Navigating Prolonged Uncertainty: The Role of Emotion Regulation and Coping on Mental Health Outcomes During Covid-19

Alexandra Haddad

A Thesis
In the Department of
Psychology

Presented in Partial Fulfillment of the Requirements
For the Degree of
Master of Arts (Psychology, Research and Clinical Training Option)
at Concordia University
Montreal, Quebec, Canada

September 2024

CONCORDIA UNIVERSITY

School of Graduate Studies

This is to certify that the thesis prepared

By: *Alexandra Haddad*

Entitled: *Navigating Prolonged Uncertainty: The Role of Emotion Regulation and Coping on Mental Health Outcomes During Covid-19*

and submitted in partial fulfillment of the requirements for the degree of

Master of Arts (Psychology, Research and Clinical Training Option)

complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the final examining committee:

_____ Chair
Karen Li

_____ Examiner
Erin Barker

_____ Examiner
Carsten Wrosch

_____ Thesis Supervisor(s)
Mark Ellenbogen

Approved by _____
Karen Li, Graduate Program Director

_____
Pascale Sicotte, Dean of Faculty of Arts and Science

_____2024

_____
Effrosyni Diamantoudi, Dean of Graduate Studies

Abstract

Navigating Prolonged Uncertainty: The Role of Emotion Regulation and Coping on Mental Health Outcomes During Covid-19

Alexandra Haddad

Concordia University, 2024

The thesis examines the longitudinal effects of emotion regulation and coping strategies on mental health outcomes during the COVID-19 pandemic across three phases in Quebec, Canada. We investigated how emotion regulation strategies and coping strategies (problem-focused, emotion-focused, and avoidant) shaped psychological adaptation during the pandemic. Results showed that cognitive reappraisal predicted lower baseline internalizing symptoms, while emotion-focused and avoidant coping were associated with higher initial distress. However, the effectiveness of these strategies varied, highlighting the need for flexible coping practices in prolonged crises. An interaction between emotion-focused coping and perceived stress revealed that high levels of both led to a reduction in psychological distress over time. Surprisingly, no effects of emotion regulation strategies on psychological distress were observed. These findings highlight how flexible coping might be beneficial during prolonged stress, offering new insights for mental health interventions in future global challenges.

Acknowledgements

I would like to thank Dr. Mark Ellenbogen for his guidance and continued support throughout these years. I would also like to extend my heartfelt thanks to the members of my lab. Your collaboration, insights, and support have made my time at the lab both rewarding and enjoyable. I am grateful for the shared experiences and the constant exchange of ideas that have helped shape this work. To my cohort, thank you for your friendship and support throughout this journey. The encouragement, venting, and sense of community we've built together have been invaluable, and I am truly fortunate to have been on this path alongside such incredible individuals. I express my deepest gratitude to my parents, whose unwavering love and encouragement have guided me through every step of this journey. Your belief in me and your constant reassurance have been my strength. To my sisters, thank you for always standing by me and being so understanding even though we're so far apart. A special thank you to my best friends outside of my academic bubble who have been a source of joy and love every step of the way. Thank you for believing in me and for always being there to lift me up. The completion of my degree has been supported by Canada's Graduate Scholarship Master's Program through the Social Science and Humanities Research Council.

Contribution of Authors

Mark Ellenbogen designed the study. Research assistants and graduate students collected the data. Alexandra Haddad conducted the statistical analyses and wrote the initial draft of the manuscript. Mark Ellenbogen revised the manuscript.

Table of contents

Navigating Prolonged Uncertainty: The Role of Emotion Regulation, Coping, and Stress in Mental Health Trajectories During Covid-19

The COVID-19 pandemic, which emerged in late 2019, quickly escalated into a global crisis, disrupting public health, economic stability, and daily life (Brooks et al., 2020). Governments worldwide responded with measures like lockdowns, social distancing, and travel restrictions to control the virus (Achou et al., 2020; Généreux et al., 2021). While these steps helped manage the public health emergency, they also brought significant psychological challenges. Prolonged isolation, uncertainty, financial insecurity, and constant fear of illness contributed to increasing levels of stress, anxiety, and depression across various populations (Vindegaard & Benros, 2020; Xiong et al., 2020). These difficulties were exacerbated by the unpredictable nature of the pandemic, as public health guidelines and restrictions frequently shifted in response to changing infection rates and scientific developments (Holmes et al., 2020; Galea et al., 2020). This study explores the psychological effects of the pandemic over time, focusing on how people coped and regulated their emotions.

Emotion regulation plays an important role in dealing with stress and maintaining well-being when facing internal and external demands (Gross, 2015). Emotion regulation is the process through which individuals influence their emotions, deciding when they experience them and how they express them (Aldao et al., 2010; Gross, 2015). This study focuses on two main emotion regulation strategies: cognitive reappraisal and expressive suppression. Cognitive reappraisal involves reinterpreting a situation to change its emotional impact, for example seeing quarantine as a chance for personal growth instead of a restriction (Gross & John, 2003; Aldao et al., 2015; Ford & Troy, 2019). This strategy often leads to better outcomes, including reduced negative emotions and greater resilience, as it encourages a more constructive perspective during stressful times (Gross & John, 2003; Aldao et al., 2015; Kalokerinos et al., 2017; Ford & Troy, 2019; Judah et al., 2022). Expressive suppression involves holding back the outward display of emotions and is often associated with less favorable outcomes, including increased perceived stress, social disconnection, and a higher risk of mental health problems (Aldao et al., 2015; Ford & Troy, 2019; Judah et al., 2022).

Coping strategies involve the cognitive and behavioural approaches people use to manage stressors they perceive as overwhelming (Lazarus & Folkman, 1984; Carver, 1997; Park et al., 2020). Problem-focused coping involves actively addressing or reducing the source of stress through strategies (Lazarus & Folkman, 1984; Carver, 1997). This approach is typically effective in situations where individuals have some control, offering a sense of agency and targets the stressor directly (Compas et al., 2017). Emotion-focused coping involves managing one's emotional responses instead of directly addressing the stressor (Lazarus & Folkman, 1984; Carver, 1997; Compas et al., 2017). Over-reliance on emotion-focused strategies like venting or rumination can intensify negative emotions (Leandro & Castillo, 2010; Völlink et al., 2013). Avoidant coping comprises efforts to disengage from or avoid the stressor, either by distraction or denial (Carver, 1997; Biggs et al., 2017). Avoidance is often considered maladaptive due to its links to long-term heightened anxiety, substance use, and stress (Holahan et al., 2005; Heggeness et al., 2020).

Internalizing symptoms, like anxiety and depression, reflect inwardly focused distress (Achenbach et al., 2016). Individuals prone to high internalizing tendencies often struggle with emotional stressors, leading to rumination, excessive worry, and hopelessness (Aldao et al., 2010; Korhonen et al., 2017). Strategies such as expressive suppression and avoidance can

worsen these symptoms, making stress management more difficult (Aldao et al., 2010; Kring & Sloan, 2010; Sheppes et al., 2014). On the other hand, strategies like cognitive reappraisal and problem-focused coping can help reduce internalizing symptoms by encouraging constructive emotional processing and resilience (Aldao et al., 2010; Kring & Sloan, 2010; Sheppes et al., 2014). Externalizing symptoms, including hostility and impulsivity, represent outwardly directed distress and are often linked to psychological maladjustment (Achenbach et al., 2016). Individuals prone to externalizing behaviours tend to react impulsively to stress, leading to conflicts and escalating distress (Achenbach et al., 2016; Berkout et al., 2019).

Flexibility and Context

Effective coping and regulation involves adaptive flexibility, shifting strategies based on situational demands (Bonanno & Burton, 2013; Cheng et al., 2014; Kobylińska et al., 2019). For example, while cognitive reappraisal is usually beneficial, its effectiveness may decline in situations of prolonged or uncontrollable stress, where reframing alone does not fully address ongoing challenges (Troy et al., 2013; Kobylińska et al., 2019). Conversely, while expressive suppression is often viewed as maladaptive, it can be protective in situations where emotional expression might escalate conflict or lead to harm (Troy et al., 2013; Alldao et al., 2015). Those who adapt their strategies based on situational demands tend to have better psychological outcomes (Aldao et al., 2015; Kobylińska et al., 2019; Shabat et al., 2021). Problem-focused coping may not be as effective in situations where the problem has no resolution and may result in frustration or burnout (Woltin et al., 2018; Finkelstein-Fox et al., 2019). Emotion-focused coping can be useful in situations where the stressor cannot be changed, such as seen in individuals with chronic illness, as it may help maintain stability (Siwik et al., 2020). Moreover, some aspects of avoidance coping may provide short-term protection (e.g. distraction), allowing individuals to conserve their psychological resources until they are better prepared to address the problem (Waugh et al., 2020).

Perceived stress plays a significant role in mental health outcomes, as individuals appraise situations as overwhelming, they are more likely to experience internalizing symptoms, particularly when relying on unhelpful coping strategies (Shakthivel et al., 2017; Siwik et al., 2020; Zandifar et al., 2020) Individuals with pre-existing mental health conditions are likely particularly vulnerable during the pandemic, as they have more difficulty with emotion regulation and stress management, which may lead to more symptom severity (Aldao et al., 2010; Fiorillo & Gorwood, 2020; Vindegaard et al., 2020).

