POSTTRAUMATIC GROWTH DURING COVID19 IN STUDENTS: THE ROLES OF
COPING, TRAIT EMOTIONAL INTELLIGENCE, AND PERCEIVED SOCIAL SUPPORT


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# ABSTRACT

Posttraumatic Growth During COVID19 in Students: The Roles of Coping, Trait Emotional

Intelligence, and Perceived Social Support

Samantha S. A. Fillion

The COVID19 pandemic produced negative outcomes, but also opportunities for post-traumatic growth (PTG). This mixed-methods study explored experiences of distress, coping, and growth, and the role of perceived social support and trait emotional intelligence (EI) in those outcomes. Undergraduates ($N = 732$) completed self-report measures of negative life events, emotional distress, PTG, trait EI, coping, and perceived social support, as well as open-ended questions about any positive impacts of the pandemic. Moderate level of PTG was reported, especially in the appreciation of life domain. Distress and PTG were weakly or non-significantly correlated, indicating these outcomes are distinct and can co-exist. Perceived social support and trait EI (Interpersonal, Adaptability) predicted greater PTG, and Trait EI (Intrapersonal, Stress Management) predicted lower distress. These effects were partially mediated by coping. Five themes emerged through qualitative analysis: Social Connectedness, New Opportunities, Appreciation of Life, Helpful Strategies, and Income and Financial Supports.

*Keywords:* Posttraumatic Growth, Perceived Stress, COVID19, Coping, Trait Emotional Intelligence, Social Support

**Table of Contents**

# List of Figures

# List of Tables

**Posttraumatic Growth During COVID19 in Students: The Roles of Coping, Trait Emotional Intelligence, and Perceived Social Support**

The disruptions of the COVID19 pandemic were linked to negative psychological consequences, such as anxiety, depression, and distress (Aknin et al., 2022). A study on adults from 59 different countries during the pandemic found that 25.4% of participants reported moderate to severe depression, and 19.5% reported moderate to severe anxiety (Alzueta et al., 2021). The psychological, economic, and societal effects of the pandemic created a context in which varying degrees of stress were naturally present in the general public. The COVID19 pandemic in many places resulted in the transition of universities and colleges to online education formats with less opportunity for meaningful social interaction and disrupted learning (Li et al., 2021), and had negative economic impacts in terms of financial loss and reduced opportunities for entering the workforce (Brunet, 2020; Karpman et al., 2020). Young adults experienced the largest increase in distress and mental illness during the pandemic (Wolf & Schmitz, 2024; Villanti et al., 2022); as such, it is important to study this population to better understand their unique experiences.

Most research on the psychological impacts of the COVID19 pandemic has focused on its negative outcomes, overlooking the potential positive psychological consequences it has had for some. Posttraumatic growth (PTG) is the perceived positive psychological change in oneself after experiencing stressful life events and challenging situations (Tedeschi & Calhoun, 2004). PTG has most commonly been studied in samples of survivors of cancer (Liegey Dougall et al., 2017; Marziliano et al., 2019; Yi & Kim, 2014) but has also been studied in samples who have experienced other health threats (Sadeghpour et al., 2021) or other traumatic events including natural disasters (Guo et al., 2017; Zhou et al, 2017) or interpersonal violence (Kleim & Ehlers,

2009). The global COVID19 pandemic provided a unique opportunity to study the phenomenon of posttraumatic growth due to the widespread disruption of daily life, pandemic public health-measures such as social distancing and lockdowns, and poor mental health during these times. Thus, the COVID19 pandemic and related stressors provided an opportunity to explore the relationships between stressful experiences, posttraumatic growth, and their psychological predictors in this novel context.

This mixed-methods study explored the phenomenon of post-traumatic growth within a sample of university students during the COVID19 pandemic. The present study specifically focused on the direct and indirect contributions of trait emotional intelligence, perceived social support, and coping to the prediction of posttraumatic growth. Firstly, it was of interest to identify the prevalence and nature of PTG in undergraduate students during COVID19. Given the inconsistencies in the existing literature on the relationship between PTG and posttraumatic stress (PTS), it was also of interest to validate the construct of PTG as unique from merely the absence of PTS. Another aim of this study was to explore the relationships between trait EI and PTG, alongside the variables of social support and coping which have their respective relationships with trait EI and positive outcomes after traumatic events. The final aim of this study was to explore coping styles as a mediator of the relationships of trait EI and perceived social support with PTG. A mixed-methods approach was employed to better address the inconsistencies within the literature surrounding these various relationships and yield a more nuanced understanding of what adaptive coping looked like during the COVID19 pandemic.

## Posttraumatic Growth (PTG)

Traditional understanding of stress and trauma focused on the idea that these experiences would inevitably translate into harmful outcomes and function in a dose response manner, in

which greater exposure to adversity would result in less adaptive functioning (Höltge et al., 2018). This dominant ideology contributed to the narrow scope of research on traumatic stress that was based around subsequent pathology, such as post-traumatic stress disorder (PTSD), depression, and anxiety. Researchers originally focused on measuring the presence or absence of these symptoms in the aftermath of trauma to indicate one's resilience or adaptive coping. This over-simplistic representation of the psychological experience of trauma fails to capture the resilience of many individuals by overlooking the possible coexistence of positive aftereffects of trauma alongside its negative consequences. More recent developments in the literature in traumatic stress and resilience indicate that adversity may function as a catalyst for positive psychological outcomes that represent positive changes beyond 'bouncing back' to pre-trauma baseline (Höltge et al., 2018). Posttraumatic growth (PTG) is a positive psychology concept that is growing in presence within the literature on trauma. Introduced in the 1990s, PTG is defined as the perceived positive psychological change in oneself following stressful and challenging life experiences (Tedeschi & Calhoun, 2004). This growth can occur across one or more life domains and can manifest as a greater appreciation of life, a changed sense of one's priorities, better relationships with others, greater perceived personal strength, the realization of new possibilities for one's life, and spiritual developments (Tedeschi & Calhoun, 2004). The emerging construct of PTG allows for the portrayal of those who have experienced and survived trauma to move beyond being pathologized and instead be perceived as resilient and adaptive.

**Measurement of PTG**

A variety of measures have been used to capture the phenomenon of growth after traumatic events. These measures can be divided into two broad categories: general measures that are applicable across a variety of stressors, and event-specific measures that are tailored to a

particular stressor of interest (Joseph & Linley, 2008). In the general category, the three commonly used measures are the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996), Stress-Related Growth Scale (SRGS; Park et al., 1996), and Perceived Benefit Scale (PBS; McMillen & Fisher, 1998). With over 9,000 citations, the PTGI is by far the most commonly used measure for this construct within the present literature (Helgeson et al., 2006).

The PTGI (Tedeschi & Calhoun, 1996) is a 21-item questionnaire which measures perceptions of the degree to which one's life has changed following a traumatic event. The PTGI was developed with undergraduate students based on their most distressing life event experienced in the last five years. The items consist of statements reflecting on areas of growth and change, such as 'I changed my priorities about what is important in life', 'I have a greater feeling of self-reliance', and 'I have a greater sense of closeness with others'. Participants are asked to rate each item on a six-point Likert scale based on how much they experienced the described change as a result of a crisis from 0 = 'I did not experience this change as a result of my crisis' to 5 = 'I experienced this change to a very great degree as a result of my crisis'. The PTGI yields a total PTG score as well as five subscale scores covering five domains of change: relating to others, new possibilities, personal strength, spiritual change, and appreciation of life. The five-factor structure of the PTGI has been replicated in several studies, although the factors tended to be highly inter-correlated (.61 to .87) and loaded strongly on a single higher-order factor (Silverstein et al., 2018). Hence, the PTGI can be used as a global assessment of PTG and as a multi-dimensional measure of specific growth domains (Joseph & Linley, 2008).

The second most commonly used scale to measure positive change after stressful life events, with over 2,000 citations, is the Stress-Related Growth Scale (Park et al., 1996). The SRGS is a 50-item inventory that measures perceptions of positive changes in one's personal

resources, social relationships, and coping skills following stressful negative life events. Example items include 'I learned to find more meaning in life', 'I developed new relationships with helpful people', and 'I learned to approach life more calmly'. Participants rate the statements on a three-point Likert scale from 0 = 'not at all' to 2 = 'a great deal'. Like the PTGI, the SRGS was developed with undergraduate students based on the most stressful life event that had occurred to them in the last year. Factor-analytic studies of the SRGS have confirmed a single global PTG factor but have not been able to converge on a consistent multi-factorial solution (Roesch et al., 2004). Therefore, a single total score is typically used for the SRGS, which can also be computed from a shorter 15-item version (Joseph & Linley, 2008).

The Perceived Benefit Scale (PBS; McMillen & Fisher, 1998) is a 30-item measure that assesses perceptions of positive life changes after traumatic stressors. Growth and benefit are overlapping constructs, in that the way benefit is perceived is within the growth and positive changes that resulted from the negative event. The PBS was developed with a community sample of adults based on their most stressful experience in the last five years. Example PBS items include 'This event made me a stronger person', 'Because of this event, I have a greater faith in other people', and 'Because of this event, my priorities in life are different'. Participants rate the statements on a five-point Likert scale, from 0 = 'not at all like my experience' to 4 = 'very much like my experience'. Factor analysis identified eight moderately inter-correlated factors, including lifestyle changes, material gain, increases in self-efficacy, family closeness, community closeness, faith in people, compassion, and spirituality (McMillen & Fisher, 1998). The PBS factors correlated strongly (.76 to .86) with the five PTGI subscales, indicating that the two measures capture similar dimensions of growth (McMillen & Fisher, 1998).

In the category of event-specific measures, the Benefit Finding Scale (BFS; Antoni et al., 2001) is commonly used to explore perceived positive changes after stressful events, specifically within samples of cancer patients. The BFS is a 17-item inventory that measures perceptions about positive contributions to one's life that happened as a result of a breast cancer diagnosis, including acceptance, sensitivity to others, improved coping, and new purpose in life. Studies that are focused on the experience of different types of cancer can alter the beginning of the BFS to reflect the appropriate cancer. The BFS items begin with the prompt 'Having had breast cancer…' and then follow up with item statements such as '… has taught me how to adjust to things I cannot change', '…has helped me become more focused on priorities, with a deeper sense of purpose in life', and '… has brought my family closer together'. Participants rate the statements on how much they apply to them on a five-point Likert scale from 1 = 'not at all' to 5 = 'extremely'. Factor analysis confirmed a single global PTG factor, which correlated strongly ($r$ = .71) with the total PTGI score (Antoni et al., 2001).

Although the different PTG measures were developed independently of one another, they all share substantial construct overlap, and they all have adequate psychometric properties, which is why they have been treated as largely inter-changeable in the PTG literature (Joseph & Linley, 2008). Aside from the general versus event-specific focus, the only other major differentiating property among these scales is whether they provide multi-dimensional assessment in addition to the global PTG score. The PTGI and PBS are the two multi-factorial scales that are recommended if researchers are interested a more nuanced multi-faceted assessment of PTG (Joseph & Linley, 2008). Joseph et al. (2005) conducted a joint factor analysis of these measures and found that all PTGI and PBS subscales loaded highly on a single higher-order construct of PTG. However, they also identified three common second-order factors: changes in perceptions

of self (e.g., newfound personal strengths, increased self-efficacy, appreciation of life), changes in relationships with others (e.g., increased sense of closeness, compassion, faith in people), and changes in life philosophy (e.g., new meaning, spirituality). Given these commonalities, in the present study we chose to use the PTGI due to its multi-dimensional structure and predominance in previous research.

**Prevalence of PTG**

How prevalent is PTG following traumatic experiences? To estimate the prevalence of moderate to high PTG, Wu et al. (2019) conducted a systematic review and meta-analysis of articles on PTG across six databases. They found that PTG was a common phenomenon: on average, one in two individuals who experienced a traumatic event reported at least a moderate degree of PTG, with an overall prevalence rate of 52.6%. However, Wu et al. (2019) also found that the rate of PTG across the 26 included studies was highly heterogenous and ranged from only 10% up to 77.3% of the study sample. High to moderate PTG was more commonly reported by those who experienced direct trauma (vs. indirect trauma in family members), had experienced less time passed since the trauma (less than 6 months), were younger than 60 years of age, and worked professions in emergency services (vs. those who suffered disease or injury). These findings suggest that PTG should continue to be explored across diverse samples and trauma contexts, to better understand who can experience PTG and under what circumstances.

Aside from global PTG rates, the nature of PTG experiences may also vary across different trauma types and populations. PTG has most commonly been studied in samples of cancer survivors, and while this population undoubtedly provides a context of traumatic stress there are specific characteristics of their stressor that may uniquely influence their experience of PTG (Liu et al., 2017; Shakespeare-Finch & Lurie-Beck, 2014). A distinct characteristic of a

cancer diagnosis is the salient threat to one's physical wellbeing and life. This threat could translate into a unique experience of PTG compared to another experience in which one feels less concerned for their physical wellbeing. For example, Sharp et al. (2018) found that their sample of cancer survivors had an average total PTGI score of 2.7 (on a 0-5 scale), representing a 'moderate degree' of change. The highest degree of change was reported in the PTG domain Appreciation of Life compared to other domains, and this could be related to the physically threatening nature of experiencing serious illness. However, there is evidence that PTG may look different for different people based on their respective traumatic experiences (Karanci et al., 2012; Laceulle et al., 2015). Thus, it is important to explore how this phenomenon may manifest in alternative samples than those previously studied.

While initial research focused largely on samples recovering from cancer or other physical ailments, PTG is being explored across increasingly diverse samples and event contexts. For example, Karanci et al. (2012) expanded the scope of PTG research to a wider range of populations by recruiting a sample of survivors of accidents, natural disasters, and those who lost a loved one unexpectedly, to explore the relationship between trauma characteristics and PTG. They found that those who experienced a natural disaster reported more growth in the Relating to Others domain compared to those who experienced loss, reflecting the communal nature of their trauma. Natural disaster and accident survivors reported greater growth in the Appreciation of Life domain compared to those who experienced loss as well, consistent with the life-threatening nature of those experiences. Posttraumatic stress severity was positively related to overall PTG, but the magnitude of this relationship differed across each domain. The results of this study indicate that PTG looks different for survivors of different traumas, and the authors suggested that there may be different predictors relevant to each domain of PTG (Karanci et al., 2012).

Undergraduate students are a heterogeneous group with regards to traumatic experiences. According to pre-COVID studies of student samples from the US and Australia, the most stressful events reported by students included serious illness of self or close other, death of close other, life-threatening accident or injury, and criminal victimization (Morris et al., 2005; Silverstein et al., 2018; Tedeschi et al., 2017). In these studies, the average total PTGI scores ranged from 1.9 to 2.4 (on a 0-5 scale), representing a 'small degree' of change. Appreciation of Life was the most frequently experienced aspect of PTG, followed by Personal Strength and Relating to Others, whereas New Possibilities and Spiritual Change were the least frequently reported aspects of PTG in these general student samples.

A number of studies have examined PTG levels in the context of the COVID19 pandemic. Cohen-Louck (2022) conducted a large online survey of residents in Israel at three time points in May 2020, November 2020, and February 2021. They observed a small degree of PTG in the early phase of the pandemic (average PTGI score of 2.4), but this increased to a moderate degree (average PTGI score of 2.7) at medium and long-term follow-ups. The increase in PTG throughout the course of the pandemic supports the idea that PTG arises from a struggle with stressful experiences that prompt re-evaluation of one's life, relationships, and self (Cohen-Louck, 2022). A moderate degree of PTG was also found in a nationally representative US sample assessed in May 2020 (average PTGI score of 2.8; Zhou et al., 2020) and in a large sample of almost 3,000 Chinese university students who volunteered in the early pandemic intervention efforts in March 2020 (average PTGI score of 2.9; Hao et al., 2023). However, other surveys of undergraduate students recorded lower levels of PTG during the pandemic. For example, Hyun et al. (2021) found a small degree of PTG (average PTGI score of 1.7) in a US student sample assessed between Fall 2020 and Spring 2021. Similarly, Van der Hallen and

Godor (2022) found a small degree of PTG (average PTGI score of 2.3) in a Dutch student sample assessed in May 2020 and again one year later.

Unfortunately, none of these studies differentiated between the PTGI domains, leaving open the question of which facets of PTG are most pronounced in the unique context of the COVID19 pandemic. One exception to this is a study by Dominick (2022), who assessed domain-specific PTG levels at four timepoints between April 2020 and April 2021 in a mixed sample of students and adults. Although the overall PTG level remained low throughout the four time points (average PTGI scores of 1.5 to 1.6), two PTGI domains showed significant increases throughout the first year of the pandemic: Personal Strength and New Possibilities (Dominick, 2022). This underscores the importance of the timing of PTG measurement and additionally highlights how a multi-dimensional PTGI assessment can provide a more nuanced picture of PTG during the pandemic.

Taken together, these epidemiological findings suggest that while it is possible to experience PTG following life's ordeals, there are considerable contextual and individual differences in the propensity to experience growth. Therefore, much research has focused on identifying correlates and predictors of PTG, with a particular interest paid to the relationship between PTG and posttraumatic stress (PTS).

## Relationship Between PTG and PTS

As both positive and negative consequences of trauma have been observed to coexist, this implores the question, what exactly is the relationship between PTS and PTG? Conceptually, PTG arises from an experience that is distressing enough to change one's perceptions of self and life (Tedeschi & Calhoun, 2004). Empirically, this would imply a positive correlation between PTG and PTS: the more severe the stressor and the suffering, the greater the likelihood of PTG.

However, there have been inconsistent findings about the relationship between growth and stress; there is evidence that this relationship is positive, negative, null, and even curvilinear (Marziliano et al., 2019). A number of possible moderators of this relationship have been explored, including trauma type, time elapsed since trauma, severity of PTS, and how PTG and PTS are measured.

**Evidence from Cancer Survivors**

Much of the evidence on PTG and its correlates comes from oncology samples. To give a few examples, Liegey Dougall et al. (2017) conducted a longitudinal study ($N = 115$) exploring the relationship between PTS symptoms, PTG, and physical and mental health outcomes (quality of life and patient survival) in lung cancer patients. PTG was measured using the PTGI and PTS was measured using the Posttraumatic Stress Disorder Checklist by Blanchard et al. (1993; as cited in Liegey Dougall et al., 2017) that measures symptoms of PTSD (re-experiencing, avoidance, and hyperarousal). Participants were administered self-report questionnaires at induction into the study and again at two and four months after baseline measurement. Liegey Dougall et al. (2017) found that PTS and PTG were moderately positively related over time, and tests of change indicated that PTS and PTG were stable across the four months. This suggests that those experiencing higher levels of PTS also experience higher levels of PTG. The stability of the PTS and PTG levels across time also suggest that this positive relationship finding is not due to an incomplete picture of the relationship between PTS and PTG due to single time point measurement. Higher level of PTG was a significant predictor of better physical quality of life but was not a significant predictor of mental quality of life. Conversely, higher level of PTS predicted lower mental quality of life but was not a significant predictor of physical quality of life. Contrary to what was expected, PTS was not a significant predictor of patient survival,

while PTG was, even after controlling for the disease-related variables of diagnosis date, type and stage of cancer, and chemotherapy treatment. These results indicate that PTG requires a certain level of PTS, but that higher levels of PTS do not exist without their own respective risks (Liegey Dougall et al., 2017). The findings of this study highlight the need to separately consider and measure both negative and positive consequences of trauma, such as PTS and PTG, as they have differential predictive power for mental and physical wellbeing outcomes.

Another study exploring the relationship between PTS and PTG in those who have experienced cancer was conducted by Yi and Kim (2014), but with a sample of Korean adolescents and young adults. They were interested in whether this relationship would present as linear or curvilinear. Participants ($N = 225$) completed a questionnaire consisting of self-report measures of PTSD symptoms, PTG, and medical details (type of cancer, cancer recurrence, age at diagnosis, and time since diagnosis). Identical to Liegey Dougall et al. (2017), PTG was measured in this study using the PTGI (Tedeschi & Calhoun, 1996). However, PTS was measured using a different but highly similar measure, the Posttraumatic Distress Diagnostic Scale developed by Foa et al. (1997), a 17-item scale that measures PTSD symptoms (reexperiencing, avoidance, and hyperarousal) within the past 30 days. Yi and Kim (2014) found a small but significant negative linear relationship between PTG and PTS ($r = -.14$), but not a curvilinear trend, which suggests that higher levels of PTS are associated with lower levels of PTG. Cancer type and reoccurrence were not associated with PTGI, while time since diagnosis was negatively associated with PTGI. This indicates that greater PTG is present in those who more recently received their diagnosis, which suggests that perceiving positive benefits in the experience of cancer is easier in the early stages of one's cancer journey. This study contradicts the findings of Liegey Dougall et al. (2017) and instead suggests that PTS could hamper one's

ability to experience growth following trauma. However, as this study was correlational, and measurement was only conducted at one time point, assumptions of directionality and causation cannot be made.

Given some of the methodological similarities between samples (cancer patients) and measures used (PTSD measures and the PTGI), it is interesting that Yi and Kim (2014) and Liegey Dougall et al. (2017) yielded different results for the directionality of the relationship between PTS and PTG. In recognition of the inconsistent findings on the PTS and PTG relationship, Marziliano et al. (2019) completed a systematic review and meta-analysis ($k = 51$) of literature in this area to better understand the relationship between PTSD and PTG in survivors of cancer. It was of interest not only to determine the directionality and strength of this relationship, but also how this relationship is commonly measured and whether variance in measurement tools had any influence on results. They found that 94% of articles published between 2016 and 2017 used Tedeschi and Calhoun's (1996) PTGI to measure PTG in this population. The other measure they found to be commonly used to assess growth and positive psychological outcomes after trauma, but less often than the PTGI, was Antoni et al.'s (2001) Benefit Finding Scale (BFS). Only four of the 51 studies selected used scales other than the PTGI and BFS, but these scales similarly measured perceived benefits and burdens, perceived personal growth, finding silver linings, and perceived changes in oneself.

Marziliano et al. (2019) found correlations ranging from moderate positive correlations to moderate negative correlations and small to medium effect sizes ($r = -.46$ to .49). The mean effect size was small but significant ($r = .08$), which suggests that in this population the relationship between PTS and PTG is positive but modest. However, the noted heterogeneity between the individual studies in terms of correlation direction and strength would be a

contributing factor to the small overall effect size. Interestingly, the measure used to assess PTG did not moderate the relationship between growth and stress, but the type of measure used to assess stress did. This suggests that the inconsistent findings about the nature of the relationship between PTS symptoms and PTG could be related to the variance in the measure used to explore PTS. Further research should be done to investigate how the correlation of PTG and trauma related mental health symptoms may come out different based on the specific conceptualization and measurement of the negative psychological consequences.

**Evidence from Other Trauma Types**

Studies conducted with samples of individuals who have experienced traumatic events outside of health-related events, such as experiencing violence or natural disasters, have produced further inconsistencies in the evidence on the relationship between PTS and PTG. For example, Kleim and Ehlers (2009) conducted two studies in which they examined the relationship between PTS, PTG, and depression in assault survivors. Participants were required to meet the DSM-IV criteria for PTSD. Participants in both studies completed a questionnaire of self-report measures of PTG and depression. Again, Tedeschi and Calhoun's (1996) PTGI was used to measure PTG. Depression was measured with Beck's Depression Inventory consisting of 21 statements about depression symptoms (Beck & Steer, 1987, as cited in Kleim & Ehlers, 2009). Participants' PTSD symptom severity was assessed in both studies by an interviewer using the 17-item PTSD Symptom Scale-Interview Version (Foa et al., 1993, as cited in Kleim & Ehlers, 2009). In both studies those that reported low and high levels of PTG reported less PTSD symptom severity, while those who reported moderate PTG reported higher levels of PTSD symptom severity. This is a curvilinear relationship (inverted U-shape), which suggests that there are optimal levels of PTS for supporting PTG. In study one ($N = 180$) PTG and depression

symptoms showed the same curvilinear relationship as PTG and PTS. However, in study two ($N$ = 70) there was not a significant relationship between PTG and depression symptoms. Kleim and Ehlers (2009) speculated that those experiencing low levels of PTS and depression may not experience the required level of belief shattering as a result of their trauma, and thus not be motivated to seek out new meanings and perspectives of growth in the way that those who are high in PTS severity may be. Kleim and Ehlers (2009) related their finding about moderate growth levels being linked to higher levels of PTS to other literature which has highlighted the necessary role of growth actions beyond positive perceptions of one's growth. They suggested that perhaps those who report only moderate growth but high symptom severity could be engaging in positive distortions of their situation, rather than taking actions towards their personal growth in the aftermath of trauma (Kleim & Ehlers, 2009). These unique findings highlight the need for further research focused on dissecting what the mechanisms are for optimal PTG and how this relates to managing the experience of PTS and the associated negative outcomes.

Two meta-analyses have attempted to summarize the accumulated evidence on the strength and direction of the relationship between PTG and PTS and its potential moderators (Liu et al., 2017; Shakespeare-Finch & Lurie-Beck, 2014). Shakespeare-Finch and Lurie-Beck (2014) reported a moderate positive average relationship between PTG and PTSD symptoms ($r = .32$), but also high degree of heterogeneity across studies ($K = 42$). One of the key moderators was the severity of PTSD symptoms, resulting in a curvilinear inverted U-shape trend where PTS was positively associated with PTG at moderate levels of symptom severity, but the relationship became negative at high levels of symptom severity. This corroborates Kleim and Ehlers's (2009) conclusion that there are optimal levels of PTS for supporting PTG. The effect size also

varied by trauma type: the correlation was stronger for survivors of natural disasters and civilians in conflict zones (*r* in the .40s), but weaker for those who experienced sexual abuse or illness of self or loved ones (*r* < .20), with mixed trauma samples falling in-between (*r* in the .20s). Age was another significant moderator, with the relationship being stronger for children than for adults. Shakespeare-Finch and Lurie-Beck (2014) concluded that although the overall relationship between PTG and PTS was statistically significant, it was not strong, suggesting that other factors likely played a larger role in differentiating between those who experienced PTG from those who did not, even in the presence of sufficient PTS.

A meta-analysis by Liu et al. (2017) replicated the findings of a modest positive average correlation between PTG and PTSD symptoms (*r* = .22), large heterogeneity across studies (*K* = 63), and the moderating effects of age and trauma type. In addition, they found a moderating effect of time since trauma: the relationship between PTS and PTG was strongest during the 18-24 month period after the event, but weaker at shorter (under a year) and longer intervals (over two years). They also found significant variability across the five PTGI dimensions, with the strongest average PTS associations observed for New Possibilities and Appreciation of Life, and a null relationship found for Relating to Others. Liu et al. (2017) suggested that growth in the relational domain may be more strongly related to other factors (e.g., perceived social support) and argued for the need to pay closer attention to the different PTG domains since they displayed differential correlations with PTS.

In contrast to the evidence that the nature of trauma and PTS have unique relationships with the respective domains of PTGI, there is also evidence that the five domains of PTGI are strongly intercorrelated. Silverstein et al. (2018) conducted a factor analysis using the five PTGI domains, using data from a sample of university students (*N* = 400) who completed

questionnaires including self-report measures of trauma exposure, PTGI, resilience, grit, PTSD, and functional impairment. To explore whether the five PTGI factors had heterogeneous relationships across the variables of interest, pairwise comparisons were made across the five PTGI domains with the external correlates. Only 14 out of 50 pairwise comparisons indicated heterogeneity across the PTGI factors, and the effect sizes for these significant pairwise comparisons were small, indicating the PTGI domains can be considered to be homogenous and share patterns of correlation across the other variables measured (Silverstein et al., 2018). Given these findings, it appears that PTG can be explored effectively using a global PTGI score, but it can also be broken down into subdomains when it is appropriate to do so based on the research questions.

**Evaluating the Evidence**

Taken together, there is some empirical support for the hypothesized positive relationship between PTG and PTS, although this relationship appears to be relatively weak and conditional on other factors. Based on the research reviewed above, PTG is more likely to co-occur alongside PTS when the trauma is communal (e.g., natural disaster, war) rather than personal (e.g., victimization, illness) and when the level of distress is sufficiently high but not too severe. There also appears to be an optimal window of time, not too soon but also not too long since the traumatic event, when PTG is most correlated with PTS.

The inconsistencies across the literature in regard to the relationship between PTS and PTG indicate that there is more work to be done in clarifying this relationship. In particular, variance in both measurement and results indicate that measurement should be a focus in future research on this relationship. It would also be useful to qualitatively explore the various domains of PTG (relating to others, new possibilities, personal strength, spiritual change, and appreciation

of life) and the co-occurring experience of PTS, as quantitative measures seem to be falling short of consistently explaining the relationship between these constructs. Qualitative research could help to inform how PTG and PTS can be best captured and understood together. This research is important as it could inform those providing interventions to trauma survivors on how to best buffer the negative consequences of trauma while also facilitating positive growth.

While it is clear that PTS and PTG do co-occur under certain conditions, they largely appear to be distinct concepts that offer different insights into the psychological experiences of life after trauma. Given the evidence that some individuals experience PTG while others do not, despite the common nature and characteristics of the negative event experience, one could conclude that the experience of a negative or traumatic event alone is not sufficient to produce PTG. While two people may experience the same stressful event, they may differ in how they think about and behave in response to that event, or in other words, their coping approach and coping resources. This poses then the question, what distinguishes those who do experience PTG from those who do not? Schaefer and Moos (1992) proposed an explanatory model for what factors influence whether one would experience PTG, and this model involves personal and environment characteristics, characteristics of the stressful event, and coping strategies. Of the various relevant factors that have been investigated empirically, two factors have consistently emerged as reliable predictors of PTG: coping and social support (Eissenstat et al., 2022; Ning et al., 2023; Prati & Pietrantoni, 2009). These two literatures are reviewed next.

**Coping**

Coping has been extensively explored in relation to a variety of positive and negative psychological outcomes, and across a wide breadth of stressful event contexts and samples. In university students, coping has been identified as a predictor of outcomes like academic

performance and stress, and more recently PTG (Perera & DiGiacomo, 2015; Saklofske et al., 2012; Van der Hallen & Godor, 2022). Early coping theorists Lazarus and Folkman (1984) defined coping as the changing of one's thoughts and behaviours to manage external or internal demands of a specific and stressful situation. Their Transactional Model of Stress and Coping (Lazarus & Folkman, 1984) remains a dominant theory in which an individual's coping strategy is determined by the elements of the person-environment interaction. These elements include the nature of the stressor (e.g., controllable vs. uncontrollable) and the individual's internal and external coping resources (e.g., emotion regulation, social support), which interact to produce a subjective appraisal of the situation as either manageable (challenge) or overwhelming (threat) depending on one's perceived coping capacity. These subjective appraisals then determine which coping strategy one might use to respond to the situation (Lazarus & Folkman, 1984).

**Coping Strategies**

Coping strategies can be grouped into three broad categories: Problem-Focused, Emotion-Focused, and Avoidance coping (Carver et al., 1989; Smith et al., 2016). Problem-Focused coping consists of attempts to do something about the stressful situation, such as information seeking, planning, and problem-solving. Problem-focused coping is typically conceptualized as an adaptive coping approach, particularly in situations that are controllable (Carver et al., 1989; Smith et al., 2016). Emotion-Focused coping consists of attempts to manage stress through changing one's thoughts and feelings rather than taking direct action on the stressful situation, and it can be more or less adaptive depending on the emotion regulation strategy used. Examples of emotion-focused strategies include cognitive reappraisal, emotional support seeking, but also rumination and venting (Carver et al., 1989; Smith et al., 2016). Avoidance Coping consists of disengagement from the stressful situation through distractions,

denial and escape. Avoidance coping is typically conceptualized as maladaptive in the long term, although it can alleviate distress in the short term (Smith et al., 2016). While these three broad categories appear in most coping research, there is great variability in how coping is operationally defined across studies. Strategies for coping with stress are categorized in a variety of ways across the literature, in part due to the variety of coping models and measures used. Some of the commonly used measures include the Coping Styles Questionnaire (CSQ; Roger et al., 1993), Coping Inventory for Stressful Situations (CISS; Ender & Parker, 1999), and Brief COPE (Carver et al., 1997).

