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ORIGINAL PAPER

Relationship Quality and Mental Health Implications for Adolescents during the COVID-19 Pandemic: a Longitudinal Study

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Abstract

Although parent-adolescent and peer-adolescent relationship quality are critical for adolescent wellbeing during typical stressful life events, the unique features of the COVID-19 pandemic put into question whether strong parent-adolescent and peer-adolescent relationship quality functioned as protective factors of adolescent mental health in this context. The current longitudinal study examined a community sample of adolescents across 3 time points, each 6 months apart (Time 1: Fall, 2019; $n = 163$, 50.9% male; mean age = 15.75 years, SD = 1.02). Results showed that increases in depression symptoms, perceived stress, and emotion dysregulation from Fall 2019 to Fall 2020 were predicted by changes in parent, but not peer relationship quality. The current study demonstrates that adolescent-parent relationship quality may be protective against mental health difficulties during the COVID-19 pandemic, while adolescent-peer relationship quality may not. Identifying protective factors that may play a role in mitigating the impact of the pandemic, and other such widespread health crises, on youth mental health is critical in reducing the long-term psychological harm of the viral outbreak, as well as promoting adolescent wellbeing and resilience.

Keywords COVID-19 · Adolescent · Pandemic · Mental health · Relationship quality

Highlights

- Longitudinal study assessing the protective nature of relationship quality in adolescents during the COVID-19 pandemic.
- Increases in adolescent-parent relationship quality were associated with adolescent mental health implications.
- Resources guiding parental characteristics may show positive effects on family functioning and adolescent wellbeing.

A large proportion of adolescents worldwide have faced unprecedented disruptions to their daily lives in response to the COVID-19 outbreak, with many youth demonstrating significant impacts on their mental health (Banje & Morris, 2021; De France et al., 2022; Hollenstein et al., 2021; Liu et al., 2020; Tang et al., 2020). Systematic reviews have documented high levels of anxiety, depression, and stress among adolescent samples since the onset of the pandemic (Jones et al., 2021; Loades et al., 2020), and longitudinal results suggest that youth are, on average, reporting significantly higher symptoms of depression during the pandemic than would be expected based on previously developed symptom trajectories (De France et al., 2022). Government policies instilled to slow the spread of the virus, including stay-at-home orders and the closure of schools and non-essential businesses, have led to widespread isolation and unintended consequences for mental health. While social isolation and distancing measures have been challenging for individuals across the lifespan, they may be associated with particularly detrimental consequences for adolescents. Youth of this age strive for independence and highly value peer relationships (Smetana et al., 2006), and thus strict restrictions on social interactions and stay-at-home orders have highly impacted their wellbeing. With the implementation of remote schooling,

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adolescents lost a sense of routine, as well as in-person interactions and relationships with peers and educational administrators, who often make up important protective support systems for youth (Piko & Kovàcs, 2010). Lacking these interpersonal relationships outside of the household represents a significant risk factor for loneliness (Beam & Kim, 2020; Janssens et al., 2021), as well as mental health decline (Zhou et al., 2020). Indeed, although some youth report improvements to their wellbeing during the pandemic (Ford et al., 2021), evidence suggests that overall, rates of mental health difficulties have increased significantly. For example, prior to the COVID-19 pandemic, the prevalence of mental health difficulties during adolescence worldwide was ~13.4% (Polanczyk et al., 2015); however, studies conducted during the pandemic report a prevalence rate up to 43.7% (Jiao et al., 2020; Zhou et al., 2020). Moreover, longitudinal assessments of adolescent mental health symptoms also suggest significant increases in anxiety and depressive symptoms when comparing scores pre- and mid-pandemic (De France et al., 2022; Kwong et al., 2021; Magson et al., 2020).