Quebec, as one of Canada's provinces most severely impacted by COVID-19, implemented some of the most public health measures nationwide (Généreux et al., 2021; Parent-Lamarche et al., 2021). These included multiple lockdown phases, the closure of non-essential services, and the introduction of curfews (Généreux et al., 2021). The initial lockdown in March 2020 brought widespread uncertainty and fear, driven by abrupt changes and the impending threat of the virus (Brooks et al., 2020). As the pandemic continued, stressors shifted toward long-term social and economic concerns (Achou et al., 2020; Généreux et al., 2021). The curfews introduced in early 2021 further would have intensified feelings of isolation and stress (Généreux et al., 2021; Parent-Lamarche et al., 2021). These regional factors likely influenced the effectiveness of coping strategies (Zarowsky et al., 2023).

Although much research has explored the psychological impact of the COVID-19 pandemic (Fiorillo et al., 2020; Galea et al., 2020; Brenning et al., 2023; Daly et al., 2023), there are not many longitudinal studies looking at how coping strategies and emotion regulation

influenced mental health over time. Better understanding these interactions could help those at higher risk of worsening mental health during prolonged crises and for designing targeted interventions. The pandemic introduced challenges like prolonged uncertainty, changing public health measures, and varying levels of social isolation (Brooks et al., 2020; Galea et al., 2020). Additionally, while coping and emotion regulation strategies are often labeled as adaptive or maladaptive, their effectiveness depends on the context (Cheng et al., 2014; Bonanno & Burton, 2013; Kalokerinos et al., 2021). This variability emphasizes the need to consider how crisis-related factors, like a pandemic, affect the usefulness of these strategies and their influence on mental health trajectories (Généreux et al., 2021).

The present study examines how initial emotion regulation strategies (i.e. cognitive reappraisal and expressive suppression) and coping mechanisms (i.e. problem-focused, emotion-focused, or avoidant) effect mental health trajectories. It also considers how perceived stress and pre-existing mental health conditions may influence these relationships. By analyzing data from three phases of the pandemic (May to August 2020, August to November 2020, and November 2020 to February 2021), this research aims to clarify how initial coping and regulation use may influence mental health trajectories.

Based on the existing literature, four hypotheses are proposed: (1) Emotion regulation strategies at Time 1 will predict changes in mental health outcomes over time, with cognitive reappraisal expected to reduce symptoms and overall psychological distress, while expressive suppression is predicted to worsen these outcomes. (2) Coping strategies at Time 1 will also predict changes in mental health outcomes, with problem-focused coping anticipated to reduce symptoms and overall psychological distress, while emotion-focused and avoidant coping are expected to increase symptoms and distress. (3) We predict an interaction between Time 1 predictors (emotion regulation and coping strategies) and perceived stress, where higher stress will amplify the negative effects of maladaptive strategies on mental health outcomes. (4) We also predict an interaction between Time 1 predictors and pre-existing mental health conditions, with maladaptive strategies leading to more severe negative effects in individuals with prior diagnoses.

Methods

Participants

Adult participants were mainly recruited from previous studies (88.6%), with additional recruitment through online ads. The study protocol received approval from the Concordia University Human Research and Ethics Committee. Participants completed a demographic questionnaire. They were asked to provide their age, sex, gender, first language, highest level of education, income, neighborhood, student status, and ethnic identity. Participants were also asked about any past or current mental health diagnoses, as well as past or current treatment. At the first time point (May-August 2020), there were 207 participants recruited between the ages 18 - 67, with 67% identifying as female (M_{age} = 31, SD = 10.4). At the second time point (August-November 2020), 131 participants remained, with 68.3% identifying as female (M_{age} = 31.3, SD = 11.2). By the third time point (November 2020-February 2021), the sample size was 106, with 70.2% identifying as female (M_{age} = 31.9, SD = 11.6). Demographic information is presented in table 1.

Procedures

The present study used a longitudinal design, collecting participant responses through self-report questionnaires at three distinct points during the COVID-19 pandemic: May-August

2020, August-November 2020, and November 2020-February 2021. The focus was on emotion regulation strategies (cognitive reappraisal and expressive suppression), coping strategies (problem-focused, emotion-focused, and avoidant coping), vulnerability status (e.g., pre-existing mental health conditions), perceived stress levels, and mental health outcomes (overall psychological distress, internalizing symptoms, and externalizing symptoms). Surveys were primarily administered via SurveyMonkey, with participants receiving links through email. For those preferring paper formats, questionnaires were mailed and returned by mail. The same core questionnaires were administered at each time point, with standardized instructions provided for all formats. The extended timelines allowed participants to complete their responses despite the uncertainties and disruptions caused by the pandemic. Informed consent was obtained electronically. Participants consented by clicking a confirmation button online after reading through the form, ensuring participants understood the study's purpose and their voluntary participation. Confidentiality was maintained by replacing any identifying participant information with a code. Only authorized individuals involved with the study would have access to re-identifying information if ever necessary. All identifying information was stored separately from research data.

Self-Report Measures

See table 2 for descriptives of each self-report measure.

Emotion Regulation Questionnaire (ERQ; Gross & John, 2003)

Emotion regulation was assessed using the ERQ (Gross & John, 2003), which measures cognitive reappraisal (six items) and expressive suppression (four items). Responses are given on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The ERQ has shown good reliability, with Cronbach's alpha values ranging from .75 to .82 for cognitive reappraisal and .68 to .73 for expressive suppression (Gross & John, 2003; Balzarotti et al., 2010). The construct validity of the ERQ is well-supported, with reappraisal linked to positive affect and well-being, and suppression associated with negative affect and social difficulties (Gross & John, 2003; Wiltink et al., 2011).

Brief COPE Inventory (Carver, 1997)

Coping strategies were measured using the Brief COPE Inventory (Carver, 1997), a 28-item questionnaire that evaluates problem-focused, emotion-focused, and avoidant coping. Responses are rated on a 4-point Likert scale from 1 (I haven't been doing this at all) to 4 (I've been doing this a lot). The Brief COPE has demonstrated solid psychometric properties, with Cronbach's alpha values ranging from .79 to .85 for problem-focused coping, .72 to .82 for emotion-focused coping, and .65 to .75 for avoidant coping (Carver, 1997; Mohanraj et al., 2015; Garica et al., 2020), indicating acceptable internal consistency.

Adult Self-Report (ASR) from the Achenbach System of Empirically Based Assessment (ASEBA–Adult Version; Achenbach & Rescorla, 2003)

Internalizing and externalizing problems were assessed using the ASR (Achenbach & Rescorla, 2003). The checklist includes 126 items rated on a 3-point Likert scale from 0 (not true) to 2 (very true/often true). Internalizing symptom scores were calculated by combining syndrome subscales—'anxious/depressed' (18 items), 'withdrawn'(9 items), and 'somatic complaints'(12 items). Externalizing symptom scores were calculated by combining syndrome

subscales—'aggressive behaviour'(15 items), 'rule-breaking behaviour'(14 items), and 'intrusive behaviour' (6 items). Cronbach's alpha values generally exceed .80, demonstrating good reliability (Achenbach & Rescorla, 2003). The ASR shows good validity, supported by normative data and correlations with other validated mental health measures (Ivanova et al., 2007; Rescorla et al., 2017).

Symptom Checklist-90 (SCL-90; Derogatis, 1994)

Overall psychological distress was measured using the Global Severity Index (GSI) from the SCL-90 (Derogatis, 1994). The GSI offers a summary of psychological distress by averaging the intensity of symptoms across 10 different domains. The checklist includes 90 items rated on a 5-point Likert scale from 0 (Not at all) to 4 (Extremely). The SCL-90 has consistently shown high internal consistency, with Cronbach's alpha values typically exceeding .90 (Pérez-García et al., 2022; Ursin et al., 2019; Carrozzino et al., 2023).

Perceived Stress Scale (PSS; Cohen et al., 1983)

Perceived stress was assessed using the 10-item PSS (Cohen et al., 1983). Responses range from 0 (never) to 4 (very often) on a 5-point Likert scale. The PSS is widely validated, with Cronbach's alpha values between .78 and .91 (Cohen et al., 1983; Taylor, 2015; Baik et al., 2019). It shows strong correlations with other measures of stress, anxiety, and depression (Lee, 2012; Smith et al., 2020).

Self-Reported Mental Health Diagnosis

Self-reported mental health diagnoses were collected during the initial demographic survey. Participants who reported having a mental health diagnosis were coded as '0' and provided the name and date of diagnosis, and those without were coded as '1'.

Statistical Analyses

Data analysis was conducted using Mplus, a statistical software well-suited for managing longitudinal data and modeling interactions between observed and latent variables (Muthén & Muthén, 2017). Mplus was chosen for its ability to handle missing data using Full Information Maximum Likelihood (FIML), using all available data points, producing more accurate parameter estimates by minimizing the impact of missing data (Enders, 2010). Mplus also employed robust maximum likelihood estimation (MLR) for model estimation. After developing baseline growth curve models, predictors assessed at Time 1 were incorporated to explore their influence on the intercepts and slopes of mental health outcomes. The primary predictors included emotion regulation strategies and coping strategies. The literature suggests that individuals often rely on specific emotion regulation and coping strategies consistently over time, making these approaches relatively stable traits (Aldao et al., 2015; Gross, 2015). For example, those who frequently use cognitive reappraisal or expressive suppression tend to default to these strategies across various contexts, reflecting habitual emotional responses (John & Gross, 2004). Similarly, problem-focused or avoidant coping strategies can become established patterns that individuals repeatedly turn to when facing stress, regardless of situational differences (Cheng et al., 2014; Carver & Connor-Smith, 2010). Given this tendency, the study treated these emotion regulation and coping strategies as predictors.

The next analysis phase involved assessing for predictor interaction effects on the models. Simple slope analyses were conducted to assess for moderation of significant interaction

effects on the outcome measures. Interaction effects were modeled to assess whether perceived stress at Time 1 influenced the impact of emotion regulation and coping strategies on mental health outcomes. Moreover, interaction effects were modeled to assess whether mental health diagnosis influenced the impact of coping and emotion regulation strategies on mental health outcomes.