The Coping Styles Questionnaire (CSQ; Roger et al., 1993) is a 60-item measure, which divides coping into four factors: Rational, Detached, Emotional, and Avoidance Coping. Rational Coping refers to actively coping through problem solving (e.g., 'Try to find out more information to help make a decision about things'). Rational coping aligns with the broad category of Problem-Focused Coping described above. Detached Coping refers to considering oneself as separate from the circumstances and being able to detach emotionally from the negative experience (e.g., 'Decide it's useless to get upset and just get on with things'). Detached coping fits into the broad category of Emotion-Focused Coping described above. Emotional Coping refers to ruminating and feeling overwhelmed by the stressor (e.g., 'Criticize or blame myself'), so it describes failure of emotion regulation and therefore represents the inverse of Emotion-Focused coping. Avoidance Coping refers to avoiding thinking about or acting on the situation (e.g., 'Try to think about or do something else'), and it matches the broad Avoidance Coping category described above.

The Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990) is a 48-item measure that divides coping into three factors: Task-Oriented, Emotion-Oriented, and Avoidance

coping. Task-Oriented coping is synonymous with Problem-Focused coping and is comparable to the CSQ Rational coping factor (e.g., 'Focus on the problem and see how I can solve it'). The Emotion-Oriented factor mirrors the Emotional coping subscale of the CSQ (e.g., 'Blame myself for being too emotional about the situation'). While the CISS does not have a subscale synonymous with the CSQ Detached coping, one could argue that the CISS Emotion-Oriented subscale is an inversion of Detached coping, as it describes the rumination and emotional overwhelm that are opposite to the ability to practise psychological flexibility and detach from the negative emotions. Like the Avoidance subscale of the CSQ, the Avoidance subscale of the CISS measures behavioural disengagement and escape (e.g., 'Take some time off and get away from the situation'). However, the CISS Avoidance subscale additionally includes items related to social distraction (e.g., 'Spend time with a special person'), whereas this aspect is not measured by the CSQ. Other coping measures, such as the Brief COPE, distinguish social support seeking as a separate coping strategy.

The Brief COPE (Carver, 1997) is a 28-item measure adapted from the longer Coping Orientation to Problems Experienced (COPE) inventory, which divides coping into considerably more coping categories than most other commonly used measures. The Brief COPE consists of 14 strategies (2 items each), some of which overlap with the three broad coping categories measured by the CSQ and CISS. Strategies in the Problem-Focused category include Active Coping and Planning. Strategies related to the Emotion-Focused category include Positive Reframing, Humour, Acceptance, Venting, and Self-Blame. Strategies in the Avoidance category include Self-Distraction, Denial, Substance Use, and Behavioural Disengagement. Additionally, and differently from the CSQ and CISS, the Brief COPE includes coping through Religion (e.g., 'I've been praying or meditating') and two strategies related to social support seeking, including

Informational Support (e.g., 'I've been getting help and advice from other people') and

Emotional Support (e.g., 'I've been getting comfort and understanding from someone'). A

systematic review and meta-analysis conducted by Solberg et al. (2022) reviewed and analyzed

the available literature between 1997 and 2021 that utilized the Brief COPE to identify whether

the original 14-factor structure of the Brief-COPE or more condensed factor structures are more

commonly used. Principal component analysis and confirmatory factor analysis were commonly

used as analytic approaches to identifying coping factors in the data, and less than 10% (eight) of

the 85 included studies used the full 14-factor structure. The majority of studies using the Brief

COPE used a reduced solution with fewer factors, although the factor composition varied across

studies. While these findings indicate that the Brief-COPE measure could possibly be condensed,

the flexibility and level of detail the measure provides should also be considered advantageous.

It is common within the coping literature for Problem-Focused and proactive Emotion-

Focused coping (e.g., positive reframing) to be presented as more adaptive, and Avoidance and

passive Emotion-Focused coping (e.g., self-blame) to be presented as maladaptive (Eissenstat et

al., 2022). However, there is growing evidence that coping flexibility is more predictive of

positive outcomes, rather than specific coping strategies being largely more or less adaptive

across situations (Cheng et al., 2014). The definition of coping flexibility is not yet consistently

agreed upon across the literature, but the common conceptualizations include Broad Repertoire,

Balanced Profile, Cross-Situational Variability, and Strategy-Situation Fit (Cheng et al., 2014).

Broad Repertoire theory posits that possessing a wider array of coping strategies to select from in

any given situation predicts better coping and adjustment, while Balanced Profile theory

identifies a moderate use of a variety of coping strategies within one's response to a stressful

situation as more adaptive. Cross-Situational Variability theory deems that adaptive coping is

situation-specific, when different strategies are deployed across different stressful situations their adaptiveness will vary based on the characteristics of the stressful event. Similarly, Strategy-Situation Fit theory posits that adaptive coping requires an assessment of strategy and context but puts emphasis on the alignment of the characteristics of a coping strategy with the unique demands of the specific stressful event (Cheng et al., 2014).

A meta-analysis completed by Cheng et al. (2014) reviewed 329 studies exploring the relationship between coping flexibility and psychological adjustment between 1978 and 2013, to establish which coping flexibility conceptualization best predicted positive psychological adjustment. They found that Strategy-Situation Fit coping produced moderate effect sizes, while Broad Repertoire, Balanced Profile, and Cross-Situational coping produced weak effect sizes. These results suggest that better psychological adjustment is best predicted by flexible coping in which the specific coping strategies are chosen in response to the unique characteristics and demands of the stressful situation.

**Relationships with PTG and PTS**

A study by Guo et al. (2017) explored the relationship between coping style and PTG and PTS in a sample of adult survivors ($N = 1369$) of the 2008 Wenchuan, China earthquake, eight years after their experience. The researchers used the PTGI (Tedeschi & Calhoun, 1996) to measure PTG and the Simplified Coping Style Questionnaire (SCSQ; Jie, 1998, as cited in Guo et al., 2017). The SCSQ is a self-report scale made-up of 20 items that are categorized into two sub-scales, Negative Coping and Positive Coping. The Negative Coping subscale consists of eight items that describe negative cognitions and avoidance behaviours. The Positive Coping subscale consists of twelve items that describe positive cognitions and behaviours aimed at managing the problem and distressing emotions. PTSD symptoms were measured using the

Impact of Event Scale-Revised (IES-R; Weiss & Marmar, 1997, as cited in Guo et al., 2017) and depression was measured using the Center for Epidemiologic Studies Depression Scale (CES-D; Wang, 1999, as cited in Guo et al., 2017). The degree to which individuals were exposed to the traumatic events of the earthquake was measured using an exposure checklist of items, such as having been trapped or injured, or having seen others experience this. PTG was found to be moderately positively correlated with PTSD ($r = .26$) and weakly negatively correlated ($r = -.07$) with depression. PTG was moderately positively correlated with both Positive Coping ($r = .41$) and Negative Coping ($r = .34$). PTSD was weakly positively correlated with both Positive Coping ($r = .11$) and Negative Coping ($r = .24$). PTSD was moderately positively correlated with Depression ($r = .43$). Depression was found to be negatively correlated with Positive Coping ($r = -.15$), and positively correlated with Negative Coping ($r = .21$).

Guo et al. (2017) concluded that PTG and PTSD are unique but co-occurring phenomena and share similar relationships with coping. They also suggested that because depression was negatively associated with PTG and positively associated with PTSD that it could act as a hindrance to experiencing positive psychological outcomes, such as PTG, following traumatic events. The use of two broad coping categories somewhat limits the conclusions that can be made about coping, and this is a substantive limitation for this study. However, the findings of this study suggest that coping strategies in response to natural disasters which involve positive cognitions and active problem management, but also coping strategies involving avoidance, are related to greater levels of PTG. This finding challenges the conceptualization of avoidance coping as being broadly maladaptive. Thus, more research is required into how various coping approaches may relate to PTS and PTG, especially in stressful contexts that constrain the availability and efficacy of some coping options, such as natural disasters and pandemics.

Platte et al. (2022) conducted a cross-sectional study to explore the associations of coping

and rumination with PTG and posttraumatic depreciation. The sample consisted of adults who

had experienced one or more traumatic events in the last two years. Participants ($N = 253$)

completed surveys with questions about the characteristics of the trauma experienced and self-

report measures of PTG, posttraumatic depreciation (PTD), coping and rumination. Collected

trauma characteristics included time since the traumatic experience, whether one experienced it

themselves or vicariously, and whether it was experienced at their job. Coping was measured

using the Brief COPE Inventory (Carver, 1997), and rumination was measured with the Event

Related Rumination Inventory (ERRI; Cann et al., 2011). The ERRI measures intrusive and

deliberate rumination; intrusive rumination can be understood as uncontrolled and distressing

thoughts about events, while deliberate rumination is thinking about events with an aim to

understand and problem solve. PTG and PTD were measured using the German Posttraumatic

Growth and Depreciation Inventory – Expanded (PTGDI-X; Platte et al., 2023). The PTGDI-X

measures both the positive (PTG) and negative (PTD) changes resulting from traumatic

experiences. In recognition of the inconsistencies in coping literature surrounding which coping

strategies are adaptive and under what circumstances, Platte et al. (2022) used a Principal

Components Analysis to interpret the Brief COPE item patterns. They produced three coping

categories: Self-sufficient, Avoidant, and Socially Supported coping. Self-sufficient coping

included positive reinterpretation, active coping, planning, humor, self-distraction, religion, and

acceptance. Avoidant coping included denial, self-blame, substance use, and behavioural

disengagement. Socially supported coping included emotional support, venting, and instrumental

support.

Platte et al. (2022) performed stepwise hierarchical regressions of coping styles and rumination on PTG and PTD by entering person and trauma characteristics (Step 1), intrusive rumination (Step 2), coping (Step 3), and deliberate rumination (Step 4) into the respective models. Self-sufficient ($\beta = .42$) and socially supported ($\beta = .28$) coping were found to be significant positive predictors of PTG after accounting for person and trauma characteristics and intrusive rumination. Self-sufficient and socially supported coping accounted for 17% of the variance in PTG. After entering deliberate rumination into the model, self-sufficient ($\beta = .33$) and socially supported ($\beta = .22$) coping were still significant. Deliberate rumination also positively predicted an additional 9% of the variance in PTG. However, Platte et al. (2022) found only small bivariate correlations of avoidant coping ($r = -.02$) and intrusive rumination ($r = .09$) with PTG. Results for PTD were opposite to those of PTG. After accounting for person and trauma characteristics, avoidant coping ($\beta = .49$) and intrusive rumination ($\beta = .35$) were found to be positive predictors of PTD, while self-sufficient and socially supported coping were not significant. Intrusive rumination accounted 28% of the variance in PTD and avoidant coping accounted for 17% of the variance in PTD. Avoidant coping ($\beta = .46$) and intrusive rumination ($\beta = .27$) remained significant positive predictors of PTD after accounting for deliberate rumination, and deliberate rumination did not significantly predict PTD. Platte et al.'s (2022) findings suggest that following traumatic events those who cope through proactive strategies such as positive reinterpretation, self-distraction, seeking emotional and instrumental support, and engaging in deliberate rumination are more likely to experience PTG; while those who engage in avoidance coping and experience intrusive rumination are more likely to experience PTD. The link between deliberate rumination and PTG is logical, given that to experience PTG one must consciously think about their experience and engage in meaning making and benefit finding.

However, the null relationship between avoidance coping and PTG is less expected and requires further exploration.

Eissenstat et al. (2022) meta-analyzed correlations between PTG and various coping strategies from 96 pre-COVID studies and confirmed that different coping styles were differentially associated with PTG. On average, PTG had positive moderate correlations with Problem-Focused strategies such as problem-focused coping ($r = .41$), goal-oriented coping ($r = .41$), and active coping ($r = .37$), as well as with Religious coping ($r = .42$) and Social Support seeking ($r = .33$). Positive weaker average correlations were found with proactive Emotion-Focused strategies such as positive reframing ($r = .31$), acceptance ($r = .25$), emotional expression ($r = .24$), and emotional support seeking ($r = .23$). However, PTG had weak or null average correlations with passive Emotion-Focused strategies such as self-blame ($r = -.06$), venting ($r = .09$), and negative coping ($r = .09$), as well as with Avoidance strategies such as avoidant coping ($r = .06$), denial ($r = -.01$), behavioural disengagement ($r = -.01$), and substance use ($r = -.07$).

Eissenstat et al.'s (2022) meta-analytic findings are consistent with those of Platte et al. (2022) and highlight the positive role of problem-focused and proactive emotion-focused coping in PTG. These strategies involve active processing of the situation and one's responses to it, which can lead to the transformative re-evaluation of oneself and one's life that characterizes PTG (Eissenstat et al., 2022). In contrast, avoidant and passive coping strategies seem to neither contribute to, nor deter from PTG outcomes. Alternatively, their adaptiveness may depend on the nature of the stressful situation and one's appraisal of that situation. As mentioned, Strategy-Situation Fit posits that one most adaptively copes when they select specific coping responses in relation to the unique context and stress demands they face (Cheng et al., 2014). Thus,

examining the various appraised characteristics of the stressful event could help uncover why one coping strategy may be more adaptive than another in certain situations and in relation to different outcomes.

**Coping in the Context of a Pandemic**

A health pandemic is a unique stressor characterized by a high degree of threat, uncertainty, and uncontrollability. What does coping look like in this context? An earlier study by Taha et al. (2014) explored the relationships between stress appraisals, coping strategies, and anxiety in adult Canadians within the H1N1 pandemic context. The H1N1 pandemic in 2009 was not as widespread or devastating as COVID19, but still presents distinct situational similarities to the COVID19 pandemic, like the communicable respiratory virus nature of the threat/stressor and related behavioural adjustments the situation required. This correlational study was conducted online with a sample of adult residents of Canada ($N = 1027$) and employed a series of self-report measures that assessed state and trait anxiety, intolerance of uncertainty, and one's appraisals of the stressfulness, threat, and controllability of the pandemic. They used Mathison and Anisman's (2003, as cited in Taha et al., 2014) Survey of Coping Profiles to measure coping, which is a 50-item measure that assesses a range of Emotion-Focused and Problem-Focused coping strategies. Taha et al. (2014) completed a principal component analysis of the items to determine which coping strategies best fit together within the context of the H1N1 pandemic. They derived two broad coping factors. The first factor included Passive strategies such as self-blame, other blame, rumination, wishful thinking, emotional containment, emotional expression, cognitive distraction, and passive resignation. The second factor included Proactive strategies such as problem solving, cognitive restructuring, social support seeking, active distraction, and humour. These results imply that coping strategies within the unique context of a pandemic may

cluster differently relative to stressful events of a different nature. Therefore, coping strategies should likely not be categorized a-priori based on a broad compilation of coping literature that synthesizes findings across diverse contexts. Instead, coping should be assessed in relation to the context of the event and related stress demands that elicit the reported coping responses.

Using their two derived coping factors, Taha et al. (2014) found that Passive Coping was positively associated with stressfulness and threat appraisals ($r$ = .43 and .40) and with pandemic-related anxiety ($r$ = .45). However, Proactive Coping was not significantly associated with pandemic-related anxiety ($r$ = .06), and it was only weakly associated with stressfulness and threat appraisals ($r$ = .19 and .17). Interestingly, Proactive coping was positively associated with greater perceived controllability ($r$ = .25), which in turn predicted less pandemic related anxiety ($r$ = -.32). These results indicate that those who perceived the H1N1 to be more stressful were more likely to have engaged in both Passive and Proactive coping, but that only those engaging in Passive Coping were more likely to experience pandemic-related anxiety. This suggests that in the context of a pandemic, Passive Coping may act as a potential risk factor for negative psychological outcomes such as anxiety. Interestingly, Proactive coping did not appear to be directly linked to less pandemic related anxiety. This could be because Taha et al. (2014) used a high-level categorization of coping and grouped coping strategies of an intrapersonal (i.e., cognitive restructuring), interpersonal (i.e., social support seeking), and task-related (i.e., problem solving) nature together. As these types of approaches are distinct in their relationships to psychological outcomes (Peña-Sarrionandia et al., 2015; Platte et al., 2022), it should not be inferred that the same coping factor structure would be the best fit for other studies that share the pandemic context but deviate in their predictor and outcome variables of interest; a more detailed factor model may be required. Thus, it would be beneficial to continue with assessing coping

factor structures using the data collected within the context of the study, as Taha et al. (2014) did, rather than assuming an a-priori model.

To better understand the role of stress appraisals and coping styles in psychological outcomes during the COVID19 pandemic, Chu et al. (2022) conducted a cross-sectional study on a sample of university students ($N = 774$) in the USA. The study was conducted through online surveys which included self-report measures of stress appraisals, coping, health anxiety, and COVID19 impacts and related distress and growth. The Brief COPE (Carver, 1997) was used to measure coping using a-priori categories of coping orientations: Problem-focused (e.g., planning, self-distraction, instrumental support-seeking), Emotion-focused (e.g., emotional support-seeking, positive reframing, humor), and Avoidant (e.g., denial, self-blame, substance use). Chu et al. (2022) used a unique measure for pandemic impact (distress and growth) – the CAIR Pandemic Impact Questionnaire, a researcher modified tool, which assessed exposure to negative impacts of COVID19, mental health distress, and psychological growth. Stress appraisals were measured with the Stress Appraisal Measure (SAM; Peacock & Wong 1990), which was found to have a four-factor structure: threat/centrality (including whether the threat involves potential for harm and is important to one's wellbeing), challenge/self-efficacy (appraised as a challenge to overcome with potential for growth), uncontrollability (situation is uncontrollable by anyone), and help available (feel that others can help in the situation).

Chu et al.'s (2022) sample endorsed a low to moderate level of distress, a low level of growth, and moderate to high use of avoidant, emotion-focused, and problem-focused coping. They also reported a low to moderate level of help available, threat/centrality, and challenge/self-efficacy in their pandemic stress appraisals. However, they reported a very high level of uncontrollability in their pandemic stress appraisals. Chu et al. (2022) used regressions to

examine the relationships among stress appraisals and coping categories with pandemic related distress and growth. Pandemic related growth was positively predicted by problem-focused ($\beta$ = .19) and emotion-focused ($\beta$ = .28) coping, but it was negatively predicted by avoidant coping ($\beta$ = -.08). The challenge/self-efficacy appraisal ($\beta$ = .48) was a strong positive predictor of pandemic related growth, especially when combined with emotion-focused coping; but the other appraisal dimensions were not significant predictors of growth. Pandemic related distress was positively predicted by avoidant ($\beta$ = .18) and problem-focused ($\beta$ = .10) coping, and negatively predicted by emotion-focused coping ($\beta$ = -.12). The threat/centrality appraisal ($\beta$ = .43) was a moderate positive predictor of pandemic related distress, especially when combined with avoidant coping; but the other appraisal dimensions were not significant predictors of distress.

Chu et al.'s (2022) study highlights that although the COVID19 pandemic was perceived to be highly uncontrollable by students, those who perceived it as an opportunity and a challenge were more likely to engage in proactive coping strategies and experience growth, whereas those who felt threatened by the pandemic showed greater avoidance tendencies and higher levels of distress. These findings indicate that some dimensions of stress appraisal have an important relationship with coping, in that stress appraisals and coping together predict growth and distress levels. Chu et al. (2022) also discussed implications for psychoeducation and mental health initiatives during traumatic events like the COVID19 pandemic. As more growth was reported by those with greater appraisals of challenge/self-efficacy, especially when engaging in proactive emotion-focused coping, interventions around shifting perceptions of challenges as an opportunity for growth and promoting emotion regulation efforts could be beneficial. Similarly, as less distress was reported by those who reported low levels of threat/centrality, interventions around cognitive restructuring and reappraisal of stressful events could be beneficial, especially

for those who tend to rely on avoidant coping. Of course, while these suggestions imply causal relationships, Chu et al.'s (2022) study was correlational and cannot confirm the directionality of these relationships. The strong and common perception of uncontrollability of the COVID19 pandemic should be taken into consideration when trying to understand what coping strategies were employed, related outcomes, and how this may apply to events that share the same stress demands and are similarly perceived as highly uncontrollable.

**Section Summary**

The inconsistencies in how coping has been operationalized across studies is one of the major limitations of this body of research. However, several broad conclusions can be drawn. In critically examining the literature, it becomes clear that certain coping strategies are adaptive in certain situations, depending on the nature and characteristics of the stressor and the context appropriateness of the coping strategies. Moreover, the coping variables that predict PTS do not necessarily predict PTG, and vice versa. This further reinforces the idea that PTG and PTS are independent outcomes, each with their own unique predictors. Less reliance on Avoidant and passive Emotion-Focused coping may reduce the overall level of distress, but that might not be sufficient to promote growth. Rather, PTG appears to be associated with greater reliance on proactive coping strategies, such as Problem-Focused coping, constructive Emotion-Focused coping, and Social Support seeking. Whether one will use these coping strategies depends on one's subjective appraisal of the situation as a challenge one can overcome, which in turn depends on the appraisal of one's coping resources (Lazarus & Folkman, 1984). A key coping resource that has been extensively studied in relation to PTG is social support.

**Social Support**

Social support is a multifaceted concept that encompasses emotional, informational, and instrumental support that one receives, or perceives being available, from various social sources, including significant other, family, friends, and broader community (McLean et al., 2023). It is important to make a distinction between received and perceived social support, since an individual may not be aware of the supports available to them or may be dissatisfied with the support they received. Meta-analytic evidence indicates that perceived social support is a stronger predictor of mental health ($r = .31$) than received social support ($r = .22$) (Prati & Pietrantoni, 2009, 2010). This is consistent with the transactional model of stress and coping, where subjective appraisal of resources is emphasized as the predictor of the coping response (Lazarus & Folkman, 1984). Within this framework, social support can be understood as an environmental resource to draw from during times of stress. The Stress-Buffering Hypothesis posits that social support can be protective against the negative mental and physical effects of stress associated with negative life events (Cohen & Wills, 1985). Theories to explain this effect include the idea that social support may allow individuals to better process and even reappraise the event in ways that promote PTG, or that an individual's social network could positively influence coping behaviours (Cohen & Wills, 1985).

**Relationships with PTS and PTG**

Social support is protective against negative psychological outcomes, and has been linked to positive outcomes such as PTG (McLean et al., 2023; Ning et al., 2023; Szkody & McKinney, 2019; Kang et al., 2018). For example, McLean et al. (2023) conducted a study to explore the relationship between perceived social support and perceived stress in first year university students. Participants ($N = 368$) completed questionnaires which included two self-report measures, the Multidimensional Survey of Perceived Social Support (MSPSS; Zimet et al., 1988)

and the Perceived Stress Scale (PSS; Cohen et al., 1983). The MSPSS is a commonly used measure of perceived social support that includes three sources: significant other (e.g., 'There is a special person who is around when I am in need'), friends (e.g., 'I can count on my friends when things go wrong'), and family (e.g., 'I can talk about my problems with my family'). On average, students reported moderate levels of perceived stress ($M = 1.97$ on a 0-4 scale) and relatively high levels of overall perceived social support ($M = 5.22$ on a 1-7 scale). Pearson's correlations revealed that those with greater perceived social support reported lower levels of perceived stress ($r = -.33$), consistent with the hypothesized protective nature of social support. However, McLean et al. (2023) did not break down the sources of social support, and their data were collected pre-COVID.

Building on this research, Aziz et al. (2023) explored the relationship between perceived social support and perceived stress in 290 university students in Malaysia during the COVID19 pandemic. Aziz et al. (2023) also used the MSPSS and PSS as their measures. On average, the sample reported moderate stress level ($M = 2.11$ on a 0-4 scale). Social support was strongly endorsed overall ($M = 5.23$ on a 1-7 scale) and across all three domains: friends ($M = 5.34$), family ($M = 5.21$), and significant other ($M = 5.15$). Pearson's correlations revealed that perceived stress was moderately negatively correlated with overall perceived social support ($r = -.43$), and with support from family ($r = -.43$), significant other ($r = -.33$), and friends ($r = -.22$). These results demonstrate that low perceived social support was a robust predictor of higher stress amongst university students during the COVID19 pandemic and implicate social support as an important target for intervention for university students during highly stressful times, such as the pandemic (Aziz et al., 2023). More specifically, given that family support was most strongly negatively correlated with perceived stress, but social support from friends was the most

highly endorsed, it may be beneficial to explore ways in which family social support can be bolstered given the association this support has with lower stress levels.

A limitation of studies by McLean et al. (2023) and Aziz et al. (2023) is that they did not directly test the buffering effects of social support on psychological outcomes. This was addressed by Szkody et al. (2021), who conducted a cross-sectional study with a sample of USA college students ($N = 405$) to examine the associations of self-isolation, worry about COVID19, and social support with psychological health during the COVID19 pandemic, and to explore whether social support provided a buffering effect for the negative psychological impacts of the worry and social isolation the pandemic created. Participants completed self-report questionnaires which included questions about COVID19 related worry, time spent in self-isolation, social support (perceived and received), and psychological health during the pandemic. Perceived social support was measured using the MSPSS (Zimet et al., 1988), and received social support was measured using the Inventory of Socially Supportive Behaviors (ISSB; Barrera et al., 1981, as cited in Szkody et al., 2021). Worry about COVID19 was used as the stressor in this study, as the stress component of a proposed Stress-Buffering model. On average, the sample reported high level of perceived social support ($M = 5.69$ on a 1-7 scale) and moderate frequency of received social support ($M = 2.49$ on a 1-5 scale). There was a relatively small correlation between perceived and received social support ($r = .26$), indicating that these constructs are distinct. Although both aspects of social support were positively correlated with psychological health, perceived social support was a stronger predictor ($r = .35$) than received social support ($r = .23$). Those with greater social support (received and especially perceived) were less likely to experience poor psychological health during the pandemic. These findings

support the literature which posits social support as an important factor in maintaining psychological wellbeing during times of stress, such as the pandemic.

To test the buffering role of social support, Szkody et al. (2021) tested the interactions between worry about COVID19 and social support on psychological health, while also taking into account days in isolation. Path analysis revealed a significant interaction effect between worry about COVID19, days in isolation, and perceived social support, indicating that isolation was associated with poorer psychological health when worry was high and perceived support was low. This finding contributes further to the importance of perceived social support during times of stress and isolation, to buffer negative psychological consequences associated with these experiences.

Social support has not only been explored as a buffering factor against the negative consequences of stress and traumatic events, but it has also been linked to positive outcomes of traumatic events, namely PTG. A systematic review and meta-analysis by Ning et al. (2023) explored the literature on social support and PTG to estimate the average correlation between these two variables. Their meta-analysis included a total of 47,940 adult participants across 217 samples, including cross-sectional and longitudinal studies. The majority (87%) of the included studies measured perceived (vs. received) social support, and almost all (99%) used the PTGI to assess PTG. Ning et al. (2023) found a medium positive effect size between social support and PTG ($r = .42$), although the relationship was somewhat stronger for caregiving trauma and serious diseases ($r$ in the .40s) compared to other trauma types ($r$ in the .30s). These findings indicate that these two constructs are moderately related across diverse samples, and that those who perceive greater social support are more likely to experience PTG.

There is also some evidence that indicates different sources of social support may uniquely predict certain domains of PTG. Laceulle et al. (2015) conducted a study ($N = 1290$) to explore the relationship between overall and domain specific PTG with demographic characteristics, time since event, stress reactions, perceived peer support, and religiosity in children who have experienced adverse events. A child adapted version of the PTGI was used to measure PTG, and a peer-support focused subscale of a child specific quality of life scale was used to assess perceived peer support. Stress response was measured using a child-specific trauma response inventory, which focused on negative posttraumatic symptoms (i.e. avoidance, arousal, intrusion). Multiple regression analyses were used to determine which predictors contributed to which PTG domains, while also controlling for severity of the event experienced. Laceulle et al. (2015) found that time since the traumatic event was not associated with overall or domain specific PTG. Stress reactions were positively associated with all domains of PTG, while perceived peer support was only positively associated with the Appreciation of Life domain. Specifically, children who reported greater peer support reported experiencing more growth, specifically in the appreciation of life domain, and it was suggested that peers could help children become aware of their growth following traumatic events (Laceulle et al., 2015).

Laceulle et al. (2015) have produced support for the idea that some predictors of PTG can differ across the five domains, while others predict PTG more globally. While it is common for social support measures to produce global scores and for researchers to use these scores, there is some evidence to believe that different sources of social support, such as support from friends, family, and spouse, can be related to different psychological outcomes, including PTG (Li et al., 2014; Laceulle et al. 2015). Thus, use of a scale such as the MSPSS in which sources of support are separately measured would be advantageous, so that social support can be assessed for

heterogeneity across outcome variables and collapsed later when appropriate. Although research

has established a moderate positive correlation between perceived social support and PTG, it is

also important to understand the mediating processes of how social support is related to PTG.

Social support is often discussed as an important coping resource to draw on in times of need

(Cohen & Wills, 1985), thus coping has been studied extensively as a mediator of social support.

**Social Support and Coping**

A study by Zhou et al. (2017) explored the relationships between perceived social support

and PTG and PTSD, well as the mediating role of two emotion-focused coping strategies,

cognitive reappraisal and expressive suppression, in a sample of adolescents ($N = 315$) six

months after the 2013 Ya'an earthquake. This study was correlational, and participants

completed a questionnaire with various self-report measures. The Trauma Exposure

Questionnaire (Wu et al., 2013, as cited in Zhou et al., 2017) was used to measure exposure to

traumatic experiences, such as experiencing or seeing or hearing of others experiencing injury,

entrapment, and death during the earthquake. Perceived social support was measured with a 20-

item questionnaire about various types of support without differentiating their sources. The

Emotion Regulation Questionnaire-Chinese Revised Version (Wang et al., 2007, as cited in Zhou

et al., 2017) was used to measure the use of two emotion regulation strategies, cognitive

reappraisal and expressive suppression. A Chinese version of Tedeschi and Calhoun's (2006)

PTGI was used to measure PTG. The Child PTSD Symptom Scale (Foa et al., 2001, as cited in

Zhou et al., 2017) was used to measure the occurrence and frequency of PTSD symptoms in

relation to the most distressing event an individual experienced. Zhou et al. (2017) hypothesised

that perceived social support would predict the way one conceptualizes their experience and their

coping response to a traumatic experience, which in turn would predict their PTSD and PTG outcomes.

Zhou et al. (2017) used correlations and structural equation modelling to analyze their data. The results revealed that traumatic exposure was positively correlated with both PTSD ($r$ = .20) and PTG ($r$ = .15). These results suggest that those who experienced exposure to trauma firsthand or vicariously were at higher risk of experiencing PTSD but were also more likely to experience PTG. This finding is logical given the fact PTG and PTSD require the experience of a traumatic event as a precursor, but it also suggests there is a linear relationship between experiencing traumatic stressors and PTG or the manifestation of PTSD symptoms. For this reason, Zhou et al. (2017) controlled for traumatic event exposure in their structural equation modelling. Perceived social support was not significantly correlated with PTSD but was positively correlated ($r$ = .26) with PTG and with cognitive reappraisal ($r$ = .26). These findings indicate that those who had greater social support were more likely to experience PTG but were not any less likely to experience PTSD. The emotion regulation strategy of cognitive reappraisal was positively correlated with PTG ($r$ = .33), indicating an adaptive coping response. The emotion regulation strategy of expressive suppression was positively correlated with PTSD ($r$ = .22) and not significantly correlated with PTG, indicating a less adaptive coping response. Mediation modeling revealed a positive direct effect of perceived social support on PTG, as well as an indirect effect on PTG through greater use of cognitive reappraisal. These findings indicate that those who perceive greater social support are more likely to engage in constructive emotion-focused coping through cognitive reappraisal and are in turn more likely to experience PTG. The findings of this study highlight the importance of perceived social support in recovering from traumatic experiences, and suggests social support plays a role in the way individuals think about

their traumatic experiences and the strategies they use to regulate their emotions following these experiences.