Nevertheless, not all adolescents have demonstrated significant mental health challenges during the pandemic, and some have actually reported decreases in mental health symptoms, such as reductions in anxiety symptoms (Hollenstein et al., 2021). This heterogeneity in effects highlights that important risk and resilience factors may be operating for adolescents. As such, identifying protective factors that may play a role in mitigating the impact of the pandemic on youth mental health indices is crucial in understanding the opportunities for resilience and limiting the long-term psychological impact. For example, relationship quality between adolescents and their parents (Aliri et al., 2019; Campione-Barr et al., 2021; Oliva et al., 2009; Tang et al., 2021; Wagner et al., 1996; Wang et al., 2020; Weeland et al., 2021), as well as between adolescents and their peers (Campione-Barr et al., 2021; McMahon et al., 2020; van Harmelen et al., 2020) are especially important during stressful life events as these positive relationships can function to buffer the negative impacts of stress (Campione-Barr et al., 2021; McMahon et al., 2020; Weeland et al., 2021). Therefore, youth with high-quality parent and peer relationships may demonstrate fewer mental health difficulties during the pandemic. In particular, given the fluctuating nature of relationship dynamics during adolescence (Campione-Barr et al., 2021; Ebbert et al. 2019), experiencing an increase in relationship quality over time during exposure to stressful events, regardless of initial relationship quality, may be especially important for well-being as it represents the ability of the relationship to adapt and meet the demands of a given stressor. However, evidence of the protective role of increases in relationship quality for youth during the pandemic has thus far been limited in two important ways. First, it is difficult to extrapolate previous findings of the protective effects of parents and peers as there is very little known about the role that parents and peers play during the unique context of the pandemic. There is a unique combination of stressors that many adolescents have faced during the pandemic, such as fear of contracting the virus and social isolation, are largely unique in comparison to those adolescents typically face. Moreover, many adolescents have spent significantly more time with parents and very limited face-to-face time with friends. Second, among the few studies that have examined relationship quality between adolescents and their parents and peers, the majority have relied only on single time point assessments (Ellis et al., 2020; Pieh et al., 2020; Siste et al., 2020). As such, we are unable to determine if relationship quality is fluctuating in a systematic manner for adolescents during the pandemic, as well as whether increases or decreases in relationship quality function as important protective or risk factors for mental health during the pandemic.

Therefore, the current study was developed with the following goals. First, we aimed to evaluate whether the quality of relationships between adolescents and their parents or peers had changed in a systematic manner from pre- to mid-pandemic. Second, we wished to assess whether the rate at which the quality of these important relationships had changed within-person was associated with the extent to which adolescents reported mental health difficulties during the pandemic. To do so, the current study used recent data from a 3-wave longitudinal study comparing pre- to mid-pandemic adolescent wellbeing.

Protective Factors: Parent and Peer Relationships

According to Bronfenbrenner's ecological theory, the family unit is a proximal process that most strongly influences an adolescent's development and wellbeing (Bronfenbrenner, 1992). Family cohesion, described as family members sharing a strong emotional bond and demonstrating high levels of support among family members, is an important protective factor for many indices of mental health and wellbeing in adolescents (Maynard & Olson, 1987). Indeed, parenting characterized by responsiveness, warmth, and monitoring are associated with higher indices of youth resiliency in the face of adversity (Sieving et al., 2017; Southwick et al., 2014; Tang et al., 2021). In particular, high levels of parental sensitivity can buffer the impact of stressful life events on adolescent wellbeing (McMahon et al., 2020). Not only does relationship quality and the social climate between youth and their parents strongly determine the adolescent's ability to cope and

adjust to adversity (Browne et al., 2015; Weeland et al., 2021), but mental health intervention efforts that include a component of family support are more effective as well (Haine-Schlagel & Walsh, 2015).