Results

Basic Growth Curve Model Analyses

To confirm that the relationship between the time points and the primary outcome variables—Global Severity Index (GSI), internalizing symptoms, and externalizing symptoms—followed a linear trajectory, model fit indices were evaluated. Model fit was assessed using the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). These indices are generally recognized for determining the adequacy of model fit (Bentler, 1990; Steiger, 1990; Browne & Cudeck, 1993; Hu & Bentler, 1999): CFI and TLI values above .90 are considered having adequate fit; RMSEA values between .06 and .08 suggest adequate fit and values below .06 indicate excellent fit.

Global Severity Index (GSI)

A basic growth curve model was conducted to examine the trajectory of the Global Severity Index (GSI) across the three time points, based on 207 observations. The model demonstrated excellent fit, $\chi^2(3) = 78.59$, $p < .001$, CFI = 1.00, TLI = 1.00, RMSEA = .00. The intercept of the GSI (Estimate = 0.722, SE = 0.043, $p < .001$) indicates a moderate initial level of global severity at Time 1. The non-significant correlation between the slope and intercept suggests that participants who initially reported elevated levels of global severity did not necessarily experience a different trajectory in global severity, compared to those who initially reported low levels. The slope of the GSI, while trending downward (Estimate = -0.03, SE = 0.02, p =.127), was not significant, suggesting that there was little variability in the change of distress levels over time.

Internalizing Symptoms

We examined the trajectory of internalizing symptoms across three time points, based on 195 observations. The model demonstrated excellent fit, $\chi^2(3) = 132.77$, $p < .001$, CFI = 1.00, TLI = 1.00, RMSEA = .000. The variance of intercept of internalizing symptoms was significant (Estimate = 1.90, SE = 0.94, $p < .001$), suggesting a high initial level of internalizing symptoms at Time 1. The variance of slope of internalizing symptoms (Estimate = -0.07, SE = 0.35), was not significant, indicating minimal change in internalizing symptoms across the study period. Additionally, the non-significant correlation between the slope and intercept suggests that the trajectory of internalizing symptoms did not differ based on Time 1 scores.

Externalizing Symptoms

We then examined the trajectory of externalizing symptoms across three time points, based on 195 observations. The model demonstrated excellent fit, $\chi^2(3) = 50.48$, $p < .001$, CFI = 1.00, TLI = 1.00, RMSEA = .00. The variance of the intercept for externalizing symptoms was significant (Estimate = 1.21, SE = 0.06, $p < .001$), indicating substantial variability in the initial levels of externalizing symptoms at Time 1. However, the variance of the slope (Estimate =

-0.06, $p = .092$), suggests there was no significant variability of externalizing symptoms over time. Additionally, the non-significant correlation between the slope and intercept implies that the trajectory in externalizing symptoms did not differ based on Time 1 scores.

Coping Strategies on mental health outcomes

Emotion-Focused Coping on Intercept and Slope of Internalizing symptoms, Externalizing symptoms, and GSI

There was a significant effect of emotion-focused coping on the intercept of externalizing symptoms (Estimate = 2.32, SE = 0.66, $p < .001$). This suggests higher reliance on emotion-focused coping at time 1 predicted higher externalizing symptoms across time. Our analyses also showed that increased reliance on emotion-focused coping strategies at the start of the study predicted higher internalizing symptoms across time (Estimate = 2.05, SE = 0.80, $p = .007$). Moreover, we found that emotion-focused coping at time 1 significantly predicted intercept of the GSI (Estimate = 0.16, SE = 0.03, $p < .001$). Participants who were more likely to use emotion-focused coping strategies initially, had higher levels of overall psychological distress. However, emotion-focused coping alone did not significantly predict the rate of change of the GSI, internalizing symptoms, or externalizing symptoms.

Interaction Effects

There was an interaction effect on slope of global severity index scores between emotion-focused coping at Time 1 and perceived stress at Time 1 (Estimate = -0.05, SE = 0.02, $p = .002$). Based on this model, the impact of emotion-focused coping on global severity index scores depended on the level of perceived stress at baseline. This indicates that the combination of high emotion-focused coping and high perceived stress at Time 1 was associated with a more pronounced decrease in the slope of overall psychological distress (GSI) over time. Further simple slope analyses showed that those who reported moderate PSS (Estimate = -.06, SE = .02, $p < .000$) and high PSS (Estimate = -.12, SE = .02, $p < .000$) had better trajectories for individuals who used more emotion-focused coping, whereas the same was not found in low PSS and low emotion-focused coping (see figure 1). The model demonstrated excellent fit, $\chi^2(12) = 274.78$, $p < .001$, CFI = 1.00, TLI = 1.00, RMSEA = .00. Additionally, we did not find an interaction effect between the two predictors when looking at intercept.

Avoidant Coping on Intercept and Slope of Internalizing symptoms, Externalizing symptoms, and GSI

Participants who reported greater use of avoidance coping at Time 1 showed higher levels of externalizing symptoms (Estimate = 2.53, SE = .51, $p < .000$), as well as higher levels of internalizing symptoms (Estimate = 3.54, SE = 0.78, $p < .001$). This suggests that among those who used avoidance coping they were associated with stable elevations of internalizing and externalizing symptoms.

Interaction Effects

A significant interaction effect was found between perceived stress and avoidance coping at Time 1 on the intercept of externalizing symptoms (Estimate = 0.99, SE = 0.40, $p = .012$). The model revealed the impact of avoidant coping at time 1 on baseline externalizing symptoms depended on the level of perceived stress at time 1. This indicated that higher perceived stress and avoidance coping was associated with more severe externalizing symptoms. Simple slope analyses revealed that levels of moderate PSS (Estimate = 2.18, SE = .59, $p < .000$) and high

PSS (Estimate = 3.17 , SE = .63, $p < .000$) in individuals with higher avoidance coping reported more externalizing symptoms (see figure 3). The model showed excellent fit, $\chi^2(12) = 150.18$, $p < .001$, CFI = 1.00, TLI = 1.00, RMSEA = .00. This interaction had an association with high externalizing symptoms across time. This interaction effect was not found when looking at impact on slope of externalizing symptoms, insinuating this impact was not predictive of trajectory. No significant interaction was found between avoidant coping and mental health diagnosis.

Problem-Focused Coping on Intercept and Slope of Internalizing symptoms, Externalizing symptoms, and GSI

Our analyses showed no significant main or interaction effect of problem-focused coping on all our outcome measures (GSI, internalizing symptoms, externalizing symptoms)

Emotion Regulation on mental health outcomes

Expressive suppression had a significant effect on the intercept of internalizing symptoms (Estimate = 2.40, SE = .72, $p = .001$). This indicated that those using higher suppression at time 1 tended to report more internalizing symptoms across time, but the lack of effect on slope meant that it did not have significant impact on trajectory of internalizing symptoms .

Null findings can be found in Table 3 and Table 4.

Main effects of mental health diagnosis and perceived stress

Mental health diagnosis

Our analyses revealed that a mental health diagnosis at time 1 significantly predicted higher baseline internalizing symptoms (Estimate = -0.28, SE = 0.09, $p = .003$) . As in, having a diagnosis was associated with stable elevations of internalizing problems across the pandemic, compared to those without a diagnosis. However, no significant effects were found for the slope, meaning that the trajectory in internalizing symptoms did not differ significantly based on diagnostic status. No significant interaction effects were found between mental health diagnosis and coping or emotion regulation strategies (cognitive reappraisal, expressive suppression, problem-focused coping, emotion-focused coping, and avoidance coping). This suggests that while having a mental health diagnosis is associated with higher internalizing symptoms, the interaction with coping or emotion regulation strategies did not significantly influence the initial severity or trajectory of internalizing symptoms over time. No further significant effects of mental health diagnosis were found on externalizing symptoms or global severity index scores.

Perceived stress (PSS)

Analyses of perceived stress at Time 1 showed a significant effect on slope of the GSI (Estimate = -0.06, SE = 0.02, $p < .001$), indicating that higher initial levels of perceived stress were associated with a decrease in overall psychological distress over time. Perceived stress at time 1 also significantly predicted the intercept of GSI (Estimate = 0.40, SE = 0.03, $p < .001$). Participants who perceived more stress at the beginning of the study had higher overall psychological distress. We found that perceived stress at Time 1 (Estimate = -0.97, SE = 0.28, $p < .001$) significantly predicted the slope of internalizing symptoms, suggesting that higher initial levels of perceived stress are linked to a decrease in internalizing symptoms over time. We also

found that higher PSS at time 1 was associated with more externalizing symptoms, stable across time (Estimate = 2.18 , SE = 0.59, $p < .001$).

Discussion

Consistent with the literature, our analysis of coping strategies revealed that both emotion-focused and avoidant coping were related to higher levels of overall psychological distress, indicating that these strategies can be less effective in promoting positive mental health outcomes (Park et al., 2020; Marroquín et al., 2020). Additionally, our findings highlighted that higher avoidance coping use, combined with the context of moderate and high perceived stress, predicted higher baseline externalizing symptoms. In line with the literature, avoidance is generally associated poorer mental health outcomes and poorer emotional well-being (Hu & Sun, 2023). Additionally, Parrott et al. (2022) revealed that pandemic-related stress significantly increased both physical and psychological intimate partner aggression, showing that those engaged in heavy drinking, a form of avoidant coping, were more likely to perpetrate physical aggression. A study looking at the impact of COVID-19-related stressors on college students' aggressive behaviours, found stressors associated with the pandemic were directly linked to increased aggression among students (Hu & Sun, 2023). Additionally, the students who employed avoidance coping were more likely to exhibit aggressive behaviours, suggesting that avoidance coping might contribute to worsening externalizing behaviors under higher stress (Hu & Sun, 2023). However, in our study avoidant coping use did not have a significant impact on the rate of change of mental health outcomes. Moreover, our findings were in line with emotion regulation literature showing that those engaging in higher suppression tended to report more internalizing symptoms across time, although there was no influence on symptom change over time. This could have been due to the short time-frame of our study period and could be something to look into if we were to conduct follow-up studies.

