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Adolescent Anxiety and the Role of Parental Support of Child Emotion Regulation during the  
COVID-19 pandemic

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## ABSTRACT

Adolescence is a transitional period during which a child undergoes social and emotional changes, adding a layer of vulnerability to increased anxiety symptoms. The COVID-19 pandemic disrupted the daily lives of many, confining adolescents to their homes and away from in-person social relationships. Parents play a critical role in supporting their children's emotion regulation via strategies including reappraisal, expressive suppression, and rumination. Our analyses examined 198 participants ( $M_{\text{age}} = 17.15$ ,  $SD = 1.82$ ; 60.6% female, 38.9% male, 0.5% another gender). For the current study, parents reported on how the pandemic impacted their families in 2020 (T1), and adolescents reported on parent support of emotion regulation throughout the pandemic and adolescent anxiety symptoms two years later (T7). We tested the hypothesis that greater emotion regulation support, particularly via reappraisal, an emotion regulation strategy consistently associated with positive emotional outcomes, will be associated with lower child reported anxiety levels. We also explored associations between suppression and rumination, framed as relatively maladaptive emotion regulation strategies, and adolescent anxiety. In addition, we tested the impact of COVID-19 as a moderator. There was a strong negative correlation between parent support for reappraisal and adolescent anxiety symptoms. The magnitude of this effect was greater among families more impacted by the pandemic. Results highlight the importance of adaptive parent support for emotion regulation in adolescents.

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## Introduction

The COVID-19 pandemic caused a worldwide lockdown with the constant rise in death counts, number of infections, lack of hospital accommodations for the infected, and the panic for social distancing (Smirini et al., 2020). Healthcare resources were redirected to protecting the elderly and immunocompromised individuals safe from COVID (Smirini et al., 2020). Although children and adolescents are less vulnerable to COVID-19, the combination of social isolation, business closures and economic recession, along with the healthcare crisis have been shown to lead to more cases of mental health problems such as anxiety and depression (Smirini et al., 2020). COVID-19 has left a traumatic impression on many individuals across the world. More research is needed to understand the scope of impact on adolescent social-emotional development, and the role of parent support of adolescent emotion regulation during the pandemic.

**Anxiety in Adolescence during COVID-19.** During development, anxiety and depression levels typically increase from late childhood into early adulthood. Hawes et al. (2021) found that during the pandemic, generalized and social anxiety symptoms among youth increased to an even higher degree than expected in typical development. The concern for social isolation and the fear of contracting COVID-19 has correlated with an increase in generalized anxiety along with comorbid mental health symptoms (Hawes et al., 2021). In addition, the increase in COVID-19 government restrictions correlated with an increase in anxiety symptoms as adolescents felt socially disconnected during their prime time to explore their social environment (Barendse et al., 2022). A study conducted by Shoshani & Kor (2022) indicated

significant increases in anxiety symptoms from pre-COVID-19 to post-confinement suggesting adolescents' vulnerability to exacerbating circumstances brought by COVID-19.

**Emotion Regulation in Adolescence.** Emotion regulation refers to the processes responsible for evaluating and modifying the intensity and duration of emotions and for monitoring how they are experienced and expressed (Lin et al., 2024; Zeman et al., 2006). Individuals who struggle to regulate their negative affect have been implicated in psychopathology such as anxiety disorders and aggression (Radman et al., 2023). An emotion regulation strategy to counter this effect may be through reappraisal which involves the changing of one's thoughts and beliefs of a situation or stimulus (Schafer et al., 2016). Reappraisal is widely empirically supported as a relatively adaptive strategy that predicts positive emotional adjustment (Shum et al., 2024). Adolescence is a key period of continued emotion regulation maturation, particularly for cognitively demanding strategies like reappraisal (Silvers, 2022). In contrast, other strategies (rumination, expressive suppression) have widely been conceptualized as relatively maladaptive and associated with mental health difficulties (Wilkinson et al., 2013; Gross & Cassidy, 2019). Expressive suppression refers to the internal suppression of emotional thoughts and experiences (Schafer et al., 2016). Rumination is also an internalizing strategy involving the continuous focus on emotional experiences along with their causes and consequences (Schafer et al., 2016). According to Lin et al. (2024), the reappraisal strategy was associated with fewer anxiety symptoms whereas expressive suppression and rumination were associated with an increase in anxiety symptoms. Parents also play a role in shaping these practices (Balan et al., 2017).