Similar to Zhou et al. (2017), Hao et al. (2023) were interested in examining the way perceived social support could be linked to how individuals respond to traumatic events. In particular, Hao et al. (2023) explored coping as a mechanism for the relationship between perceived social support and PTS and PTG, and this was done within the context of the COVID19 pandemic with a sample of Chinese university students ($N = 2990$) who volunteered in the early pandemic intervention efforts. Hao et al. (2023) conducted their study in March 2020 through questionnaires with self-report measures, including the PTSD Checklist-Civilian Version (PCL-5; Weathers et al., 2013), an adapted Chinese version of Tedeschi and Calhoun's PTGI, Social Support Scale for University Students (Yeh & Dai, 2008), and the Simplified Coping Questionnaire (SCQS; Xie, 1999). The Simplified Coping Questionnaire consisted of two subscales: Positive coping style and Negative coping style. Positive coping style consisted of proactive behaviours such as talking to others about inner troubles, seeking possible advice from others, and trying to think of and observe the good side of things. Negative coping style consisted of passive behaviours such as avoidance of problems, meaningless passive waiting, and the habit of relying on others.

Hao et al. (2023) found that PTSD and PTG were very weakly correlated in their sample ($r = -.05$), further adding support to the literature which posits that these are distinct outcomes with distinct predictors. Pearson's correlations revealed that PTSD level was positively correlated with Negative coping ($r = .26$), and negatively correlated with both perceived social support ($r = -.37$) and Positive coping ($r = -.17$). PTG was positively correlated with perceived social support ($r = .26$) and Positive coping ($r = .46$), and interestingly also with Negative coping

($r = .10$). This finding further substantiates the notion that regardless of whether coping styles are classified by some as negative or less adaptive, they could still yield positive outcomes in some situations. While avoidance, waiting, and relying on others could be maladaptive in circumstances where resolution of the stressor is directly within one's control, avoidance, waiting, and relying on others are strategies that aligned with the very nature of the COVID19 pandemic, as the pandemic required waiting on medical advancements, finding ways to carry on with day to day living despite the pandemic, and relying on collective efforts to end the pandemic. Hao et al.'s (2023) mediation analysis revealed a significant partial mediating effect of Positive coping on the relationship between perceived social support and PTG, with those with greater perceived social support being more likely to engage in positive coping strategies and through engaging in these behaviours, also be more likely to experience PTG. However, Negative coping was not a significant mediator of the relationship between perceived social support and either PTG or PTSD. These results suggest that perceived social support plays an important role in orienting individuals to proactive coping styles that facilitate PTG, while also being directly protective against PTS.

While Hao et al. (2023) used a global measure of perceived social support, Mai et al. (2021) conducted a study in China in February of 2020 to explore how different sources of social support were linked to coping and PTS during the COVID19 pandemic. Their sample ($N = 3,453$) consisted of students in secondary and post-secondary education, aged 15 to 25 years old. They used a questionnaire with a series of self-report scales to measure perceived social support, coping, anxiety, and the negative impact of events (likelihood to experience PTSD). Their measure of perceived social support produced a score for overall perceived social support, as well as three sources: family, friends, and others (e.g., teachers and classmates). To measure

coping they used the Simplified Coping Style Questionnaire (SCSQ; Xie, 1998), same as Hao et al. (2023), which consists of 20 items split into two categories of Positive/active coping and Negative/passive coping. Using Latent Profile Analysis participants were grouped into four groups with different levels of perceived social support: high (25% of the sample), medium (29% of the sample), low (44% of the sample), and extremely low (less than 2% of the sample). Those who perceived moderate to high levels of social support identified this support as coming primarily from family and friends, while those who perceived low to very low levels of social support did not endorse a dominant source, reporting low levels of support across all sources. This finding suggests that building up familial and friend support resources is useful for bolstering perceived social support in youth, but also that other sources (e.g., school) may be an under-utilized resource.

Mai et al. (2021) further compared the four social support groups on their levels of anxiety, PTSD symptoms, and positive coping (active) and negative coping (passive). They found that as the level of perceived social support increased, the use of positive coping increased, whereas the use of negative coping decreased. In addition, those who engaged in more positive coping and reported more perceived social support also reported less anxiety symptoms than those who engaged in more passive coping and reported less perceived social support. It was also revealed that those who reported greater perceived social support reported lower levels of anxiety and PTSD symptoms from the pandemic. These results indicate that those with greater social support during the pandemic were more likely to engage in active coping strategies and were less likely to experience anxiety and posttraumatic stress.

Xie and Kim (2022) conducted a correlational study in April/May of 2021 to explore whether coping mediated the relationship between perceived social support and PTG during later

stages of the COVID19 pandemic. The study was conducted via online surveys and was done with a sample of adults ($N = 181$), which were predominantly residents of China and Sweden. In contrast to Hao et al. (2023) and Mai et al. (2021), Xie and Kim (2022) used a more fine-grained coping measure, the Brief COPE (Carver, 1997) with four subscales: Problem-focused coping (active coping, planning), proactive Emotion-focused coping (positive reframing, acceptance), Social Support coping (emotional support, instrumental support, venting), and Avoidant coping (behavioural disengagement, denial). Perceived social support was measured using the MSPSS (Zimet et al., 1988), and PTG was measured using a 10-item short version of the original PTGI (PTGI-S; Cann et al., 2010), which still produces scores for the five key PTG domains. The sample in this study endorsed a small to moderate level of PTG, with the Personal Strength, Relating to Others, and Appreciation of Life being the three highest endorsed domains. PTG was moderately positively associated with perceived social support ($r = .30$), Problem-focused coping ($r =.46$), proactive Emotion-focused coping ($r = .54$), and Social Support coping ($r = .28$), but it was not significantly predicted by Avoidant coping. Mediational analyses showed that Problem-focused and Emotion-focused coping (but not Social Support coping) each served an independent mediating role in the relationship between perceived social support and PTG. This study further highlights the predictive power of perceived social support and proactive coping styles on the outcome of PTG, while differentiating among the various coping strategies that are often conflated into one broad 'positive/active' category.

The studies reviewed so far were cross-sectional in design, raising the question of directionality in the relationships between social support, coping, PTS and PTG. Van der Hallen and Godor (2022) conducted a one-year longitudinal study to explore the prevalence of PTG among university students ($N = 70$) during the COVID19 pandemic, and determine which

psychological variables predicted PTG over time. The psychological determinants measured were posttraumatic stress, emotional well-being, coping styles, perceived social support, and other protective factors linked to resilience. The civilian version of the PTSD-Checklist (PCL-C; Weathers et al., 1993, as cited in Van der Hallen & Godor, 2022) was used to measure posttraumatic stress, and the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988, as cited in Van der Hallen & Godor, 2022) was used to measure emotional wellbeing. The Scale of Protective Factors (SPF-24; Ponce-Garcia et al, 2015, as cited in Van der Hallen & Godor, 2022) was used to measure the protective factors linked to resilience, including perceived social support, social skills, planning behaviour, and goal efficacy. The Brief-COPE (Carver et al., 1989) was used to measure coping styles, and the PTGI (Tedeschi & Calhoun, 1996) was used to measure PTG. Prior to analysis, the Brief COPE items were organized into a three factor structure: Problem-focused coping (active coping planning, religion, instrumental support), Avoidant coping (denial, substance abuse, self-blame, distraction, behaviour disengagement), and active Emotional coping (venting, positive reframing, emotional support, humor, acceptance).

In Van der Hallen and Godor's (2022) longitudinal design, participants completed all questionnaires at Time 1 (May 2020) and they completed the PTGI again at Time 2 (May 2021). At Time 1 moderate levels of PTG were reported by 21% and high levels were reported by 3% of the sample. At Time 2 moderate levels of PTG were reported by 23% of the sample, but no one reported high levels. These results indicate that high levels of PTG were not as prevalent among students and were more likely to occur after the initial onset of the pandemic, while moderate PTG levels were more common and consistent across time. Pearson's correlations revealed that PTG measured at both time points (Time 1/Time 2) had moderate positive associations with

positive affect ($r = .46/.34$), social skills ($r = .36/.38$), and perceived social support ($r = .41/.25$), and weak positive associations with PTSD symptoms ($r = .26/.17$). Surprisingly, neither of the three coping styles were significantly correlated with PTG at either timepoint, which is inconsistent with the findings of other research on PTG and coping, necessitating further replication with a larger sample. Hierarchical regressions were performed to assess the shared and unique variance of the respective predictor variables at Time 1 and Time 2. At Time 1 PTSD ($\beta = .41$), positive affect ($\beta = .46$), perceived social support ($\beta = .30$), and social skills ($\beta = .22$) uniquely predicted PTG, and all variables jointly predicted 50% of the variance in PTG. However, at Time 2 only positive affect ($\beta = .29$) and social skills ($\beta = .30$) uniquely predicted PTG, while PTSD and perceived social support did not. All variables jointly predicted 30% of the variance in PTG at Time 2. These results establish PTS and perceived social support as direct precursors to PTG at the initial onset of a traumatic experience but indicate that their role may become indirect and mediated by other variables when predicting future PTG levels in the year following the initial experience. In contrast, social skills and positive affect appear to play a more direct role in predicting PTG levels over time. Interestingly, this suggests that initiatives aimed at promoting growth following a traumatic event would benefit from a multi-pronged focus on managing emotional wellbeing and posttraumatic stress, while also bolstering social support and social skills for relating to others. However, given the correlational nature of this research causal conclusions cannot be made. There was also no accounting for other stressful events than the pandemic itself, thus it is difficult to ascertain whether additional stressful events and other factors have influenced participants' experiences and outcomes, and due to this limitation combined with the small sample size, this sample's experiences may not be as widely generalizable to the population.

Another study, by Dominick (2022), also employed a longitudinal approach and explored PTG within the COVID19 context, but it better accounted for the presence of stressful events experienced by their sample than did Van der Hallen and Godor (2022). Dominick (2022) was interested in understanding changes in PTG throughout the first year of the pandemic, and how this related to perceived social support, coping, and types of stressful events. The sample ($N =$ 201) consisted of adults ranging from 18 to 80 years of age who were a mix of university undergraduates and the general public. Participants completed four surveys between April 2020 and April 2021, with four timepoints: T1 (March 31st, 2020), T2 (April 30th, 2020), T3 (September 30th, 2020), and T4 (March 31st, 2021). PTG was measured using the expanded version of the PTGI, which has an expanded spiritual change subscale (Tedeschi et al., 2017). Coping was measured using the Brief COPE (Carver et al., 1997) and scores were calculated for the three coping subscales that were also used by Van der Hallen and Godor (2022): problem-focused, proactive emotion-focused, and avoidant. Perceived social support was measured using both the MSPSS (Zimet et al., 1988) and the Lexington Pet Attachment Scale (Johnson et al., 1992, as cited in Dominick, 2022), to capture social support from both humans and pets. Accounting for support from pets was a unique facet of this study. The measure of stressful events included a stressful event checklist and a stressfulness rating for each event experienced.

Participants in Dominick's (2022) study reported a small degree of PTG that remained consistent between T1 and T4 ($M =$ 1.46 and 1.61 on a 0-5 scale). However, two PTGI domains showed significant linear increases over the 12 months further into the timeline of the pandemic: personal strength and new possibilities. This demonstrates how a multi-dimensional PTGI assessment can provide a more nuanced picture of PTG experiences. In terms of PTG predictors, Dominick (2022) found no significant difference in PTG levels between the types of the stressful

events experienced or perceived to be most stressful, but instead found a significant difference in PTG levels between whether participants perceived the event as ongoing or resolved, with those reporting the event as resolved reporting significantly higher PTG than those who viewed the event as ongoing. This suggests that the timing of PTG measurement is important to consider, in relation to whether the stressful event that can initiate the PTG is ongoing or resolved.

Participants in Dominick's (2022) study endorsed moderate to strong levels of social support from humans ($M = 5.37$ on a 1-7 scale) and pets ($M = 4.05$ on a 1-5 scale) at T1. Social support from humans remained strongly endorsed throughout the follow-up year, while perceived support from pets declined somewhat over time. These results indicate that both humans and pets were perceived as important sources of support during times of isolation, and Dominick (2022) suggested that perhaps support from pets was more salient earlier in the pandemic, due to barriers to human social support related to social distancing. Pearson's correlations revealed that PTG at T4 was positively predicted by perceived social support from humans ($r = .18$) and pets ($r = .24$), and it was also positively predicted by problem-focused coping ($r = .47$) and proactive emotion-focused coping ($r = .25$), but PTG was not significantly correlated with avoidant coping. Surprisingly, perceived social support was not significantly correlated with any of the coping styles, which ruled out coping as a mediator in this study.

**Section Summary**

Social support is an important environmental resource to consider when exploring experiences of PTS and PTG during the COVID19 pandemic. Consistent with the stress buffering hypothesis (Cohen & Wills, 1985), individuals with higher perceived social support are less likely to suffer PTS symptoms and more likely to experience PTG in the aftermath of highly stressful events, including the COVID19 pandemic (Aziz et al., 2023; Hao et al., 2023; Ning et

al., 2023). The relationship between perceived social support and these psychological outcomes is partially direct and partially mediated through coping (Hao et al., 2023; Mai et al., 2021; Zhou et al., 2017). Perceptions of social support appear to play a role in both the appraisal of stressful events (positive reinterpretation) and as a resource for one to engage in a variety of proactive coping strategies, such as seeking social support, problem-focused coping, and active emotion-focused coping (Hao et al., 2023; Mai et al., 2021; Zhou et al., 2017). However, the evidence has been mixed regarding the relationship of social support with avoidant and passive emotion-focused coping (Dominick, 2022; Hao et al., 2023; Mai et al, 2021), suggesting that factors other than perceptions of social support might predict the use of these coping strategies. A qualitative approach to exploring this relationship could be beneficial, as it could uncover the way in which types of social support are discussed by individuals recovering from traumatic events, and more specifically the role of social support in PTG and coping with stress.

Looking beyond social support, personality appears to be another predictor of which individuals engage in which types of coping strategies, and whether they experience PTG (Xie & Kim, 2022). Thus, personality is a variable that is worth exploring when examining who is better equipped in terms of personal resources to respond with resilience and growth following traumatic events. In particular, the personality construct of Trait Emotional Intelligence has been widely linked to coping and positive outcomes during times of stress (Keefer et al., 2015), and it is a promising yet under-researched predictor of PTG.

### Trait Emotional Intelligence

Emotional intelligence (EI) is a set of emotion-related capabilities that influence one's ability to cope with environmental demands and stressors (Bar-On, 1997). It is a multi-dimensional construct that encompasses competencies related to perceiving, understanding,

utilizing, and managing emotions in self and others. Two theoretical orientations characterize the

EI literature: Ability EI and Trait EI, which are distinct constructs. Ability EI consists of

emotion-related knowledge and aptitude, and overlaps with other cognitive abilities, while trait

EI is the emotion-related part of one's personality (Keefer et al., 2018). Another significant

distinction between the two is in how they are measured. Ability EI is measured through

performance-based tests similarly to other cognitive abilities, while Trait EI is measured through

self-report questionnaires similarly to other personality traits (Keefer et al., 2018). Of course,

while self-report measures are commonly used and convenient, they do present limitations and

require nuanced interpretation. It is widely accepted that self-report measures can be vulnerable

to inaccuracies, such as self-enhancement or overestimation when individuals are asked to reflect

on and judge their competencies (Keefer, 2015). However, one's tendency to engage in a skillful

process, such as emotion regulation, can be predicted by whether one perceives their

competencies to be sufficient to achieve the desired outcome, and because of their perception,

whether they pursue development of this competency (Keefer, 2015). As such, perceptions of

one's EI self-efficacy can still be considered predictive of emotionally intelligent behaviour in

this way, and complementary to objective EI ability measurement in research.

Comparative meta-analyses have found that Trait EI has stronger predictive effects than

Ability EI for a range of positive outcomes during times of stress, such as greater mental health

and physical health (Martins et al., 2010) and psychological well-being (Sánchez-Álvarez et al.,

2016). Trait EI has also been linked to better academic performance in students (Perera &

DiGiacomo, 2013). As Keefer (2015) explains, one may demonstrate high EI in their

performance on a structured ability EI test, but may not necessarily habitually engage in EI

behaviour in a real-world context. Trait EI instruments use dispositional language in their items

to capture what behaviour one typically engages in, rather than their knowledge of how to behave when instructed to do so in an Ability EI test context (Keefer et al., 2015). This is important, as there is a distinction between knowing what to do and engaging in that behaviour. While this does not remove the necessary caution in interpreting self-report data, Trait EI measurement bridges the gap between capturing EI in terms of what one knows they ought to do, and what behaviours they regularly engage in. With these considerations in mind, a Trait EI framework was adopted for the present study.

Among the many existing self-report EI measures, Bar-On's (1997) Emotional Quotient Inventory and its short form derivative, the Emotional Quotient Inventory – Short Form (EQi-S; Parker et al., 2011) are commonly used. The EQi-S has several advantages over other trait EI measures of similar length, including solid theoretical foundation (Bar-On, 1997), psychometric validation with undergraduate samples, and a multi-dimensional factor structure (Parker et al., 2011). The EQi-S measures four core EI dimensions: Intrapersonal, Interpersonal, Adaptability, and Stress Management. The Intrapersonal domain consists of abilities such as being able to recognize and understand one's own feelings (e.g., 'It's hard for me to understand the way I feel', reversed). The Interpersonal domain consists of abilities to recognize and understand others' feelings, and to be empathetic to these (e.g., 'I'm sensitive to the feelings of others'). The Adaptability domain consists of one's abilities to adjust their emotions and behaviours to changing circumstances (e.g., 'In handling situations that arise, I try to think of as many approaches as I can'). The Stress Management domain consists of abilities to effectively regulate emotions, such as resisting or delaying an impulse (e.g., 'I tend to explode with anger easily', reversed). The four EQi-S domains tend to be only moderately inter-correlated, and the multi-dimensional scoring is recommended over using a global trait EI score (Parker et al., 2011).

Examining trait EI using a multi-dimensional measure is important, as it has been established that different domains of trait EI have unique relationships with behaviour and well-being variables, such as coping, stress, and academic performance (Austin et al., 2010; Saklofske et al., 2012).

Several mechanisms have been proposed to explain how trait EI may facilitate positive outcomes, with two most researched pathways being coping and social support (Perera & DiGiacomo, 2015). According to the transactional coping paradigm (Lazarus & Folkman, 1984), an individual's choice of coping strategies depends on how they appraise their coping resources in a situation. EI-related competencies comprise an important personal resource one can draw on to regulate emotions and manage stress, whereas trait EI represents one's subjective appraisal of this coping resource (Keefer, 2015). Trait EI also includes interpersonal competencies that may facilitate a stronger sense of connection with others and greater ability to leverage social support (Perera & DiGiacomo, 2015).

**Trait EI, Coping, and Social Support**

Before reviewing research on trait EI and coping, it is important to clarify their overlap with a related construct of emotion regulation. Compas et al. (2014) conducted a review on the conceptual similarities and distinctions between emotion regulation and coping. They distinguished emotion regulation as encompassing both automatic and intentional processes involved in the processing of a variety of emotional experiences, whereas coping is intentional and more specific to stressful situations. However, coping includes the use of emotion regulation under stress and both can be purposeful responses to stress. As such, emotion regulation and coping strategies overlap in that they are both regulation processes to regulate distressing emotions and one's response to stress. Similarly, Peña-Sarrionandia et al. (2015) provided a

conceptual integration of various coping strategies within the process model of emotion regulation, where coping strategies are classified according to the target of change: the situation itself, cognitions about the situation, or one's behavioural response. For example, avoidant coping and task-focused coping are conceptualized as situation-focused strategies, while passive (e.g., rumination) and proactive (e.g., positive reappraisal) emotion-focused strategies are conceptualized as cognition-focused strategies. Emotion suppression and substance use would be examples of response-focused strategies (Peña-Sarrionandia et al., 2015). Further to this, Peña-Sarrionandia et al. (2015) identified the significant overlap between the research areas of emotion regulation and trait EI, despite their largely individual existence from one another within the literature. Emotion regulation is defined as a process in which one manages their emotions, while trait EI is a personality variable that supports that process.

To substantiate the evidence for integrating these research areas, Peña-Sarrionandia et al. (2015) conducted a metanalysis ($K = 90$) using studies that examined correlations between trait EI and various coping and emotion regulation strategies. They only included studies with adult samples, using more than one subscale of trait EI, and which presented a correlation between trait EI and one or more emotion regulation strategy. Averaged across studies, they found trait EI to have moderate positive associations with problem solving ($d = 0.92$), positive reappraisal ($d = 0.61$), and social support seeking ($d = 0.38$); moderate negative associations with rumination ($d = -0.43$) and emotion suppression ($d = -0.43$); and weak negative associations with avoidant coping ($d = -0.27$), denial ($d = -0.27$), and substance use ($d = -0.25$). These results indicate that at every stage of the emotion regulation process, those higher in trait EI tend to use more active coping strategies (such as problem-focused coping, cognitive reappraisal, and social support seeking), and fewer passive coping strategies (such as avoidance, rumination, and suppression). Peña-

Sarrionandia et al.'s (2015) meta-analysis suggests integrating the research areas of trait EI and

emotion regulation could better explain who is more or less likely to engage in active coping

strategies and social support seeking.

Beyond these general associations, there is also evidence that different domains of trait EI

are uniquely linked to different coping strategies. Austin et al. (2010) conducted a longitudinal

study to explore the correlations between trait EI, coping, life satisfaction, and perceived stress in

university students ($N = 748$) over the course of a semester. Coping was measured using the

Coping Inventory for Stressful Situations - Revised (CISS-Adult; Endler & Parker, 1999), which

consists of four subscales: Task-Focused, passive Emotion-Focused, and two categories of

Avoidance-Oriented coping, Distraction and Social Diversion. Trait EI was measured using the

EQi-Short (Parker et al., 2011) across four domains: Intrapersonal (awareness of one's own

feelings), Interpersonal (interpersonal/social skills), Adaptability (flexible coping with

problems), and Stress Management.

Passive Emotion-focused coping was negatively associated with the trait EI domains

Intrapersonal ($r = -.44$) and Stress Management ($r = -.49$), which suggests those with greater trait

EI in the areas of awareness and management of their feelings were less likely to engage in

ruminating on their negative emotions. This cluster of variables prospectively predicted greater

life satisfaction ($r = .45$) and lower perceived stress ($r = -.41$) at the end of the semester. The

Avoidance subcategory of Distraction was weakly negatively associated with the Stress

Management ($r = -.17$) domain, but it did not correlate significantly with the other trait EI

domains or with the end-of-term levels of life satisfaction or perceived stress. Social Diversion

was positively associated with the Intrapersonal ($r = .22$) and especially Interpersonal ($r = .39$)

domains. This suggests those with better understanding of their own and others' emotions and

with greater social skills are more likely to rely on their social support network for coping. This cluster of variables predicted greater life satisfaction ($r = .28$), but it was a weaker predictor of lower perceived stress ($r = -.14$). Task-Focused coping was positively associated with all trait EI domains, but most strongly with Adaptability ($r = .61$). This suggests those with greater Adaptability and overall trait EI are more likely to engage in coping by planning and taking actions towards solving or alleviating the problem. This cluster of variables predicted greater life satisfaction ($r = .27$) and lower perceived stress ($r = -.24$) at the end of the semester. The unique relationships between each of the trait EI domains and coping approaches found by Austin et al. (2010) further substantiate the necessity of examining trait EI as a multi-dimensional construct.

While Trait EI has been linked to the process of social support seeking, Trait EI also been linked to greater perceived social support (Malinauskas & Malinauskiene, 2018; Perera & DiGiacomo, 2015). Malinauskas and Malinauskiene (2018) conducted a study to explore the relationship between Trait EI and psychological well-being in a university male athlete sample ($N = 398$), and whether perceived social support and perceived stress mediated this relationship. They used self-report measures including the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) to measure perceived social support, and the Perceived Stress Scale-10 (PSS; Cohen et al., 1983) to measure perceived stress. The Schutte Self-Report Inventory (SSRI; Schutte et al., 1998, as cited in Malinauskas & Malinauskiene, 2018) was used to measure Trait EI according to four components: optimism (ability to use own positive emotional experiences), appraisal (ability to assess and express emotions), social skills (ability to understand and analyze emotions), and utilization (ability to manage emotions). The Ryff Psychological Wellbeing Scale (RPWBS; Ryff & Keyes, 1995, as cited in Malinauskas & Malinauskiene, 2018) was used to measure psychological well-being in terms of autonomy,

environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. The personal growth, positive relations with others, and purpose in life components of the psychological well-being scale used share some conceptual overlap with PTG, particularly with the domains of greater perceived personal strength, relating to others, and new possibilities.

Malinauskas and Malinauskiene (2018) found Trait EI to be moderately positively associated with both perceived social support ($r = .31$) and psychological wellbeing ($r = .57$), and weakly negatively associated with perceived stress ($r = -18$). Perceived social support was also positively associated with psychological well-being ($r = .23$) and negatively associated with perceived stress ($r = -.30$). Perceived stress was negatively associated with psychological wellbeing ($r = -.23$). Structural equation modelling revealed that the relationship between Trait EI and psychological wellbeing was sequentially mediated by perceived social support and perceived stress. This suggests that those possessing greater trait EI were more likely to report greater social support, and through this personal resource were more likely to report lower levels of stress and experience greater psychological wellbeing. However, the mediation was only partial, meaning that Trait EI also had a direct association with psychological wellbeing after controlling for perceived stress and social support. It is unsurprising that Trait EI and perceived social support were positively linked, given that the SSRI (like most Trait EI measures) includes a domain consisting of relating well with others. This study helps to parse out the way that Trait EI and social support together predict positive psychological outcomes.

Perera and DiGiacomo (2015) conducted a multi-wave study with undergraduate students ($N = 470$) over the course of their first semester at university, to explore the relationships between Trait EI and academic performance, academic adjustment, and wellbeing, with particular interest in the potential mediating effect of perceived social support and coping on

these relationships. Perceived Social Support was measured using the Social Provisions Scale (SPS; Cutrona & Russell, 1987, as cited in Perera & DiGiacomo, 2015), which consists of 24 items measuring the degree to which individuals perceive their social relationships as providing them with social support. Trait EI was measured using a total score on the 30-item self-report Trait Emotional Intelligence Questionnaire-Short-Form (TEIQue-SF; Cooper & Petrides, 2010). Perera and DiGiacomo (2015) were specifically interested in engagement coping and they described this as active attempts to manage stressful situations. Engagement Coping was measured using a total score on three COPE Inventory (Carver et al., 1989) subscales: Active Coping, Planning, and Positive Reinterpretation. Both academic adjustment and psychological wellbeing were measured with self-reports at the end of the semester, and academic performance was measured as end-of-term GPA. The data were analyzed through confirmatory factor analysis and structural equation modelling, where the mediating effects of perceived social support and coping were modeled simultaneously.

Perera and DiGiacomo (2015) found a direct positive relationship between Trait EI and perceived social support and engagement coping. After accounting for these mediators, Trait EI no longer significantly directly predicted academic adjustment, psychological wellbeing, or academic performance. However, there was an indirect positive relationship between Trait EI and psychological wellbeing through both higher perceived social support and greater use of engagement coping. Additionally, Trait EI was indirectly positively associated with academic adjustment through greater use of engagement coping. These multi-wave results suggest that those with higher Trait EI at the start of the semester were more likely to have strong supportive relationships and to engage in active conscious coping strategies throughout the semester, and to experience the associated positive end-of-term outcomes such as better psychological wellbeing

and better engagement and performance in their academics. It is important to note that this study only examined Trait EI at a global level, which limits the insight of their related findings. As such, further investigation into the relationship between the various domains of Trait EI in relation to social support, coping, and psychological well-being in university samples is needed.

**Trait EI and PTG**

While there is abundant evidence linking Trait EI to PTS-related outcomes, only a handful of studies examined the relationship between Trait EI and the construct of PTG. Thomas et al. (2020) conducted a cross-sectional survey of undergraduate students from the US ($N = 230$) to examine the relationships between Trait EI (measured with the total SSRI score), PTG (measured with the total PTGI score), and adaptive emotion-focused coping. Coping was measured with the Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski et al., 2001, as cited in Thomas et al., 2010), which includes five subscales: Acceptance, Positive Refocusing, Refocusing on Planning, Positive Reappraisal, and Putting into Perspective. Trait EI was significantly positively correlated with PTG ($r = .43$) and with all five coping strategies ($r = .27$ to .41). PTG was also significantly positively correlated with all five coping strategies, the strongest being with Positive Reappraisal ($r = .52$). Thomas et al. (2010) also tested a mediational model where coping subscales were entered as predictors of PTG and Trait EI as a mediator. However, this model was difficult to interpret because it was inconsistent with the Trait EI literature where coping is typically modeled as the mediator of Trait EI effects.

Another study, by Sadeghpour et al. (2021), explored the relationship between Trait EI and PTG through coping as a mediator. Their study was cross-sectional and correlational, and the sample ($N = 249$) consisted of hemodialysis patients in Iran. Participants were interviewed to complete the questionnaires. The PTGI (Tedeschi & Calhoun, 1996) was used to measure PTG,

and Trait EI was measured using the TEIQue-SF (Cooper & Petrides, 2010), which produces a global trait EI score. Coping was measured using the 66-item Ways of Coping Questionnaire (WQC; Folkman & Lazarus, 1985, as cited in Sadeghpour et al., 2021), which is a multi-dimensional measure, but this study used a single global coping score. Path analysis was used to determine the direct relationship between trait EI and PTG, and their indirect relationship with the mediator variable of coping entered into the model. The regression analysis revealed a moderate positive direct path between trait EI and PTG ($r = .39$), a strong positive direct path between PTG and coping ($r = .52$), and a significant positive indirect path between trait EI and PTG, through coping ($r = .23$). Trait EI predicted 38% of the variance in PTG, while coping predicted 27% of the variance in PTG. These findings suggest that those higher in trait EI were more likely to experience PTG, and that this could be facilitated through being more likely to engage in diverse coping behaviours. The degree of insight from these findings is limited due to the measures employed in this study. Measuring and exploring trait EI as a global score reduces the insight that can be yielded from the data, as other researchers have found trait EI to be a multi-dimensional construct with unique associations across each domain (Austin et al., 2010). The same limitation applies to using a global coping score that did not differentiate between different strategies that are known to relate differently to PTG (Eissenstat et al., 2022).

While it is useful to know there is a relationship between PTG, trait EI, and coping at a global level, the results of past studies do not contribute substantially to the understanding of these relationships because coping is diverse and trait EI is multi-dimensional. Assessing the degree to which each coping strategy is supported by trait EI competencies and efficacious in predicting PTG requires a more nuanced measurement of these specific variables in relation to the context. Clearly, further research is required to understand how trait EI and its components

are linked to PTG, and the role of different coping strategies in those relationships. The understanding of these relationships within the literature could be advanced by expanding the conceptualization and measurement of coping and exploring coping strategies that are context and data driven rather than a-priori.

## Current Study

The present study capitalized on the COVID19 pandemic as a unique and novel context to study the nature of PTG and its predictors among undergraduate students. The COVID19 pandemic was perceived as a highly uncontrollable and stressful event (Chu et al., 2022), and the negative impacts were widespread. University is widely recognized as a high-stress environment, and the pandemic presented a stress context that challenged socially facilitated and active coping strategies, due to the communicable nature of the virus and related behaviour restrictions, as well as the lack of control over the event at an individual level. Thus, the pandemic was a highly suitable context to explore how trait EI, social support, and coping predicted PTG and distress in a unique stress context.