Beyond the family environment, high-quality adolescent-peer relationships have been shown to provide an important source of emotional and social support, both highly protective against the risk of developing depression and anxiety (La Greca & Harrison, 2005; Lun et al., 2018; Tang et al., 2021), loneliness (Nangle et al., 2003; Janssens et al., 2021), and withdrawal (Freitas et al., 2019). Strong interpersonal relationships are critical protective mechanisms that reduce psychological risk during stressful life events, and instead promote resilience by fostering adaptive coping (Hartup & Stevens, 1999; Rutter, 1990; Stevens et al. 2018). Furthermore, an adolescent's peers are important "socializing agents", and they rely heavily on each other for problem solving and support, more so than on their parents and family members (Agnew, 2003; Buehler, 2006; Fuligni & Eccles, 1993). For example, positive peer relationships have been shown to buffer the effects of stressors on adolescent mental health (Criss et al., 2002; Lansford et al. 2003; Parra et al. 2018). Moreover, high friendship quality and perceived peer social support are associated with lower psychological symptoms, particularly stress (Compas et al., 1986).

Protective Effects of Parent and Peer Relationship Quality during the Pandemic

Unlike most stressful life events an adolescent may typically face, or global events such as natural disasters or terrorist attacks, the unique combination of isolation measures instilled as a result of the pandemic has modified the lifestyle of adolescents in unprecedented ways (De France et al., 2022). Adolescents typically seek independence from their parents and spend more time with peers (Smetana et al., 2006); however, during the COVID-19 pandemic, this balance was disrupted. Family members, rather than friends, inherently became the primary source of in-person interaction and social presence under stay-at-home orders. As a result of lockdown measures, adolescents attended classes from home with limited external leisure activities while many parents, particularly those in the middle to high SES families, worked from home, closely supervising their child's schoolwork and pastime (Shockley et al., 2021; Trevino et al., 2021).

While high-quality parent-adolescent relationships are typically predictive of adolescent wellbeing in the presence of stressful life events due, at least in part, to the role they play in problem solving (Capaldi et al., 1994; Say and Batigun, 2016; Sivrikaya et al., 2013), the uncertainty and lack of control caused by the pandemic created problems that did not have clear-cut solutions that could be encouraged or emphasized (Pfefferbaum & North, 2020; Prime et al., 2020). Therefore, high-quality parent-adolescent relationships may not be as effective in buffering the effects of the pandemic since the problems and distress introduced by these circumstances have proven to be uniquely challenging. Additionally, the positive benefits of a high-quality parent-adolescent relationship may be diminished as a result of increased time together in a contained environment. Specifically, although a parent-adolescent relationship may be strong, the positive effects this normally entails may be dampened as parents are expected to take on additional roles and responsibilities during isolation periods (e.g., greater academic support; Panaoura, 2021). Lastly, while supportive parent-adolescent relationships help counter some of the negative impacts of short-term stressful life events (Bava & Tapert, 2010), the longevity of the pandemic may be a greater challenge to bear.

Similarly, although high adolescent-peer relationship quality typically protects against mental health problems induced by stressful life events and promotes adolescent resilience (McMahon et al., 2020; Orben et al., 2020; van Harmelen et al., 2020), adolescents have been forced to rely more heavily on virtual means of social interactions, such as texting, telephone or video calls, and have had limited, if any, opportunities to see their friends in person (Siste et al., 2020). It is possible that face-to-face interactions between adolescents and their peers are a crucial component of what makes these relationships highly protective during stressful life events (Lewandowski et al., 2011). For example, the virtual nature of these interactions makes it more challenging to properly interpret and respond to emotional cues (Byron, 2008; Uhls et al., 2020; Vermeulen et al., 2018). Thus, even high-quality adolescent-peer relationships may not provide the same protective effects against adolescent mental health problems in the context of the pandemic due to the shift in the nature of the interactions and physical distancing and confinement measures preventing the social needs of adolescents to be met (Ha et al., 2019; van Harmelen et al., 2020).