**Parental Influence and Support of Emotion Regulation.** Parents influence children's emotion regulation development through children's observation and modeling of how parents



respond and react to the children's emotions (Lin et al., 2024). Children may learn how to regulate their emotions by imitating their parents which can have significant implications for the child's development (Rutherford et al., 2015). A positive relationship between the parent and the child focuses on the parent's emotion socialization behaviors aimed at supporting children's emotion regulation (Lin et al., 2024). Such factors increase emotional security and allow children to learn effective strategies to manage their emotions (Lin et al., 2024).

In addition, parents play an important role as caregivers and as such their mental health can affect their children (Andres et al. 2022). In the study by Andres et al. (2022), anxiety in parents and caregivers was associated with greater anxiety and depression among adolescents, further demonstrating the effects of parental mental health. Parents affect children's capacity to engage in emotion regulation strategies which may contribute to their children's development of psychopathology (Cohodes et al., 2021). Parent anxiety was also found to be associated with an increased report of anxiety among children with parent-child communication as a moderator (Guo et al., 2023). Guo et al. (2023) interprets this finding as modeling and considers the possibility of parents utilizing controlling behaviors limiting children's autonomy.

During the time of isolation, parents felt an increase of pressure as they had to balance work and home life along with the economic struggle impacting their mental health which showed an association with their children's mental health (Penner et al., 2022). Some families were impacted by the COVID-19 pandemic more than others. There were families who lost a member to a COVID-19 related illness, lacked health care coverage, faced forms of oppression (hate crimes, racism, etc.), or experienced food insecurities (Barnowski et al., 2024). The combination of several stressors (social isolation, financial losses, etc.) may also increase the feeling of anxiety and distress among families (Shoshani & Kor, 2022). In addition, families who

lacked consistency in parental support demonstrated a positive correlation between COVID-19 stressors and depression and anxiety symptoms (Penner et al., 2022).

Overwhelmed by the pressure, the increased depression and anxiety of the parents resulted in a stronger association with negative parenting (i.e., inconsistency, lack of supervision, lack of parental support, harsh punishments) (Penner et al., 2022). Parental mental health problems were associated with an increase in children's internalizing and externalizing problems (Penner et al., 2022). Parental supportiveness was found to be negatively associated with depression and anxiety suggesting that parents remained consistent in their parenting despite the COVID-19 stressors (Penner et al., 2022). This highlights the importance of parental support, particularly in the context of the pandemic.

Social skills and general development during adolescence takes place at home with their family, school with educators and peers, community builders, and online (Pigaiani et al., 2020). According to Pigaiani et al. (2020), adolescents were found to have reevaluated family relationships and find their own coping strategies; however, some adolescents found it difficult to stay at home (Pigaiani et al., 2020). Social support from peers and adults was found to moderate pandemic effects; however, many children reported a decline in social support during the pandemic due to social lockdown (Shoshani & Kor, 2022). Greater levels of perceived social support served as a protective factor for individuals affected by the pandemic (Mariani et al., 2020).

