirect effect through affect dysregulation on internalizing symptoms ($\beta = 0.08$, $p \leq 0.001$) and externalizing symptoms ($\beta = 0.09$, $p \leq 0.001$). In contrast, family stress from confinement had an indirect effect through suppression on internalizing symptoms ($\beta = 0.03$, $p \leq 0.001$) but did not have an indirect effect on externalizing symptoms ($\beta = 0.01$, $p = 0.27$). Family stress from confinement had an indirect effect through psychological maltreatment and affect dysregulation for internalizing ($\beta = 0.02$, $p = 0.002$) and externalizing ($\beta = 0.02$, $p = 0.002$). Family stress from confinement did not have an indirect effect through psychological maltreatment and suppression for internalizing ($\beta = 0.002$, $p = 0.06$) or externalizing symptoms ($\beta = 0.001$, $p = 0.31$).

Discussion

The current study used large samples of Canadian adolescents and caregivers to investigate whether affect regulation difficulties account for the indirect associations between family stress from confinement and maltreatment on adolescent mental health problems during COVID-19. Our

findings are three-fold. First, and consistent with early warnings regarding the effects of the pandemic on families (e.g., Collier & Webber, 2020), we show that many Canadian adolescents and caregivers are reporting significant distress associated with being confined at home. More than 25% of youth and 11% of caregivers reported that being confined at home is resulting in “extreme” stress within their families. Indeed, our previous work found that family stress from confinement was rated as the fourth most stressful impact of the COVID-19 pandemic, following worries about vulnerable community members, family members’ health, and overloading the healthcare system (Craig et al., 2021). Consistent with Hypothesis 1, we further found that family stress from confinement was positively associated with both psychological and physical maltreatment in adolescent and caregiver samples. Second, our findings underscore concerning rates of child maltreatment during the pandemic. Over 40% of youth and caregivers endorsed maltreatment of adolescents in their homes, while 2–8% of respondents reported physical maltreatment. Consistent with Hypothesis 2, even though most of the psychological maltreatment was seemingly mild forms such as name-calling and swearing, these behaviors were significantly related to youths’ mental health concerns. Unsurprisingly, physical maltreatment was no longer associated with mental health and affect regulation difficulties when entered simultaneously into the model with psychological maltreatment. Physical maltreatment often coincides with psychological maltreatment, as evident by their high correlation in the current and prior studies (e.g., Moretti & Craig, 2013). Third and finally, our results corroborated a growing body of literature implicating affect dysregulation as a key mechanism that accounts for the association between family stress, psychological maltreatment, and adolescent mental health (Dvir et al., 2014). Our results build on the limited research on the role of suppression, specifically, finding it to account for a partial indirect effect between family stress, psychological maltreatment and broad mental health concerns of youth and of internalizing (but not externalizing) concerns as reported by caregivers (partially consistent with Hypothesis 3).

Family Stress from Confinement, Maltreatment, and Adolescent Mental Health

Considered alongside other studies of the impact of the pandemic on families, our results contribute to a growing and mixed picture. Previous studies, for instance, have found that parents are reporting an increased sense of closeness with their children (Gadermann et al., 2021) and that spending more time together as a family can buffer against the negative effects of the pandemic on adolescent mental health

(Ellis et al., 2020). Conversely, adults who are living with children under 18 years old are reporting greater stress, alcohol use, suicidal ideation, and concern about physical or emotional violence at home, relative to adults without children at home (Gadermann et al., 2021). These results paint a picture of both resilience and strain as families cope with the significant disruptions associated with the pandemic. Our results align with previous studies showing that being confined at home is a unique and salient source of stress for caregivers (Brooks et al., 2020; Spinelli et al., 2020), and extend this work by showing adolescents are keenly aware of this dynamic. Confinement-related challenges may include a lack of sufficient space and equipment for personal, work, and school activities for each family member, different daily routines, and difficulty balancing multiple roles that are now permeating the same time and space (e.g., parenting while working; completing school work while interacting with siblings), lack of access to important recreational activities, and a lack of restorative “down time” (Spinelli et al., 2020). These challenges are likely exacerbated for families who experience overcrowding, housing insecurity, or other difficulties in the home environment. Together, these effects seem to contribute to a significant rise in stress and mental health problems in Canadian families, affecting children and caregivers alike.