Importantly, findings from both parent and peer literatures highlight that the highly dynamic nature of the pandemic has required a shift in both relationship characteristics and modalities, evolving not only the ways we interact, but potentially also how these interactions affect our wellbeing. Given these rapidly changing circumstances and relationship dynamics, it may be particularly important for youth during the pandemic to experience increases in relationship quality, rather than static levels of relationship quality, as these increases may be an indication of the ability of the relationship to flexibly adapt to the everchanging aspects of the pandemic and accommodate the changing needs of the adolescent.

The Current Study

The purpose of the current 3-wave longitudinal study was to examine whether increasing relationship quality between adolescents and parents or adolescents and peers represent protective factors for the development of mental health difficulties in the face of the COVID-19 pandemic. Specifically, we sought to examine whether increases or decreases in adolescent-parent or adolescent-peer relationship quality were associated with individual differences in mental health during the pandemic. It is hypothesized that an increase in adolescent-parent or adolescent-peer relationship quality would lead to an improvement in adolescent mental health outcomes. To capture a wide range of possible mental health difficulties, in the current study we assessed shifts in symptoms of anxiety, depression, perceived stress, and emotion dysregulation from prior to the pandemic (Fall, 2019) to mid-pandemic (Fall, 2020).

Method

Participants

As part of a larger study (De France et al., 2022), participants were recruited from a community sample of adolescents who had recently completed a larger 5-wave study assessing mental health prior to the pandemic in Kingston, Ontario (Time 1; October–November, 2019; $n = 163$, 50.9% male; age range 14–16 years, mean age = 15.75 years, SD = 1.02). Representative of the small urban city where the youth lived, the sample was predominantly White (92%) and lived above the poverty line (94%). Other racial identities reported included Asian (2.6%), Black (2.1%), and Latin American (2.1%). Approximately six months following Time 1, participants were invited to take part in a follow-up study to assess their psychological functioning during the pandemic (Time 2; May–June 2020). In total, 136 participants took part in Time 2 (53.7% female, 46.3% male, mean age = 16.21, SD = 0.97). At this time, students were undergoing remote schooling and many companies were operating remotely, however social distancing measures were beginning to relax as the province of Ontario went into Phase 1 and 2 reopening plans, where businesses, daycares and places or worship were re-opening and gatherings of 10 were permitted (Nielsen, 2021). Of participants who did not complete Time 2, 8 were not able to be reached as their contact information was no longer accurate, and no current telephone numbers could be identified through searches. Seven participants were not interested in participating; one participant had no internet access at home and therefore could not access the online surveys, and one participant was not eligible for the study as they had left the country. Participants who completed Time 2 were then contacted one final time six months later (Time 3; October-November 2020). At this time, students had recommenced remote schooling following the summer vacation, and social distancing measures were beginning to increase following a rise in COVID-19 infection cases during the second wave of the pandemic. All Time 2 participants completed Time 3. Participants were compensated with $30 CDN for completing Time 1, $20 for completing Time 2 and $25 for completing Time 3.

Procedure

Participants were invited to participate in each study wave via email. Participants whose email address was no longer active and participants who did not respond to emails, were also contacted via telephone. Participants that were over the age of 16 provided consent and completed the set of questionnaires online using the survey website LimeSurvey. Participants who were under the age of 16 were only given access to the online assent and survey platform once a parent/guardian had provided written consent. All study information, consent and assent forms, and questionnaires were provided online. Debriefing forms and compensation were sent via email following confirmation that the study measures had been completed. Study measures took ~20–30 min to complete. All studies were approved by the Queen's University Internal Review Board under the project name Emotion Regulation and Well Being (Study Number GPSYC-817-17).

Measures

Mental health indices

Anxiety symptoms *Time 1 and 3*. The Multi-dimensional Anxiety Scale for Children (MASC; March et al., 1997) is a 39-item self-report inventory of symptoms of anxiety among youth. Items are rated on a 4-point scale, from 1 (Almost never) to 4 (Almost always). The MASC showed strong inter-item reliability, Cronbach's $\alpha > 0.91$ for all time points.