First, we aimed to document the prevalence and nature of PTG experiences among undergraduate students during the COVID19 pandemic, both quantitatively using a well-established multi-dimensional measure of PTG (the PTGI; Tedeschi & Calhoun, 1996), and qualitatively using open-ended questions. This study opted to explore coping and PTG through mixed methods, in hopes of uncovering a more nuanced understanding of coping and positive outcomes during high stressful and uncontrollable events that constrain certain coping strategies. Diverging from common quantitative approaches could help to overcome differences in coping conceptualization and measurements and gaps in knowledge in this area. It is highly beneficial to uncover what kinds of thoughts, activities, and supports are identified to have been useful during

challenging times by those who report high PTG so that future interventions can target these needs appropriately and support PTG in those who experience traumatic events. The way in which individuals talked about their experience during the pandemic was explored for themes relating to the different coping strategies and PTG domains. The qualitative analysis of the open-ended questions was exploratory and served to complement and contextualize the quantitative results.

*Research Question 1 (RQ1):* In their own words, how do individuals conceptualize and describe their positive experiences of coping and PTG during the COVID19 pandemic?

Secondly, as PTG is still a relatively new area of research, it was of interest to provide further construct validation relative to PTS, by demonstrating that while PTG may co-occur alongside PTS, it is a distinct concept from the mere absence of negative psychological consequences after trauma. Given the inconsistency within the literature on this relationship, partly due to differences in stress measures used (Marziliano et al., 2019), a variety of PTS measures were used in the current study, including mental health status (i.e., presence of one or more psychological/psychiatric diagnoses), negative life events checklist, subjective stressfulness of those events, and self-reported symptoms of psychological distress measured with the Depression, Anxiety, and Stress Scale (DASS; Lovibond & Lovibond, 1995). It was hoped that this multi-method approach would build a more robust understanding of how stress and negative psychological outcomes after trauma are related to PTG.

*Hypothesis 1 (H1):* It was predicted that PTG and PTS (measured with multiple indicators) will be independent of each other (non-significant or weak positive correlations).

Third, we aimed to extend the limited research on the relationship between Trait EI and PTG using a multivariate framework alongside perceived social support and coping, which have

been extensively studied in relation to both PTG and trait EI, but in separate literatures. In addition to connecting these two literatures, we used multi-dimensional measures of each construct to better understand how various facets of perceived social support, trait EI, and coping strategies relate to PTG. The personality construct of trait EI and the environment resource of social support are two variables that have been linked to coping and positive outcomes during times of stress, and are positively associated (Malinauskas & Malinauskiene, 2018). They also have shared and independent associations with psychological outcomes, including PTG. Global Trait EI has been established as a predictor of greater PTG (Sadeghpour et al., 2021; Thomas et al., 2020). Higher levels of interpersonal skills, which is a domain of trait EI, have also been linked to greater PTG (Van der Hallen & Godor, 2022). Social support is associated with higher levels of PTG and lower levels of distress following traumatic events, including the pandemic (Dominick, 2022; Hao et al., 2023; Mai et al., 2021; Szkody et al., 2021). Thus, these two variables are promising predictors of PTG when analyzed under Shaefer and Moo's (1992) explanatory model of PTG.

*Hypothesis 2 (H2):* Those higher in PTGI will report higher levels of Trait EI (H2a) and higher levels of perceived social support (H2b). Which Trait EI and social support domains specifically were left exploratory given lack of previous research at this granular level.

Finally, it was also of interest to explore the potential mediating role of coping styles in the relationships of trait EI and perceived social support with PTG. Higher PTG has been consistently linked with greater use of proactive task-focused and emotion-focused coping strategies, as well as social support seeking (Eissenstat et al., 2022; Platte et al., 2022). However, the evidence is mixed regarding the relationship of PTG with avoidant and passive emotion-focused coping. The lack of association between PTG and avoidance/passive coping in some

studies indicates that this coping style is not necessarily predictive of whether someone will experience PTG but may be more predictive of negative psychological outcomes such as PTS. The relationship may also depend on the traumatic event contexts and perceptions of controllability of the stressor. In a separate literature, those with higher Trait EI have been found to engage in less passive emotion-focused coping, as well as in more proactive problem-focused and emotion-focused coping and social support seeking strategies during times of stress (Austin et al., 2010; Peña-Sarrionandia et al., 2015). Greater perceived social support has been linked to engaging in certain coping strategies which have been associated with greater PTG levels, such as seeking emotional or instrumental support from others (Hao et al., 2023). Perceived social support has also been linked to PTG indirectly through cognitive reappraisal (Zhou et al., 2017). However, the evidence is mixed regarding the relationship of perceived social support with avoidant and passive emotion-focused coping. Given these past findings, the following hypotheses were made about the multivariate relationships between PTG and the variables of Trait EI, perceived social support, and coping:

*Hypothesis 3 (H3):* PTG will have a significant positive relationship with Problem-Focused, Proactive Emotion-Focused, and Social Support Seeking coping (H3a), a weak positive or non-significant relationship with Avoidance coping (H3b), and a weak negative or non-significant relationship with Passive/Negative Emotion-Focused coping (H3c). These associations were expected to be independent of other variables in the model.

*Hypothesis 4 (H4):* Coping will mediate the relationships between PTG and Trait EI (H4a) and between PTG and perceived social support (H4b).

**Method**

**Research Design**

This study employed a mixed-methods research design, via a Concurrent Embedded Strategy. Concurrent Embedded Strategy involves the simultaneous collection of both quantitative and qualitative data, in which one method is predominant and the secondary method is used to provide supportive information to the data yielded by the predominant method (Creswell, 2009). The mixing of methods occurred within the interpretation phase of the study. The majority of the weight in the design was given to quantitative methodology, while qualitative methods were used to provide supportive information to the findings of the quantitative data. The qualitative data was embedded within the larger context of the quantitative data. The quantitative measures were used to quantify the prevalence of PTG and distress, the levels of trait EI and perceived social support, and the frequency of the use of various coping categories. The direction and strength of the relationships between the predictor and outcome variables were also explored quantitatively. The qualitative component of this study was intended to provide a more detailed understanding of PTG and coping during the COVID19 pandemic from the subjective perspective of participants, extending the insight beyond the prevalence of these constructs in the sample. The qualitative methodology and data were also employed to more fully capture and describe coping and PTG within the novel context of the COVID19 pandemic, as quantitative coping measures have yielded some inconsistent findings in the PTG literature, especially surrounding whether avoidant and passive coping strategies have a positive, negative, or null relationship with PTG (Guo et al., 2017; Platte et al., 2022). There is also considerable variability in how coping is categorized across studies even when the same measure is employed (Solberg et al., 2022). Thus, complementing the quantitative measurement of coping with qualitative methods was of theory-building interest.

**Participants**

Participants were undergraduate students enrolled at Trent University, Ontario, Canada. In Fall of 2020 students were invited to participate in the study through the voluntary Trent University SONA system, and were recruited from the introductory psychology, research methodology, and statistics courses at Trent University. There were no exclusion criteria for participating in the study. Students of all majors and levels of study, and of all identities were able to participate. Of the 763 students who responded to the SONA recruitment, 732 consented to participation and provided valid data. Data validity was determined by examining participants' survey completion time, response rates, and response patterns. Participants varied in age from 16 to 48 years old ($M = 20.58$, $SD = 4.60$). The sample was 83.5% female,14.8% male, 0.4% non-binary, 0.8% transgender, 0.3% other, and 0.3% preferred not to identify. The sample consisted of 65.4% Caucasian/White, 12.2% Asian, 8.5% African American or Black, 2.9% Latino or Hispanic, 2.5% Middle Eastern or Arabic, 1.1% First Nations or Indigenous, 7% students from other ethnic backgrounds, and 0.5% preferred to not identify. The sample was made up of 57.2% first year students and 38.1% upper year students; 90.3% were enrolled in full time studies based on Fall 2020 enrollment. The sample was predominantly (77.2%) domestic students, with 10.1% being international students. Demographic characteristics of the sample are summarized in Table 1.

**Measures**

*Demographics Questionnaire*

Participants were asked to complete a brief demographics form, collecting information about their gender, age, ethnicity, domestic or international student status, major of study, credits completed toward their degree thus far, and number of courses enrolled in for Fall 2020, among

other details not pertinent to the present study (see Appendix A for the full contents of the

Demographics Questionnaire and other scales).

### *Qualitative Questions*

Participants were asked two open-ended questions asking them to elaborate on any

negative effects (Q1) and any positive effects (Q2) the pandemic had had on them thus far.

Participants were also asked two open-ended questions about what had been helpful to them

during the pandemic (Q3), and what had been less helpful to them during the pandemic (Q4).

### *Mental Health Status*

Participants were asked whether they had been diagnosed with one or more

psychological/psychiatric disorders. Participants could choose multiple options from a list of

Psychological/psychiatric disorders: Depressive/Mood Disorder, Anxiety Disorder, Personality

Disorder, Psychotic Disorder, Eating Disorder, Trauma-Related Disorder, Addiction/Substance

Abuse, Autism Spectrum Disorder, Learning Disorder, Conduct Disorder, Attention Deficit

Hyperactivity Disorder. There were additional options of 'Other' with a free text space, 'None',

and 'Prefer not to disclose'. Participants were then grouped into three categories: No Disorder,

One or More Disorder, and Prefer not to Disclose.

### *The Posttraumatic Growth Inventory (PTGI)*

The PTGI (Tedeschi & Calhoun, 1996) is a 21-item questionnaire which measures

perceptions of the degree to which one's life has changed following a traumatic event. The PTGI

covers five factors of change: Relating to Others (7 items), New Possibilities (5 items), Personal

Strength (4 items), Spiritual Change (2 items), and Appreciation of Life (3 items). The items

consist of statements reflecting on areas of growth and change, such as 'I changed my priorities

about what is important in life', 'I have a greater feeling of self-reliance', and 'I have a greater

sense of closeness with others'. Participants are asked to rate each item on a 6-point Likert scale based on how much they have experienced the described change as a result of a crisis from 0 = 'I did not experience this change as a result of my crisis' to 5 = 'I experienced this change to a very great degree as a result of my crisis'. For the present study, 'my crisis' was replaced with 'the COVID19 pandemic' to make the measure specific to this context. Both a global PTGI score and a subscale score for each domain of the PTGI were calculated using means of respective item ratings, with higher scores representing greater perceived growth. The total PTGI scale demonstrated strong reliability in the present sample (Cronbach's alpha = .95).

### The Multidimensional Scale of Perceived Social Support (MSPSS)

The MSPSS (Zimet et al., 1988) is a 12-item scale that measures perceived social support from three sources (4 items each): Family, Friends, and Significant Other. Due to the student background of the present sample, an additional four items were added to measure the degree to which students felt supported by their university (institutional services, as well as faculty and staff). Participants were asked to rate their agreement with each statement on a 7-point Likert scale from 1 = 'very strongly disagree' to 7 = 'very strongly agree'. Some examples of these statements are 'There is a special person who is around when I am in need', 'I can talk about my problems with my family', 'I can count on my friends when things go wrong', and 'I feel supported by the staff or professors at my university'. Both a global MSPSS score and a subscale score for each source of perceived social support (family, friends, significant other, and school) were calculated using means of respective item ratings, with higher scores representing higher levels of perceived social support. The total MSPSS scale demonstrated strong reliability in the present sample (Cronbach's alpha = .91).

### The Depression, Anxiety, and Stress Scale (DASS)

The DASS (Lovibond & Lovibond, 1995) is a 21-item scale which measures perceived symptoms in three domains (7 items each): Depression, Anxiety, and Stress. Participants were asked to rate how much each statement applied to them over the past two weeks on a 4-point Likert scale from 0 = 'Did not apply to me at all' to 3 = 'Applied to me very much, or most of the time'. Some examples of these statements are 'I found it difficult to work up the initiative to do things' and 'I tended to over-react to situations'. Both a global DASS score and a subscale score for depression, anxiety, and stress symptoms were calculated using means of respective item ratings, with higher scores representing higher levels of perceived distress. The total DASS scale demonstrated strong reliability in the present sample (Cronbach's alpha = .94).

### The Brief COPE

The Brief COPE (Carver, 1997) is a 28-item scale which measures coping behaviours across 14 styles of coping (2 items each): self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioural disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame. The scale was supplemented with three additional items for this study, to capture elements of emotion-focused coping that were not well represented among the original items: 'worrying about what I am going to do', 'taking it out on other people', and 'blaming myself for being too emotional'. These items were sourced from the Emotion-Focused subscale of the CISS (Endler & Parker, 1999). Participants were asked to rate each statement based on how much they used it when they encountered a stressful situation during the COVID19 pandemic 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'. Some examples of these statements are 'Getting emotional support from others' and 'Using alcohol to make myself feel better'. Brief COPE scores were calculated based on the results of a principal components

analysis in the present sample. Examination of the scree plot and eigenvalues identified five substantive factors that each explained at least 5% of the variance (51% cumulatively), consisted of at least five items, and were conceptually interpretable. An alternative six-factor solution was also examined, but the sixth factor was too small to be included in the analyses (only 2 items comprising religious coping). The final five factors of coping strategies were: Negative Emotion-focused coping (7 items comprising self-blame, behavioural disengagement, and the supplemental items), Proactive coping (7 items comprising active problem-focused coping, positive reframing, planning, and self-distraction through work), Social support seeking (5 items comprising use of emotional and instrumental support and venting through expressing emotions), Avoidance (5 items comprising denial, substance use, and venting through indirect means), and Acceptance (5 items comprising acceptance, humour, and self-distraction through media). A subscale score for each of the five factors was calculated using means of respective item ratings, with higher scores representing more frequent use of that coping strategy.

### *The Emotional Quotient Inventory – Short Form (EQi-S)*

The EQi-S (Parker et al., 2011) is a 51-item scale which measures global trait EI, as well as four trait EI dimensions: Intrapersonal (10 items), Interpersonal (10 items), Adaptability (7 items), and Stress Management (8 items). In addition, the EQi-S contains a General Mood scale, but it was not used in the present study as it is a correlate rather than a component of trait EI (Parker et al., 2011). The intrapersonal component measures one's assessment, awareness, and understanding of themselves. The interpersonal component measures one's capacity and functioning in empathy, social responsibility, and interaction with others. The stress management component measures one's capability for stress tolerance and impulse control. The adaptability component measures one's ability to assess and flexibly cope and respond to environmental

demands and difficult situations. Participants are asked to rate how much each statement is true of the way they feel, think, or act most of the time and in most situations on a 5-point Likert scale from 1 = 'very seldom true' to 5 = 'very often true'. Some examples of these statements are 'I've got a bad temper' and 'It's hard for me to describe my feelings' (reverse-keyed). Both a global trait EI score and a subscale score for each dimension were calculated using means of respective item ratings, with higher scores representing higher trait EI competencies. Item 20 from the scale was erroneously omitted from the survey, and this was accounted for when computing scale scores. The total EQi-S scale demonstrated strong reliability in the present sample (Cronbach's alpha = .89).

### The Negative Life Events Scale for Students (NLESS)

The NLESS (Buri, 2018) is a 25-item scale which measures the occurrence of negative life events and their perceived stressfulness by those who experienced them. This inventory of events includes events that have happened directly to the individual (e.g., 'You having been assaulted'), or indirectly to a close friend, family member, or romantic partner (e.g., 'Serious illness/injury to family member'). The original 25 items were supplemented with two additional items. An item for experiencing being laid off at work was included, as many students work in addition to their studies. Another item for experiencing serious conflict at school was included. Gendered terms, such as 'girlfriend/boyfriend' were substituted with more inclusive terms (i.e. 'romantic partner'). 'Failing classes/academic probation' was substituted with 'serious academic problems' to better capture the wider range of academic problems students could experience. Participants were asked to indicate whether they have experienced each event since the beginning of the COVID19 pandemic, and to rate the perceived stressfulness of each event they experienced on a 6-point Likert scale from 1 = 'not stressful at all' to 6 = 'one of the worst things

I have ever had to go through'. Three scores were calculated using the NLESS items: a total count of NLESS events experienced (Count), a mean of stressfulness ratings for the NLESS events experienced (Severity), and a mean of the sum total of events experienced and their rated severity (Combined). The NLESS Severity scale demonstrated acceptable reliability in the present sample (Cronbach's alpha = .75).

**Procedure**

Participant recruitment and data collection took place in the Fall of 2020, when the university was operating remotely due to the COVID19 pandemic restrictions. The study was advertised to students through the Trent University SONA system, and the questionnaire was administered online via Qualtrics survey software. Those who participated received SONA credits to apply to their final grades in their respective psychology courses. Participants were presented with an Information and Consent Form prior to undertaking the questionnaire. The questionnaire consisted of the demographics form and the mental health status question, followed by the qualitative opened ended questions about individuals' experience of the pandemic, followed by the quantitative self-report measures in this order: NLESS, Brief COPE, PTGI, MSPSS, EQi-S, and DASS. The questionnaire additionally contained several other scales that were part of a larger project and not used in this study. Following completion of the questionnaire, participants were provided with a debriefing sheet elaborating on the purpose of the study and the researcher's contact information in case they had any future questions. This study was approved by the Trent University Research Ethics Board (see Appendix A for copies of the research forms and questionnaire).

**Statistical Analysis**

The continuous variables in the data set were assessed for normality to confirm the appropriateness of the chosen data analysis methods; this was done by conducting Kolmogorov-Smirnov test of normality and examining frequency distributions, skew, and kurtosis. Z values for skew and kurtosis within the range of -3 to +3 were considered tolerable. Some variables violated assumptions of normality. In these cases, nonparametric tests were run in addition to the planned analyses to ensure there was no difference in results between the parametric and nonparametric tests. For ease of interpretation, results of parametric tests are presented unless there were discrepancies, while results of nonparametric tests are supplemented in Appendix B.

Participants were categorized into groups based on their response regarding presence of a psychological/psychiatric disorder: no disorder ($n = 415$), having one or more disorders ($n = 291$), or prefer not to disclose ($n = 23$). Due to the small number of those who selected 'prefer not to disclose', this group was treated as missing data, and disorder diagnosis was instead analyzed as a dichotomous variable (presence of one or more disorder diagnosis versus no diagnosis). All future analyses completed using this variable used list-wise deletion of missing data. Independent t-tests were completed for psychological/psychiatric disorder diagnosis categories to determine whether the presence of a diagnosed psychological/psychiatric disorder (no disorder, or one or more disorders) were linked to significantly different outcomes across the variables of PTGI and Depression, Anxiety, and Stress (DASS).

Pearson's correlations were computed for all continuous variables, as a preliminary test of the hypothesized relationships. Standard multiple regressions were then used to assess the shared and unique contributions of the different domains of trait EI (EQi-S), perceived social support (MSPSS), and different coping strategies (Brief COPE) to the prediction of each outcome variable, namely PTGI and depression, anxiety, and stress symptoms (DASS). The

predictor variables that contributed independently to the prediction of the outcome variables were carried forward into mediation analyses.

Next, we tested the proposed meditation models of the indirect effects of the MSPSS and EQi-S predictor variables on the outcome variables of PTGI and DASS, separately through each of the Brief-COPE variables. Evidence for mediation was determined based on two criteria: 1) the Baron and Kenny (1986) method, and 2) the Sobel Test of the indirect effect. The Baron-Kenny method involves four steps testing the significance of various paths in the mediation model (for a graphic representation see Figure 1). In step one, the criterion variable (Y) is regressed onto the predictor variable (X) to determine if there is a significant relationship to be mediated (path c). In step two, the mediator variable (M) is regressed onto X to determine if there is a significant relationship between the predictor variable and the mediator variable (path a). In step three, to determine the independent effect of the mediator on the outcome, Y is regressed onto both X and M in a multiple regression to show whether the mediator variable predicts the outcome variable after controlling for the predictor variable (path b). Finally, in step four, the significance of the independent effects of X on Y, controlling for M is examined, to determine if the mediator completely mediates the relationship between the predictor variable and outcome (path c'). If the four steps are completed and the effect of the predictor variable on the outcome variable becomes nonsignificant after controlling for the mediator, then the conditions for full mediation according to Barron and Kenny are met. The Sobel Test was then used to determine if the indirect mediated path from X to Y via M was statistically significant (path ab).

Cohen's (1988) effect size guidelines are frequently employed as benchmarks for interpreting the strength and meaningfulness of correlations. Cohen's guidelines for interpreting

correlation effect sizes posit that effect sizes of 0.10, 0.30, and 0.50 reflect small, typical, and large effects respectively (Cohen, 1988). The present study employed Cohen's effect size guidelines for interpreting the strength and meaningfulness of correlation coefficients.

Finally, participants' responses to open-ended questions about their experiences during the pandemic were explored using qualitative analysis. For the purpose of the study, to generate qualitative insight into PTG, only responses to open-ended questions Q2 and Q3 were analyzed, to understand helpful coping in relation to positive impacts of the pandemic.

Responses to the open-ended questions about positive impacts of the pandemic were first reviewed using Conceptual Content Analysis. Conceptual Content Analysis allows for making inferences from text and involves identification of concepts within the text data, in the form of words, phrases, or themes (Krippendorff, 2019). This is achieved through a process of selective reduction and focuses on the presence and frequency of those concepts (Krippendorff, 2019). Participants' responses to open ended questions were grouped based on the survey questions they corresponded to. Participants' answers about positive impacts were printed and the hard copies were reviewed by hand by the Principal Investigator. This stage of analysis focused on uncovering the presence of content consistent with the construct of PTG in participants' responses. Consistency with PTG was indicated by language that referred to a positive change in oneself and perspectives, relationships, or life circumstances. Responses that indicated positive events during the pandemic, without any reference to the aforementioned positive changes were not considered to be reflective of PTG content. Answers consistent with PTG language were highlighted and the corresponding participants were then grouped together, and their qualitative data was brought forward into the next stage of analysis.

The data of those who provided answers consistent with PTG was explored using Thematic Analysis. Thematic Analysis is used to identify overarching themes and involves several steps (Creswell, 2009; Howitt, 2016). First, the data is reviewed for patterns of common topics or meanings, and the text that includes this common information is organized together and assigned a code that represents the meaning (Creswell, 2009; Howitt, 2016). Codes that are related are then organized and categorized into larger overarching themes that convey the common meanings of the information (Howitt, 2016). Thematic Analysis was used in the present study to identify common themes within participants' answers about positive impacts the pandemic had, as well as what had been helpful to them during that time. The data was reviewed and coded by hand by the Principal Investigator.

## Results

### Missing and Invalid Data

Four participants completed the survey twice, and the copy that was completed first was retained in the dataset while the second copy was deleted. No imputations of missing data were performed for demographic variables or the NLESS variables. In the case of missing scale data, item scores were imputed with the sample means for cases where no more than 10% of the data was missing per scale or subscale. For cases with more than 10% data missingness, the scale score was not computed, and they were left out of analyses involving that variable using pairwise deletion. Overall, the extent of missing and imputed data was negligible for the size of the sample (see Table 2 for summary of missingness and imputations).

### Descriptive Statistics

#### *The Negative Life Events Scale for Students (NLESS)*

On average, participants reported experiencing four NLESS events since the beginning of the COVID-19 pandemic ($M = 3.99$, $SD = 3.38$, range from 0 to 24). See Table 3 for NLESS item descriptives. The five most commonly endorsed stressors were: own major financial pressures, family having major financial pressures, struggling with addiction/psychological problem, serious academic problems, and serious illness/injury of a family member. The five least commonly endorsed stressors were: serious conflict at school, experiencing abuse/violence at home, having problems with the law, family losing house due to natural disaster, and unwanted pregnancy (either own or one's partner). The average perceived severity of the NLESS events experienced ranged from "definitely stressful" (lowest $M = 3.83$) to "extremely stressful" (highest $M = 4.80$), with the overall mean severity rating falling in the "definitely stressful" range ($M = 4.29$, $SD = 0.96$). These statistics suggest that students in this sample indeed experienced stressful events during the pandemic. The NLESS Count and Severity variables were relatively weakly correlated with each other ($r = .27$), confirming that they represent two distinct methods for operationalizing stress.

### *The Posttraumatic Growth Inventory (PTGI)*

See Table 4 for the PTGI domain descriptives. All PTGI scales exhibited some deviations from normal distribution, but the violations were minor except in the case of Spiritual Growth, which was substantially positively skewed. The total PTGI scale, as well as the Appreciation of Life, Personal Strength, Relating to Others, and New Possibilities domains of PTGI were all moderately endorsed by the sample ($M = 2.51$ to 2.79 on a 0-5 scale, indicating a "moderate degree of change" in these domains was experienced). The greatest degree of growth was reported for the Appreciation of Life and Personal Strength domains. However, the Spiritual

Growth domain of PTGI was positively skewed and weakly endorsed by the sample ($M = 1.34$

corresponds to "a very small degree" of change experienced).

The correlations of Spiritual Growth with the other PTGI domains were somewhat

attenuated (average $r = .43$) relative to the very strong correlations among the rest of the PTGI

domains (average $r = .74$; see Table 5). Such high inter-correlations are typical for PTGI

(Silverstein et al., 2018), indicating that these domains of growth share commonalities and

support internal consistency of the global PTGI scale. Due to their high inter-correlations, the

individual PTGI domains were combined into a single total score for the remaining analyses. It is

common for PTGI to be analyzed as a global score. To assess whether the lack of endorsement of

the Spiritual Growth domain would influence the results of future analyses, an alternative

variable called PTG4 was created by totaling and averaging the four other PTGI domain scores

(excluding Spiritual Growth). The relationships with the other scale variables were not

meaningfully altered when using PTG4 (average $r = .18$) in place of the total PTGI (average $r =$

.18; see Table 5). Thus, for ease of comparison with results of other studies a total PTGI score

combining all five domains was used in the present analyses.

### *The Depression, Anxiety, and Stress Scale (DASS)*

See Table 4 for the DASS domain descriptives. All DASS scales exhibited some

deviations from normal distribution, but the violations were minor. On average, participants

endorsed low to moderate levels of symptoms on the total DASS, as well as on the Depression,

Anxiety, and Stress domains of DASS ($M = 1.06$ to $1.39$ on a 0-3 scale, which corresponds to

"applied to me to some degree, or some of the time"). All three domains of DASS were strongly

intercorrelated (average $r = .71$), which supports internal consistency of the global DASS scale,

and they also shared similar patterns of correlations to one another with the NLESS, EQi-S,

MSPSS, and Brief-COPE variables (see Table 5). As such, DASS was used as a single global score in all analyses involving these variables. As the three domains are commonly intercorrelated in other studies, it is a common practice to use the global score of DASS when interested in DASS as an indicator of negative psychological outcomes in a broader sense. However, the relationships of the three DASS domains with PTGI varied and thus they were analyzed separately when testing Hypothesis 1.

### The Emotional Quotient Inventory – Short Form (EQi-S)

See Table 4 for the EQi-S domain descriptives. The Interpersonal and Stress Management scales were negatively skewed, but the Intrapersonal and Adaptability scales were normally distributed. The Interpersonal, Adaptability, and Stress Management domains of EQi-S were strongly endorsed by the sample ($M$ = 3.45 to 4.11 on a 1-5 scale, which corresponds to "often true of me"). The Intrapersonal domain of EQi-S was moderately endorsed by the sample ($M$ = 3.30, which corresponds to "sometimes true of me"). The four domains of EQi-S were weakly to moderately intercorrelated (average $r$ = .23), which supports their distinctiveness, and they also showed different patterns of correlations to one another with all the other study variables (see Table 5). Previous research has found that each EQi-S domain can uniquely predict different variables and these domains can vary based on participant characteristics, such as gender (Parker et al., 2011), thus using global trait EI scores can conceal distinct relationships that are only apparent at the subdomain level and is not recommended. As such, the EQi-S domains were analyzed separately, rather than using a combined total score.

### The Multidimensional Scale of Perceived Social Support (MSPSS)

See Table 4 for the MSPSS domain descriptives. Overall MSPSS scale and the Significant Other, Family, and School scales were negatively skewed, while the Friend scale was

normally distributed. On average, the sample endorsed moderate levels of perceived social support overall, as well as from the Family and Friend domains ($M = 5.03$ to 5.18 on a 1-7 scale, which corresponds to "mildly agree"). The Significant Other domain was strongly endorsed by the sample ($M = 5.51$, which corresponds to "strongly agree"). The School domain received the lowest level of endorsement ($M = 4.29$, which corresponds to a "neutral" rating). The four domains of MSPSS were moderately correlated with each other (average $r = .40$), indicating some distinctiveness of the MSPSS domains, which is a commonly cited advantage of this measure. However, when examining their correlations with the other study variables, the four MSPSS domains showed similar patterns of correlations to one another; only the Family domain showed slightly stronger magnitudes relative to the other three domains (see Table 5). It is a common practice to use the MSPSS as a global score to represent overall perceived social support from all sources. Thus, the individual MSPSS domains were combined and carried forward as a single global score in subsequent analyses.

### The Brief-COPE

See Table 4 for the Brief-COPE factor descriptives. Proactive and Acceptance factors of the Brief-COPE were normally distributed, Negative Emotion-Focused and Social Support Seeking factors exhibited minor deviations from normality, and Avoidance coping was positively skewed. The Acceptance, Proactive, and Social Support Seeking factors of Brief-COPE were moderately endorsed by the sample ($M = 2.50$ to 2.91 on a 1-4 scale, which corresponds to "doing this a medium amount"). The Avoidance and Negative Emotion-Focused factors of Brief-COPE were weakly endorsed by the sample ($M = 1.66$ and 2.19, which corresponds to "doing this a little bit"). The five factors of Brief-COPE were weakly to moderately correlated with each other (average $r = .26$), which supports their distinctiveness, and they also showed different

patterns of correlations to one another across the other study variables (see Table 5). This is typical of coping variables, as different predictors, such as personality variables like trait EI translate to different coping behaviours. Thus, the individual Brief-COPE factors were carried forward as unique scores in subsequent analyses in order to examine their unique relationships with the other variables.

**Differences in DASS and PTGI by Mental Health Status**

An independent t-test was preformed to evaluate whether DASS levels differed by psychological/psychiatric disorder status. The results indicated that those who reported one or more diagnosis of a psychological/psychiatric disorder ($M = 1.51$, $SD = 0.66$, $n = 291$) endorsed significantly higher levels of DASS than those who did not report a diagnosis of a psychological/psychiatric disorder ($M = 1.00$, $SD = 0.64$, $n = 415$), $t(726) = -10.50$, $p < .01$. The effect size was large, with a Cohen's $d$ of 0.78. These results suggest that those with psychological/psychiatric disorders were more likely to experience depression, anxiety, and stress symptoms than their counterparts without a disorder, thus providing cross-validation of the two measures of psychological distress.

A second independent t-test was preformed to evaluate whether PTGI levels differed by psychological/psychiatric disorder status. The results indicated that those who reported one or more diagnosis of a psychological/psychiatric disorder ($M = 2.44$, $SD = 1.13$, $n = 291$) did not significantly differ in their endorsement of PTGI outcomes than those who did not report a diagnosis of a psychological/psychiatric disorder ($M = 2.57$, $SD = 1.10$, $n = 415$), $t(727) = 1.59$, $p = 0.11$, Cohen's $d = 0.12$. These results suggest that those with psychological/psychiatric disorders were no less likely to experience PTG than their counterparts without a disorder. This result is consistent with Hypothesis 1, adding further support to the conceptualization of PTG as

a distinct concept from the absence of negative psychological consequences of traumatic events. If they were inverse constructs, one would expect individuals with psychological disorders, generally accompanied by symptoms of anxiety and depression, to have lower levels of PTG, which was not the case here.