Contrary to our expectations, problem-focused coping, typically connected to more favorable psychological outcomes (Compas et al., 2017), did not significantly impact any of our baseline mental health outcomes. This finding is particularly interesting given that problem-focused coping is generally viewed as adaptive (Cheng et al., 2014; Biggs et al., 2017). The limited effect of problem-focused coping in our study may reflect the challenges posed by the pandemic, where many stressors, such as government restrictions, health concerns, family member death, and job insecurity, were largely beyond individual control (Woltin et al., 2018; Finkelstein-Fox et al., 2019). As the pandemic was characterized by prolonged uncertainty, problem-focused coping may have not been possible to its full extent. This supports literature that calls for a more flexible approach to coping (Park et al., 2020).

Our findings also highlight the interaction between emotion-focused coping and perceived stress, which suggests that these factors jointly influence distress trajectories. Specifically, higher emotion-focused coping use combined with the context of moderate and high perceived stress showed better trajectories in these individuals, as they had smaller worsening and better recovery when looking at overall psychological distress. Emotion-focused coping, often considered less effective than problem-focused coping in managing chronic stress, showed some protective effects when combined with high perceived stress. This suggests that its adaptiveness depends on the specific stressor and context (Cheng et al., 2014;Pearman et al., 2020). Recent research supports this view, highlighting that emotion-focused strategies can be effective when they facilitate emotional processing and acceptance rather than avoidance (Pearman et al., 2020; Park et al., 2020; Kalokerinos et al., 2017). These findings contribute to

the broader discussion on coping flexibility, emphasizing that coping strategies should be understood as part of an evolving process rather than as fixed categories (Cheng et al., 2014). For instance, Kristofferzon et al. (2018) highlighted the role of emotion-focused coping in enhancing mental quality of life among patients with chronic illnesses. Specifically, acceptance and reframing were found to mediate the relationship between a person's ability to perceive life as manageable and meaningful with mental quality of life. This suggests that emotion-focused coping addresses the emotional challenges associated with chronic illness, offering patients a means to maintain psychological well-being despite the persistent and uncontrollable nature of their condition. A study by Stratta et al. (2015) examined how resilience affects the relationship between coping strategies and trauma symptoms in students who survived the L'Aquila earthquake in Italy. Their findings revealed that emotion-focused coping positively influenced resilience, which then played a significant role in reducing post-traumatic stress symptoms. This suggests that emotional coping helps build resilience, which in turn supports better psychological outcomes during times of uncertainty and stress. Our findings resonate with studies showing that in situations where stressors are persistent and uncontrollable, emotion-focused strategies can help individuals manage their emotional responses without necessarily resolving the external problem.

The anticipated interaction effects between mental health diagnosis and emotion regulation or coping strategies were not significant, indicating that having a mental health diagnosis did not substantially alter the influence of these strategies on symptom trajectories. The research has shown that individuals with pre-existing mental health conditions often engage in less effective coping strategies and emotion regulation, which typically lead to poorer mental health outcomes. Although our findings did not show significant effects on symptom trajectory, we found that having a diagnosis was associated with stable elevated levels of internalizing problems across the pandemic, compared to those without a diagnosis. Recent studies conducted during the pandemic have found that individuals with pre-existing mental health conditions did not experience a disproportionate psychological toll during the pandemic compared to those without prior mental health struggles. For instance, in line with our finding, Pan et al. (2021) found that although individuals with depressive, anxiety, or obsessive-compulsive disorders had higher overall symptom levels, their symptoms did not increase as significantly during the pandemic, whereas those without prior mental health conditions experienced a greater increase in symptoms. Similarly, Shevlin et al. (2020) observed that while anxiety and depression rates rose during the pandemic, the increase was comparable for both individuals with and without pre-existing mental health conditions. Pierce et al. (2020) also found that while individuals with pre-existing mental health conditions had higher levels of distress before the pandemic, the increase in distress was similar to that of the general population during the pandemic. Collectively, these studies challenge the assumption that individuals with pre-existing mental health conditions are more vulnerable to the pandemic's psychological effects. It is worth noting that our sample consisted of roughly 25% of people who self-reported as being diagnosed by a mental health professional. This does not account for those who may have undiagnosed conditions from being unable to access mental health services. The absence of clinical interviews to confirm diagnoses is a limitation; however, our findings raise questions about the role of individual differences in psychological adaptation.

The implications of this study extend to practical applications for mental health interventions and public health strategies, particularly in contexts of prolonged stress and uncertainty, such as pandemics or other large-scale crises. The results suggest that interventions

should promote flexibility in coping and emotion regulation strategies rather than focusing solely on traditional categorizations of strategies as either adaptive or maladaptive. Interventions should also emphasize the importance of context in determining which strategies are most effective over time. Flexible clinical training approaches is encouraged, teaching individuals to assess the controllability of their stressors and adjust their strategies accordingly can enhance both regulatory flexibility and psychological resilience. For example, incorporating aspects of acceptance and commitment therapy (ACT) in contexts that are difficult yet uncontrollable, has been shown to enhance well-being by promoting non-judgmental acceptance and a willingness to address internal experiences without avoidance and without trying to change them (Shafiei et al., 2024). Proividing resources that encourage adaptive emotion-focused strategies, such as distress tolerance and emotion regulation skills training taught as part of dialectical behavioural therapy, could be quite helpful during extended periods of uncertainty (Stuntz et al., 2020; O'Hayer et al., 2021; Ellberger et al., 2021).

One of the strengths of this study lies in its longitudinal design, providing valuable understandings into how our predictors influenced mental health outcomes over time. Moreover, focusing on interaction effects moves beyond categorizations of strategies as either adaptive or maladaptive, instead examining their function within specific contexts. The inclusion of multiple psychological outcomes—internalizing symptoms, externalizing symptoms, and the Global Severity Index (GSI)—further strengthens the study by offering a comprehensive assessment of mental health during the pandemic. However, our study also has several limitations. Although the self-report measures used are well-validated, self-report data are inherently limited by participants' subjective interpretations and the possibility of overreporting or underreporting certain behaviours or symptoms (Podsakoff et al., 2003). Integrating multi-method approaches, such as incorporating objective measures, such as ecological momentary assessments, or clinician-rated assessments, would have complemented self-report surveys and enhanced the validity of psychological research. While longitudinal designs provide valuable information on temporal changes, they are also vulnerable to participant dropout. Our study experienced significant attrition, with the sample size of those completing all outcome measures decreasing from 190 participants at Time 1 to 127 participants at Time 2 and 103 participants at Time 3. Although FIML was employed to address missing data, the high attrition rate by the third time point still poses challenges to generalizability (Little & Rubin, 2019). Longitudinal studies typically recommend a minimum of four time points to more accurately model trajectories and detect subtle changes over time (Singer & Willett, 2003). However, the significant attrition of our sample and limited resources due to the context of the pandemic, we were limited to three time points. Future studies should consider strategies to minimize dropout, such as employing shorter intervals between data collection waves.

This study highlights several areas for further exploration that could enhance understanding of psychological adaptation during prolonged crises and inform targeted mental health interventions. Future research could focus on variables not included in this study that likely influence mental health outcomes during crises. Economic stability, and access to healthcare are important factors to consider that affect how individuals manage long-term stress, as these are additional barriers hardships to consider within the context (Lu & Lin, 2021). Including these elements in future studies would provide a more comprehensive view of environmental influences on mental health. Cross-cultural studies could reveal interesting information on how local practices shape psychological responses to global stressors. Our study was conducted within the context of Quebec, but further studies should explore whether these

findings apply across different regions and populations. Comparative studies in countries with varied public health measures and cultural norms would clarify if these patterns maintained universally or show different patterns in strategy-use.

Future research should also focus on groups with specific vulnerabilities or resilience factors during crises. Frontline healthcare workers, individuals with pre-existing health conditions, and marginalized communities faced higher levels of stress and burnout during the pandemic (Vizheh et al., 2020). Studying these groups could reveal specific stressors and coping needs, leading to more tailored interventions. Considering factors like age, socioeconomic status, and education would further refine our understanding of how different segments of the population respond to prolonged crises. Incorporating multi-group analyses could help uncover whether specific subgroups are more vulnerable to particular stressors or benefit differently from various coping mechanisms, thereby guiding more targeted interventions.

This study treated coping and emotion regulation strategies as stable predictors rather than outcomes, assuming these strategies are relatively trait-like. While this perspective aligns with existing research, significant events like a pandemic could prompt shifts in these strategies that our design may not fully capture. Future research could examine bidirectional relationships between coping, emotion regulation, and mental health outcomes.

Follow-up studies should assess the longer-term psychological effects of the pandemic and other large-scale stressors. Understanding how coping strategies and emotion regulation evolve as individuals transition out of crisis conditions is helpful for designing interventions that promote sustained mental well-being.