**Sex Differences.** Females appear to experience an increase in mental health problems relating to the literature suggesting females' susceptibility in developing internalizing symptoms upon exposure to stress and trauma (Hawes et al., 2021). Females were more likely to report a subjective change aligning with previous findings in which females tend to assess events as more

severe regarding their well-being (Pigaiani et al., 2020). The study conducted by Myruski et al. (2023) found that the females reported experiencing significantly greater anxiety than the males during the pandemic. Previous studies also indicate sex differences in emotion regulation such that women seemed to use more emotion regulation strategies than men (Haver et al., 2023; Nolen-Hoeksema, 2012). However, studies pertaining to specific emotion regulation strategies (reappraisal, expressive suppression, rumination, etc.) are inconclusive as some studies report the tendency for women to use reappraisal and for men to use expressive suppression while other studies report no differences (Haver et al., 2023).

**Current Study.** The current study used a follow-up sample from a longitudinal study of adolescent anxiety during the COVID-19 pandemic (Myruski et al., 2023) to examine the effect of parents using reappraisal, expressive suppression, and rumination for adolescents' emotion regulation. The aim of this study is to examine adolescent anxiety levels during the peak of the COVID-19 pandemic, emphasizing the role of parental support of teens' emotion regulation. The follow-up time point became the focus of the study in which we focused on the questionnaires reported by the adolescents to examine how their parents supported their emotion regulation throughout the pandemic. Our first research question examines whether parental support of emotion regulation will be associated with anxiety among adolescents. We will also examine how parent support of child emotion regulation may differ between female and male adolescents. We predict that parent emotion regulation support, particularly reappraisal strategies, will be associated with a lower report in anxiety symptoms for adolescents. We will explore these patterns with expressive suppression and rumination as well. We also predict that the impact of COVID-19 will moderate this association such that the relation between lower report in parental support and greater anxiety symptoms will be stronger for more profoundly impacted families.

We predict greater anxiety symptom severity for girls than boys and that girls will report receiving more emotion regulation support. Through this project, we hope to gain a better understanding of how COVID-19 impacted adolescents and how parents played a role in reducing adolescent's anxiety symptoms.

## Method

**Participants.** Participants were recruited via social media (i.e., Facebook, Instagram) advertisements and through invitations to families who previously participated in prior studies. As this was a remote study, data collection occurred online via Qualtrics surveys. Families predominantly resided in central and south-central Pennsylvania. Prior to participation, parents completed a screening questionnaire and were excluded if the parent or adolescent did not speak English, or if the adolescent was diagnosed with any neurological or developmental disorders.

In total, 295 families were recruited to participate. We focused on T7 as this was when families completed questionnaires about parent support of adolescent emotion regulation. As such the sample for this analysis consisted of 198 participants aged 14-22 years old ( $M_{\text{age}} = 17.15$ ,  $SD = 1.82$ ; 60.6% female, 38.9% male, 0.5% other). Of those, three families did not provide information for adolescent race, ethnicity, parent income, and parent education. Adolescent race was reported as follows: 87.9% White, 6.6% more than one race, 3.5% Black/African American, 0.5% other. For ethnicity, 96.0% identified as non-Hispanic or Latinx descent and 5% identified as Hispanic or Latinx descent. Caregivers reported their highest education: 38.9% had a graduate degree, 37.9% had a college degree, 13.1% had completed technical school or some college degree, 5.6% had graduate training, and 3.0% had a high school degree. In 2021, most families (77.8%) reported having an annual income of \$60,000 or more.

**Materials.** The Screen for Child Anxiety Related Disorders (SCARED; Birmaher et al., 1999) questionnaire consists of 41 items designed to assess adolescent anxiety symptoms. Adolescents completed a self-report (SCARED-C) rating the prevalence of anxiety-related behaviors (in the last three months) based on a 3-point Likert scale: (0) not true or hardly ever

true, (1) somewhat true or sometimes true, (2) very true or often true. The scores compiled from this measure yield a total anxiety score and five anxiety subscales: generalized anxiety disorder, social anxiety disorder, separation anxiety disorder, significant school avoidance, and panic disorder. The current study used the total anxiety scale. A higher score would indicate greater symptoms severity and frequency symptoms. The total anxiety scale exhibited good internal consistency ( $\alpha = .97$ ).