Depression symptoms *Time 1 and 3*. The Children's Depression Inventory (CDI; Kovacs & Beck, 1977) is a 27-item self-report measure assessing the prevalence of depressive symptoms. One item reflecting suicidal ideation was removed in accordance with requests by the IRB. Items are rated on a 3-point scale, ranging from no presence of the symptom (0), to high levels of the symptom (2). Several items are reverse scored. A high mean CDI score indicates a high level of depressive symptoms. The CDI showed strong inter-item reliability, Cronbach's $\alpha > 0.92$ for all time points.

Perceived stress *Time 1 and 3*. The Perceived Stress Scale (PSS; Cohen et al., 1983) is a 10-item self-report measure assessing the extent to which an individual has perceived themselves as having stress during the previous month. Items are scored from zero (never) to 4 (very often), indicating how often they experienced various symptoms of stress. An example item is: "In the last month how often have you felt that you were unable to control the important things in your life?". Higher mean scores indicate higher levels of perceived stress. The PSS showed strong inter-item reliability, Cronbach's alphas > 0.86.

Emotion dysregulation *Time 1*. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a 36-item self-report measure assessing the extent to which an individual struggles with emotion regulation. Items are rated on a five-point Likert scale from one (Almost never) to five (Almost always). During Time 1, the DERS showed strong inter-item reliability, Cronbach's $\alpha = 0.93$.

Time 3. During Time 3, Emotion Dysregulation was assessed using the Difficulties in Emotion Regulation Scale —Coronavirus Short Form (DERS-COVID; Crowell et al. 2020). The DERS-COVID is an 18-item self-report measure assessing the extent to which an individual is struggling with emotion regulation during the pandemic. The DERS-COVID is derived from the original DERS (Gratz & Roemer, 2004). Items were modified to include the preface "During the pandemic…" and are rated on a five-point scale from one (Almost never) to five (Almost always). DERS-COVID scores showed strong inter-item reliability, Cronbach's $\alpha = 0.91$.

Parent and peer relationship quality

The Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987) is a 53-item self-report measure assessing specific elements of an individual's relationships to index the strength of relationships with parents and peers. Items are scored on a five-point Likert scale from 1 (almost never or never true) to 5 (almost always or always true). An example item is: "My parents (peers) encourage me to talk about my difficulties". Parental Relationship Quality is calculated as the mean across parent items, which showed strong inter-item reliability, Cronbach's $\alpha > 0.94$. Peer Relationship Quality is calculated as the mean across peer items, which showed strong inter-item reliability, Cronbach's $\alpha > 0.95$. In both bases, higher scores indicate higher quality relationships.

Data Analysis Plan

For the following analyses, multi-level modeling (MLM) was conducted using MPlus (Muthen & Muthen, 1998–2017). The MLM approach was appropriate as the repeated nature of the dataset led to waves of data nested within individuals. For each of the following models, slopes were first generated at the within level (Level 1) by regressing Parent Relationship Quality or Peer Relationship Quality onto Time, which was recoded to allow for a Time 1 intercept (time coded as 0, 1, 2). Parent Relationship Quality and Peer Relationship Quality models were run independently. In each model, random intercepts and random slopes were generated for each participant, therefore allowing each participant's scores to determine their own starting point (intercept) and rate of change across time (slope).

To determine how the rate of Relationship Quality change was associated with wellbeing during the pandemic, at Level 2, Time 3 mental health symptom scores were regressed onto Time 1 scores to create a residualized variable that can be interpreted as variance in symptom scores that cannot be accounted for by earlier levels of symptomology. Next, Time 3 mental health symptom scores were regressed onto the Parent Relationship Quality or Peer Relationship Quality slopes and the individual's Relationship Quality intercept. Including the intercept as a predictor in our models allows us to evaluate whether the slope effects are significant independent of intercept effects. We can therefore determine whether it is the rate of change, or the pre-pandemic starting point, that is most influential for mental health during the pandemic. Finally, as gender was strongly correlated with Time 3 mental health symptoms, it was included as a covariate in all models.