As both DASS and PTGI variables violated assumptions of normality, Mann-Whitney U tests were computed to assess whether results varied between parametric and nonparametric tests. There was no significant variation between the results of the t-tests and Mann-Whitney U, thus the interpretation based on the t-tests was retained. Please see Appendix B for Mann-Whitney U results.

**Relationships Among Scale Variables**

Pearson's correlations among all scale variables are presented in Table 5 (note this table spans multiple pages). As some of the variables of interest violated assumptions of normality, Spearman's Rho coefficients were also computed to assess whether results varied between parametric and nonparametric correlation analyses. There was no substantive discrepancy between the results of the Pearson's Correlations and Spearman's Rho, thus for ease of interpretation Pearson's correlations are used to explain bivariate relationships. Please see Appendix B for Spearman's Rho results.

*Relationships Among Stress Variables and PTG*

DASS was moderately positively correlated with NLESS Count ($r = .36$), NLESS Severity ($r = .31$), and NLESS Combined ($r = .37$). These findings suggest that with the experience of more stressful events, and the more stressful these events are perceived to be, the more likely one is to experience negative psychological symptoms of depression, anxiety, and stress. This is expected, as one's perception of a stressful event is subjective and as the number

of events adds up, the individual may perceive the events as outside of their means to cope with the events, and experience more negative psychological consequences due to this. This finding also aligns with the idea that there is a threshold to the number of stressful events and their severity together for avoiding greater risk for negative psychological outcomes. These correlations provide cross-validation of the different stress measures, but they also suggest that the NLESS and DASS variables are not redundant with one another.

PTGI was only weakly positively correlated with NLESS Severity ($r = .12$) and PTGI was not significantly correlated with NLESS Count or NLESS Combined. These findings suggest that neither the number of stressful events one experiences nor the perceived severity of those events predict one's likelihood to experience PTG. These findings are consistent with Hypothesis 1.

Looking at the correlations between PTGI and DASS variables, Anxiety and Stress domains were not significantly correlated with any of the PTGI variables (see Table 5). These results imply that PTG is distinct from the mere absence of negative psychological consequences of stressful events, such as anxiety and stress symptoms. Those experiencing PTG could also be experiencing anxiety and stress symptoms, but these experiences were not associated, as predicted by Hypothesis 1. The Depression domain was the only DASS domain significantly negatively correlated with all PTGI variables (average $r = -.20$), although while statistically significant these correlations were weak.

To understand the nature of the overlap between Depression and PTGI, the items of PTGI and the DASS-Depression items were cross-correlated and explored for overlapping and inverse item content. Five of the seven DASS-Depression items described the absence of some of the PTG phenomena (see Appendix C to review PTGI and DASS items and their correlations). Five

of the DASS-Depression items were weakly to moderately correlated with some of the PTG items. To explore whether these overlapping items explained the negative correlation between the PTGI and DASS-Depression scale scores, a redacted score for both PTGI and DASS-Depression were calculated omitting these overlapping items, and a correlation was computed using these new variables. The relationship between modified PTGI and DASS-Depression ($r$ = -.19) variables was somewhat attenuated when using the new redacted variables, but the redacted PTGI variable was still negatively correlated with the redacted DASS-Depression variable ($r$ = -.13). This suggests that while PTGI and DASS do share some overlapping items, that even after accounting for these items, PTG and Depression are inversely related constructs.

### *Relationships Among Trait EI, MSPSS, and Coping*

All four domains of trait EI were positively correlated with MSPSS (see Table 5). MSPSS was weakly positively correlated with the Intrapersonal ($r$ = .21), Adaptability ($r$ = .19), and Stress Management domains of EQi-S ($r$ = .15). MSPSS was moderately positively correlated with the Interpersonal domain of EQi-S ($r$ = .41). These results indicate that those who are higher in trait EI are more likely to have greater perceived social support. However, given the strength of the relationship between the Interpersonal EQi-S domain and MSPSS, it appears this is the most relevant EQi-S domain when predicting one's level of perceived social support. The lower practical significance of the other three domains should be considered when interpreting these relationships, due to their small effect sizes.

Negative emotion-focused coping was moderately negatively correlated with the EQi-S domains Intrapersonal ($r$ = -.44) and Stress Management ($r$ = -.48), and it was not significantly correlated with the Interpersonal or Adaptability domains. To further explore whether these two EQi-S domains were significant predictors of Negative emotion-focused coping in their own

right, a standard multiple regression was performed with these two variables entered simultaneously as predictors. In total, these two domains together accounted for 29.2% of the variance in Negative Emotion-Focused coping, $F(2, 727) = 150.11$, $p < .001$. Both variables remained significant unique predictors of Negative emotion-focused coping after accounting for their shared variance together: Intrapersonal ($\beta = -.29$, B $= -.27$, $p < .001$, 95% *CI* [-0.33, -0.21]), Stress Management ($\beta = -.35$, B $= -.30$, $p < .001$, 95% *CI* [-0.35, -0.24]). These results suggest that those who had higher Intrapersonal and/or Stress Management competencies were less likely to engage in Negative Emotion-Focused coping.

Proactive Coping was weakly to moderately positively correlated with the Intrapersonal ($r = .14$), Interpersonal ($r = .27$), and Adaptability ($r = .46$) EQi-S domains. Stress Management was not a significant predictor. To further explore whether these three EQi-S domains were significant predictors of Proactive Coping in their own right, a standard multiple regression was performed with these three variables entered simultaneously as predictors. In total, these three domains together accounted for 23.2% of the variance in Proactive Coping, $F(3, 726) = 74.41$, $p < .001$. However, only the Interpersonal ($\beta = .13$, B $= .14$, $p < .001$, 95% *CI* [0.07, 0.22]) and Adaptability ($\beta = .42$, B $= .38$, $p < .001$, 95% *CI* [0.32, 0.45]) domains remained significant unique predictors of Proactive Coping after accounting for their shared variance together, while Intrapersonal did not ($\beta = .07$, B $= .06$, $p = .05$, 95% *CI* [0.00, 0.11]). These results suggest that those who had higher Interpersonal and/or Adaptability competencies were more likely to engage in Proactive coping.

Social Support Seeking was weakly to moderately positively correlated with the Interpersonal ($r = .34$) and Adaptability ($r = .24$) EQi-S domains, and weakly negatively correlated with the Stress Management ($r = -.14$) domain, but it was not significantly correlated

with the Intrapersonal domain. To further explore whether these three EQi-S domains were significant predictors of Social Support Seeking in their own right, a standard multiple regression was performed with these three variables entered simultaneously as predictors. In total, these three domains together accounted for 17.9% of the variance in Social Support Seeking, $F(3, 726)$ = 53.86, $p < .001$. All three EQi-S domains tested remained significant unique predictors after accounting for their shared variance together: Interpersonal ($\beta = .46$, B = .34, $p < .001$, 95% $CI$ [0.36, 0.55]), Adaptability ($\beta = .15$, B = .17, $p < .001$, 95% $CI$ [0.09, 0.25]), and Stress Management ($\beta = -.22$, B = -.20, $p < .001$, 95% $CI$ [-0.27, -0.14]). These results suggest that those who had higher Interpersonal and/or Adaptability competencies were more likely to engage in Social Support Seeking coping, whereas those who had higher Stress Management competencies were less likely to use this coping strategy.

Avoidance coping was weakly to moderately negatively correlated with the Intrapersonal ($r = -.21$) and Stress Management ($r = -.38$) EQi-S domains. The Interpersonal and Adaptability EQi-S domains were not significant predictors. To further explore whether these two EQi-S domains were significant predictors of Avoidance coping in their own right, a standard multiple regression was performed with these two variables entered simultaneously as predictors. In total, these two domains together accounted for 14.5% of the variance in Avoidance coping, $F(2, 722)$ = 62.71, $p < .001$. However, only the Stress Management EQi-S domain remained a significant unique predictor after accounting for their shared variance together ($\beta = -.35$, B = -.24, $p < .001$, 95% $CI$ [-0.30, -0.19]), while the Intrapersonal domain did not ($\beta = -.06$, B = -.05, $p > .05$, 95% $CI$ [-0.11, 0.01]). These results suggest that those who had higher Stress Management competencies were less likely to engage in Avoidance coping.

Acceptance coping was weakly positively correlated with the Interpersonal ($r = .16$) and Adaptability ($r = .15$) EQi-S domains, and weakly negatively correlated with the Intrapersonal ($r = -.10$) and Stress Management ($r = -.19$) EQi-S domains. To further explore whether these four EQi-S domains were significant predictors of Acceptance coping in their own right, a standard multiple regression was performed with these four variables entered simultaneously as predictors. In total, these four domains together accounted for 8.4% of the variance in Acceptance coping, $F(4, 725) = 17.81$, $p < .001$. The Interpersonal ($\beta = .18$, B = .18, $p < .001$, 95% *CI* [0.10, 0.25]), Adaptability ($\beta = .12$, B = .10, $p < .05$, 95% *CI* [0.04, 0.15]), and Stress Management ($\beta = -.14$, B = -.20, $p < .001$, 95% *CI* [-0.19, -0.08]) domains remained significant unique predictors after accounting for their shared variance, while the Intrapersonal domain did not ($\beta = -.07$, B = -.05, $p > .05$, 95% *CI* [-0.11, 0.01]). These results suggest that those who had higher Interpersonal and/or Adaptability competencies were more likely to engage in Acceptance coping, whereas those who had higher Stress Management competencies were less likely to use this coping strategy.

MSPSS was positively correlated with social support seeking ($r = .37$) and proactive coping ($r = .28$), and negatively correlated with negative emotion-focused coping ($r = -.20$). MSPSS was not a significant predictor of Avoidance or Acceptance coping. These results suggest that those who perceived greater social support available to them were more likely to cope using Social Support Seeking and Proactive strategies, and less likely to engage in Negative Emotion-Focused coping. To further explore whether the domains of EQi-S and MSPSS were significant predictors of coping in their own right, a series of standard multiple regressions were performed with predictor variables, that were both correlated at the bivariate level and significant unique predictors of the various coping styles, entered simultaneously (see Table 6).

MSPSS and EQi-S Intrapersonal and Stress Management domains together predicted 29.4% of the variance in Negative Emotion-Focused coping, $F(3, 723) = 101.87$, $p < .001$. All three variables remained significant unique predictors after accounting for their shared variance: MSPSS ($\beta = -.09$, B = -.06, $p < .05$, 95% *CI* [-0.09, -0.01]), Intrapersonal ($\beta = -.27$, B = -.25, $p < .001$, 95% *CI* [-0.32, -0.19]), Stress Management ($\beta = -.35$, B = -.29, $p < .001$, 95% *CI* [-0.35, -0.23]). Thus, all three variable pairs were considered as candidates for the mediation models.

MSPSS and EQi-S Interpersonal and Adaptability domains together predicted 25.6% of the variance in Proactive coping $F(3, 723) = 84.19$, $p < .001$. All three variables remained significant unique predictors after accounting for their shared variance: MSPSS ($\beta = .18$, B = .10, $p < .001$, 95% *CI* [0.06, 0.14]), Interpersonal ($\beta = .08$, B = .09, $p < .05$, 95% *CI* [0.01, 0.17]), and Adaptability ($\beta = .41$, B = .37, $p < .001$, 95% *CI* [0.31, 0.44]). Thus, all three variable pairs were considered as candidates for the mediation models.

MSPSS, and EQi-S Interpersonal, Adaptability, and Stress Management domains together predicted 25% of the variance in Social Support Seeking, $F(4, 722) = 60.13$, $p < .001$. MSPSS ($\beta = .29$, B = .20, $p < .001$, 95% *CI* [0.15, 0.24]) and the EQi-S domains Interpersonal ($\beta = .24$, B = .32, $p < .001$, 95% *CI* [0.22, 0.41]), Adaptability ($\beta = .13$, B = .14, $p < .001$, 95% *CI* [0.07, 0.22]), and Stress Management ($\beta = -.24$, B = -.22, $p < .001$, 95% *CI* [-0.28, -0.16]) were also significant unique predictors of Social Support Seeking even after accounting for their shared variance. Thus, all four variable pairs were considered as candidates for the mediation models.

**Predictors of PTGI**

PTGI was moderately positively correlated with the EQi-S domains Interpersonal and Adaptability (both $r = .32$), and weakly positively correlated with the Intrapersonal domain ($r =$

.14); this is consistent with Hypothesis 2a. However, there was no significant relationship between PTGI and the EQi-S Stress Management domain. PTGI was moderately positively correlated with MSPSS ($r = .38$); this is consistent with Hypothesis 2b. These findings suggests that those who were higher in Trait EI, particularly in the Interpersonal and Adaptability domains, as well as those who perceived greater social support available to them, were more likely to experience PTG.

To further explore whether these predictors (MSPSS, EQi-S Intrapersonal, Interpersonal, and Adaptability) were significant predictors of PTGI in their own right, a standard multiple regression was performed with these four variables entered simultaneously as predictors of PTGI (see Table 7). In total, these four predictors together accounted for 21.5% of the variance in PTGI, $F(4, 723) = 50.84$, $p < .001$. Only MSPSS ($\beta = .26$, B $= .27$, $p < .001$, 95% $CI$ [0.19, 0.33]), Interpersonal ($\beta = .13$, B $= .26$, $p < .001$, 95% $CI$ [0.12, 0.40]), and Adaptability ($\beta = .22$, B $= .35$, $p < .001$, 95% $CI$ [0.24, 0.46]) remained significant unique predictors of PTGI after accounting for their shared variance together, while the Intrapersonal domain did not ($\beta = .04$, B $= .03$, $p > .05$, 95% $CI$ [-0.06, 0.13]). Thus, MSPSS and Trait EI domains Interpersonal and Adaptability were considered for the mediation models predicting PTGI.

Among the coping variables, PTGI was strongly positively correlated with Proactive Coping ($r = .56$) and moderately positively correlated with Social Support Seeking ($r = .38$). These relationships are consistent with Hypothesis 3a, considering that these two coping factors were comprised of problem-focused and proactive emotion-focused strategies. In addition, PTGI was weakly positively correlated with Acceptance Coping ($r = .20$) and Avoidance Coping ($r = .10$). The weak positive correlation with Avoidance coping is consistent with Hypothesis H3b (no prediction was made regarding Acceptance coping). There was no significant relationship

between PTGI and the Negative Emotion-Focused Coping factor, which is consistent with Hypothesis 3c. These findings suggests that those who engaged in proactive coping and social support seeking, and to a lesser extent acceptance coping and avoidance coping, were more likely to experience PTG.

To further explore whether these four Brief-COPE factors were significant predictors of PTGI in their own right, a standard multiple regression was performed with these four variables entered simultaneously as predictors of PTGI (see Table 7). In total, the Brief-COPE factors Proactive Coping, Social Support Seeking, Acceptance, and Avoidance accounted for 32.7% of the variance in PTGI, $F(4, 725) = 89.55$, $p < .001$. However, only Proactive Coping ($\beta = .49$, B = .84, $p < .001$, 95% $CI$ [0.72, 0.95]) and Social Support Seeking ($\beta = .13$, B = .18, $p < .001$, 95% $CI$ [0.08, 0.28]) remained significant independent predictors of PTGI after controlling for the shared variance of all four variables. Acceptance ($\beta = .03$, B = .06, $p > .05$, 95% $CI$ [-0.07, 0.18]) and Avoidance ($\beta = .02$, B = .03, $p > .05$, 95% $CI$ [-0.09, 0.15]) were not unique contributors to PTGI outcomes. Thus, only Proactive Coping and Social Support Seeking were considered for the mediation models predicting PTGI.

### PTGI Mediation Models

Based on the bivariate relationships and results of the multiple regressions described above, the predictor variables that significantly independently predicted PTGI (MSPSS, EQi-S Interpersonal, and EQi-S Adaptability) were carried forward into mediation analyses, to assess their indirect effects on PTGI through the relevant coping variables (Social Support Seeking and Proactive Coping). Relationships that were deemed to be of little practical significance due to their small effect size (under +/- .10) were not carried forward into these analyses. Only triplets of variables that met the conditions for Baron and Kenny's mediation model were carried

forward to mediation analysis. Relationships in which the predictor and mediator did not share the same direction of correlation, or in which the predictor was more strongly associated with the outcome than the proposed mediator variable, were deemed to not meet the requirements for the mediation models and were not analyzed.

**Indirect effect of MSPSS on PTGI through Social Support Seeking.** Linear regressions indicated that MSPSS was a significant predictor of PTGI (path $c$: B = 0.36, SE = 0.03, $p < .01$) and of Social Support Seeking (path $a$: B = 0.25, SE = 0.03, $p < .01$). Standard multiple regression indicated that Social Support Seeking was a significant independent predictor of PTGI (path $b$: B = 0.39, SE = 0.05, $p < .01$) after controlling for MSPSS. It was also revealed that the MSPSS was still a significant predictor of PTGI after controlling for Social Support Seeking (path $c'$: B = 0.26, SE = 0.03, $p < .01$), although this relationship was attenuated. The two predictors together accounted for a total of 20% in the variance of PTGI. The Sobel test indicated that the indirect effect (path $ab$) was significant (z = 5.69, SE = 0.02, $p < .01$). These results are not consistent with Baron and Kenny's conditions for full mediation but indicate partial mediation, thus Hypothesis 4 is only partially supported. Standardized coefficients for this mediation model are presented in Figure 2a.

**Indirect effect of MSPSS on PTGI through Proactive Coping.** Linear regressions indicated that MSPSS was a significant predictor of PTGI (path $c$: B = 0.36, SE = 0.03, $p < .01$) and of Proactive coping (path $a$: B = 0.16, SE = 0.02, $p < .01$). Standard multiple regression indicated that Proactive coping was a significant independent predictor of PTGI (path $b$: B = 0.84, SE = 0.05, $p < .01$) after controlling for MSPSS. It was also revealed that the MSPSS was still a significant predictor of PTGI after controlling for Proactive coping (path $c'$: B = 0.22, SE = 0.03, $p < .01$), although this relationship was attenuated. The two predictors together accounted

for a total of 36.78% in the variance of PTGI. The Sobel test indicated that the indirect effect (path *ab*) was significant (z = 7.22, SE = 0.02, *p* < .01). These results are not consistent with Baron and Kenny's conditions for full mediation but indicate partial mediation, thus Hypothesis 4 is only partially supported. Standardized coefficients for this mediation model are presented in Figure 2b.

**Indirect effect of EQi-S Interpersonal on PTGI through Social Support Seeking.**

Linear regressions indicated that EQi-S Interpersonal domain was a significant predictor of PTGI (path *c*: B = 0.61, SE = 0.07, *p* < .01) and of Social Support Seeking (path *a*: B = 0.46, SE = 0.05, *p* < .01). Standard multiple regression indicated that Social Support Seeking was a significant independent predictor of PTGI (path *b*: B = 0.42, SE = 0.05, *p* < .01) after controlling for the EQi-S Interpersonal domain. It was also revealed that the EQi-S Interpersonal domain was still a significant predictor of PTGI after controlling for Social Support Seeking (path *c'*: B = 0.41, SE = 0.07, *p* < .01), although this relationship was attenuated. The two predictors together accounted for a total of 18% in the variance of PTGI. The Sobel test indicated that the indirect effect (path *ab*) was significant (z = 6.20, SE = 0.03, *p* < .01). These results are not consistent with Baron and Kenny's conditions for full mediation but indicate partial mediation, thus Hypothesis 4 is only partially supported. Standardized coefficients for this mediation model are presented in Figure 2c.

**Indirect effect of EQi-S Adaptability on PTGI through Proactive Coping.** Linear regressions indicated that EQi-S Adaptability domain was a significant predictor of PTGI (path *c*: B = 0.50, SE = 0.05, *p* < .01) and of Proactive Coping (path *a*: B = 0.46, SE = 0.05, *p* < .01). Standard multiple regression indicated that Proactive Coping was a significant independent predictor of PTGI (path *b*: B = 0.90, SE = 0.06, *p* < .01) after controlling for the EQi-S

Adaptability domain. It was also revealed that the EQi-S Adaptability domain was still a significant predictor of PTGI after controlling for Proactive Coping (path *c'*: B = 0.12, SE = 0.05, *p* < .05), although this relationship was attenuated. The two predictors together accounted for a total of 32% in the variance of PTGI. The Sobel test indicated that the indirect effect (path *ab*) was significant (z = 6.77, SE = 0.03, *p* < .01). These results are not consistent with Baron and Kenny's conditions for full mediation but indicate partial mediation, thus Hypothesis 4 is only partially supported. Standardized coefficients for this mediation model are presented in Figure 2d.

**Predictors of DASS**

DASS was moderately negatively correlated with the EQi-S domains Intrapersonal and Stress Management (both *r* = -.45) and with MSPSS (*r* = -.29), and it was weakly negatively correlated with the Interpersonal domain (*r* = -.08). These findings suggest that those who were higher in trait EI, particularly in intrapersonal and stress management domains, as well as those who perceived greater social support available to them, were less likely to experience symptoms of depression, anxiety, and stress.

To further explore whether these predictors (MSPSS, and EQi-S domains Intrapersonal, Interpersonal, and Stress Management) were significant predictors of DASS in their own right, a standard multiple regression was performed with these four variables entered simultaneously as predictors of DASS (see Table 7). In total, these four domains together accounted for 33.3% of the variance in DASS, $F(4, 722) = 91.66$, $p < .001$. All four variables remained significant unique predictors of DASS after accounting for their shared variance: MSPSS ($\beta$ = -.25, B = -.15, $p < .001$, 95% *CI* [-0.19, -0.11]), Intrapersonal ($\beta$ = -.30, B = -.28, $p < .001$, 95% *CI* [-0.34, -0.21]), Interpersonal ($\beta$ = .16, B = .20, $p < .001$, 95% *CI* [0.12, 0.28]), and Stress Management

($\beta$ = -.32, B = -.26, $p$ < .001, 95% $CI$ [-0.31, -0.21]). Interestingly, the relationship of the Interpersonal domain with DASS switched direction from negative to positive after controlling for its overlap with the other predictors in the model. Although the partial correlation between DASS and the Interpersonal domain was statistically significant, the very small and unstable effect size ($r$ < .10) should be kept in mind when interpreting the practical significance. Thus, MSPSS and Trait EI domains Interpersonal, Intrapersonal, and Stress Management were considered for the mediation models predicting DASS.

The coping correlates of DASS were quite different from those of PTGI. DASS was strongly positively correlated with Negative Emotion-Focused Coping ($r$ = .66) and moderately positively correlated with Avoidance ($r$ = .41). DASS was also weakly positively correlated with Social Support Seeking ($r$ = .21) and Acceptance ($r$ = .20). DASS was not significantly correlated with Proactive Coping. These findings suggests that those who engaged in coping through negative emotion-focused coping, avoidance, acceptance, and social support seeking were more likely to experience symptoms of depression, anxiety, and stress. Engaging in proactive coping was not associated with the negative psychological outcomes of depression, anxiety, and stress.

To further explore whether these four Brief-COPE factors were significant predictors of DASS in their own right, a standard multiple regression was performed with these four variables entered simultaneously as predictors of DASS (see Table 7). In total, the Brief-COPE factors Negative Emotion-Focused, Avoidance, Social Support Seeking, and Acceptance accounted for a substantial 44.8% of the variance in DASS, $F(4, 724)$ = 148.55, $p$ < .001. However, only two coping factors remained significant independent predictors of DASS after controlling for the shared variance: Negative Emotion-Focused coping ($\beta$ = .60, B = .58, $p$ < .001, 95% $CI$ [0.52,

0.65]) and Avoidance ($\beta$ = .11, B = .12, $p$ < .05, 95% *CI* [0.05, 0.20]). The partial correlations were no longer significant for Social Support Seeking ($\beta$ = .00, B = .00, $p$ > .05, 95% *CI* [-0.05, 0.05]) and Acceptance ($\beta$ = .04, B = .06, $p$ > .05, 95% *CI* [-0.01, 0.13]). Therefore, only Negative Emotion-Focused coping and Avoidance were considered for the mediation models with DASS.

### DASS Mediation Models

Based on the bivariate relationships and results of the multiple regressions described above, the predictor variables that independently predicted DASS (EQi-S domains Intrapersonal and Stress Management) were carried forward into mediation analyses, to assess their indirect effects on DASS through Negative Emotion-Focused Coping. Relationships that were deemed to be of little practical significance due to their small effect size (under +/- .10) were not carried forward into these analyses. As with the PTGI mediation analyses, only triplets of variables that met the conditions for Baron and Kenny's mediation model were carried forward to the DASS mediation analyses. Again, relationships in which the predictor and mediator did not share the same direction of correlation, or in which the predictor was more strongly associated with the outcome than the proposed mediator variable, were deemed to not meet the requirements for the mediation models and were not analyzed.

**Indirect effect of EQi-S Intrapersonal on DASS through Negative Emotion-Focused Coping.** Linear regressions indicated that the EQi-S Intrapersonal was a significant predictor of DASS (path *c*: B = -0.26, SE = 0.03, $p$ < .01) and of negative emotion-focused coping (path *a*: B = -0.41, SE = 0.03, $p$ < .01). Standard multiple regression indicated that Negative Emotion-Focused coping was a significant independent predictor of DASS controlling for the EQi-S Intrapersonal domain (path *b*: B = 0.56, SE = 0.03, $p$ < .01). It was also revealed that the EQi-S

Intrapersonal domain was still a significant predictor of DASS after controlling for Negative

Emotion-Focused coping (path $c'$: B = -0.18, SE = 0.03, $p < .01$), although this relationship was

attenuated. The two predictors together accounted for a total of 47% in the variance of DASS.

The Sobel test indicated that the indirect effect (path $ab$) was significant ($z$ = -11.03, SE = 0.02,

$p < .01$). These results are not consistent with Baron and Kenny's conditions for full mediation

but indicate partial mediation. Standardized coefficients for this mediation model are presented

in Figure 3a.

**Indirect effect of EQi-S Stress Management on DASS through Negative Emotion-**

**Focused Coping.** Linear regressions indicated that the EQi-S Stress Management domain was a

significant predictor of DASS (path $c$: B = -0.37, SE = 0.03, $p < .01$) and of negative emotion-

focused coping (path $a$: B = -0.57, SE = 0.04, $p < .01$). Standard multiple regression indicated

that Negative Emotion-Focused coping was a significant independent predictor of DASS

controlling for the EQi-S Stress Management domain (path $b$: B = 0.57, SE = 0.03, $p < .01$). It

was also revealed that the EQi-S Stress Management domain was still a significant predictor of

DASS after controlling for Negative Emotion-Focused coping (path $c'$: B = -0.14, SE = 0.03, $p <$

.01), although this relationship was attenuated. The two predictors together accounted for a total

of 46% in the variance of DASS. The Sobel test indicated that the indirect effect (path $ab$) was

significant ($z$ = -11.40, SE = 0.03, $p < .01$). These results are not consistent with Baron and

Kenny's conditions for full mediation but indicate partial mediation. Standardized coefficients

for this mediation model are presented in Figure 3b.

**Qualitative Analysis of Students' Experience During COVID19**

The responses of participants who provided answers to the open-ended question about

any positive impacts of the COVID19 pandemic ($N = 750$) were explored using Conceptual

Content Analysis, to identify the existence of content consistent with the PTG construct in participants' answers ($n = 589$) answers. Participants who used language consistent with PTG in their answer were grouped together and brought forward into further qualitative analysis. Next, exploratory Thematic Analysis was used to explore the data provided by those who responded with answers consistent with PTG, to address Research Question 1: In their own words, how do individuals conceptualize and describe their experiences of PTG and coping during the COVID19 pandemic

The following five themes were uncovered: Social Connectedness (Social Support, Common Humanity, and Strengthened Relationships), Helpful Coping Strategies (Self-Care and Distraction), Income and Financial Support, New Opportunities (Increased free time, New interests), and Appreciation of Life (Self-Reflection, Gratitude). See Table 8 for more information on these themes.

### *Social Connectedness*

Social Connectedness was a strong theme that emerged, and consisted of three subthemes: Social Support, Common Humanity, and Strengthened Relationships. Social Support and Common Humanity were both identified as helpful during the pandemic, and Strengthened Relationships were discussed as a positive effect of the pandemic.

**Social Support.** Social Support emerged as a strong subtheme of Social Connectedness, with participants citing a breadth of social support sources including significant others, family, friends, co-workers, university staff/faculty, and community groups. Social support was identified as a way to prevent feelings of loneliness and isolation, and one participant identified that their family helped in this way and shared, "My family has been very helpful as I live with my sisters and parents so I did not feel isolated as others may have felt alone during the

pandemic" (Participant #83305). Just as social support came from a variety of sources, it was reported in a variety of forms. Both emotional support, such as having someone to discuss one's emotions and thoughts with, and instrumental support, such as having someone who could share resources or assist with self-care tasks, were identified.

One participant identified a mix of emotional and instrumental support when they said, "What has been helpful to me during the pandemic would be the love and support I receive from my partner. He tries to engage with me when I mention anything about my studies and tries to understand the content with me. He also reminds me to take breaks while studying and to not skip any of my meals" (Participant #83311). Another participant shared that they were able to receive instrumental support from others they were connected to online: "Having online support groups for obtaining cleaning supplies and people to relate [to] who are going through the same issues." (Participant #83185). Another participant identified instrumental support their roommates provided; when asked about what was helpful during the pandemic they said, "My roommates. They gave me a way to be social and have a community. We were able to create a stable workout routine every day. We also played video games and watch media together every day" (Participant #83761).

Emotional and practical support also seemed to converge at times, with participants identifying it was helpful having others to engage in activities with to improve their mood and well-being, and to distract them from the pandemic. One participant mentioned that they coped by engaging in physical exercise with their family, as a means of distraction and said, "Being close to family also helped a lot, spending time going for walks or playing tennis took my mind off upsetting things and let us just relax" (Participant #83599). Another participant identified that spending time with their roommates as distraction was helpful, "Being with my roommates.

They can relate to my difficulties and help distract me from them" (Participant #79621). Being close, virtually or in person, with others, such as family and peers was identified as helpful.

**Common Humanity**. When asked what had been helpful to them during the pandemic, many participants referred to finding comfort in the shared experience aspect of the pandemic, which could be described as a sense of common humanity. They explained that knowing others were going through the same things was helpful. as it allowed them to feel less alone. One participant expressed this sentiment when they said, "The knowledge that I am not alone, that other people felt the whirlwind of emotions that I felt from the beginning of the pandemic [until] now" (Participant #75280), in response to what was helpful to them. Another identified being able to discuss their feelings with others experiencing the same thing was helpful when they said, "Being able to talk to people and realize that most people are in the same boat and feeling similar emotions to me" (Participant #79291). Another participant explained that social media helped to facilitate this sense of shared experience and made them feel less alone, and said "To be honest, TikTok has helped me during the pandemic. Seeing people my age go through the same thing as me, feeling the same way reminded me that I am not alone" (Participant #83302). Thus, Common Humanity included a sense of not only not being alone but also feeling that others understood their experience.

**Strengthened Relationships.** Strengthened relationships was a strong theme when participants described what positive effect the pandemic had on them. Participants often cited their strengthened relationships with significant others, friends, family, and coworkers as a positive effect of the pandemic. The mandated pandemic safety measures, such as social distancing and stay at home orders, led to increased time at home for many and, in turn,

increased time spent with the individuals they shared that space with. Many participants identified spending more time together as a facilitator for strengthening these relationships. One participant shared how their relationship with their mother improved due to this increased time together and explained, "As my travel plans got postponed, I got an opportunity to spend more time with my mom. Which was honestly the best thing to ever happen to me" (Participant #83032). Similarly, another participant said, "I spent a lot of time with my family, and because of that I feel now more than ever I am really close with them, and I don't know where I would be without them" (Participant #83674). However, relationships with those outside of the home or workplace were also mentioned, and participants identified technology as a key component in maintaining and strengthening these connections. One such participant expressed the benefit of virtual connection when they said, "My social life, relationships and friendships, improved as we all would often connect virtually and be there for each other during such difficult times" (Participant #81904). A variety of types of relationships were strengthened through the pandemic, through increased time together, intentional connection, and mutual support.