This study adds to the current literature on coping and mental health outcomes. Our findings showed how coping strategies and perceived stress interact during prolonged crises. While emotion-focused coping was linked to higher overall psychological distress, it showed a protective effect in high and moderately perceived-stress situations, emphasizing the importance of context in determining strategy adaptiveness. Interestingly, problem-focused coping, typically associated with better outcomes, did not significantly impact mental health in our study. Additionally, having a pre-existing mental health diagnosis did not significantly alter the impact of coping strategies nor have an effect on mental health outcome trajectory, which is in line with recent pandemic research. Overall, we suggest that mental health interventions should promote flexibility in coping strategies, helping individuals choose the most effective approach based on their specific circumstances. Promoting flexible clinical approaches that help people evaluate the controllability of their stressors and adapt their strategies can help improve coping flexibility and build psychological resilience. Future studies should explore these patterns across diverse populations and focus on tailoring interventions to meet the needs of specific groups.

References

Achenbach, T. M., Ivanova, M. Y., Rescorla, L. A., Turner, L. V., & Althoff, R. R. (2016). Internalizing/externalizing problems: Review and recommendations for clinical and research applications. *Journal of the American Academy of Child & Adolescent Psychiatry*, *55*(8), 647-656.

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*(2), 217-237. https://doi.org/10.1016/j.cpr.2009.11.004

Aldao, A., Sheppes, G., & Gross, J. J. (2015). Emotion regulation flexibility. *Cognitive Therapy and Research, 39*(3), 263-278. https://doi.org/10.1007/s10608-014-9662-4

Achou, B., Boisclair, D., d'Astous, P., Fonseca, R., Glenzer, F., & Michaud, P. C. (2020). Early impact of the COVID-19 pandemic on household finances in Quebec. *Canadian Public Policy*, *46*(S3), S217-S235.

Baik, S. H., Fox, R. S., Mills, S. D., Roesch, S. C., Sadler, G. R., Klonoff, E. A., & Malcarne, V. L. (2019). Reliability and validity of the Perceived Stress Scale-10 in Hispanic Americans with English or Spanish language preference. *Journal of health psychology*, *24*(5), 628-639.

Berkout, O. V., Tinsley, D., & Flynn, M. K. (2019). A review of anger, hostility, and aggression from an ACT perspective. *Journal of contextual behavioral science*, *11*, 34-43.

Biggs, A., Brough, P., & Drummond, S. (2017). Lazarus and Folkman's psychological stress and coping theory. In C. L. Cooper & J. C. Quick (Eds.), *The Handbook of Stress and Health: A Guide to Research and Practice* (pp. 351-364). Wiley. https://doi.org/10.1002/9781118993811.ch21

Bonanno, G. A., & Burton, C. L. (2013). Regulatory flexibility: An individual differences perspective on coping and emotion regulation. *Perspectives on Psychological Science, 8*(6), 591-612. https://doi.org/10.1177/1745691613504116

Brenning, K., Waterschoot, J., Dieleman, L., Morbée, S., Vermote, B., Soenens, B., Van der Kaap-Deeder, J., van den Bogaard, D., & Vansteenkiste, M. (2023). The role of emotion regulation in mental health during the COVID-19 outbreak: A 10-wave longitudinal study. Stress and Health : *Journal of the International Society for the Investigation of Stress*, 39(3), 562–575. https://doi.org/10.1002/smi.3204

Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *The Lancet, 395*(10227), 912-920. https://doi.org/10.1016/S0140-6736(20)30460-8

Carrozzino, D., Patierno, C., Pignolo, C., & Christensen, K. S. (2023). The concept of psychological distress and its assessment: A clinimetric analysis of the SCL-90-R. *International Journal of Stress Management*, *30*(3), 235.

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine, 4*(1), 92-100. https://doi.org/10.1207/s15327558ijbm0401_6

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*(2), 267-283. https://doi.org/10.1037/0022-3514.56.2.267

Cheng, C., Lau, H. P. B., & Chan, M. S. (2014). Coping flexibility and psychological adjustment to stressful life changes: A meta-analytic review. *Psychological Bulletin, 140*(6), 1582-1607. https://doi.org/10.1037/a0037913

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385-396. https://doi.org/10.2307/2136404

Compas, B. E., Jaser, S. S., Bettis, A. H., Watson, K. H., Gruhn, M. A., Dunbar, J. P., Williams, E. K., & Thigpen, J. C. (2017). Coping, emotion regulation, and psychopathology in childhood and adolescence: A meta-analysis and narrative review. *Psychological Bulletin, 143*(9), 939-991. https://doi.org/10.1037/bul0000110

Daly, M., Sutin, A. R., & Robinson, E. (2022). Longitudinal changes in mental health and the COVID-19 pandemic: Evidence from the UK Household Longitudinal Study. *Psychological medicine*, *52*(13), 2549-2558.

Derogatis, L. R. (1994). *SCL-90-R: Administration, scoring, and procedures manual* (3rd ed.). National Computer Systems.

Enders, C. K. (2010). *Applied missing data analysis.* Guilford Press.

English, T., & John, O. P. (2013). Understanding the social effects of emotion regulation: The mediating role of authenticity for individual differences in suppression. *Emotion, 13*(2), 314-329. https://doi.org/10.1037/a0029847

English, T., Lee, I. A., John, O. P., & Gross, J. J. (2017). Emotion regulation strategy selection in daily life: The role of social context and goals. *Motivation and Emotion, 41*(2), 230-242. https://doi.org/10.1007/s11031-016-9597-z

Ellberger, M. (2021). Dialectical Behavior Therapy and the COVID-19 Pandemic: Building a Life Worth Living in the Face of an Unrelenting Crisis. *Shared Trauma, Shared Resilience During a Pandemic: Social Work in the Time of COVID-19*, 219-233.

Finkelstein-Fox, L., & Park, C. L. (2019). Control-coping goodness-of-fit and chronic illness: a systematic review of the literature. *Health psychology review*, *13*(2), 137-162.

Fiorillo, A., & Gorwood, P. (2020). The consequences of the COVID-19 pandemic on mental health and implications for clinical practice. *European Psychiatry, 63*(1), 1-4. https://doi.org/10.1192/j.eurpsy.2020.35

Folkman, S. (2013). Stress: Appraisal and coping. In M. D. Gellman & J. R. Turner

(Eds.), *Encyclopedia of Behavioral Medicine* (pp. 1913-1915). Springer. https://doi.org/10.1007/978-1-4419-1005-9_215

Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and promise. *Annual Review of Psychology, 55*(1), 745-774. https://doi.org/10.1146/annurev.psych.55.090902.141456

Ford, B. Q., & Troy, A. S. (2019). Reappraisal reconsidered: A closer look at the costs of an acclaimed emotion-regulation strategy. *Current Directions in Psychological Science*, *28*(2), 195-203.

Galea, S., Merchant, R. M., & Lurie, N. (2020). The mental health consequences of COVID-19 and physical distancing: The need for prevention and early intervention. *JAMA Internal Medicine, 180*(6), 817-818. https://doi.org/10.1001/jamainternmed.2020.1562

Généreux, M., Schluter, P. J., Hung, E., Wong, C. S., Mushquash, C. J., Landsman, V., & Caron, J. (2021). The evolution in anxiety and depression with the progression of the pandemic in adult populations from eight countries and four continents. *International Journal of Environmental Research and Public Health, 18*(9), 4845. https://doi.org/10.3390/ijerph18094845

Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry, 26*(1), 1-26. https://doi.org/10.1080/1047840X.2014.940781

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*(2), 348-362. https://doi.org/10.1037/0022-3514.85.2.348

Heggeness, L. F., Bean, C. A., Kalmbach, D. A., & Ciesla, J. A. (2020). Cognitive risk, coping-oriented substance use, and increased avoidance tendencies among depressed outpatients: A prospective investigation. *Journal of clinical psychology*, *76*(12), 2249-2263.

Holahan, C. J., Moos, R. H., Holahan, C. K., Brennan, P. L., & Schutte, K. K. (2005). Stress generation, avoidance coping, and depressive symptoms: A 10-year model. *Journal of Consulting and Clinical Psychology, 73*(4), 658-666. https://doi.org/10.1037/0022-006X.73.4.658

Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., ... & Bullmore, E. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *The lancet psychiatry*, *7*(6), 547-560.

Hu, W., & Sun, M. (2023). Covid-19 stressors and aggression among Chinese college students: the mediation role of coping strategies. *International journal of environmental research and public health*, *20*(4), 3171.

Judah, M. R., Milam, A. L., Hager, N. M., Webb, T. N., Hamrick, H. C., & Meca, A. (2022). Cognitive reappraisal and expressive suppression moderate the association between social anxiety and depression. *Journal of Psychopathology and Behavioral Assessment*, *44*(4), 984-991.

Kalokerinos, E. K., Greenaway, K. H., & Denson, T. F. (2017). Reappraisal but not suppression

downregulates the experience of positive and negative emotion. *Emotion, 17*(3), 411-415. https://doi.org/10.1037/emo0000239

Kobylińska, D., & Kusev, P. (2019). Flexible emotion regulation: How situational demands and individual differences influence the effectiveness of regulatory strategies. *Frontiers in psychology*, *10*, 72.

Korhonen, M., Luoma, I., Salmelin, R., Siirtola, A., & Puura, K. (2018). The trajectories of internalizing and externalizing problems from early childhood to adolescence and young adult outcome.

Kring, A. M., & Sloan, D. M. (2010). *Emotion regulation and psychopathology: A transdiagnostic approach to etiology and treatment.* The Guilford Press.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping.* Springer Publishing.

Leandro, P. G., & Castillo, M. D. (2010). Coping with stress and its relationship with personality dimensions, anxiety, and depression. *Procedia-Social and Behavioral Sciences*, *5*, 1562-1573.