The Parental Assistance with Child Emotion Regulation (PACER; Cohodes et al., 2021) questionnaire consists of ten emotion regulation strategies: acceptance, avoidance, behavioral disengagement, distraction, expressive suppression, problem solving, reappraisal, rumination, social support search, and venting. Adolescents (PACER-C) rate the degree to which the questionnaire items are true based on parent's response to negative emotions displayed by adolescents due to the COVID-19 pandemic. This measure involves a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Higher scores would indicate a higher frequency in which parents assisted their children with these ten strategies. For this specific study, adolescent report on parental support for three of these strategies will be examined: reappraisal, rumination, and expressive suppression. The PACER scale exhibited good internal consistency (Reappraisal:  $\alpha = .89$ ; Expressive suppression:  $\alpha = .86$ ; Rumination:  $\alpha = .81$ ).

The CoRonavIruS Health Impact Survey (CRISIS; Nikolaidis et al., 2021) quantified the economic, health, and social impact of COVID-19 on families at T1, reported by the parent. The total score was used to measure the magnitude of pandemic-related impacts on families (e.g., job loss, illness, etc.) as a moderator of the association between parent support in emotion regulation (PACER) and child anxiety reports (SCARED).

**Procedure.** Participants completed questionnaires via Qualtrics once per month, over the course of ~6 months from August 2020 through May 2021. During this period, T1-T6 questionnaire data was collected. As a follow-up, T7 data was collected approximately 2 years after T6. Measures relevant for the current study were parent-reported COVID impact at T1, and adolescent-reported PACER and SCARED collected during the follow-up at T7. This study took place during the middle of the pandemic social distancing and mask mandates occurred during the 2020-2021 academic year and included the shift from the requirement to recommendation of these safety precautions.

**Analytic Plan.** The preliminary analyses consisted of examining associations between adolescent age and study variables.

For the main analysis, an independent samples *t*-tests to examine sex differences between males and females. Moderation analyses were conducted via the SPSS PROCESS Macro Version 3.5 (Hayes, 2018). Reappraisal, expressive suppression, and rumination were entered as the predictors, the COVID-19 impact on families as the moderator, and total adolescent-reported anxiety symptoms were the outcome variable, for a total of three models. All predictors were mean-centered for moderation analyses.

## Results

### Preliminary analyses

**Age Effects.** There were no significant correlations with age and parental support of emotion regulation or adolescent anxiety (Table 1).

**Correlations between anxiety reports and parental support.** Adolescents who reported higher levels of parental support through reappraisal ( $r = -.17, p = .01$ ), rumination ( $r = -.24, p < .001$ ), and expressive suppression ( $r = -.15, p = .04$ ) reported lower levels of anxiety.

### Main Analysis

**Sex differences.** Independent samples *t*-tests revealed significant differences between females and males regarding total anxiety symptoms and COVID-19 impact on the family (Table 2). Adolescents' report on parental support through reappraisal, expressive suppression, and rumination was not significantly different between females and males.

The moderation analyses revealed that the magnitude of the association between parental support of reappraisal and adolescent anxiety symptoms depended on the impact of COVID-19 on the family (Figure 1). Less parental support of adolescents' reappraisal correlated with higher levels of adolescent anxiety. This effect was only significant among families who were moderately (mean) or highly (+1SD) impacted by COVID-19. Expressive suppression and rumination strategies showed no significant interaction with the impact of COVID-19.



## Discussion

This current study demonstrates the important role parents play in emotion regulation among adolescents, especially during a worldwide crisis. During the COVID-19 pandemic, parents were impacted by external factors which affected their parenting strategies (Penner et al., 2022). The main purpose of this study was to examine how parental support of adolescent emotion regulation related to adolescents' anxiety symptoms.