### Helpful Coping Strategies

Two key coping strategies emerged from participants' responses about what was helpful to them during the pandemic: Self-Care and Distraction.

**Self-Care.** Self-care, focused on both physical and mental health, was identified as a theme amongst what was helpful. Participants identified prioritizing regular exercise, cooking, focusing on nutrition, and prioritizing sleep. Participants also identified self-care strategies for mental well-being such as engaging in counselling and mental health resources, self-reflection, journaling, and meditation. One participant described engaging in self-care and activities they enjoy as a way of managing their mood and stress when they said,

"I found that exercising was extremely helpful, there was a point [where] I did not know

what to do and felt useless siting in my bed the whole day, and beginning to workout

really helped me to feel more positive and motivated. Listening to music and doing

something to relieve my stress, like yoga or playing games with family, also helped"

(Participant #84157).

Self-care emerged as an intentional coping strategy, which individuals engaged in to not only

promote wellness but improve their affective state in the moment.

**Distraction.** As forementioned, distraction from the stress of the pandemic was identified

as a helpful facet of social support. Engaging in activities as a means of distraction from the

stress of the pandemic was also identified as a helpful coping strategy outside of the context of

social support. Participants often mentioned the use of activities such as exercise and physical

activity, music and arts, cooking, meditation, and spending time in nature as helpful during the

pandemic. Work and studies were also identified as helpful, as they provided activities to focus

on. One participant shared "Running has really cleared my head" (Participant #82879), and

another shared "My hobbies and homework have given me focus in the chaos" (Participant

#83017). Participants often shared they were trying to stay busy despite an increase in time due

to the loss of activities that normally filled their pre-pandemic schedules. There was a degree of

overlap between the subthemes of Self-Care and Distraction, as participants identified using

activities oriented towards physical and mental wellness when describing how they achieved

self-distraction.

The terms 'distraction' and 'escape' were commonly used when participants were

describing how engaging in these activities made them feel, or what it provided for them. One

participant described the escape that art provided them, and how this method of distraction allowed them to become absorbed in the process and control what their focus was on,

"Something that has been helpful for me during the pandemic is my art. I paint, draw, and most recently began to dive into learning how to create digital art. This has been not only time consuming to make long days seem shorter but also allowed me to escape the unfortunate state of our world and dive into a reality I create in my head where something only I allow in exists" (Participant #84430).

Another participant described the temporary escape that reading provided them with,

"I started to read books again throughout the pandemic. This is something that has been a favourite past time of mine, and since I started university, I haven't had time to read for fun. I found it a great way to escape if only for a little bit" (Participant #79093).

Distracting oneself by maintaining routines that provided a sense of similarity to pre-pandemic life was another form of distraction identified. One participant described the sense of normalcy they achieved through leaving the house and visit open stores and how this helped when they said "Being able to go to Tim Hortons every morning and being able to go to Dollarama these places were never closed completely So it kept me thinking its something normal. Normalcy helps when things are not normal" (Participant #77764). Given the mandated closures of many non-essential stores and services within Ontario, what some previously considered to be just routine shopping and purchases pre-pandemic became an important element of structure they could maintain in their lives during the pandemic. Another participant identified that work provided them with a sense of routine and normalcy through the opportunity to socialize outside of the house and said "I worked during the pandemic, I found it very helpful. I was able to have a routine, get out of the house, and socialize with my coworkers and customers

safely. It made everything seem more normal and made me feel less trapped in the house"
(Participant #83848). The sense of normalcy that many participants identified as helpful came
from a variety of sources and activities. Another participant described how routine physical
activity benefitted them when they shared that "Maintaining some semblance of a normal routine
and making sure I stay physically active is very helpful for me. It helps me stay focused on my
work and allows me to clear my head from negative thoughts" (Participant #83446). Distraction
as a coping strategy seems to range from more intentional and short-term distraction as a means
of escape to more subtle distraction by making the pandemic less salient in day-to-day life by
emulating similarity to pre-pandemic activities and routines.

### *New Opportunities*

A strong theme of New Opportunities also came through in participants' responses about
positive effects of the pandemic, consisting of the subthemes of Increased Free Time and New
Interests. One participant described the element of opportunity for change that the pandemic
presented for some when they said, "I guess you could say that it was the catalyst for a change
that needed to happen in my life" (Participant #83593). There was a high level of overlap
between the subthemes of New Opportunities, in that increased free time is what facilitated the
opportunity for individuals to take up new interests.

**Increased Free Time.** Due to the reduction or complete halt of many day-to-day
activities due to the pandemic, many reported an increase in free time. Increased free time was
commonly reported as a positive effect of the pandemic, and there were a variety of ways
participants reported using that time. Many shared that this additional free time allowed them to
spend more time with friends and family, prioritizing self-care, and engaging in old and new
hobbies and interests. Participants often indicated they felt they did not have the time to engage

in these activities as much as they would have liked to before the pandemic happened, for example one participant said "…usually in school I got no time to learn or discover new skills due to the study load, but because of the pandemic I have learned how to cook properly and do yoga everyday, along with meditation, which brings in a very positive and good energy to me. Exercising has become a habit now and I am very happy for finally getting the time to do what I always wanted to do and learn" (Participant #82912).

Many participants also shared they used their free time as an opportunity to reflect on themselves and contemplate changes in their life. One participant described this increased time as an opportunity to process their thoughts and the past events in their life:

"During the summer it also gave me a lot of time to be alone with my thoughts and to process things that I had not during the school year. It gave me time to "catch up" with myself and I went a month feeling really good" (Participant #80224).

The increased free time mentioned by participants was attributed as a unique side effect of social distancing, lockdown measures, and other disruptions to typical routines related to the pandemic, and it was identified that this free time may not have otherwise been a reality for them outside of the pandemic.

**New Interests.** Increased free time was commonly reported as a positive effect of the pandemic, and there were a variety of ways participants reported using that time. Many shared this additional free time allowed them to return to old interests or establish new interests. Participants often indicated they felt they did not have the time to do this before the pandemic. One participant shared how the time away from their usual obligations allowed them to explore new interests: "It has given me an opportunity to find interests outside of the very competitive sport that consumed my life for the last 10 years and the beginning of quarantine gave me a

chance to have a break…" (Participant #84235). Another participant shared "… I developed a few new hobbies that I didn't think I would appreciate but now have as new coping mechanisms…" (Participant #81904), identifying that their new interests have even provided them with a way to cope in difficult situations.

### *Appreciation of Life*

Appreciation of Life was another strong theme that arose from participants' responses about positive impacts of the pandemic. This theme consists of the subthemes Self-Reflection and Gratitude.

**Self-Reflection.** Time outside of typical pre-pandemic routines and obligations appeared to also provide an opportunity to engage in self-reflection. One participant shared that being away from others and not engaging in as many social activities allowed them time to reflect on themselves and their relationships and explained that:

> "Having a significant amount of time away from the social aspects of life has given me time to reflect on myself I have been able to reflect on things that I want to change in the future, I have reflected on things I have to change about myself, and I have been able to reflect on friendships and relationships in my life and whether or not they are heathy or unhealthy for me to be a part of" (Participant #83617).

Some participants described experiencing the pandemic itself as an opportunity for reflection and growth. One participant shared "It's helped me realize what is most important in life, and to consider what things are unnecessary or materialistic" (Participant #84082), and another said "During these 6 months I feel like I have realized more that the world does not revolve around me. Which was a hard thing to learn but has made me a better human being" (Participant #83830). Realizations of core values and shifts in perspective and awareness were commonly

described. Participants shared that through self-reflection they became more self-aware of their experiences in relation to others. One participant spoke to this self-awareness when they said, "I became very aware of how fortunate I am and my current living conditions. While I might be lonely or feel isolated, there are those who are in much tougher situations" (Participant #84274). The subtheme of Self-reflection was about the opportunity and motivation the pandemic provided to reflect on a variety of things, including oneself and their life circumstances, goals, values, and relationships.

**Gratitude.** A positive change in appreciation of life was commonly identified, in relation to gratitude for things such as relationships with friends and family, access to resources and stability, and life in a more general sense. One participant described an increased appreciation for their life, and the resources and relationships they have and explained,

"I also find myself appreciating more of my life in general, the friends I have, the family that takes care of me, my wonderful partner, the things I own, the fact I was able to find work during the pandemic, everything. Though things are very much still difficult for me, I feel prepared for what's to come in my life" (Participant #83599).

Another participant identified that the pandemic helped them reflect back on and value the simplicity of their life before the pandemic and described it as an important lesson, stating:

"The pandemic has shown me how quickly the world can change to accommodate something like this. It has taught me to not take things for granted, thinking back to simpler times before the virus hit" (Participant #80629).

The Gratitude subtheme conveys that participants were able to engage in perspective taking during the pandemic, and more specifically they were able to reflect on their lives and experiences with a sense of gratitude.

*Income and Financial Support*

Participants shared that access to income and financial support was very helpful during the pandemic and eased financial stress. Individuals who were able to maintain or secure employment reported that this was helpful to them. Programs such as Canada Emergency Student Benefit (CESB), Canada Emergency Response Benefit (CERB), temporary wage increases, and bursaries were also commonly identified as helpful. Some participants identified family as a helpful source of financial support. One participant highlighted the importance of access to financial support in meeting their basic needs: "Government funding, without it I wouldn't have a home because my job was on hold during the pandemic" (Participant #79744). Access to income and/or financial support can be understood as an important resource during the pandemic and was reported within the group of those who reported experiences using language consistent with post-traumatic growth.

## Discussion

This study was undertaken between late October and early December 2020 to explore the relationships between posttraumatic growth (PTG), posttraumatic distress (PTS), coping, trait Emotional Intelligence (EI), and perceived social support in university students during the COVID19 pandemic. Given the novelty of the pandemic context, a major aim was to document the prevalence and nature of PTG experiences both quantitatively, using a well-established measure of PTG, and qualitatively, by asking students to describe positive impacts of the pandemic in their own words. We also included multiple indices of PTS to better ascertain that PTG and distress can coexist and are two unique phenomena, thus providing further validation of the PTG construct. It was also of interest to explore the independent and shared contributions of the variables Trait EI and perceived Social Support in predicting levels of PTG during the

COVID19 pandemic, and whether coping mediated these relationships. These multivariate analyses extended past research by employing multi-dimensional conceptualizations of Trait EI and coping, to provide a more nuanced understanding of specific personal resources and processes associated with PTG. Additionally, given the inconsistent conceptualizations and categorizations of coping in the literature, it was important to explore coping using a mixed methods approach, and uncover how individuals described their experiences of coping during the pandemic. Like for PTG, this approach provided further clarity on what adaptive coping looked like in this context, informed by a valid quantitative measure of coping but also by inviting participants to identify in their own words what strategies they found most helpful in relation to the unique context and constraints of the pandemic.

**Students' Experiences of PTG**

On average, the present sample reported moderate levels of PTG across all PTGI domains except Spiritual Growth, which was weakly endorsed, and a low to moderate level of psychological distress (depression, anxiety, stress). This represents a fairly resilient profile, considering that participants reported experiencing an average of four negative life events since the beginning of the pandemic that were perceived to be "definitely" or "extremely" stressful (e.g., major financial pressures, serious health problems). When compared to other student surveys collected during the first year of the pandemic, the level of PTG in the present sample was similar or higher. Some studies (e.g., Dominick, 2022; Hyun et al., 2021; Van der Hallen & Godor, 2022) found lower levels of PTG than our sample, while others (e.g., Hao et al., 2023; Xie & Kim, 2022) found moderate levels of PTG similar to our sample. To understand these differences in PTG prevalence rates, it is important to analyze the methodological differences

present, namely measurement time in relation to the pandemic and other stressful events, and geographic location of the sample.

Measurement within these sets of studies with differing PTG levels were conducted at different times during the pandemic, but with some timeline overlap. Van der Hallen and Godor (2022) conducted their measurements in May 2020 and again in May 2021, Hyun et al. (2021) collected their data between Fall 2020 and Spring 2021, and Dominick (2022) conducted four measurements between March 2020 and March 2021. All three studies reported low levels of PTG at their respective time points. However, the present study was conducted from mid-October until early December of 2020, while Xie and Kim (2022) conducted their study in late April to early May of 2021 and reported similar PTG levels to this study, despite being conducted several months further into the pandemic. In contrast, Hao et al. (2023) recorded similar levels of PTG at the very start of the pandemic in March 2020.

It is unclear whether time of measurement has influenced these differing results, as they have all fallen relatively within the first year of the pandemic. However, perception of the status of the stressful events as ongoing or resolved may play a part in this. Dominick (2022) found that participants who viewed their stressful events as resolved were more likely to report PTG. The present data were collected approximately two and a half years prior to May 2023, when The World Health Organization declared the COVID19 pandemic to be over (The World Health Organization, 2023). As such, it is unlikely that participants viewed the stressful event of the pandemic itself as resolved. However, they were not asked whether the other negative life events they reported were perceived as ongoing, so it is possible that their levels of PTG were linked to the perception of those events being resolved.

It is possible that geographic location has influenced these discrepancies. The studies by Dominick (2022) and Hyun et al. (2021) were conducted with participants in the United States, and Van der Hallen and Godor (2022) was conducted with participants living in the Netherlands. While the present study was conducted in Canada, and studies by Hao et al. (2023) and Xie and Kim (2022) were conducted with participants predominantly living in China and Sweden. There are distinct country-specific differences in the impact and response measures to COVID19 that could influence one's experience of PTG. For example, the United States is estimated to have the second highest cumulative COVID19 deaths in the world (Pasovic et al., 2021). Further research should be done to explore the geographic differences in the prevalence of PTG related to the pandemic. While the present study explored the prevalence of PTG in a Canadian context, it is important to note that the level of PTG in the present sample may not be representative of Canadian students in general. Thus, the level of PTG found in this study should only be considered to reflect this specific sample.

Looking at domain specific endorsement of PTG, Appreciation of Life, Personal Strength, and Relating to Others were the three most highly endorsed PTGI domains in the present sample, whereas Spiritual Growth was the least frequently endorsed domain. This PTGI profile is similar to that found in other student samples (e.g., Morris et al., 2005; Silverstein et al., 2018; Tedeschi et al., 2017; Xie & Kim, 2022). When comparing the quantitative and qualitative findings, there are clear similarities across the patterns of PTGI domain endorsement and what participants identified to be positive impacts of the pandemic. The theme of Social Connectedness, particularly the subtheme of Strengthened Relationships is consistent with the PTGI domain Relating to Others. The theme of New Opportunities (Increased Free Time and New Interests) is consistent with the PTGI domain of New Opportunities. Additionally, the

subtheme of New Interests was consistent with other literature on COVID19 pandemic experiences, such as a survey by Shulz (2021) that found a large portion (59%) of respondents had taken up a new hobby during the pandemic, including hobbies that the majority of them (79%) wanted to continue even after the pandemic ended. The theme of Appreciation of Life (Self-Reflection and Gratitude) also emerged from participants' responses when discussing what positive impacts the pandemic had. This theme maps onto the PTGI domain of Appreciation of Life, which was strongly endorsed by the sample. However, Personal Strength, although identified as the second highest endorsed PTGI domain, did not emerge as a theme in the qualitative data, which is inconsistent with the quantitative findings.

The low endorsement of the PTGI domain Spiritual Change was also further reflected in the limited identification of positive changes in spirituality or faith in the qualitative data. Content consistent with Spiritual Changes was mentioned very rarely among the participants who discussed growth related experiences. This may only speak to the low levels of religiosity or spirituality of this sample, rather than to the capacity for spiritual growth facilitated by stressful life events such as COVID19 in those who are already spiritual or religious. However, this finding is consistent with other studies (Dominick, 2022).

**Relationship Between PTG and PTS**

Hypothesis 1 predicted that PTG would be non-significantly or only weakly positively correlated with various indices of PTS, reflecting the notion that these are two distinct phenomena that can coexist. Consistent with this hypothesis, it was found that those who had one or more psychological/psychiatric disorder were no less likely to experience PTG than those who did not have a psychological/psychiatric disorder. This adds further support to the conceptualization that PTG is not merely the absence of negative psychological symptoms, such

as depression, anxiety, and stress, as many individuals with psychological/psychiatric disorders experience these symptoms related to their disorder. Otherwise, one would anticipate that those who experienced these symptoms due to such disorders would be less likely to experience PTG, which was not the case. This finding is also important as it speaks to the resilience that individuals are capable of despite the negative consequences of traumatic events or the vulnerabilities that pre-existing mental health conditions present.

The number of negative life events one experienced and the perceived severity of these events positively predicted symptoms of depression, anxiety, and stress. In contrast, the number of negative life events one experienced did not significantly predict PTG, and the perceived severity of these events was only weakly positively correlated with PTG. Similarly, PTG was not significantly associated with symptoms of anxiety and perceived stress. These findings are consistent with Hypothesis 1 and build further support for the conceptualization of PTG as more than merely the absence of negative psychological consequences of trauma. The only result that was inconsistent with Hypothesis 1 was a weak negative correlation between PTG and depression, even after omitting cross-correlated and similarly worded items. Some previous studies have also found a negative correlation between PTG and depression (Guo et al., 2017), suggesting that depression may serve as a barrier to experiencing PTG. Given that one of the characteristics of depression is a negative self and world concept (Beck & Alford, 2009) it is logical that this negative mindset could hinder one's ability to engage in positive cognitions such as the benefit finding and positive attributions of self and the world characteristic of PTG. Additionally, depression is characterised by lower motivation and behaviour disengagement (Beck & Alford, 2009), which conflicts with the nature of the coping strategies that are predictive of greater PTG, such as proactive emotion-focused and problem-focused coping

strategies (Eissenstat et al., 2022; Platte et al., 2022). However, given that the present study is correlational, directional conclusions about the relationships between depression, coping, and PTG cannot be made.

Previous meta-analyses of the relationship between PTG and PTS found a weak to moderate positive overall effect, but they also found a high degree of heterogeneity across studies (Liu et al., 2017; Shakespeare-Finch & Lurie-Beck, 2014). For example, some studies found that PTG and PTS were not significantly associated at a global level (Yi & Kim, 2014), and contrary to the findings of other studies (Kleim & Ehlers, 2009; Liegey Dougall et al., 2017; Guo et al., 2017). Given the varying findings within the literature in this area, this relationship should continue to be explored, with the caveat that this research needs to capture a variety of traumatic stressor characteristics and contexts. Further research should also be done with a consistent PTG measure, specifically the PTGI (Tedeschi & Calhoun, 1996), as it is the most consistently used (Marziliano et al., 2019). Additionally, a consistent measure of negative psychological outcomes should be use, and more specifically one that is applicable to the general public, such as the DASS-21 (Lovibond & Lovibond, 1995), rather than a measure designed for those experiencing PTSD or other clinical samples. This will allow for easier comparison across the literature and help to rule out measurement as a source of the conflicting results surrounding the relationship between PTG and the negative psychological consequences of trauma. It would also allow for more generalizable results and in turn, more widely applicable recommendations on facilitating PTG during stressful times.

**Coping in the Context of COVID19**

Social distancing and lockdown requirements during the COVID19 pandemic presented challenges to accessing social support and engaging in stress reducing activities that may have

been more easily accessible before these pandemic related measures, and thus individuals'

typical coping repertoire may have been challenged. Given the disagreement in the literature

surrounding coping measurement and which strategies are most appropriate for which situations,

exploring coping both quantitatively and qualitatively provided useful insight into what students'

coping strategies looked like during the pandemic.

A principal components analysis of the Brief COPE produced five coping factors in the

present study: Proactive coping (problem-focused coping, planning, positive reframing), Social

support seeking (use of emotional and instrumental support, venting), Negative Emotion-focused

coping (self-blame, rumination, behavioural disengagement), Avoidance (denial, substance use),

and Acceptance (acceptance, humour, self-distraction through media). This was not entirely

consistent with the findings of other studies in this area. For example, Chu et al. (2022)

examined Emotion-Focused coping as a category consisting of proactive emotion-focused

strategies such as support-seeking, positive reframing, and humour. While the current study

began with the same coping measure (Brief-COPE) as Chu et al. (2022), the results of the

principal components analysis of item responses produced coping categories that were distinct

from those of Chu et al. (2022). In the present study, the strategies deemed to be Emotion-

Focused coping by Chu et al. (2022) were broken out into separate categories, including Social

Support Seeking (includes instrumental and emotional support items), Proactive coping (includes

positive reframing items), and Acceptance coping (includes humour items).

However, it is important to note the variance amongst coping conceptualizations and

measures is a persistent issue across studies. The current study parsed out which coping

strategies more specifically were linked to positive and negative psychological outcomes during

the COVID19 pandemic. Methodological strengths of the present study include both the use of

the Brief COPE (Carver et al., 1989) and the measure's wide variety of coping strategy items, and the factor analysis approach to analyzing and grouping coping strategies within the context of the pandemic, the sample, and the dataset, rather than testing an a-priori coping model. Given the data driven categorization of coping within the unique stressor context of the COVID19 pandemic, the present study provides a context-specific representation of coping and PTG.

The coping categories of Acceptance, Proactive coping, and Social Support Seeking were moderately endorsed in the present sample, whereas Avoidant and Negative Emotion-Focused coping strategies were less frequently used. This indicates both a relatively varied repertoire of employed coping strategies and a generally adaptive coping profile, when paired with the moderate to high levels of PTG, low levels of depression, anxiety, and stress, and the positive relationship between the Adaptability domain of trait EI and PTG. Although causal relationships cannot be concluded from this study, the findings produced in this study build further support for the idea of coping flexibility and the findings of Cheng et al. (2014); in that those with a wide variety of coping strategies and the ability to adapt and deploy coping strategies based on the unique characteristics of the stressor and unique context and demands of the stressor were more likely to experience positive outcomes, namely PTG.

Looking at participants' qualitative responses about what was helpful during the pandemic, the theme of Social Connectedness could be mapped onto the factor of Social Support Seeking, which encompassed reliance on emotional and instrumental supports. This theme is discussed in more detail in the next section on the role of social support. The theme of Helpful Strategies, which included the subthemes of Self-Care and Distraction, could be mapped onto the factors of Proactive and Acceptance coping. The theme of Self-Care is consistent with the factor of Proactive coping, which included active problem-solving and emotion-regulation strategies.

The theme of Distraction is consistent with the factor of Acceptance, which included accepting the situation as is and re-directing attention towards other activities. Given that the locus of control was largely outside of individuals, beyond following recommended pandemic health measures, it is not surprising that the helpful strategies identified were focused on finding ways to take care of oneself within the scope of their control and available resources. As the COVID19 virus is a threat to one's health, it is logical that individuals may have been more conscious of their physical health and responded to this situation by engaging in self-care through health-promoting behaviours, such as exercise. Focusing on what was available and within their control maps onto a Problem-Focused coping approach.

Participants also discussed distraction as a means of helping themselves through the pandemic, both through engaging in activities that allowed them to escape their current circumstances and emotions, and participating in tasks that provided a sense of pre-pandemic normalcy. Self-distraction is typically conceptualized as Avoidance coping within other coping measures, such as the Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990) or Coping Style Questionnaire (CSQ; Roger et al., 1993). Unfortunately, by categorizing self-distraction strategies together with other less helpful avoidance behaviours such as substance use, as is commonly done, the benefit of avoidance through distraction in some contexts would be overlooked. Given that many of the activities and routines people used to engage in before the pandemic became unavailable or much less accessible, and that the pandemic was largely outside of the control of individuals, it is understandable that avoidance through distraction was regularly identified as helpful in the context of the pandemic. This may explain why self-distraction items of the Brief COPE fell within the Acceptance factor in the present study (alongside humour), as opposed to the Avoidance factor (alongside substance use). Thus, gathering qualitative data

about participants' coping strategies within the unprecedented context of the COVID19 pandemic provided a novel opportunity to develop more nuanced understanding of coping from the perspective of the Strategy-Situation Fit theory of coping.

Based on a meta-analysis of past studies on PTG and coping (Eissenstat et al., 2022), Hypothesis 3 predicted that PTG would be moderately associated with greater use of Problem-Focused, proactive Emotion-Focused, and Social Support Seeking coping, whereas its relationship with Avoidance and Negative Emotion-Focused coping would be weak or non-significant. In line with these predictions, PTG was moderately positively correlated with Proactive and Social Support Seeking coping, and it was weakly correlated with Acceptance coping (positively) and Avoidance coping (negatively). Negative Emotion-Focused coping did not significantly correlate with PTG. However, only Proactive and Social Support Seeking factors remained significant independent predictors of PTG after entering all coping factors simultaneously. These findings suggest that those who engaged in more proactive coping strategies, such as problem-solving, positive reframing, or seeking emotional and instrumental support, were more likely to experience PTG. However, avoidance, self-distraction, and emotional rumination appeared to neither contribute to, nor deter from PTG outcomes.

Interestingly, the coping factors that predicted PTG outcomes were not the same factors that predicted PTS outcomes. Instead, emotional distress (i.e., depression, anxiety, and stress) was moderately positively correlated with Negative Emotion-focused coping and Avoidance, and it was weakly positively correlated with Social Support Seeking and Acceptance coping, while Proactive coping was not significantly correlated with PTS. However, only Negative Emotion-Focused coping was a unique positive predictor of depression, anxiety, and stress, after accounting for shared variance with the other coping factors. This finding is broadly consistent

with that of Taha et al. (2014), which found higher endorsement of Passive coping strategies predicted greater levels of pandemic-related anxiety, whereas Proactive coping strategies were not significantly associated with pandemic-related anxiety. However, Taha et al. (2014) flattened coping into two broad categories, Passive and Proactive coping, which is a limitation of their study, whereas the present study was able to account for shared variance amongst coping strategies to understand which strategies had shared and standalone predictive power of the outcomes of interest. For example, Taha et al.'s (2014) Proactive category combined strategies that could be considered distinct from one another in nature, such problem solving, distraction, and social support seeking, whereas the current study conceptualized these items as distinct approaches (Proactive, Acceptance, and Social Support Seeking, respectively). The distinct relationships these coping styles showed with PTG and PTS outcomes may have been overlooked if they had been flattened into fewer categories.

The results of the present study when compared to those of existing literature, such as Chu et al. (2022) and Taha et al. (2014), indicate there is further research required in this area to clarify the relationship between coping and growth, with particular attention needed to exploring coping conceptualizations in a manner that is more aligned with the context and characteristics of the stressful event(s) of interest. Given that the literature on coping presents both varying conceptualizations of coping and a broad range of types of stressful events, a shift to focusing on the context and using data-driven approaches (i.e. factor analysis) could reduce the perpetuation of overly broad or conflated coping categories in the literature.

**Role of Social Support**

Moderate levels of overall perceived social support were reported in the present sample, although the levels varied somewhat across the four domains of perceived social support.

Perceived social support was highest from Significant Other, moderate from Family and Friends, and lowest from School. These findings were consistent with other studies conducted with student samples during the COVID19 pandemic, both in overall levels of social support from other people (i.e. Dominick, 2022) and across domains (Mai et al., 2021). Perceptions of social support were also reflected in the qualitative findings, as one of the major themes that emerged in responses to what was helpful was Social Connectedness and subthemes Social Support and Common Humanity. Social Connectedness provided a sense of not being alone in one's experience, despite the particularly isolating conditions of the pandemic. Participants shared that this was achieved through a variety of means, through the creation and maintenance of various kinds of social relationships, such as those with school faculty and peers, coworkers, family, and significant others, and by taking a perspective of a shared experience (common humanity) during the pandemic.

Social support was predicted to be one factor that would distinguish those who experienced PTG from those who did not (Hypothesis 2b), as social support has been consistently found to positively predict PTG across diverse populations and trauma types (Ning et al., 2023; Prati & Pietrantoni, 2009). Consistent with this hypothesis, Perceived Social Support was positively correlated with PTG and negatively correlated with psychological distress. These results indicate that during the COVID19 pandemic, those who perceived greater social support to be available to them were more likely to experience positive psychological outcomes, namely PTG, and less likely to experience negative psychological outcomes. It was further predicted that coping would mediate this relationship (Hypothesis 4b), and this hypothesis was also supported. Mediation analysis revealed that coping through Social Support Seeking partially mediated the relationship between perceived Social Support and PTG. It is not surprising that those with

greater perceived social support were found to be more likely to engage in coping by seeking social support. This is consistent with the transactional stress model, which suggests that if one is to be successful in seeking social support as a coping strategy, they must have reasonable expectation (appraisal) that they have access to such supports to begin with. Additionally, those with greater perceived social support reported they were more likely to engage in Proactive coping strategies (e.g., problem-focused coping, positive reframing), and mediation analysis revealed that Proactive coping partially mediated the relationship between perceived Social Support and PTG. Although perceived social support was also found to be negatively correlated with Negative Emotion-Focused coping, this association was weak and did not mediate the link between perceived social support and PTG.

There are further consistencies between these quantitative findings and the themes present in the qualitative data, through the theme of Social Connectedness, subtheme of Social Support. Participants commonly identified that one of the ways in which they found social support helpful was by their supports engaging them in finding active ways to cope with their situation (i.e., problem-focused coping) and manage their thoughts and emotions in constructive ways (i.e., positive reframing). This qualitative finding adds further context to the relationships that were found between perceived social support and proactive coping strategies. However, given the correlational and qualitative approaches used in this study, causal conclusions cannot be drawn and further exploration into the directionality of the relationships between perceived social support, PTG, and coping is required. It would be beneficial to explore these relationships in future intervention studies, to assess whether bolstering social support for those going through traumatic experiences would increase employment of Proactive coping and the associated positive outcomes.

Social Connectedness and the subtheme of Social Support also illustrated the importance of emotional and instrumental types of support; the qualitative data revealed that both social and practical resources were important to those who experienced PTG during the COVID19 pandemic. They had others to turn to for social activities to feel better or achieve temporary distraction, someone to express and/or relate to their emotions and experiences, and even greater access to practical resources through social support networks. Practical resources were identified in terms of consumer goods, such as food, housing, and utilities, but also in terms of financial assistance. Some identified that their social access to these goods was through sharing the cost of living by moving to live with family members or significant others, while others discussed being given financial gifts and support. Government financial support programs were also regularly identified as helpful to getting through the pandemic, in that student and worker focused financial relief programs allowed for many to meet their basic needs in a way they would not have otherwise been able to during the economic disruption of COVID19. The measurement of such resources was not done through the quantitative measures in this study, but through the qualitative questions participants identified how social support contributed to their access to these resources. Through this, it was uncovered that during traumatic events such as the pandemic, which challenge one's access to these important resources, social support may play a uniquely protective role. This further contributes to the argument that when interested in the outcomes of traumatic events, it is important to explore a variety of traumatic events to ensure the necessary nuance is captured in relation to the context and characteristics of the event itself. Perhaps following another event that presents less challenge to one's material resources, social support may not play the same role or carry the same significance.

This nuance is also important because socioeconomic status and access to resources has been linked to one's psychological outcomes of traumatic events. A systematic review and meta-analysis conducted by Cénat et al. (2020) identified that those who had lower socioeconomic status and less access to resources were more likely to experience depressive symptoms following the 2010 Haiti earthquake. Cénat et al. (2020) also pointed out the importance of understanding the experiences and needs of low- and middle-income countries when studying the psychological outcomes following disasters. As such, the current study and sample was limited to the geography and economic state of Canada as the context. While there were international students represented in the sample, and qualitative answers identified that some international students had to move home during the pandemic, the sample was predominantly domestic students (77.2%), and the university services and the public-healthcare system in Ontario provide a level of mental health supports that is not necessarily as accessible outside of academic institutions on a provincial scale nor universally available on a global level. This is an important consideration given that some support was perceived to be available from school sources (university institution, faculty, and staff) within this sample. As such, the addition of these items is a methodological strength and additional contribution of the current study, as some similar studies with university samples either did not explicitly measure and report on this source of support (e.g., Hao et al., 2023), or reported lower endorsement of school-related support (e.g., Mai et al., 2021).