Lee, E. H. (2012). Review of the psychometric evidence of the Perceived Stress Scale. *Asian Nursing Research, 6*(4), 121-127. https://doi.org/10.1016/j.anr.2012.08.004

Leslie-Miller, Calissa J., Veronica T. Cole, and Christian E. Waugh. "Positive distraction in daily activities as a predictor of good coping: A “day in the life” during the COVID-19 pandemic." *Frontiers in Psychology* 14 (2023): 1142665.

Li, N., Fan, L., Wang, Y., Wang, J., & Huang, Y. (2022). Risk factors of psychological distress during the COVID-19 pandemic: The roles of coping style and emotional regulation. *Journal of affective disorders*, *299*, 326-334.

Little, R. J., & Rubin, D. B. (2019). *Statistical analysis with missing data* (Vol. 793). John Wiley & Sons.

Lu, X., & Lin, Z. (2021). COVID-19, economic impact, mental health, and coping behaviors: a conceptual framework and future research directions. *Frontiers in psychology*, *12*, 759974.

Marroquín, B., Vine, V., & Morgan, R. (2020). Mental health during the COVID-19 pandemic: Effects of stay-at-home policies, social distancing behavior, and social resources. *PsychiatryResearch,293,* 113419.

Muthén, L. K., & Muthén, B. O. (2017). *Mplus user’s guide* (8th ed.). Muthén & Muthén.

O'Hayer, C. Virginia. "Building a life worth living during a pandemic and beyond: adaptations of comprehensive DBT to COVID-19." *Cognitive and Behavioral Practice* 28, no. 4 (2021): 588-596.

Pan, K. Y., Kok, A. A. L., Eikelenboom, M., Horsfall, M., Jörg, F., Luteijn, R. A., ... & Penninx, B. W. (2021). The mental health impact of the COVID-19 pandemic on people with and without depressive, anxiety, or obsessive-compulsive disorders: A longitudinal study of three Dutch case-control cohorts. *The Lancet Psychiatry, 8*(2), 121-129.

Park, C. L., Russell, B. S., Fendrich, M., Finkelstein-Fox, L., Hutchison, M., & Becker, J. (2020). Americans' COVID-19 stress, coping, and adherence to CDC guidelines. *Journal of General Internal Medicine, 35*(8), 2296-2303.

Parent-Lamarche, A., & Boulet, M. (2021). Employee well-being in the COVID-19 pandemic: The moderating role of teleworking during the first lockdown in the province of Quebec, Canada. *Work*, *70*(3), 763-775.

Parrott, D. J., Halmos, M. B., & Stappenbeck, C. A. (2022). COVID-19 stress and intimate partner aggression: The moderating role of heavy drinking. *Journal of Family Psychology*, 36(2), 227-239.

Pearman, A., Hughes, M. L., Smith, E. L., & Neupert, S. D. (2020). Age differences in risk and resilience factors in COVID-19-related stress. *The Journals of Gerontology: Series B, 76*(2), e38-e44. https://doi.org/10.1093/geronb/gbaa120

Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., John, A., ... & Abel, K. M. (2020). Mental health before and during the COVID-19 pandemic: A longitudinal probability sample survey of the UK population. *The Lancet Psychiatry, 7*(10), 883-892. https://doi.org/10.1016/S2215-0366(20)30308-4

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903. https://doi.org/10.1037/0021-9010.88.5.879

Roth, S., & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. *American Psychologist, 41*(7), 813-819. https://doi.org/10.1037/0003-066X.41.7.813

Schmitz, N., Hartkamp, N., & Franke, G. H. (2000). Assessing clinically significant change: Application to the SCL-90-R. *Psychological Reports, 86*(1), 263-274. https://doi.org/10.2466/pr0.2000.86.1.263

Shabat, Maya, Roni Shafir, and Gal Sheppes. "Flexible emotion regulatory selection when coping with COVID-19-related threats during quarantine." *Scientific Reports* 11, no. 1 (2021): 21468.

Shakthivel, N., Amarnath, V. M., Ahamed, F., Rath, R. S., Sethuraman, A. R., & Suliankatchi, R. A. (2017). Level of Perceived Stress and Coping Strategies Prevailing Among 1st year Medical Undergraduate Students: A Cross-sectional Study from South Indi. *International Journal of Medicine and Public Health*, *7*(2).

Shafiei, Z., Ghamari, M., & Shamir, A. S. (2024). Effectiveness of Acceptance and Commitment Therapy on Psychological Flexibility, Emotional Self-Regulation, and Stress Coping Styles in Mothers of Children with Specific Learning Disorders. *Journal of Assessment and Research in Applied Counseling (JARAC)*, *6*(2), 11-18.

Sheppes, G., Suri, G., & Gross, J. J. (2014). Emotion regulation and psychopathology. *Annual Review of Clinical Psychology, 11*(1), 379-405.

Shevlin, M., McBride, O., Murphy, J., Miller, J. G., Hartman, T. K., Levita, L., ... & Bentall, R. P. (2020). Anxiety, depression, traumatic stress, and COVID-19-related anxiety in the UK general population during the COVID-19 pandemic. *BJPsych Open, 6*(6), e125.

Siwik, C., Hicks, A., Phillips, K., Rebholz, W. N., Zimmaro, L. A., Weissbecker, I., ... & Sephton, S. E. (2020). Impact of coping strategies on perceived stress, depression, and cortisol profiles among gynecologic cancer patients. *Journal of health psychology*, *25*(7), 993-1003.

Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. *Psychological Bulletin, 129*(2), 216-269. https://doi.org/10.1037/0033-2909.129.2.216

Spaapen, D. L., Waters, F., Brummer, L., Stopa, L., & Bucks, R. S. (2014). The emotion regulation questionnaire: validation of the ERQ-9 in two community samples. *Psychological assessment*, *26*(1), 46.

Stratta, P., Capanna, C., Dell'Osso, L., Carmassi, C., Patriarca, S., Di Emidio, G., ... & Rossi, A. (2015). Resilience and coping in trauma spectrum symptoms prediction: A structural equation modeling approach. *Personality and Individual Differences*, *77*, 55-61.

Stuntz, E. C., & Linehan, M. M. (2020). *Coping with Cancer: DBT Skills to Manage Your Emotions--And Balance Uncertainty with Hope*. Guilford Publications.

Taylor, J. M. (2015). Psychometric analysis of the Ten-Item Perceived Stress Scale. *Psychological Assessment, 27*(1), 90-101. https://doi.org/10.1037/a0038100

Troy, A. S., Shallcross, A. J., & Mauss, I. B. (2013). A person-by-situation approach to emotion regulation: Cognitive reappraisal can either help or hurt, depending on the context. *Psychological Science, 24*(12), 2505-2514. https://doi.org/10.1177/0956797613496434

Urbán, R., Szigeti, R., Kökönyei, G., & Demetrovics, Z. (2014). Global severity index of the Symptom Checklist-90-R: A reliable measure of psychological distress. *Journal of Behavioral Medicine, 37*(4), 883-892. https://doi.org/10.1007/s10865-013-9531-5

Ursin, G., Eriksen, H. R., & Oltedal, S. (2019). The SCL-90-R: Factor structure and psychometric properties in a Norwegian outpatient population. *Nordic Journal of Psychiatry, 73*(3), 191-199. https://doi.org/10.1080/08039488.2019.1571422

Van der Velden, P. G., Contino, C., Das, M., van Loon, P., & Bosmans, M. W. (2020). Anxiety and depression symptoms, and lack of emotional support among the general population before and during the COVID-19 pandemic. A prospective national study on prevalence and risk factors. *Journal of Affective Disorders, 277*, 540-548.

Vindegaard, N., & Benros, M. E. (2020). COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity, 89,* 531-542. https://doi.org/10.1016/j.bbi.2020.05.048

Vizheh, M., Qorbani, M., Arzaghi, S. M., Muhidin, S., Javanmard, Z., & Esmaeili, M. (2020). The mental health of healthcare workers in the COVID-19 pandemic: A systematic review. *Journal of Diabetes & Metabolic Disorders*, *19*, 1967-1978.

Völlink, T., Bolman, C. A., Eppingbroek, A., & Dehue, F. (2013). Emotion-focused coping worsens depressive feelings and health complaints in cyberbullied children. *Journal of Criminology*, *2013*(1), 416976.

Wang, Y., Di, Y., Ye, J., & Wei, W. (2022). Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China. *Psychology, Health & Medicine, 27*(1), 87-92. https://doi.org/10.1080/13548506.2020.1746817

Webb, T. L., Miles, E., & Sheeran, P. (2012). Dealing with feeling: A meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation. *Psychological Bulletin, 138*(4), 775-808. https://doi.org/10.1037/a0027600

Woltin, K. A., Sassenberg, K., & Albayrak, N. (2018). Regulatory focus, coping strategies and symptoms of anxiety and depression: A comparison between Syrian refugees in Turkey and Germany. *PLoS One*, *13*(10), e0206522.

Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M., Gill, H., Phan, L., ... & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of affective disorders*, *277*, 55-64.

Ye, B., Chen, X., Zhang, Y., & Yang, Q. (2022). Psychological flexibility and COVID-19 burnout in Chinese college students: a moderated mediation model. *Journal of Contextual Behavioral Science*, *24*, 126-133.

Li, Y., Peng, J., & Tao, Y. (2023). Relationship between social support, coping strategy against COVID-19, and anxiety among home-quarantined Chinese university students: A path analysis modeling approach. *Current Psychology*, *42*(13), 10629-10644.

Waugh, C. E., Shing, E. Z., & Furr, R. M. (2020). Not all disengagement coping strategies are created equal: positive distraction, but not avoidance, can be an adaptive coping strategy for chronic life stressors. *Anxiety, Stress, & Coping*, *33*(5), 511-529.