Results

Descriptive statistics

No outcome variables showed outliers or problematic distribution values (skew and kurtosis < |1.8|). Table 1 provides the intercorrelations, means, standard deviations, and gender differences for all study variables. Gender differences were found for Time 3 Depressive Symptoms, Anxiety Symptoms, Perceived Stress and Emotion Dysregulation: female participants reported significantly higher levels of these mental health symptoms during Time 3 than male participants.

Model Results

All model results are presented in Table 2. Model results demonstrate that, at the group level, slopes of Parent (mean = −0.01, $p = 0.81$) or Peer Relationship Quality (mean = 0.05, $p = 0.06$) were not significantly different

Table 1 Intercorrelations, means, standard deviations, and gender differences for all study variables

		Family Relationship Quality			Peer Relationship Quality			Anxiety Symptoms		Depressive Symptoms		Perceived Stress		Emotion Dysregulation	
		Time 1	Time 2	Time 3	Time 1	Time 2	Time 3	Time 1	Time 3	Time 1	Time 3	Time 1	Time 3	Time 1	Time 3
Family Relationship Quality	Time 1	1													
	Time 2	0.54**	1												
	Time 3	0.53**	0.77**	1											
Peer Relationship Quality	Time 1	0.45**	0.34**	0.22*	1										
	Time 2	0.20*	0.25**	0.12	0.50**	1									
	Time 3	0.20*	0.28**	0.31**	0.56**	0.50**	1								
Anxiety Symptoms	Time 1	−0.20*	−0.10**	−0.07	−0.37**	−0.16	−0.14	1							
	Time 3	−0.11	−0.19*	−0.21*	−0.21*	−0.05	−0.15	0.71**	1						
Depressive Symptoms	Time 1	−0.58**	−0.44**	−0.30**	−0.48**	−0.23**	−0.15	0.50**	0.35**	1					
	Time 3	−0.45**	−0.54**	−0.58**	−0.37**	−0.13	−0.23**	0.29**	0.48**	0.60**	1				
Perceived Stress	Time 1	−0.51*	−0.32**	−0.28**	−0.43**	−0.12	−0.22*	0.41**	0.31**	0.69**	0.53**	1			
	Time 3	−0.29**	−0.37**	−0.50**	−0.30**	−0.14	−0.32**	0.27**	0.39**	0.34**	0.68**	0.52**	1		
Emotion Dysregulation	Time 1	−0.53**	−0.31**	−0.22*	−0.37**	−0.13	−0.16	0.55**	0.34**	0.69**	0.38**	0.70**	0.38**	1	
	Time 3	−0.35**	−0.57**	−0.65**	−0.31**	−0.14	−0.32**	0.39**	0.54**	0.46**	0.68**	0.52**	0.73**	0.57**	1
Mean		3.63	3.59	3.58	3.74	3.78	3.83	2.07	2.14	1.44	1.50	1.87	2.02	2.49	2.69
Standard Deviation		0.71	0.71	0.78	0.71	0.66	0.62	0.44	0.48	0.35	0.34	0.71	0.76	0.67	0.75
Gender Differences (0=male)		0.03	−0.14	−0.12	0.05	0.09	−0.00	0.13	0.22*	0.08	0.27**	0.15	0.34**	0.11	0.22*

*$p < 0.05$, **$p < 0.01$

Table 2 Full model results for the association between parent and peer relationship quality slopes on Time 3 mental health symptoms

	Family Relationship Quality Slopes		Peer Relationship Quality Slopes	
	b	95% CI	*b*	95% CI
Anxiety	−0.32, $p = 0.08$	−0.67, 0.04	−0.05, $p = 0.89$	−0.80, 0.69
Depression	−0.66, $p < 0.001$	−0.94, −0.37	−0.22, $p = 0.48$	−0.82, 0.39
Stress	−1.28, $p < 0.001$	−1.91, −0.65	−1.64, $p = 0.07$	−3.44, 0.16
Emotion Dysregulation	−2.01, $p < 0.001$	−2.53, −1.49	−1.21, $p = 0.09$	−2.61, 0.18

Models included slope intercepts, Time 1 symptoms, and gender as control variables

from zero. However, both slope estimates had significant levels of variance (means > 0.04, *p*s < 0.02), suggesting considerable individual-level differences in these slope estimates.