Additionally, it is important to note the current sample consisted of those with enough access to material resources to access post-secondary studies. Thus, further research should be done with individuals in other geographic locations and of varying socioeconomic status, to

capture a broader snapshot of how not only the nature of traumatic events vary, but similarly so do risk and protective factors across geographic and social contexts.

**Role of Trait EI**

Aside from social support, Trait EI was predicted to be another factor that would distinguish those who experienced PTG from those who did not (Hypothesis 2a). It was further predicted that coping would mediate this relationship (Hypothesis 4a). Trait EI is a well-known predictor of coping and positive psychological outcomes during stress, but the research on its association with PTG has been very limited. While past studies documented a moderate positive correlation between PTG and global Trait EI, they did not differentiate between different domains of trait EI (Sadeghpour et al., 2021; Thomas et al., 2020). Using a multi-dimensional measure of trait EI, the present study found that only certain aspects of Trait EI, namely the Interpersonal and Adaptability domains, positively predicted PTG. The correlations of these two trait EI domains with PTG remained significant even after controlling for their shared variance with perceived social support (support for Hypothesis 2a). Their contributions to the prediction of PTG were also independent of each other had distinct mediational coping pathways (support for Hypothesis 4a). The relationship between the Interpersonal domain and PTG was partially mediated by greater use of Social Support Seeking coping, and the relationship between the Adaptability domain and PTG was partially mediated by greater use of Proactive coping. These results are consistent with the transactional coping theory, in that those with more positive appraisals of their interpersonal capabilities were more likely to seek out social support, and those with more positive appraisals of their ability to successfully adapt were more likely to engage in active coping strategies to deal with stressful experiences, and in turn they were more likely to experience related benefits, including PTG.

While the Intrapersonal and Stress Management domains of Trait EI did not contribute to the prediction of PTG outcomes, they were found to negatively predict PTS outcomes (depression, anxiety, and stress), even after controlling for their shared variance with each other and with perceived social support. Additionally, the relationships between DASS and the Trait EI Intrapersonal and Stress Management domains were partially mediated by lower use of Negative Emotion-Focused Coping strategies (e.g., self-blame, rumination). This means that those with more positive appraisals of their capability to perceive, understand, and regulate their emotions were less likely to engage in Negative Emotion-Focused coping, and therefore less likely to experience negative psychological outcomes of depression, anxiety, and stress. As such, the Intrapersonal and Stress Management domains of Trait EI can be seen as protective factors, which partially facilitate one's ability to avoid engaging in rumination on their negative emotions within stressful contexts such as the COVID19 pandemic. However, given that the mediations uncovered were only partial, other variables contribute to this relationship and need to be explored.

There were no themes within the qualitative data that mapped clearly onto Trait EI, thus no comparisons can be drawn in this regard. However, in should be noted that thematic analysis was only performed on participants' comments about positive impacts of the pandemic and helpful coping strategies, given this study's primary interest in PTG. It is likely that additional qualitative themes would have emerged from participants' comments about negative experiences and unhelpful coping strategies, which might be more relevant to Trait EI.

**Methodological Considerations**

The effect sizes for the relationships uncovered between the predictor and outcome variables ranged from small to medium, based on Cohen's (1988) guidelines. This suggests that

there are other factors that could be relevant to the PTG outcomes that were not explored in this study. It is also important to note that common method bias could affect the size of the relationships found. Common method bias is when the significance and magnitude of results are affected by variance attributable to measurement when variables are measured in the same way at the same time (Kock et al., 2021). The present study collected entirely self-report data, which does leave the results and related interpretations vulnerable to common method bias. Thus, the significance or magnitude of the relationships between variables in the present study could be overstated due to the common self-report measurement employed. However, multiple distress measures were employed in the present study, including event counts and diagnostic status in addition to subjective perceptions, to allow for comparisons across measures and better ascertain whether the results are attributable to the constructs of interest or methodology.

The main limitation of the current study is that it was cross-sectional and not longitudinal. The correlational nature of this research limits the ability to make conclusions about the directionality and causes of the relationships observed. Participants in the current study were surveyed between October and December 2020, while the pandemic was largely still a present threat and ongoing event; given the evidence that PTG can look different across time and whether one perceives the stressful event as ongoing or resolved (Dominick, 2022; Van der Hallen & Godor, 2022), the single timepoint is a limitation in the current study. Further longitudinal research on PTG should be done to better capture the range of PTG possible during and following stressful events and should assess whether individuals perceive the stressful event as ongoing or resolved.

While self-report measures such as those employed in this study are vulnerable to social desirability bias, discrepancies between perceived and actual behaviours, and retroactive memory

bias (Keefer, 2015), it can be argued that self-report was a suitable method to measure the variables of interest in the present study. As aforementioned, self-reported trait EI has been demonstrated to be a stronger predictor of stress-related outcomes than performance-based ability EI (Martins et al., 2010; Sánchez-Álvarez et al., 2016). Likewise, perceived social support has been shown to be a stronger predictor of mental health and PTG than received social support (Prati & Pietrantoni, 2009, 2010). The self-report methodology is also consistent with the transactional model of stress and coping, where subjective appraisal of stressors and resources is emphasized as the predictor of the coping response (Lazarus & Folkman, 1984). The Brief-COPE uses behavioural language to assess what coping behaviour one typically engages in. Additionally, one's perception about the severity of stressfulness of the events experienced, and perceptions about their growth following trauma is meant to be subjective, and thus self-report was the most appropriate to address the variables and research questions of interest.

One major criticism of measuring PTG retrospectively is that one's perceptions of growth could be illusory or consist of positive distortions, rather than actual changes in the various PTG domains (Boals & Schuler, 2019; Jayawickreme & Blackie, 2014). To address this critique, future research could be done using a longitudinal study, in which pre and post measurements of growth-oriented actions and positive changes are collected, which could help parse out actual perceived growth over time, instead of illusory growth in the moment or shortly after a traumatic event. Confounding variables may also be present in this study that are not accounted for, given the correlational design. Basic personality traits could be contributing to the relationships of trait EI with the outcome variables. To account for this, future research in this area interested in the value of trait EI in predicting posttraumatic growth and distress could measure additional

personality constructs alongside trait EI, to establish whether trait EI has predictive value over and above other personality variables.

### *Reflexivity*

In knowing that true and complete objectivity is not possible when analyzing quantitative or qualitative data, it is important to reflect on and acknowledge several influences on the results interpreted and presented within this study. Firstly, it is important to acknowledge that I have personally experienced the COVID19 pandemic. This personal experience is tied to some of my initial interest in this research topic, and the possibility that my personal experiences have influenced my interpretation of the data and the resulting coding, themes, and conclusions should be kept in mind. As a graduate student navigating the pandemic, who at times felt underequipped to navigate this and additional challenging life circumstances, I have personally been faced with both positive and negative effects, such as strengthened relationships and personal growth through this experience. Additionally, as an individual that was fortunate to have access to resources, such as income and social support, during the pandemic, my viewpoint may constrain my ability to identify, understand, and convey the viewpoint of those who did not have access to such resources. This could also influence the importance I have placed on such resources in facilitating wellbeing and growth within my qualitative results. Furthermore, given my academic familiarity with the areas of resilience, PTG, and coping, it should be taken into consideration that I have approached coding with theoretical knowledge of this literature, and it has influenced the subjective lens through which I have analyzed the data.

### Conclusions

Given that PTG and PTS measures were very weakly associated, and they each were linked with a distinct set of psychological predictors and coping strategies, this study has created

further evidence that negative psychological consequences of traumatic events and the experience of PTG are independent constructs. Additionally, as those who reported one or more psychological/psychiatric disorder were no less likely to experience PTG than those without a disorder, this study is a demonstration of the capacity for resilience of those who struggle with mental health, even if they were more likely to report greater levels of depression, anxiety, and stress. As such, pre-existing mental health conditions should not be considered a barrier to experiencing PTG, but they should be considered as a risk factor for negative psychological outcomes after traumatic events. Interventions that promote PTG while also buffering negative consequences of traumatic stress should be explored jointly for promoting best outcomes.

A novel contribution of the present study was the qualitative data on students' positive experiences during the COVID19 pandemic. Individuals who experienced PTG spoke about what was helpful to them during the pandemic in terms of emotional and instrumental social support, a sense of common humanity through a shared experience, self-care, intentional distraction, and income/financial support. They also identified that the positive impacts of the pandemic included New Opportunities (increased free time and new interests), Appreciation of Life (self-reflection and gratitude), and Strengthened Relationships. Qualitative findings about PTG, social support, and helpful coping strategies during the pandemic corroborated and clarified quantitative findings across the PTGI, MSPSS, and Brief COPE variables. The relationships uncovered between trait EI, perceived social support, coping, and PTG and distress indicate that outcomes after traumatic events are not predicted best by one or two static coping approaches. Instead, these outcomes can be better understood as being linked to whether one is equipped with diverse coping skills and can align their coping responses with the context and stress demands of challenging situations. In turn, a diverse coping repertoire is best supported by

a combination of both personal resources, such as trait EI, and environmental resources, such as

social support, and interventions targeted at bolstering these skills and resources should be

explored.

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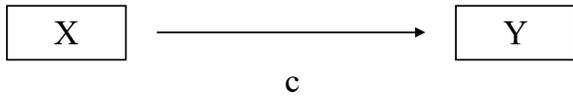
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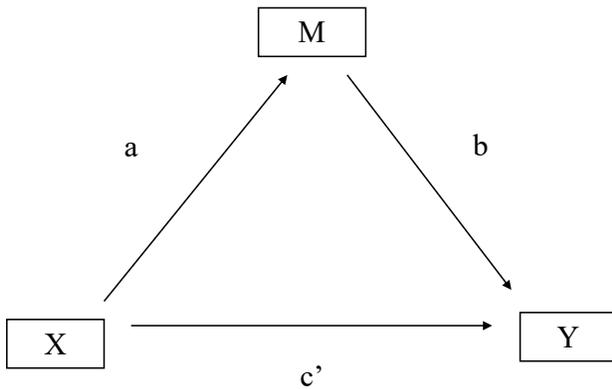
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**Figure 1**

*Paths in the Baron-Kenny Method for Mediation Testing*

Without mediator:



With mediator:



*Note.* X = Predictor variable. Y = Criterion variable. M = Mediator variable. a = Path between X and M. b = Path between M and Y controlling for X. c = Path between X and Y. c' = Path between X and Y controlling for M.

**Figure 2**

*Significant Mediation Models for PTGI*
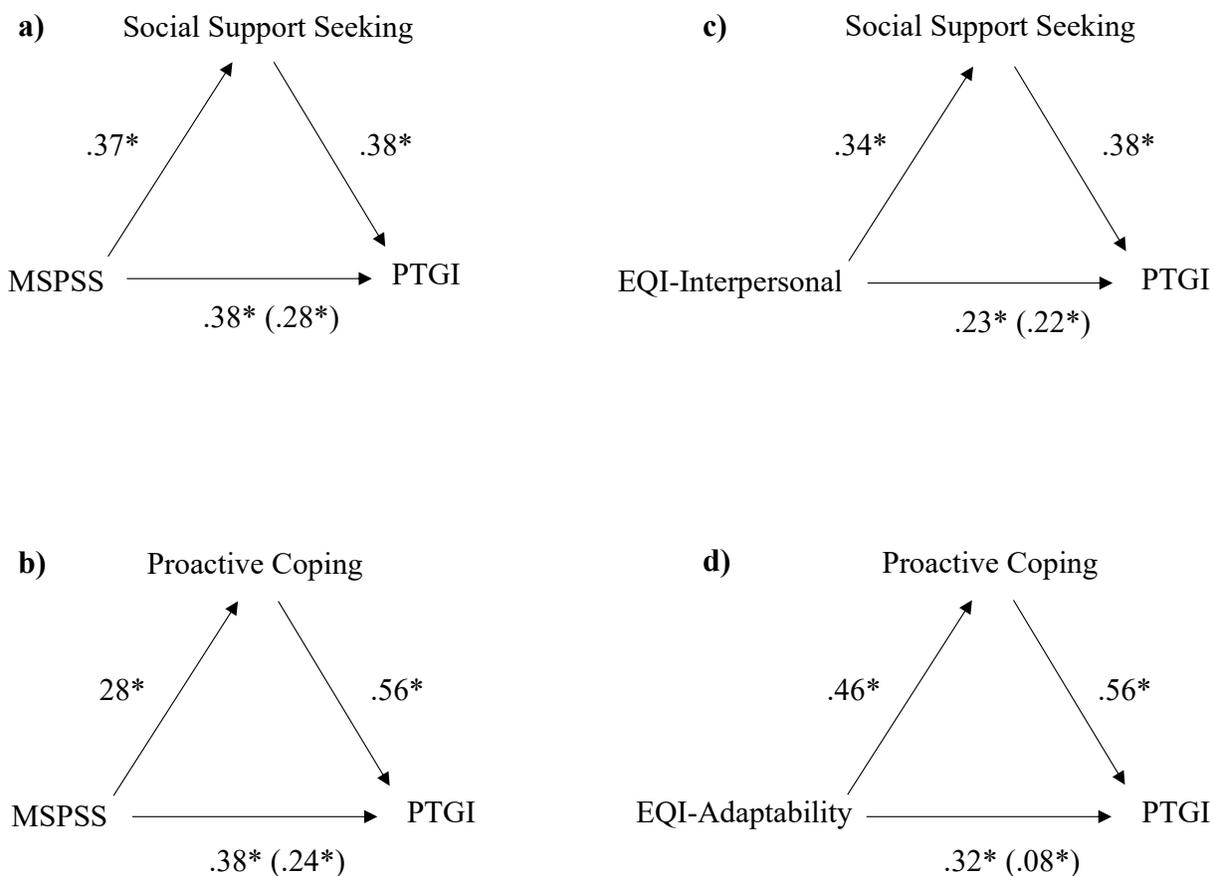
a)        Social Support Seeking

.37*        .38*

MSPSS ——————→ PTGI
.38* (.28*)

c)        Social Support Seeking

.34*        .38*

EQI-Interpersonal ——————→ PTGI
.23* (.22*)

b)        Proactive Coping

28*        .56*

MSPSS ——————→ PTGI
.38* (.24*)

d)        Proactive Coping

.46*        .56*

EQI-Adaptability ——————→ PTGI
.32* (.08*)

*Note.* Standardized regression coefficients for linear regression listed first, regression coefficients after input into multiple regression testing mediation model in parentheses. Mediation determined by significant Sobel Test result. *MSPSS* = Multidimensional Scale of Perceived Social Support; *EQI* = Emotional Quotient Inventory – Short; *PTGI* = Posttraumatic Growth Inventory.

* *p* < .05.

**Figure 3**

*Significant Mediation Models for DASS*
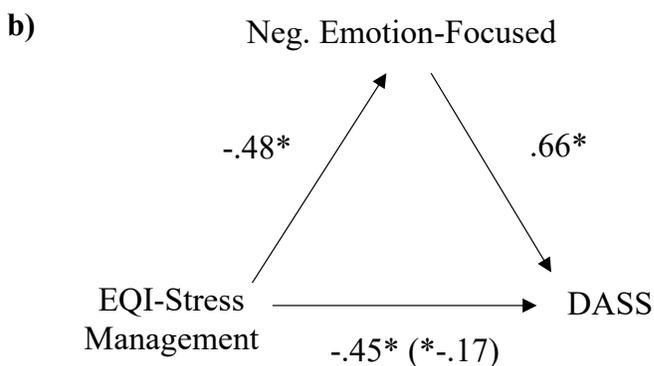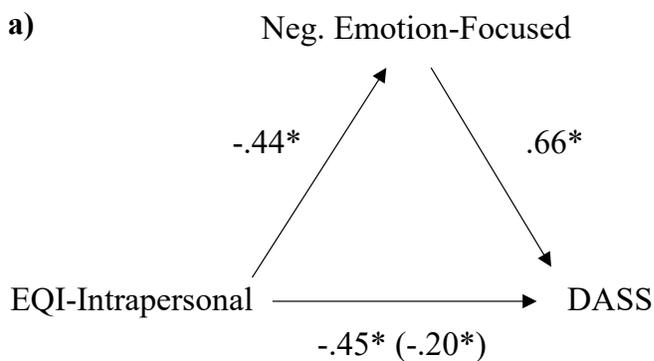
a)


Neg. Emotion-Focused

-.44*          .66*

EQI-Intrapersonal ⟶ DASS

-.45* (-.20*)

b)


Neg. Emotion-Focused

-.48*          .66*

EQI-Stress Management ⟶ DASS

-.45* (*-.17)

*Note.* Standardized regression coefficients for linear regression listed first, regression coefficients after input into multiple regression testing mediation model in parentheses. Mediation determined by significant Sobel Test result. *Brief-COPE* = Brief Inventory of Coping Behaviours; *Neg. Emotion-Focused* = Negative Emotion Focused Coping; *EQI* = Emotional Intelligence Quotient Inventory – Short; *DASS* = Depression, Anxiety, and Stress Scale.

*p* < .05.

**Table 1**

*Demographic Characteristics of Participants*

| Characteristic | *N* | % |
|---|---|---|
| Age | | |
|    16-19 years | 455 | 62.2 |
|    20+ years | 270 | 36.9 |
|    Not reported | 7 | 0.9 |
| Gender | | |
|    Female | 611 | 83.5 |
|    Male | 108 | 14.8 |
|    Other | 11 | 1.5 |
|    Not reported | 2 | 0.2 |
| Year of Study | | |
|    First Year | 419 | 57.2 |
|    Upper Year | 279 | 38.1 |
|    Not reported | 34 | 4.7 |
| Student Status | | |
|    Full-time | 661 | 90.3 |
|    Part-time | 70 | 9.6 |
|    Not reported | 1 | 0.1 |
| Student Type | | |
|    Domestic | 565 | 77.2 |
|    International | 74 | 10.1 |
|    Not reported | 93 | 12.7 |

*Note.* Sample $N = 732$.

**Table 2**

*Summary of Missingness and Imputations*

| Scales (Number of Items) | Cases with Missing Data | Cases Imputed [a] | Valid *N* |
|---|---|---|---|
| PTGI (21) | | | |
| Relating to Others (7) | 3 | 3 | 732 |
| New Possibilities (5) | 1 | 1 | 732 |
| Personal Strength (4) | 2 | 2 | 732 |
| Spiritual Growth (2) | 1 | 1 | 732 |
| Appreciation of Life (3) | 1 | 1 | 732 |
| DASS (21) | | | |
| Depression (7) | 4 | 3 | 731 |
| Anxiety (7) | 2 | 1 | 731 |
| Stress (7) | 3 | 2 | 731 |
| EQi-S (51) | | | |
| Intrapersonal (10) | 8 | 7 | 731 |
| Interpersonal (10) | 7 | 6 | 731 |
| Adaptability (7) | 4 | 3 | 731 |
| Stress Management (8) | 9 | 8 | 731 |
| MSPSS (16) | | | |
| Significant Other (4) | 4 | 0 | 728 |
| Family (4) | 5 | 1 | 728 |
| Friends (4) | 4 | 0 | 728 |
| School (4) | 4 | 0 | 728 |
| COPE (31) | 2 | 0 | 730 |

*Note. EQi-S* = Emotional Quotient Inventory – Short. *PTGI* = Posttraumatic Growth Inventory.

*MSPSS* = Multidimensional Scale of Perceived Social Support. *COPE* = Brief Inventory of

Coping Behaviours. *DASS* = Depression, Anxiety, and Stress Scale.

[a] Imputation was based on replacement of missing item scores with sample mean for cases with

no more than 10% of item missingness per scale or subscale.

**Table 3**

*Descriptive Statistics for NLESS Events Reported and Their Perceived Stressfulness*

| NLESS Item | Frequency | | Severity Rating [a] | | |
|---|---|---|---|---|---|
| | *N* | % | Mean | *SD* | Min – Max |
| You having major financial pressures | 329 | 45.0 | 4.32 | 1.28 | 1 – 6 |
| Family has major financial pressures | 261 | 35.8 | 4.24 | 1.16 | 1 – 6 |
| You struggling with addiction/psychological problem | 224 | 30.6 | 4.24 | 1.25 | 1 – 6 |
| Serious academic problems | 213 | 29.1 | 4.43 | 1.27 | 1 – 6 |
| Serious illness/injury to family member | 206 | 28.2 | 4.40 | 1.16 | 2 – 6 |
| You having ongoing conflict with your family | 177 | 24.2 | 4.16 | 1.29 | 1 – 6 |
| Parent laid off work | 176 | 24.1 | 3.86 | 1.23 | 1 – 6 |
| Parents have ongoing conflicts | 168 | 23.0 | 3.85 | 1.41 | 1 – 6 |
| Serious conflict with close friend | 166 | 22.7 | 3.90 | 1.27 | 1 – 6 |
| Death of family member | 143 | 19.5 | 4.15 | 1.48 | 1 – 6 |
| Addiction/psychological struggle of family member | 142 | 19.4 | 4.28 | 1.21 | 2 – 6 |
| Serious break-up with romantic partner | 128 | 17.5 | 4.39 | 1.33 | 1 – 6 |
| Serious illness/injury to you | 82 | 11.2 | 4.31 | 1.36 | 1 – 6 |
| Serious illness/injury to close friend | 67 | 9.2 | 4.17 | 1.28 | 1 – 6 |
| Unwanted sexual behaviour imposed on you | 60 | 8.2 | 4.22 | 1.42 | 1 – 6 |
| Family member having problems with the law | 59 | 8.1 | 3.83 | 1.45 | 1 – 6 |
| Serious conflict at work | 53 | 7.3 | 4.17 | 1.18 | 2 – 6 |
| Separation of parents | 48 | 6.6 | 3.83 | 1.74 | 1 – 6 |
| Death of close friend | 46 | 6.3 | 4.48 | 1.23 | 1 – 6 |
| You having been assaulted | 41 | 5.6 | 4.68 | 1.17 | 2 – 6 |
| Cheated on by romantic partner | 39 | 5.3 | 4.77 | 1.18 | 2 – 6 |
| Serious conflict at school | 36 | 4.9 | 4.68 | 1.30 | 2 – 6 |
| You experience abuse/violence at home | 24 | 3.3 | 4.48 | 1.16 | 2 – 6 |
| You having problems with the law | 16 | 2.2 | 4.31 | 1.58 | 1 – 6 |
| Family losing house through fire, flood, etc. | 9 | 1.2 | 4.56 | 1.42 | 2 – 6 |
| Unwanted pregnancy (either you or you being the father) | 5 | 0.7 | 4.80 | 1.80 | 2 – 6 |

*Note.* Valid *N* = 732. *NLESS* = Negative Life Events Scale for Students.

[a] Severity ratings were collected only from the respondents who endorsed the item, using the following scale: 1 = not stressful at all; 2 = slightly stressful; 3 = moderately stressful; 4 = definitely stressful (but not unbearable); 5 = extremely stressful (hardly bearable); 6 = one of the worst things I have ever had to go through.

**Table 4**

*Descriptive Statistics for Scale Variables*

| Variable | Valid *N* | Mean | *SD* | Min – Max | *Z* Skew | *Z* Kurtosis |
|---|---|---|---|---|---|---|
| PTGI Domains | | | | | | |
| Relating to Others | 732 | 2.60 | 1.25 | 0.00 – 5.00 | -1.11 | 4.44 |
| New Possibilities | 732 | 2.53 | 1.24 | 0.00 – 5.00 | -0.78 | -3.72 |
| Personal Strength | 732 | 2.70 | 1.28 | 0.00 – 5.00 | -2.11 | -3.16 |
| Spiritual Growth | 732 | 1.34 | 1.59 | 0.00 – 5.00 | 11.33 | -1.00 |
| Appreciation of Life | 732 | 2.79 | 1.31 | 0.00 – 5.00 | -3.56 | -3.61 |
| PTGI Total | 732 | 2.51 | 1.11 | 0.00 – 5.00 | -0.56 | -3.11 |
| PTG4 | 732 | 2.65 | 1.14 | 0.00 – 5.00 | -0.68 | -3.26 |
| DASS Domains | | | | | | |
| Depression | 731 | 1.21 | 0.84 | 0.00 – 3.00 | 4.00 | -4.83 |
| Anxiety | 731 | 1.06 | 0.75 | 0.00 – 3.00 | 5.00 | -3.56 |
| Stress | 731 | 1.39 | 0.74 | 0.00 – 3.00 | 0.89 | -4.11 |
| DASS Total | 731 | 1.22 | 0.70 | 0.00 – 3.00 | 2.89 | -4.06 |
| EQi-S Domains | | | | | | |
| Intrapersonal | 731 | 3.30 | 0.76 | 1.56 – 5.00 | -1.00 | -1.72 |
| Interpersonal | 731 | 4.11 | 0.58 | 1.56 – 5.00 | -9.33 | 4.94 |
| Adaptability | 731 | 3.45 | 0.70 | 1.00 – 5.00 | -0.03 | 0.50 |
| Stress Management | 731 | 3.53 | 0.86 | 1.00 – 5.00 | -6.22 | -0.72 |
| MSPSS Domains | | | | | | |
| Significant Other | 728 | 5.51 | 1.66 | 1.00 – 7.00 | -13.11 | 3.17 |
| Family | 728 | 5.15 | 1.59 | 1.00 – 7.00 | -9.33 | -0.22 |
| Friend | 728 | 5.18 | 1.55 | 1.00 – 7.00 | -1.00 | 1.00 |
| School | 728 | 4.29 | 1.50 | 1.00 – 7.00 | -3.89 | 2.66 |
| MSPSS Total | 728 | 5.03 | 1.16 | 1.13 – 7.00 | -7.22 | 1.05 |
| Brief-COPE Domains | | | | | | |
| Negative Emotion-Focused | 730 | 2.19 | 0.72 | 1.00 – 4.00 | 0.03 | -4.61 |
| Proactive | 730 | 2.66 | 0.65 | 1.00 – 4.00 | 1.11 | -2.44 |
| Social Support Seeking | 730 | 2.50 | 0.78 | 1.00 – 4.00 | 0.44 | -4.39 |
| Avoidance | 730 | 1.66 | 0.59 | 1.00 – 4.00 | 11.33 | 3.83 |
| Acceptance | 730 | 2.91 | 0.57 | 1.00 – 4.00 | -1.89 | -1.50 |

*Note. SE* Skew = 0.09; *SE* Kurtosis = 0.18. *PTGI* = Posttraumatic Growth Inventory; *PTG4* =

Overall PTG score without Spiritual Growth Dimension; *DASS* = Depression, Anxiety, and

Stress Scale; *EQi-S* = Emotional Quotient Inventory – Short; *MSPSS* = Multidimensional Scale

of Perceived Social Support; *Brief-COPE* = Brief Inventory of Coping Behaviours.

**Table 5.1**

*Pearson's Correlations Among the Scale Variables*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1. NLESS Count | | | | | | | |
| 2. NLESS Severity | .27** | | | | | | |
| 3. NLESS Combined | .96** | .51** | | | | | |
| 4. DASS Depression | .34** | .26** | .35** | | | | |
| 5. DASS Anxiety | .34** | .27** | .34** | .69** | | | |
| 6. DASS Stress | .30** | .29** | .31** | .73** | .76** | | |
| 7. DASS Total | .36** | .31** | .37** | .90** | .90** | .91** | |
| 8. PTGI Relating to Others | -.01 | .14** | .01 | -.13** | .05 | .06 | -.01 |
| 9. PTGI New Opportunities | .05 | .10* | .05 | -.17* | .03 | .01 | -.06 |
| 10. PTGI Personal Strength | .03 | .08* | .02 | -.21** | -.03 | -.05 | -.11** |
| 11. PTGI Appreciation of Life | .01 | .13** | .03 | -.22** | -.01 | .02 | -.09* |
| 12. PTGI Spiritual Growth | .03 | .04 | .03 | -.08* | -.00 | -.04 | -.05 |
| 13. PTGI Total | .02 | .12** | .03 | -.19** | .02 | .01 | -.07 |
| 14. PTG4 | .02 | .12** | .03 | -.20** | .01 | .01 | -.08* |
| 15. EQi-S Intrapersonal | -.05 | -.06 | -.04 | -.43** | -.40** | -.39** | -.45** |
| 16. EQi-S Interpersonal | -.10** | .05 | -.11** | -.14** | -.04 | -.02 | -.08* |
| 17. EQi-S Adaptability | -.05 | .04 | -.03 | -.06 | .00 | .04 | -.01 |
| 18. EQi-S Stress Management | -.27** | -.23** | -.29** | -.36** | -.40** | -.46** | -.45** |
| 19. MSPSS Significant Other | -.13** | .04 | -.12** | -.19** | -.08* | -.03 | -.11** |
| 20. MSPSS Family | -.30** | -.10* | -.27** | -.38** | -.26** | -.23** | -.32** |
| 21. MSPSS Friend | -.17** | -.05 | -.14** | -.27** | -.15** | -.15** | -.22** |
| 22. MSPSS School | -.12** | -.05 | -.13** | -.27** | -.14** | -.17** | -.22** |
| 23. MSPSS Total | -.25** | -.05 | -.22** | -.37** | -.21** | -.20** | -.29** |
| 24. Brief-COPE Negative Emotion-Focus | .35** | .31** | .39** | .60** | .58** | .61** | .66** |
| 25. Brief-COPE Proactive | .04 | .14** | .05 | -.14** | .05 | .06 | -.01 |
| 26. Brief-COPE Social Support Seeking | .06 | .20** | .10* | .08* | .21** | .28** | .21** |
| 27. Brief-COPE Avoidance | .35** | .25** | .36** | .35** | .39** | .37** | .41** |
| 28. Brief-COPE Acceptance | .12** | .01 | .07 | .16* | .18** | .20** | .20** |

*Note.* Table spans multiple pages. *NLESS* = Negative Life Events Scale for Students; *DASS* = Depression, Anxiety, and Stress Scale; *PTGI* = Posttraumatic Growth Inventory; *PTG4* = Overall PTG score without Spiritual Growth Dimension; *EQi-S* = Emotional Quotient Inventory – Short; *MSPSS* = Multidimensional Scale of Perceived Social Support; *Brief-COPE* = Brief Inventory of Coping Behaviours.

*p* < .05. **p* < .01.

**Table 5.2**

*Pearson's Correlations Among the Scale Variables (continued)*

| Variable | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|
| 8. PTGI Relating to Others | | | | | | | |
| 9. PTGI New Opportunities | .72** | | | | | | |
| 10. PTGI Personal Strength | .75** | .78** | | | | | |
| 11. PTGI Appreciation of Life | .70** | .76** | .73** | | | | |
| 12. PTGI Spiritual Growth | .40** | .46** | .44** | .43** | | | |
| 13. PTGI Total | .91** | .90** | .89** | .85** | .58** | | |
| 14. PTG4 | .88** | .91** | .91** | .89** | .48** | .99** | |
| 15. EQi-S Intrapersonal | .07* | .12** | .18** | .15** | .07* | .14** | .15** |
| 16. EQi-S Interpersonal | .39** | .22** | .29** | .28** | .06 | .32** | .33** |
| 17. EQi-S Adaptability | .25** | .30** | .33** | .33** | .14** | .32** | .34** |
| 18. EQi-S Stress Management | -.05 | -.06 | -.00 | -.03 | -.02 | -.04 | -.04 |
| 19. MSPSS Significant Other | .36** | .18** | .20** | .22** | -.01 | .26** | .27** |
| 20. MSPSS Family | .33** | .18** | .21** | .27** | .15** | .29** | .28** |
| 21. MSPSS Friend | .39** | .18** | .21** | .23** | .05 | .29** | .28** |
| 22. MSPSS School | .30** | .23** | .24** | .23* | .08* | .28** | .28** |
| 23. MSPSS Total | .47** | .26** | .30** | .32** | .09* | .38** | .37** |
| 24. Brief-COPE Negative Emotion-Focus | .05 | -.03 | -.08* | -.07 | -.04 | -.03 | -.04 |
| 25. Brief-COPE Proactive | .47** | .53** | .51** | .53** | .31** | .56** | .57** |
| 26. Brief-COPE Social Support Seeking | .47** | .27** | .28** | .30** | .12** | .38** | .37** |
| 27. Brief-COPE Avoidance | .11** | .10** | .05 | .07* | .08* | .10** | .09* |
| 28. Brief-COPE Acceptance | .17** | .18** | .26** | .14** | .05 | .20** | .21** |

*Note.* Table spans multiple pages. *PTGI* = Posttraumatic Growth Inventory; *PTG4* = Overall

PTG score without Spiritual Growth Dimension; *EQi-S* = Emotional Quotient Inventory – Short;

*MSPSS* = Multidimensional Scale of Perceived Social Support; *Brief-COPE* = Brief Inventory of

Coping Behaviours.