Willett, J. B., & Singer, J. D. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York, NY, USA:: Oxford University Press.

Zandifar, A., Badrfam, R., Yazdani, S., Arzaghi, S. M., Rahimi, F., Ghasemi, S., ... & Qorbani, M. (2020). Prevalence and severity of depression, anxiety, stress and perceived stress in hospitalized patients with COVID-19. *Journal of Diabetes & Metabolic Disorders*, *19*, 1431-1438.

Zarowsky, Z., & Rashid, T. (2023). Resilience and wellbeing strategies for pandemic fatigue in times of Covid-19. *International Journal of Applied Positive Psychology*, *8*(1), 1-36.

Table 1

Frequency Table of Participant Demographics

Annual Household Income	%	Ethnic Origins	%	Mental Health Diagnosis	%
$21,000 or less	22.2	*European*	53.1	*Yes*	25.1
$20,000 - $40,000	23.2	*Latin/ Central /South American*	6.3	*No*	74.9
$41,000 - $60,000	16.4	*Asian*	18.8		
$61,000 - $80,000	11.6	*African*	3.4		
$81,000 - $100,000	12.1	*Caribbean*	1.0		
$101,000 - $120,000	3.9	*North American Indigenous*	1.0		
$121,000 or more	10.6	*Other North American*	3.9		
		Oceania	1.4		
		Mixed	11.1		

Note. N = 207

Table 2

Descriptive Statistics for Self-Report Measures

Self-Report Measure	*N*	*M*	*SD*	*Range*
Cognitive Reappraisal (Time 1) – ERQ	190	27.47	7.01	34
Expressive Suppression (Time 1) –ERQ	190	13.95	5.53	24
Perceived Stress Scale (Time 1) –PSS	203	17.53	7.44	36
Problem-Focused Coping (Time 1) – Brief COPE	194	2.41	0.60	3
Emotion-Focused Coping (Time 1) – Brief COPE	194	2.14	0.44	2.33
Avoidant Coping (Time 1) – Brief COPE	194	1.90	0.48	2.38
Externalizing Symptoms (Time 1) – ASR-ASEBA	190	12.20	8.65	39
Externalizing Symptoms (Time 2) – ASR-ASEBA	127	10.47	7.56	48
Externalizing Symptoms (Time 3) – ASR-ASEBA	103	10.02	8.28	51
Internalizing Symptoms (Time 1) – ASR-ASEBA	190	19.26	13.30	63
Internalizing Symptoms (Time 2) – ASR-ASEBA	127	17.89	12.67	67
Internalizing Symptoms (Time 3) – ASR-ASEBA	103	18.09	12.62	57
Global Severity Index (Time 1) – SCL-90	204	0.73	0.63	3.02
Global Severity Index (Time 2) – SCL-90	131	0.63	0.63	2.82
Global Severity Index (Time 3) – SCL-90	106	0.64	0.60	2.24

Table 3

Main Effects of Primary Predictors on Mental Health Outcomes

Effect	Estimate	*SE*	*95% CI*		*p*
			LL	*UL*	
Emotion-Focused Coping					
Intercept Internalizing Symptoms	2.05	0.80	0.81	3.29	.007*
Slope Internalizing Symptoms	0.14	0.45	-0.60	0.88	.748
Intercept Externalizing Symptoms	2.32	0.66	1.28	3.49	.000**
Slope Externalizing Symptoms	0.07	0.40	-0.60	.69	.861
Intercept GSI	0.16	0.03	0.11	0.21	.000**
Slope GSI	0.01	0.02	-0.02	0.05	.533
Problem-Focused Coping					
Intercept Internalizing Symptoms	-.27	0.81	-0.13	0.09	.738
Slope Internalizing Symptoms	-0.42	0.37	-1.91	1.21	.242
Intercept Externalizing Symptoms	0.25	0.59	-0.71	1.21	.670
Slope Externalizing Symptoms	0.10	0.28	-0.36	0.55	.728
Intercept GSI	.04	0.03	-0.02	.10	.241
Slope GSI	-0.02	0.02	-0.05	0.02	.401
Avoidant Coping					
Intercept Internalizing Symptoms	3.54	0.78	0.19	0.38	.000**
Slope Internalizing Symptoms	0.09	0.46	-0.41	0.53	.841
Intercept Externalizing Symptoms	2.53	0.51	1.69	3.37	.000**
Slope Externalizing Symptoms	0.05	0.36	-0.56	0.65	.902
Intercept GSI	0.12	0.03	0.14	0.25	.000**
Slope GSI	0.02	0.03	-0.02	0.07	.377
Cognitive Reappraisal					
Intercept Internalizing Symptoms	-1.00	0.78	-2.49	0.48	.203
Slope Internalizing Symptoms	-0.22	0.34	-0.77	0.34	.518
Intercept Externalizing Symptoms	-0.80	0.61	-1.80	0.21	.193
Slope Externalizing Symptoms	-0.01	0.33	-0.55	0.54	.986
Intercept GSI	0.01	0.04	-0.60	0.80	.795
Slope GSI	-0.02	0.02	-0.05	0.01	.355
Expressive Suppression					
Intercept Internalizing Symptoms	2.40	0.72	1.23	3.58	.001**
Slope Internalizing Symptoms	-0.56	0.29	-1.04	-0.08	.056
Intercept Externalizing Symptoms	-0.82	0.61	-1.83	0.19	.179
Slope Externalizing Symptoms	-0.16	0.25	-0.58	0.26	.528
Intercept GSI	0.07	0.04	0.00	0.14	.093
Slope GSI	-0.01	0.02	-0.05	0.02	.519

Note. GSI = Global Severity Index, LL = lower limit UL = upper limit.
** indicates $p < .001$, * indicates $p < .05$.

Table 4

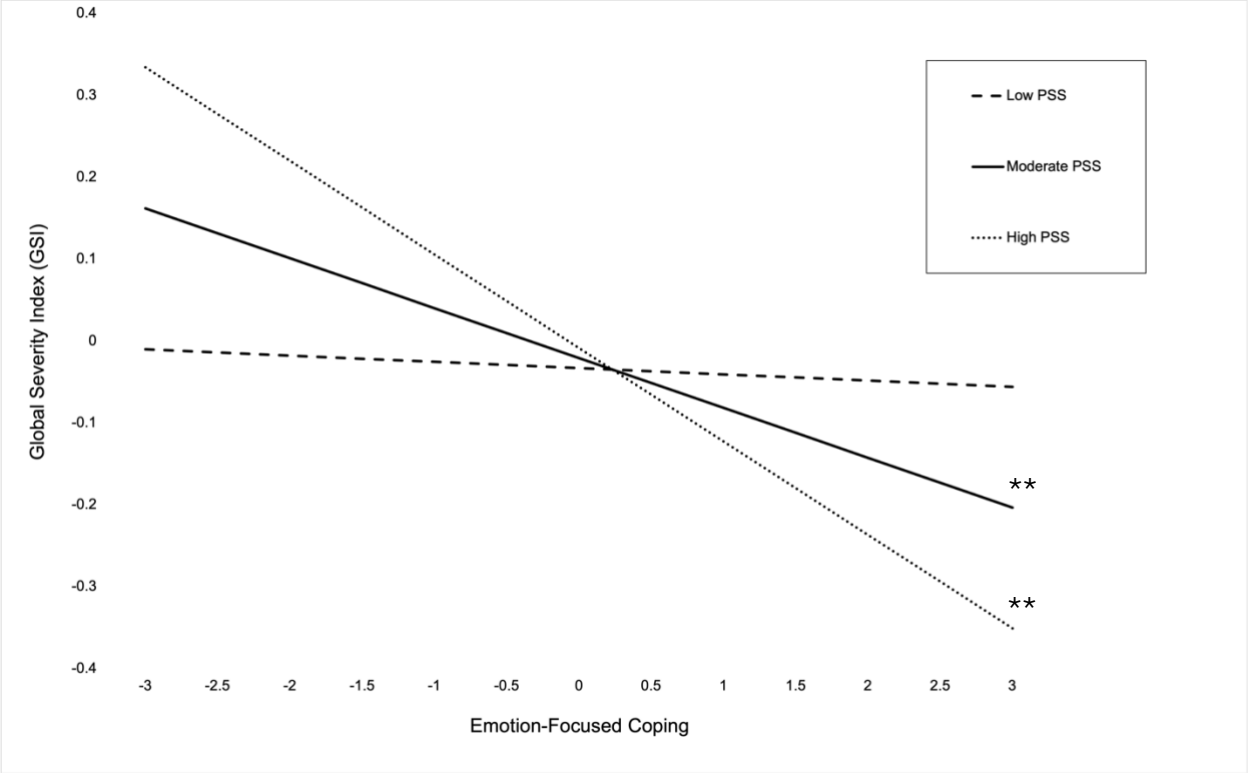
Interaction Effects of Perceived Stress and Main Predictors on Mental Health Outcomes