Consistent with our predictions, the greater parental assistance of adolescent emotion regulation, specifically via reappraisal, was associated with a lower level of anxiety. There was a strong negative correlation between the reappraisal and adolescent total anxiety such that adolescents of parents who exhibited more emotion regulation support also reported lower adolescent anxiety levels. Parents who exhibited more expressive suppression and rumination also correlated with lower reported anxiety levels. This suggests that any type of emotion regulation support may have been beneficial, regardless of the strategy. These findings align with previous research examining the role parents play in supporting their children with emotion regulation (Cohodes et al., 2021; Balan et al., 2017). In addition, since the findings of this current study are correlations, it cannot speak to the directionality of the pattern. As such, future research would be needed to establish a longitudinal or causal relationship.

We also examined the relationship between parent anxiety and adolescent's report on anxiety by conducting a moderation analysis. By utilizing the impact of COVID-19 on families as a moderator, we found a stronger correlation between reappraisal support and reduced anxiety symptoms among families who were highly impacted by the pandemic. This association, specific to reappraisal, seems to be stronger by families who were highly impacted due to the pandemic

disrupting health, daily routines, and/or financial stability of families. There was no significant moderation effect for suppression or rumination. This suggests that among those moderately-highly impacted families, the ability to leverage reappraisal was particularly valuable, and low use of reappraisal support may coincide with elevated anxiety among the most vulnerable families. Andres et al. (2022) and Penner et al. (2022) found a positive association between parents' anxiety and adolescents' anxiety supporting the notion that families who lacked consistency and experienced higher stress experienced greater anxiety levels in adolescents. These findings highlight the pivotal role of reappraisal-based emotion regulation support in adolescence for the most vulnerable, emphasizing the need for prevention and interventions to support these adolescents.

As a part of our analyses, we examined sex differences to confirm previous research supporting females reporting higher levels of anxiety. In our study, females reported higher anxiety levels. This is consistent with previous research demonstrating the tendency for females to report greater anxiety and other internalizing symptoms (i.e. depression) (Pigaianni et al., 2020). The higher report of anxiety in females could be that parents did not seem to offer greater emotion regulation support compared to males. We examined sex differences regarding parent support of adolescent emotion regulation. In this analysis, we did not find any significant sex differences in relation to parent support of emotion regulation. Haver et al. (2023) examined these differences as well to interpret inconclusive evidence found in previous studies where some researchers found a difference while others did not. Our findings align with the findings that support no differences between parent support of specific emotion regulation strategy. These findings suggest that parents supported their adolescent's use of emotion regulation strategies similarly for both males and females. This could be related to an assumption that men tend to

suppress their emotions more than women when both male and female similarly seek support from both parents and peers (Nolen-Hoeksema, 2012). This reinforces the need for more research on sex differences for specific strategies.

**Limitations and Future Directions.** The current study used general retrospective reports, which are limited in precisely capturing daily fluctuations. This is particularly relevant for the use of the PACER measure of parent support of emotion regulation, as adolescents were asked to reflect back on the duration of the pandemic. One solution is to incorporate an ecological momentary assessment to capture real-time recording of the degree to which children feel supported by their parents. Future studies should examine prevention and intervention efforts to help vulnerable families focus on emotion regulation skills. They should also focus on how to best maintain support for the parents so that they can provide consistent support for their children. In the event of another potential pandemic or any large-scale stressor, this measure can benefit families who may need extra resources to support adolescents' well-being.

Our analysis for the PACER focused only on T7, limiting our abilities to look at concurrent associations at earlier timepoints in the pandemic, as well as testing how earlier emotion regulation support might longitudinally predict later anxiety. In addition, this study only utilizes the parent report of covid impact. A more comprehensive measure could be used to include adolescents' perspective on the impact of the pandemic. There may be differences on how the parent and the adolescent viewed the effects of COVID-19.

In sum, this work highlights the important role of adaptive parent support for emotion regulation in adolescents during large scale stressors such as the COVID-19 pandemic.