The robust literature pointing to elevated family stress associated with the COVID-19 pandemic (Gadermann et al., 2021) raises concern about child maltreatment, as stressed caregivers tend to use less sensitive, more coercive/controlling, and more punitive parenting strategies (Stith et al., 2009). Wu and Xu (2020) postulated that caregivers have faced decreases in both their internal (e.g., parenting style) and external (e.g., social support) resources during COVID-19, which can affect their ability to cope and increase the risk of maltreatment. Coupled with evidence that economic recessions are linked to increases in child abuse and neglect (Schneider et al., 2017), this emerging evidence has prompted warnings about rising child maltreatment that may go undetected while youth have less in-person contact with mandated reporters such as teachers, counselors, and coaches (Campbell, 2020). Consistent with these concerns, national hotlines such as the Kids Help Phone have reported a 28% increase in calls that discuss physical abuse, relative to before the pandemic (Watson, 2020). In line with these concerns, our results show that high rates of child maltreatment are being reported by both caregivers and adolescents. The rates of psychological and physical maltreatment observed in these community samples mirror rates that were observed in a clinical sample of youth referred to an assessment or correctional facility prior to the pandemic (Moretti & Craig 2013). This is alarming, as correctional and clinical samples would be expected to be qualitatively

and quantitatively distinct from community non-probability samples in terms of experiences of maltreatment.

Thus, our results are also consistent with past research showing psychological and physical maltreatment to be linked with a host of negative outcomes for adolescents, including decreased self-esteem, poor academic and occupational functioning, lower long-term wellbeing, and mental health problems (Cicchetti, 2016). Moreover, maltreatment perpetuated by a primary caregiver raises particular concerns as it damages a crucial attachment system that informs youths’ growing sense of identity, self-efficacy, and relatedness. Youth who are maltreated by an attachment figure face the double challenge of coping with the trauma of the abuse while also not having access to a significant source of co-regulation. As such, the apparent rise in parental maltreatment of adolescents raises significant concerns for potential long-term sequelae for the present generation of youth in terms of their emotional, behavioral, and interpersonal wellbeing (Cuartas, 2020).

Indirect Effects of Affect Dysregulation and Suppression

A final contribution of this study is that it implicates affect dysregulation and suppression as potential mechanisms by which family stress from confinement and maltreatment are associated with adolescent mental health concerns. Most studies examining affect regulation difficulties measure dysregulation as a trait or individual factor rather than examining the context in which it occurs (Gross & Cassidy, 2019). Affect dysregulation can be seen as a reaction to an environmental trigger (e.g., increased stress at home) that precipitates an emotion (Gross, 1998), thereby explaining its indirect effect between family stress from confinement, maltreatment, and adolescent mental health problems. In comparison, suppression can be viewed as an adaptive reaction to being in a perceived environment in which a youth feels unsafe to express their emotions to their attachment figures (Gross & Cassidy, 2019). This is adaptive because expressing emotions in such an environment may result in further maltreatment from their caregiver(s) or family stress as a caregiver is unable to cope with a youth’s emotions (Gross & Cassidy, 2019). It may also relieve the youth of the negative effects of feeling dysregulated in the short term. However, suppression of emotions has a paradoxical effect in which a youth may feel increased emotional intensity following their attempts to suppress their emotions (Hofmann et al., 2009). Over time, the implications of chronic affect dysregulation and suppression are increased anxiety and depression (Schäfer et al., 2017) and aggression (Kokkinos & Voulgari-dou, 2017). In our study, suppression accounted for the indirect effect between the association between family stress from confinement on both internalizing and externalizing problems

for youth report, but only internalizing symptoms for caregiver report. One explanation may be that caregivers are unaware that youth are actively suppressing their emotions, as this is an internal process which may not be observable to caregivers. This may lead caregivers to overestimate the role of affect dysregulation and underestimate the role of suppression in their youth's functioning. Misunderstanding a youth's affect regulation process may be particularly problematic for caregivers who have youth with externalizing symptoms as it may be difficult for them to recognize internalizing processes, such as suppression, in the face of behavior problems.