The results from the Parent Relationship Quality models show that controlling for Time 1 mental health scores, the slope of Parent Relationship Quality was significantly associated with Time 3 Depressive Symptoms, Perceived Stress, and Emotion Dysregulation, but not Anxiety. See Table 2 for all model results. Therefore, greater decreases in Parent Relationship Quality were associated with greater increases in depressive symptoms, perceived stress, and emotion dysregulation. The results from the Peer Relationship Quality models show that controlling for Time 1 mental health scores, the slope of Peer Relationship Quality was not associated with any Time 3 mental health symptoms.

Discussion

By assessing a sample of adolescents prior to, and throughout the COVID-19 pandemic, in the current longitudinal study, we were able to examine whether increases in parent-adolescent and peer-adolescent relationship quality were protective against the development of mental health symptomology in adolescents during the COVID-19 pandemic. Given the unprecedented shift in social routines of adolescents as a result of widespread isolation measures, developing a better understanding of the effect that a change in relationship quality with parents or peers has had may assist in bolstering our understanding of how to support youth mental health and resiliency during the pandemic.

Several findings from the current study warrant discussion. First, results showed that increases in adolescent-parent relationship quality over the course of the pandemic were associated with reductions in symptoms of depression, perceived stress, and emotion dysregulation in adolescents during the pandemic. Therefore, adolescents whose relationship quality with their parents had increased, displaying positive slopes since the onset of the pandemic, reported lower levels of mental health difficulties during the Fall of 2020. In contrast, adolescents whose parent relationship quality had decreased, displaying negative slopes since the onset of the pandemic, reported elevated levels of mental health difficulties. In the current study we controlled for Time 1 symptom scores, therefore the associations between relationship quality and mental health symptomology scores reflected how changes in mental health symptoms were associated with changes in parent relationship quality that took place over the course of the pandemic. These results suggest that parents, and the quality of the relationship they share with their adolescent child, are playing a critical role in adolescent mental health state during the COVID-19 pandemic. Conversely, a decrease in adolescent-parent relationship quality during this time may represent a major risk factor for adolescent mental health decline. It is noteworthy that these results were robust to intercept effects, suggesting that pre-pandemic relationship quality scores reported by adolescents were not significantly associated with changes in mental health symptoms over the course of the pandemic. Therefore, the extent to which an adolescent has reported an increase or decrease in their relationship quality with their parent during the pandemic appears to be more important for mental health during the pandemic than pre-pandemic levels of relationship quality. The results of the current study align with past studies on stressful life events, further demonstrating the importance of parent relationship quality in the face of typical adolescent adversities, as well as adverse global events (Browne et al., 2015; McMahon et al., 2020).

Surprisingly, however, changes in adolescent-parent relationship quality were not associated with anxiety symptoms. This is contrary to previous studies that have reported a strong association between parent-adolescent relationship quality and adolescent anxiety symptomology under a variety of contexts (Bhandari, 2017; Hale et al., 2006; Parra et al., 2018). While speculative, it is possible that the high levels of unpredictability, uncertainty, and lack of control during the pandemic stemming from continuously changing guidelines and restrictions are important driving factors for anxiety. Therefore, it may be that even the most warm and nurturing family dynamics could not counter the high levels level of uncertainty and

unpredictability, both largely characteristic and aggravating factors for anxiety (Carleton et al., 2012; Ross et al., 2016).