**Table 1**

*Correlations*

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Child Age	17.15	1.82	-	0.09	-0.05	-0.03	-0.07	-0.12
2. Adolescent Total Anxiety	26.98	19.33		-	-.17*	-.15*	-.24**	0.12
3. Parent Support of Reappraisal	5.25	1.1			-	.15*	.38**	0.1
4. Parent Support of Expressive Suppression	3.67	1.29				-	.54**	0.1
5. Parent Support of Rumination	3.96	1.22					-	0.13
6. Impact of COVID-19	3.47	2.19						-

\*Correlation is significant at the 0.05 level (2-tailed)

\*\*Correlation is significant at the 0.01 level (2-tailed)

**Table 2***Sex differences*

	Females ( <i>n</i> = 120)	Males ( <i>n</i> = 77)	<i>t</i> ( <i>df</i> )	<i>p</i>
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )		
Adolescent Total Anxiety	33.43 (18.57)	16.68 (15.83)	-6.77 (179.85)	< .001
Parent Support of Reappraisal	5.24 (1.22)	5.28 (0.88)	0.28 (195)	.78
Parent Support of Expressive Suppression	3.60 (1.30)	3.79 (1.27)	0.99 (195)	.32
Parent Support of Rumination	3.90 (1.20)	4.05 (1.25)	0.82 (195)	.41
Impact of COVID-19	3.76 (2.34)	3.04 (1.89)	-2.37 (194.92)	.02

**Table 3***Parent Support of Reappraisal and Impact of COVID-19 Interaction*

<b>Outcome</b>	<b>R</b>	<b>R<sup>2</sup></b>	<b>MSE</b>	<b>F</b>	<b>df1</b>	<b>df2</b>	<b>p</b>
Adolescent Total Anxiety	0.48	0.23	292.09	14.78	4.00	193.00	<b>0.000</b>
Predictors	Coeff	SE	<i>t</i>	<i>p</i>	LLCI	ULCI	
Main effects							
Constant	1.15	4.19	0.28	0.783	-7.10	9.41	
Reappraisal	-3.26	1.13	-2.90	<b>0.004</b>	-5.48	-1.04	
COVID Impact	0.82	0.57	1.43	0.156	-0.31	1.95	
Reappraisal*COVID Impact	-1.25	0.56	-2.25	<b>0.025</b>	-2.35	-0.16	
Conditional effects							
COVID Impact	Effect	SE	<i>t</i>	<i>p</i>	LLCI	ULCI	
-1.00 SD	-0.52	1.55	-0.33	0.739	-3.59	2.55	
0.00	-3.26	1.13	-2.90	<b>0.004</b>	-5.48	-1.04	
+1.00 SD	-6.00	1.76	-3.42	<b>0.001</b>	-9.46	-2.54	

*Note:* Bold values indicate a significant effect ( $p < 0.05$ )

**Table 4***Parent Support of Expressive Suppression and Impact of COVID-19 Interaction*

<b>Outcome</b>	<b>R</b>	<b>R<sup>2</sup></b>	<b>MSE</b>	<b>F</b>	<b>df1</b>	<b>df2</b>	<b>p</b>
Adolescent Total Anxiety	0.45	0.20	303.70	12.36	4.00	193.00	<b>0.000</b>
Predictors	Coeff	SE	<i>t</i>	<i>p</i>	LLCI	ULCI	
Main effects							
Constant	1.37	4.28	0.32	0.750	-7.08	9.81	
Expressive Suppression	-1.80	0.97	-1.85	0.066	-3.72	0.12	
COVID Impact	0.49	0.58	0.84	0.402	-0.66	1.64	
Expressive*COVID Impact	-0.39	0.43	-0.90	0.369	-1.23	0.46	

*Note:* Bold values indicate a significant effect ( $p < 0.05$ )