Implications

Given the likely necessity of continued periods of family confinement as the pandemic persists, effective mitigation of adolescent mental health concerns should focus on modifiable mechanisms that link family stress and maltreatment to psychopathology. Fortunately, numerous efficacious interventions target each of these processes. Parenting interventions that target the attachment relationship such as Connect Parent Group (e.g., Moretti et al., 2015) and Attachment Based Family Therapy (Diamond et al., 2016) may be helpful in repairing the negative effects of increased psychological maltreatment that is occurring in the attachment relationship during COVID-19 for adolescents. Attachment-based interventions have been shown to be efficacious in addressing parenting capacities in maltreating families with toddlers and young children (e.g., van der Asdonk et al., 2020) and there is evidence that attachment-based interventions may have similar effects in adolescents (e.g., Moretti et al., 2015). These interventions have also been shown to decrease youths' affect regulation difficulties (e.g., Moretti et al., 2015), indicating that repairing the attachment relationship may be effective in addressing the mediating factors to psychopathology. For youth who experience continued affect regulation challenges, Cognitive Behavioral Therapy and Family and Youth Skills Training in emotion regulation has been shown to improve the ability to tolerate and effectively modulate difficult emotions (Suveg et al., 2009). COVID-19 has resulted in rapid expansion of online therapies, including attachment-based therapies, however, there is continued concern with the efficacy and engagement of families in online therapy (Lebow, 2020). Evidence from this study suggests that increased family mental health is required both during and after the COVID-19 pandemic to mitigate the negative impacts from increased family stress.

Limitations

Several limitations of the current study warrant consideration. First and foremost, this study presents cross-sectional data regarding the effects of the COVID-19 pandemic on family wellbeing, and thus cannot speak to the directionality of the effects. It is likely, for instance, that families in which youth are experiencing elevated internalizing and externalizing problems may experience more stress from confinement because of the difficulty associated with witnessing and managing these concerns. In line with this, an Australian study showed that parents and children with pre-existing mental health concerns experienced more pandemic-related stress and impaired family functioning since the onset of the pandemic (Westrupp et al., 2020). It is also difficult to examine mediation effects in a cross-sectional design, and thus we are careful to use the term 'indirect effects' throughout our results section. Second, while a strength of this work is the consideration of both youth and caregiver perspectives, our methods fall short of a true multi-informant approach where multiple parties provide ratings of the same family. Thus, we were unable to assess the degree to which caregivers and youth agree on the impact of the COVID-19 pandemic on their families, and whether such agreement is associated with increased family resilience. Third, while our sample demographics were broadly consistent with the gender and geographical distribution of Canadian youth (Statistics Canada, 2018), this sample was recruited via social media and cannot be considered representative of the Canadian population in dense cities. In particular, this sample was more likely to be White and caregivers were found have slightly higher income/education, relative to the general population of Canadian adolescents. Further, our caregiver sample was largely female; having greater representation across genders in our caregiver sample would have provided a more accurate understanding of family functioning. Families without consistent Internet access, who were precariously housed, or who do not use social media were unlikely to be represented in this sample. Given the non-probability sampling of the current study, it is also possible that the survey attracted adolescents and caregivers that were struggling with their mental health, which possibly explains why higher than expected maltreatment was found in the sample. Nevertheless, the associations between maltreatment, affect regulation difficulties, and youth mental health have been found in normative and high-risk samples (Moretti & Craig, 2013) and thus this study adds to our understanding of these associations during COVID-19.

Conclusion

Despite these limitations, our study contributes to our understanding of how Canadian families are faring during the COVID-19 pandemic and points to important directions for future work. First, many caregivers and youth urgently need support both broadly, and specific to coping with stress of confinement as they confront the significant challenges brought by the pandemic. Confinement at home has created significant stress and simultaneously reduced available outlets for stress relief. Based on previous theoretical models (e.g., Wu & Xu, 2020), parents may also require additional supports to deal with financial, mental health, and social stressors that can reduce their external and internal resources and lead to increases in maltreatment. Beyond the previously mentioned attachment-based interventions, additional resources for families could include information on stress management, peer-led parenting support, and training in effective affect regulation. Additionally, these results highlight the need for ongoing monitoring of the populations' mental health as the pandemic subsides. The effects of child maltreatment are often, unfortunately, insidious and enduring. Not only would families benefit from immediate support, youth who experienced maltreatment during this stressful period may need long-term support as they navigate the sequelae. Given that some youth are faring well amidst the pandemic (Dvorsky et al., 2020), we also need to understand what contributes to resiliency in these challenging times. As adolescents often rely, in part, on peers and romantic partners for support (Collins & Laursen, 2004), future work may want to consider the moderation effects of positive peer relationships on mental health outcomes. Longitudinal studies that follow adolescents throughout the COVID-19 pandemic and into a return to relatively normal life will be vital in assessing which youth will recover and which youth will require further support.

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