Second, increases in adolescent-peer relationship quality over the course of the pandemic were not systematically associated with any mental health outcomes. While speculative, a possible explanation for these results stems from the shift in the nature of the interactions between adolescents and their peers. With physical distancing measures implemented, adolescents were no longer capable of having face-to-face interactions that provide the degree of protective support necessary to counter mental health difficulties (Branje and Morris, 2021; Grossman et al., 2020; Orben et al., 2020), and instead were forced to rely on virtual interactions. Although speculative, we suggest that being restricted to virtual interactions with peers may have changed the types of supports adolescents sought from their peers during this time. For example, virtual interactions between peers are associated with lower levels of perceived emotional support (Byron, 2008; Uhls et al., 2020; Vermeulen et al., 2018), and therefore adolescents may have relied less heavily on their peers for support during this time. Similarly, in a time of great uncertainty, youth may not have tools to cope with such a novel stressor themselves (Williams and McGillicuddy-De Lisi 1999), making it challenging to support peers and leading to a decrease in perceived peer emotional support among adolescents despite high adolescent-peer relationship quality (Neville 1998).

Limitations and Future Directions

While the current study offers an important contribution to the implications of adolescent relationship quality with parents and peers during an unprecedented pandemic, it was not without limitations. First, the current study is a non-experimental and largely correlational analysis, and therefore, there are a variety of additional variables at play, as well as alternate explanations. For example, we do not control for additional stressors, such as academic demands. Second, the current study assessed the mental health of typically developing adolescents recruited from a North American community-based sample of 136 participants. Future studies should include efforts to replicate these findings with larger and more diverse samples, which would allow us to determine whether this pattern of results is generalizable to both global and clinical populations. Third, participants lived in the city of Kingston, in which the COVID-19 infection rate remained relatively low throughout the period of data collection. The results obtained in the current study may vary depending on the number of daily infected cases in a given area, painting a different picture of the severity of the virus and risks involved regarding the probability of contracting the virus. Future studies that are able to compare the current results with those derived from samples in larger or denser cities in which the number of cases were high would provide a significant contribution to this field in the context of the COVID-19 pandemic. Fourth, the current sample consisted of adolescents from middle-to-upper class families. Lower income families may experience higher levels of stress stemming from financial and job insecurity during the pandemic. Therefore, higher levels of stress introduced by the pandemic in lower income families may trickle down and disrupt the relationship quality between parents and their adolescents to a larger extent than families with higher income levels (Band & Weisz et al., 1990; Wadsworth et al., 2011). To increase the generalizability of results, future studies should include a more financially diverse sample. Fifth, the current study asked participants to report on general categories of parents and peers, without delineating specific relationships, such as relationships with mothers or fathers, or romantic relationships or platonic friendships. Studies that take a more fine grain approach to relationships throughout adolescence and during the pandemic would benefit the field. Finally, the current study relied on the assumption that there would be a direct effect between relationship quality and wellbeing. Given the unique parameters of the pandemic, there may be important moderating influences on the link between high quality peer relationships and adolescent wellbeing, such as the platforms through which adolescents could engage with one another and their ability to participate in online activities together, such as video games.

Conclusion

Like many stressful life events, adolescent-parent relationship quality appears to be highly protective against mental health difficulties in the unique context of the COVID-19 pandemic. During a time when youth have lost access to many alternate forms of adult support due to disrupted contact with teachers, coaches, youth leaders, or extended family, bolstering the relationship quality between adolescents and their parents is particularly important. Resources directed at parental characteristics during the pandemic, as well as resources aimed at reducing the imposed load on parents during these unprecedented times may have significant downstream effects for family functioning and adolescent wellbeing. Consequently, these results have implications that are useful to consider for future resources and intervention effects aimed at supporting mental health and resiliency of adolescents during the pandemic, post-pandemic, as well as can be generalized to other crises or periods of high stress.

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Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

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