**Table 5***Parent Support of Rumination and Impact of COVID-19 Interaction*

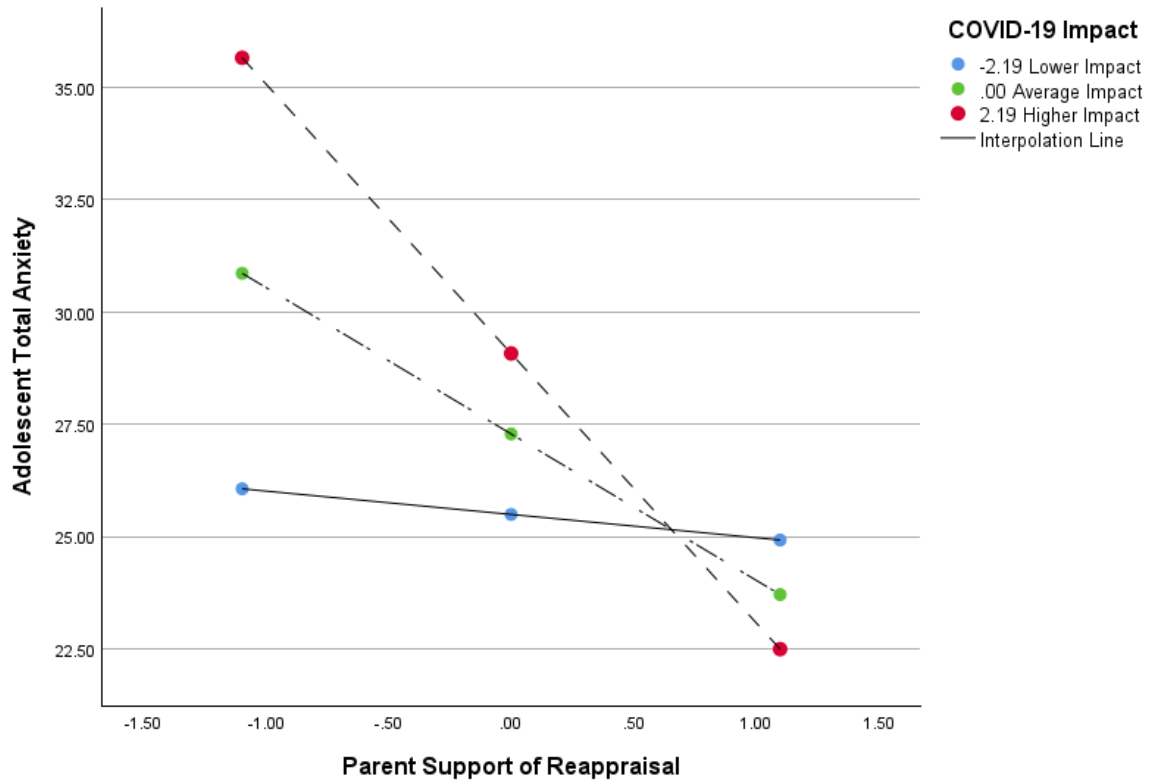
<b>Outcome</b>	<b>R</b>	<b>R<sup>2</sup></b>	<b>MSE</b>	<b>F</b>	<b>df1</b>	<b>df2</b>	<b>p</b>
SCARED-C T7_Total	0.49	0.24	289.41	15.36	4.00	193.00	<b>0.000</b>
Predictors	Coeff	SE	<i>t</i>	<i>p</i>	LLCI	ULCI	
Main effects							
Constant	1.66	4.17	0.40	0.691	-6.57	9.90	
Rumination	-3.58	1.01	-3.55	<b>0.001</b>	-5.57	-1.59	
COVID Impact	0.70	0.57	1.24	0.218	-0.42	1.82	
Rumination*COVID Impact	-0.50	0.47	-1.05	0.293	-1.43	0.43	

*Note:* Bold values indicate a significant effect ( $p < 0.05$ )



**Figure 1**

*COVID-19 Impact as a moderator of the link between parental support of reappraisal and adolescent total anxiety.*



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