Effect	Estimate	*SE*	*95% CI*		*p*
			LL	*UL*	
PSS x Emotion-Focused Coping					
on Intercept Internalizing Symptoms	0.38	0.91	-1.11	1.88	.671
on Slope Internalizing Symptoms	-0.03	0.33	-0.57	0.51	.924
on Intercept Externalizing Symptoms	0.23	0.80	-1.08	1.44	.761
on Slope Externalizing Symptoms	-0.13	0.25	-0.52	0.32	.620
on Intercept GSI	0.03	0.04	-0.31	0.09	.411
on Slope GSI	-0.05	0.02	-0.08	-0.02	.002*
PSS x Problem-Focused Coping					
on Intercept Internalizing Symptoms	-0.17	0.70	-0.12	0.09	.812
on Slope Internalizing Symptoms	0.29	0.25	-0.87	1.38	.248
on Intercept Externalizing Symptoms	0.03	0.56	-0.89	0.94	.960
on Slope Externalizing Symptoms	-0.13	0.20	-0.45	0.20	.517
on Intercept GSI	-0.00	0.03	-0.06	0.05	.906
on Slope GSI	-0.02	0.01	-0.04	0.00	.135
PSS x Avoidant Coping					
on Intercept Internalizing Symptoms	1.55	0.91	0.03	0.24	.087
on Slope Internalizing Symptoms	-0.18	0.18	-0.41	0.18	.322
on Intercept Externalizing Symptoms	0.99	0.40	0.05	0.26	.012*
on Slope Externalizing Symptoms	-0.21	0.15	-0.45	0.04	.163
on Intercept GSI	0.06	0.04	-0.01	0.13	.148
on Slope GSI	-0.02	0.02	-0.05	0.01	.242
PSS x Cognitive Reappraisal					
on Intercept Internalizing Symptoms	-1.00	0.78	-2.28	0.29	.203
on Slope Internalizing Symptoms	-0.15	0.23	-0.54	0.23	.509
on Intercept Externalizing Symptoms	-0.80	0.61	-0.70	1.31	.193
on Slope Externalizing Symptoms	-0.13	0.17	-0.41	0.15	.450
on Intercept GSI	-0.03	0.04	-0.09	0.04	.490
on Slope GSI	-0.00	0.02	-0.30	0.02	.821
PSS x Expressive Suppression					
on Intercept Internalizing Symptoms	1.11	0.59	0.14	2.071	.059
on Slope Internalizing Symptoms	-0.04	0.30	-0.53	0.44	.881
on Intercept Externalizing Symptoms	0.30	0.57	-0.64	1.25	.596
on Slope Externalizing Symptoms	-0.16	0.19	-0.47	0.15	.386
on Intercept GSI	0.03	0.03	-0.-2	0.08	.292
on Slope GSI	0.01	0.02	-0.02	0.04	.465

Note. PSS = Perceived Stress, GSI = Global Severity Index, LL = lower limit UL = upper limit.
** indicates $p < .001$, * indicates $p < .05$.

Figure 1

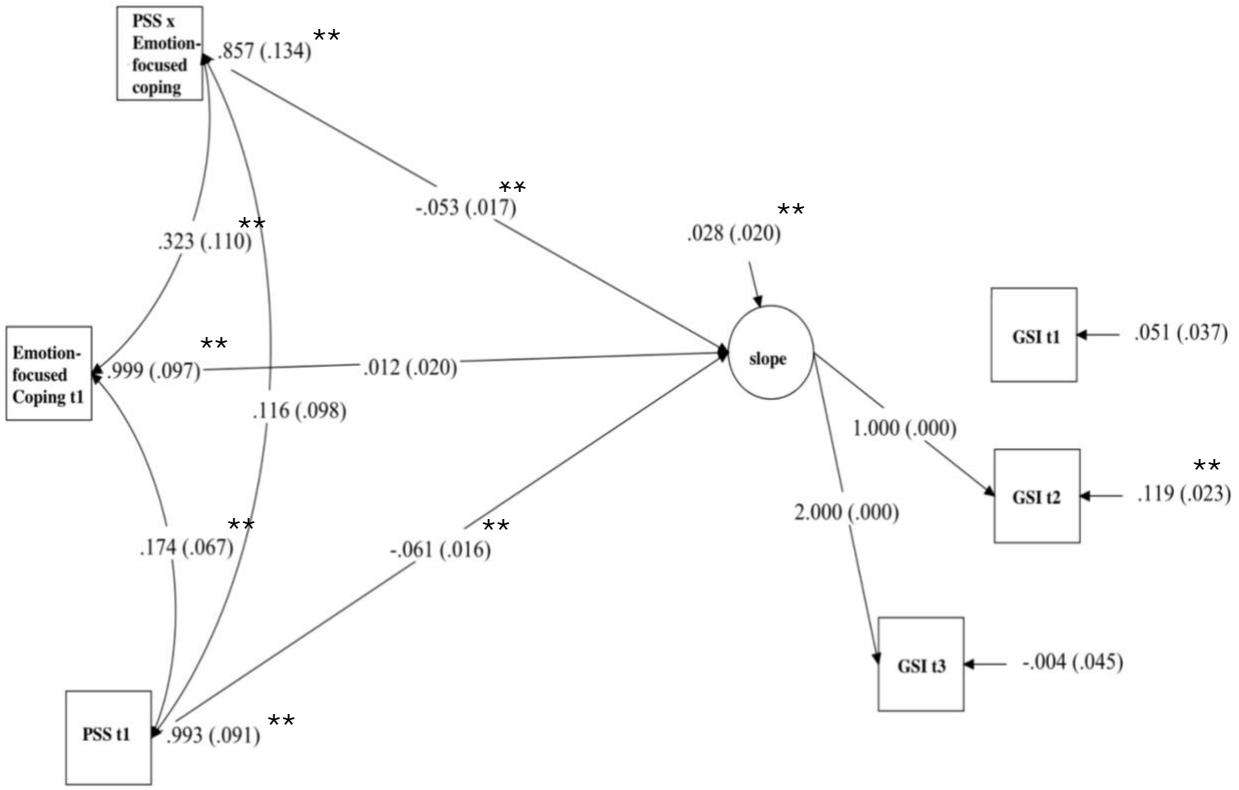
Simple slope analysis of interaction between Emotion-focused coping and perceived stress (PSS) in predicting slope of Global Severity Index (GSI)



Note. PSS = Perceived Stress. Association of Emotion-focused coping use on slope of GSI at three levels of PSS (low, moderate, high; - / +1 SD). We saw better trajectories for people who used more emotion-focused coping only in high and moderate PSS situations. ** indicates $p < .001$.

Figure 2

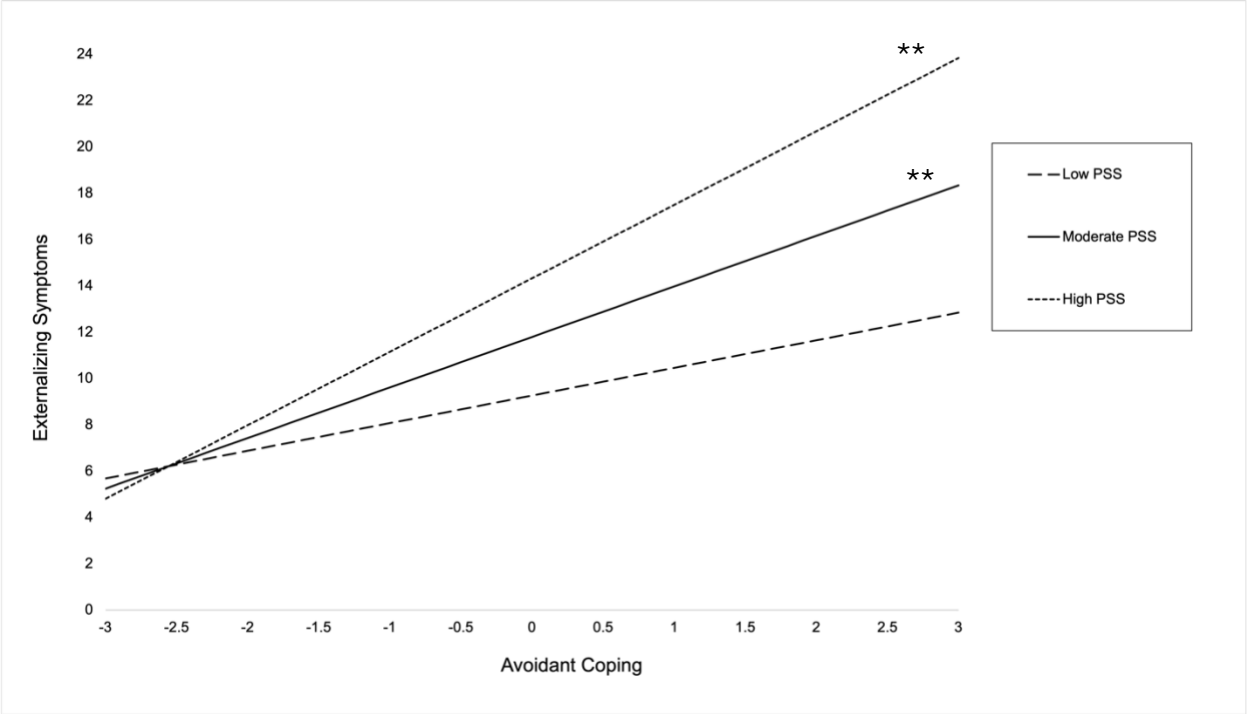
Model of perceived stress and emotion-focused coping interaction on slope of global severity index



Note. PSS = perceived stress, GSI = global severity index. standard error for each estimate is shown in parentheses; t1= time 1, t2 = time 2, t3 = time 3. The model demonstrated excellent fit, $\chi^2(12) = 274.757$, $p < .001$, CFI = 1.000, TLI = 1.000, RMSEA = .000. ** indicates $p < .001$

Figure 3

Simple slope analysis depicting the interaction between Avoidant Coping and Perceived Stress (PSS) in predicting intercept of Externalizing Symptoms



Note. PSS = Perceived Stress. Association of avoidant-coping use on intercept of externalizing symptoms at three levels of PSS (low, moderate, high; - / +1 SD). The impact of avoidant coping use at baseline on externalizing symptoms depended on moderate and high levels of PSS. ** indicates $p < .001$.