*p < .05. **p < .01.

**Table 5.3**

*Pearson's Correlations Among the Scale Variables (continued)*

| Variable | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|
| 15. EQi-S Intrapersonal | | | | | | | |
| 16. EQi-S Interpersonal | .23** | | | | | | |
| 17. EQi-S Adaptability | .10** | .31** | | | | | |
| 18. EQi-S Stress Management | .42** | .22** | .08* | | | | |
| 19. MSPSS Significant Other | .16** | .32** | .15** | .07 | | | |
| 20. MSPSS Family | .22** | .27** | .18** | .22** | .39** | | |
| 21. MSPSS Friend | .17** | .40** | .13** | .11** | .44** | .48** | |
| 22. MSPSS School | .07* | .218* | .10* | .04 | .25** | .35** | .46** |
| 23. MSPSS Total | .21** | .41** | .19** | .15** | .72** | .75** | .80** |
| 24. Brief-COPE Negative Emotion-Focus | -.44** | -.01 | -.06 | -.48** | -.03 | -.25** | -.17** |
| 25. Brief-COPE Proactive | .14** | .27** | .46** | .03 | .20** | .25** | .18** |
| 26. Brief-COPE Social Support Seeking | .02 | .34** | .24** | -.14** | .32** | .28** | .30** |
| 27. Brief-COPE Avoidance | -.21** | -.03 | .04 | -.38** | -.08* | -.09* | -.04 |
| 28. Brief-COPE Acceptance | -.10** | .16** | .15** | -.19** | .04 | .02 | .08* |

*Note.* Table spans multiple pages. *EQi-S* = Emotional Quotient Inventory – Short; *MSPSS* =

Multidimensional Scale of Perceived Social Support; *Brief-COPE* = Brief Inventory of Coping

Behaviours. *$p < .05$. **$p < .01$.

**Table 5.4**

*Pearson's Correlations Among the Scale Variables (continued)*

| Variable | 22 | 23 | 24 | 25 | 26 | 27 |
|---|---|---|---|---|---|---|
| 22. MSPSS School | | | | | | |
| 23. MSPSS Total | .68** | | | | | |
| 24. Brief-COPE Negative Emotion-Focus | -.14** | -.20** | | | | |
| 25. Brief-COPE Proactive | .20** | .28** | .05 | | | |
| 26. Brief-COPE Social Support Seeking | .17** | .37** | .28** | .49** | | |
| 27. Brief-COPE Avoidance | .00 | -.07 | .49** | .11** | .23** | |
| 28. Brief-COPE Acceptance | .01 | .05 | .22** | .28** | .24** | .20** |

*Note.* Table spans multiple pages. *MSPSS* = Multidimensional Scale of Perceived Social

Support; *Brief-COPE* = Brief Inventory of Coping Behaviours. *\*p* < .05. *\*\*p* < .01.

**Table 6**

*Standard Multiple Regressions Predicting Coping Variables*

| Model | Negative Emotion-Focused | Proactive | Social Support Seeking | Avoidance | Acceptance |
|---|---|---|---|---|---|
| *MSPSS* (ß) | -.09 | .17** | .29** | a | a |
| *EQi-S Domains* | | | | | |
|    Intrapersonal (ß) | -.27** | .04 | a | -.06 | -.07 |
|    Interpersonal(ß) | a | .07* | .24** | a | .18** |
|    Adaptability (ß) | a | .40** | .13** | a | .12* |
|    Stress Management (ß) | -.35** | a | -.24** | -.35** | -.20** |
| Full Multiple $R^2$ | .30** | .26** | .25** | .15** | .09** |

*Note.* ß = Standardized regression coefficient. *Multiple $R^2$* = Total variation accounted for.

*MSPSS* = Multidimensional Scale of Perceived Social Support; *EQi-S* = Emotional Quotient Inventory – Short.

[a] These variables were not included in the model due to non-significant bivariate correlation.

* $p < .05$. ** $p < .01$.

**Table 7**

*Standard Multiple Regressions Predicting PTGI and DASS*

| Model | PTGI | DASS |
|---|---|---|
| *MSPSS* (ß) | .27** | -.25** |
| *EQi-S Domains* | | |
|     Intrapersonal (ß) | .03 | -.30** |
|     Interpersonal (ß) | .13* | .16** |
|     Adaptability (ß) | .22* | a |
|     Stress Management (ß) | a | -.32** |
| Full Multiple *R²* | .22** | .33** |
| *Brief-COPE Factors* | | |
|     Negative Emotion-Focused (ß) | a | .60* |
|     Proactive (ß) | .49** | a |
|     Social Support Seeking (ß) | .13** | .00 |
|     Acceptance (ß) | .03 | .05 |
|     Avoidance (ß) | .02 | .11* |
| Multiple *R²* | .33** | .45* |

*Note.* ß = Standardized regression coefficient. *Multiple R²* = Total variation accounted for. *PTGI* = Posttraumatic Growth Inventory; *DASS* = Depression, Anxiety, and Stress Scale; *MSPSS* = Multidimensional Scale of Perceived Social Support; *EQi-S* = Emotional Quotient Inventory – Short; *Brief-COPE* = Brief Inventory of Coping Behaviours.

[a] These variables were not included in the model due to non-significant bivariate correlation.

* *p* < .05.

**Table 8**

Qualitative Themes Table

| Theme | Description | Example Quotes |
|---|---|---|
| *Social Connectedness* | | "My close friends, especially those that I still am able to see occasionally, have supported me a great deal with respect to mental health and coping with being somewhat isolated." (Participant #84109) |
| Social Support | Participants identified a variety of social supports that were helpful to them during the pandemic, for both emotional and instrumental support. | "My little family. They have been my supporters through it all. They have been keeping the house is good order while I have been at work. Spending more time with my husband and kids have been super helpful for my mental health during it all." (Participant #83563) |
| | | "People checking up on me doesn't matter if virtually felt really good. The support and motivation that the university offered were also really helpful." (Participant #83890) |
| | | "Having the support of my significant other has been helpful. More specifically because we are both students and can help each other with that stress." (Participant #78652) |
| Common Humanity | Participants identified that a sense of shared experience during the pandemic allowed them to feel less alone or be more optimistic. | "having a friend to talk to knowing we are all in this together and we will get through this it will just take time" (Participant #83710) |
| | | "I have also realized which friends were my true friends as everyone is going through the same thing, we get to talk about it and it all seems a little better than before." (Participant #82942 |

*Note.* Table spans multiple pages.

**Table 8.2**

Qualitative Themes Table

| Theme | Description | Example Quotes |
|---|---|---|
| *Social Connectedness* | | "Relationships with those that I am closest to have grown stronger as they became my bubble and I was seeing them more often than I usually would." (Participant #81829) |
| Strengthened Relationships | Participants identified strengthened relationships, such as with friendly, family, significant others, and colleagues, as a positive impact of the pandemic. | "This pandemic has allowed me to spend more time with friends and family and therefore allowing me to form stronger relationships with them." (Participant #83545) |
| | | "Before leaving for school, during the pandemic I was able to build stronger relationships with both of my parents as they were either working from home, or out of work." (Participant #84574) |
| | | "The pandemic did help me and my parents to learn patience for each other. … We spent a lot more time together over the summer and I think it helped to build our relationships with each other." (Participant #80317) |
| | | 'I have had a lot more time with my family which has been great because I wasn't home last year. Also has helped my romantic relationship I feel it has brought us closer." (Participant #84610) |
| | | "I feel closer with the people who I've been working with since March because there's been a select few of us that are comfortable working in these times." (Participant #79093) |

*Note.* Table spans multiple pages.

**Table 8.3**

Qualitative Themes Table

| Theme | Description | Example Quotes |
|---|---|---|
| *Helpful Coping Strategies* | | "It has been helpful for me to self care. Just taking a minute to relax, be mindful, and shut off my brain." (Participant #80629) |
| Self-Care | Participants shared that they engaged in physical and mental health-oriented self-care to cope with the pandemic. | "Self-care such as yoga, baking, painting, etc. has helped me cope with the pandemic and allowed me to stay positive and fear-free." (Participant #84226) |
| Distraction | Participants referred to distraction from the pandemic and related stress as a helpful coping strategy. | "Communicating to my friends online helped a lot, as well as going for walks and watching copious amounts of Netflix as a distraction." (Participant #81904) |
| | | "School has been a good distraction from what's going on outside." (Participant #84544) |
| | | "Surrounding myself with my immediate family and listening and playing music. It's my way of escape." (Participant #78799) |
| | | "Having the escape of being able to go on drives with my boyfriend at night, it calms my anxiety." (Participant #84004) |

*Note.* Table spans multiple pages.

**Table 8.4**

Qualitative Themes Table

| Theme | Description | Example Quotes |
|---|---|---|
| *New Opportunities* | | "The pandemic gave me the chance to spend a lot |
| Increased Free Time | Participants identified that they had free time they would not of otherwise had outside of the pandemic. | of time with my family which would not be possible in our usual daily lives." (Participant #83071) |
| | | "Gave me time off from school which gave me time to destress and gave me a lot of time to work on myself and my hobbies." (Participant #84604) |
| | | "I've been able to call and text people more often, even if I don't get to see them. I feel like I have more time to work on my hobbies such as knitting and reading a lot of books." (Participant #85012) |
| New Interests | | "The pandemic allowed me to explore new things and find new interests that I never thought I'd be interested in prior to the pandemic." (Participant #81853) |
| | | "I picked up a few hobbies with the spare time. I tried to do embroidery, painted more, and played more piano. I also started to learn very basic Mandarin - downloaded apps and tried to watch Chinese movies. I spent a lot of time outside in my garden - grew more fruits and veggies, bird watching, and trying to befriend squirrels and chipmunks in the backyard. With more spare time, I did online volunteering for a grassroot organization that focuses on COVID19 in Canada." (Participant #83044) |

*Note.* Table spans multiple pages.

**Table 8.5**

Qualitative Themes Table

| Theme | Description | Example Quotes |
|---|---|---|
| *Appreciation of Life* | | 'This pandemic has been helpful because it has |
| Self-Reflection | Participants identified that the pandemic and time away from typical activities provided them with the opportunity to reflect on their life, such as their goals, values, and relationships. | allowed for some much needed silent and personal reflection time. Especially at the beginning of the pandemic, I spent a lot of time alone. So, this allowed me to introspectively reflect on a lot of aspects of my life to change it for the better." (Participant #84154) "I think another positive effect is that I have figured out who I want to be personally through self-reflection and evaluation, and I am now going to start taking those steps in order to become the real me." (Participant #80878) |
| Gratitude | Participants described taking a perspective of appreciation for one's life, such as their personal circumstances, relationships, or life in general. | "I have learned to be grateful for time spent with loved ones and put more effort into people that I find put it back into me." (Participant #847660) "I also learnt to become so much more grateful towards my parents and all the efforts they put in that allowed us to lead a pandemic with no or very little financial stress. That prompted me to open up and donate to food banks and pandemic relief programs because not everyone is as lucky as myself …" (Participant #83632) "I think COVID-19 has made me realize how little I actually need in order to function in my everyday life and to be satisfied with what I have instead. " (Participant #76978) |

*Note.* Table spans multiple pages.

**Table 8.6**

Qualitative Themes Table

| Theme | Description | Example Quotes |
|-------|-------------|----------------|
| *Income and Financial Supports* | Participants identified financial support was helpful and helped maintain access to housing, education, and other needs. | "If not for the Canadian Emergency Response Benefit (CERB), both my partner and I would have been homeless throughout the pandemic. Neither him or I make much more than minimum wage, often leaving us in a position where we are living paycheque to paycheque. If not for the financial support from the government, we would not have had the availability to pay our bills and keep up with our rent." (Participant #83203) "I also found CERB to be helpful since I was working part time when the pandemic started and was not able to increase my work hours later in the shutdown like normal, so it helped my income stay more similar to what it would usually be/what I was planning for." (Participant #82906) "CERB and other government programs to help people like myself who were left unemployed, especially when trying to save up for university…" (Participant #84943) "The student benefit was helpful when that finally came out as I was in dire need of income to support my family. (Participant #83443) |

*Note.* Table spans multiple pages.

**Appendix A**



**LETTER OF INFORMATION**

**Project title: "In These Unprecedented Times..."**

You are invited to participate in a research study titled "In these unprecedented times…", conducted by Samantha Fillion under the supervision of Dr. Kateryna Keefer. The purpose of this study is to better understand the impacts of COVID19 on everyday life and psychological well-being, and what coping strategies are being used to cope with related stress during these unprecedented times. I am conducting this study in partial fulfillment for my graduate degree.

| **Principal Investigator:** | **Supervisor:** |
|---|---|
| Samantha Fillion | Dr. Kateryna Keefer |
| Masters Thesis Student | Senior Lecturer |
| samanthafillion@trentu.ca | katerynakeefer@trentu.ca |

\* Please direct questions regarding this study, and your participation in it, to **Samantha Fillion**, who will be managing the data collection activities for this project.

**PROCEDURES**

If you agree to participate in this study, you will be asked to complete an electronic survey, which will take up to 90 minutes of your time. This survey will ask specific questions about your thoughts and emotions related to the COVID19 pandemic, academics, negative life events in the past 6 months, stress, and related coping strategies. There will be questions about alcohol and cannabis use. Additionally, potential positive impacts of stressful life events will be explored. Some people may become distressed by the questions asked or the insight that is generated about how difficult COVID19 has been for them.

After completing this survey, you will be given a handout with a more detailed description of the study.

**VOLUNTARINESS**

Your participation in this study is entirely voluntary. Your decision of whether to participate in this study or not will have no effect on your evaluation as a student at any time. You can refuse to participate without penalty or loss of benefits to which you are otherwise entitled. You can stop your participation at any time. You may also refuse to answer any questions you do not want to answer and still remain in the study. Should you choose to withdraw from the study, you have the right to determine what will happen to the information and data you provided, including requesting that it be destroyed.

For those who do choose to participate, you will be granted 1.5 bonus credits via the SONA research participation system to put towards one of the eligible Psychology courses.

**BENEFITS**

You may not derive any personal benefit from participating in this study, but you may contribute to the understanding of mental health and resilience during the COVID19 pandemic. The information collected for this study and the data you provide through your participation will be used to provide insight into how individuals are coping during the COVID19 pandemic and what psychosocial factors are linked to better psychological well-being following stressful life events. Participating in this research will provide you with an opportunity to reflect on your coping strategies and to gain insight into how psychological research is conducted.

**RISKS**

Some people may become distressed by the questions asked or the insight that is generated about how difficult COVID19 has been for them.

**PRIVACY AND CONFIDENTIALITY**

***It is important for you to know that I am obliged to report any disclosures of intent to harm yourself or others.***

Every effort will be made to maintain confidentiality of the information you provide for this study, which will be stored on encrypted computer files. All data collected as part of this research will be anonymized after it is entered into the database. Your name and student number will not be attached to the data. Instead, each participant's data will be referenced using a unique participant code, with the master code key kept secure and separate from the data. Data will be housed within Trent University's Qualtrics system, accessible only by a secure password. Data will be kept for 10 years and then destroyed. All presentations of the data (e.g., theses, conferences, publications) will be in the form of group averages/aggregates and will never include individual scores or any personal information that will make it possible to identify you as a participant. At no time will any individual outside of the immediate research team have access to the personal information that is provided.

We also ask your permission to contact you for a potential follow up interview about your experience during the COVID19 pandemic. If yes, please click "Yes" on the Consent Form below and provide contact information. You will be provided with the information and the opportunity to consent for the future study at that time.

**ETHICS**

This study has been reviewed and approved by the Trent University Research Ethics Board. For any questions concerning the ethics of this project, please contact Jamie Muckle (jmuckle@trentu.ca) Certifications and Regulatory Compliance Officer for-the Research Office of Research and Innovation at Trent University.

REB Approval File # 26347

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**CONSENT TO PARTICIPATE IN RESEARCH**

I have read the information about the research study provided above, and I have had all questions answered to my satisfaction. It has been made clear to me that participation in this study is completely voluntary, that my personal identifying information will be kept confidential and separate from the research data, that research results will be presented in an anonymized and aggregated format, and that I will receive bonus course credits for my participation.

I understand that I will complete an electronic survey, which will ask about thoughts and emotions related to the COVID19 pandemic, academic performance, stress, and related coping strategies. I understand that any disclosure of self-harm, suicidality, or harm to others will require the researchers to report this information to the relevant authorities.

I am also aware that if I have any questions or concerns, wish to indicate my desire to withdraw from the study, or have my data destroyed, I may contact Samantha Fillion. I have sufficient information to make a decision about participating in this study.

**I agree to participate in the survey:**
- ☐ Yes
- ☐ No

**I grant the researchers to contact me for a follow up interview at a later date:**
- ☐ Yes
- ☐ No

First and Last Name: _____
Email Address: _____

PLEASE SAVE OR PRINT A COPY OF THIS INFORMATION AND CONSENT FORM
FOR YOUR RECORDS

**Questionnaire**

**SECTION A: Demographics**

1.	How would you describe your gender?
	Male
	Female
	Non-binary
	Transgender
	Two-spirited
	Prefer not to identify
	Other/ Prefer to self-describe (free text input)

2.	What is your age (in years)?
	Free text input.

3.	What is your ethnicity?
	Caucasian/White
	Latino or Hispanic
	African American or Black
	First Nations or Indigenous
	East Asian
	South Asian
	Middle Eastern or Arabic
	Native Hawaiian or Pacific Islander
	Prefer not to identify
	Other/Prefer to self-describe (with free text input)

4.	Are you an international student or domestic student?
	International
	Domestic

5.	What is your program or major(s) of study?
	Free text input.

6.	How many credits have you completed towards your degree to date? (not counting courses currently in progress)
	Free text input.

7.	How many courses are you enrolled in for the Fall 2020 semester? (Please include any full year courses in this total)
	Free text input.

8.	Before the COVID19 pandemic (around January-February 2020), did you work in addition to school?
	Yes

No

9. Before the COVID19 pandemic (around January-February 2020), how many hours were you working per week, approximately?
Free text input.

10. Please select which option best describes your current employment situation:
Working at my place of employment
Working from home
Not working
Other (free text input)

11. Approximately how many hours are you working per week currently?
Free text input.

12. Did you change your place of residence since the COVID19 pandemic started?
Yes
No

13. Please select which option best describes your current living arrangements:
Living with partner
Living with family
Living with roommate(s)
Living alone
Other (free text input)

14. How many people live in your household currently, including you?
Free text input.

15. How overcrowded do you feel your current living conditions are?
1 = not at all overcrowded... to 9 = extremely overcrowded

16. How suitable do you feel your current space is for completing your studies?
1 = not at all suitable... to 9 = completely suitable

17. In general, how satisfied are you with your life?
1 = not at all satisfied... to 9 = completely satisfied

18. Have you, or anyone in your close social circle, been diagnosed with COVID19?
Yes
No
Don't know
Prefer not to disclose

19. Have you ever been formally diagnosed with a mental-health or psychiatric condition?
(please select all that apply)

Depressive / Mood Disorder
Anxiety Disorder
Personality Disorder
Psychotic Disorder
Eating Disorder
Trauma-Related Disorder
Addiction / Substance Abuse
Autism Spectrum Disorder
Learning Disorder
Conduct Disorder
Attention Deficit Hyperactivity Disorder
Other (free text input)
None
Prefer not to disclose

20.     If yes, for how long have you had the diagnosis? (In case of multiple diagnoses, please refer to the most recent one)
Free text input.

## SECTION B: Impact of the Pandemic

1. Please indicate how the COVID19 pandemic has affected you in the following areas, using the scale below. Feel free to input other areas that are relevant to you in the 'Other' line.

1 Very Negatively
2 Mostly Negatively
3 Somewhat Negatively
4 Neither Positively nor Negatively
5 Somewhat Positively
6 Mostly Positively
7 Very Positively

The pandemic has impacted my...
Academics
Employment
Productivity
Social life
Romantic relationships
Family relationships
Friendships
Finances
Psychological/Mental health
Physical health / wellness
Other (free text input)

2. Please elaborate on any negative effects the pandemic has had on you.

Free text input.

3. Please elaborate on any positive effects the pandemic has had on you.
 Free text input.

4. What has been helpful to you during the pandemic?
 Free text input.

5. What has been less helpful to you during the pandemic?
 Free text input.

**SECTION C: Negative Life Events Scale for Students (Buri et al., 2018)**

**Since the beginning of the COVID19 pandemic**, have you experienced any of the following events? Please indicate Yes or No, and use the provided scale to rate the perceived stressfulness of each experienced event. Feel free to input other negative life events that happened to you in the 'Other' lines.
 Yes or No
 1 = not stressful at all
 2 = slightly stressful
 3 = moderately stressful
 4 = definitely stressful (but not unbearable)
 5 = extremely stressful (hardly bearable)
 6 = one of the worst things I have ever had to go through

1. Death of family member
2. Death of close friend
3. Serious illness / injury to family member
4. Serious illness / injury to you
5. Serious illness / injury to close friend
6. Separation of parents
7. Family member having problems with the law
8. You having problems with the law
9. You having been assaulted
10. Parent laid off work
11. Serious break-up with romantic partner
12. Family has major financial pressures
13. You having major financial pressures
14. Addiction / mental health struggle of family member
15. You struggling with addiction
16. You struggling with mental health problem
17. Cheated on by romantic partner
18. Serious academic problems
19. Parents have ongoing conflicts
20. You having ongoing conflict with your family
21. You experiencing abuse / violence at home
22. Family losing house through fire, flood, etc.

23. Unwanted sexual behavior imposed on you
24. Unwanted pregnancy (either yours, or you being the father)
25. Serious conflict with close friend
26. Serious conflict at work
27. Other (Free text input)
28. Other (Free text input)

**SECTION D: Brief COPE (Carver, 1997)**

The following are different ways people react to difficult, stressful, or upsetting situations. Please indicate how much you have been engaging in these types of behaviours when encountering a difficult, stressful, or upsetting situation **during the COVID19 pandemic**.

> 1= I haven't been doing this at all
> 2= I've been doing this a little bit
> 3= I've been doing this a medium amount
> 4= I've been doing this a lot

1. Turning to work or other activities to take my mind off things.
2. Concentrating my efforts on doing something about the situation I'm in.
3. Saying to myself "this isn't real".
4. Using alcohol to make myself feel better.
5. Using cannabis or other drugs to make myself feel better.
6. Getting emotional support from others.
7. Giving up trying to deal with it.
8. Taking action to try to make the situation better.
9. Refusing to believe that it has happened.
10. Saying things to let my unpleasant feeling escape.
11. Getting help from other people.
12. Trying to see it in a different light, to make it seem more positive.
13. Criticizing myself.
14. Trying to come up with a strategy about what to do.
15. Getting comfort and understanding from someone.
16. Giving up the attempt to cope.
17. Looking for something good in what is happening.
18. Making jokes about it.
19. Doing something to distract myself (e.g., watching movies/TV, reading, going on social media, online browsing or shopping).
20. Accepting the reality of the fact that it has happened.
21. Expressing my negative feelings.
22. Find comfort in my religion or spiritual beliefs.
23. Trying to get advice or help from other people about what to do.
24. Learning to live with it.
25. Thinking hard about what steps to take.
26. Blaming myself for things that happened.
27. Praying or meditating.
28. Making fun of the situation.

29. Worrying about what I am going to do.
30. Taking it out on other people.
31. Blaming myself for being too emotional.

## SECTION E: Post Traumatic Growth Inventory (Tedeschi & Calhoun, 1997)

Indicate for each of the statements below the degree to which this change occurred in your life **as a result of the COVID19 pandemic**.

    0 = I did not experience this change
    1 = I experienced this change to a very small degree
    2 = I experienced this change to a small degree
    3 = I experienced this change to a moderate degree
    4 = I experienced this change to a great degree
    5 = I experienced this change to a very great degree

As a result of the COVID19 pandemic:

1. I changed my priorities about what is important in life.
2. I have a greater appreciation for the value of my own life.
3. I developed new interests.
4. I have a greater feeling of self-reliance.
5. I have a better understanding of spiritual matters.
6. I more clearly see that I can count on people in times of trouble.
7. I established a new path for my life.
8. I have a greater sense of closeness with others.
9. I am more willing to express my emotions.
10. I know better that I can handle difficulties.
11. I am able to do better things with my life.
12. I am better able to accept the way things work out.
13. I can better appreciate each day.
14. New opportunities are available which wouldn't have been otherwise.
15. I have more compassion for others.
16. I put more effort into my relationships.
17. I am more likely to try to change things which need changing.
18. I have stronger religious or spiritual faith.
19. I discovered that I'm stronger than I thought I was.
20. I learned a great deal about how wonderful people are.
21. I better accept needing others.

## SECTION F: Intolerance of Uncertainty Scale – Short Form (Carleton, Norton, & Asmundson, 2007)

Please indicate what number best corresponds to how much you agree with each item.

    1 = not at all characteristic of me
    2 = a little characteristic of me
    3 = somewhat characteristic of me
    4 = very characteristic of me
    5 = entirely characteristic of me

1. Unforeseen events upset me greatly.
2. It frustrates me not having all the information I need.
3. Uncertainty keeps me from living a full life.
4. One should always look ahead so as to avoid surprises.
5. A small unforeseen event can spoil everything, even with the best of planning.
6. When it's time to act, uncertainty paralyses me.
7. When I am uncertain I can't function very well.
8. I always want to know what the future has in store for me.
9. I can't stand being taken by surprise.
10. The smallest doubt can stop me from acting.
11. I should be able to organize everything in advance.
12. I must get away from all uncertain situations.

**SECTION G: Multidimensional Scale of Perceived Social Support** (Zimet, Dahlem, Zimet & Farley, 1988)

Please read each statement carefully and then indicate how you feel about each statement.
> 1 = Very Strongly Disagree
> 2 = Strongly Disagree
> 3 = Mildly Disagree
> 4 = Neutral
> 5 = Mildly Agree
> 6 = Strongly Agree
> 7 = Very Strongly Agree

1. There is a special person who is around when I am in need.
2. There are people at my university who care about me.
3. There is a special person with whom I can share joys and sorrows.
4. My family really tries to help me.
5. There are supports at my university I can use if I need to.
6. I get the emotional help & support I need from my family.
7. I have a special person who is a real source of comfort to me.
8. My friends really try to help me.
9. I feel supported by the staff or professors at my university.
10. I can count on my friends when things go wrong.
11. I can talk about my problems with my family.
12. I have friends with whom I can share my joys and sorrows.
13. There is a special person in my life who cares about my feelings.
14. My family is willing to help me make decisions.
15. I can talk about my problems with my friends.
16. There is someone at my university that I can go to for help.

**SECTION H: Emotional Quotient Inventory** (Parker et al., 2011)

Please read the following statements and indicate the degree to which each statement is true of the way you feel, think, or act **most of the time and in most situations**.

1 = Very seldom true
2 = Seldom true
3 = Sometimes true
4 = Often true
5 = Very often true

1. I'm a fairly cheerful person.
2. I like helping people.
3. I'm unable to express my ideas to others.
4. It is a problem controlling my anger.
5. My approach in overcoming difficulties is to move step by step.
6. I don't do anything bad in my life.
7. I feel sure of myself in most situations.
8. I'm unable to understand the way other people feel.
9. I prefer others to make decisions for me.
10. My impulsiveness creates problems.
11. I try to see things as they really are, without fantasizing or daydreaming about them.
12. Nothing disturbs me.
13. I believe that I can stay on top of tough situations.
14. I'm good at understanding the way other people feel.
15. It's hard for me to understand the way I feel.
16. I feel that it's hard for me to control my anxiety.
17. When faced with a difficult situation, I like to collect all the information about it that I can.
18. I have not told a lie in my life.
19. I'm optimistic about most things I do.
20. My friends can tell me intimate things about themselves.
21. In the past few years, I've accomplished little.
22. I tend to explode with anger easily.
23. I like to get an overview of a problem before trying to solve it.
24. I have not broken a law of any kind.
25. It's hard for me to enjoy life.
26. I care what happens to other people.
27. It's hard for me to make decisions on my own.
28. I have strong impulses that are hard to control.
29. When facing a problem, the first thing I do is stop and think.
30. I don't have bad days.
31. I am satisfied with my life.
32. My close relationships mean a lot to me and to my friends.
33. It's hard to express my intimate feelings.
34. I'm impulsive.
35. When trying to solve a problem, I look at each possibility and then decide on the best way.
36. I have not been embarrassed about anything that I've done.
37. I get depressed.
38. I'm able to respect others.

39. I'm more of a follower than a leader.
40. I've got a bad temper.
41. In handling situations that arise, I try to think of as many approaches as I can.
42. I generally expect things will turn out all right, despite setbacks from time to time.
43. I'm sensitive to the feelings of others.
44. Others think that I lack assertiveness.
45. I'm impatient.
46. I believe in my ability to handle most upsetting problems.
47. I have good relations with others.
48. It's hard for me to describe my feelings.
49. Before beginning something new, I usually feel that I'll fail.
50. It's difficult for me to stand up for my rights.
51. People think that I'm sociable.

## SECTION I: Valued Living Questionnaire (Wilson & Groom, 2002)

Below are areas of life that are valued by some people. We are concerned with your quality of life in each of these areas. One aspect of quality of life involves the importance one puts on different areas of living. Rate the importance of each area on a scale of 1-10. Not everyone will value all of these areas, or value all areas the same. Rate each area according to **your own personal sense of importance**.

    1 = not at all important to me… to 10 = extremely important to me

Area
1. Family (other than marriage or parenting)
2. Marriage/couples/intimate relations
3. Parenting
4. Friends/social life
5. Work
6. Academics/education
7. Recreation/fun
8. Spirituality
9. Citizenship/community life
10. Physical self-care
11. Mental health/well-being

In this section, we would like you to give a rating of how consistent your actions have been with each of your values. We are **not** asking about your ideal in each area. We are also **not** asking what others think of you. Everyone does better in some areas than others. People also do better at some times than at others. We want to know how you think you have been doing **over the past two weeks.** Rate each area on a scale of 1-10.
**Over the past two weeks, how consistent have your actions been with your values, in each area?**

    1 = not at all consistent with my values… to 10 = completely consistent with my values

Area
1. Family (other than marriage or parenting)
2. Marriage/couples/intimate relations

3. Parenting
4. Friends/social life
5. Work
6. Academics/education
7. Recreation/fun
8. Spirituality
9. Citizenship/community life
10. Physical self-care
11. Mental health/well-being

**SECTION J: Depression, Anxiety, and Stress Scale-21 (Lovibond & Lovibond, 1995)**

Please read each statement and indicate how much the statement applied to you **over the past two weeks**. There are no right or wrong answers. Do not spend too much time on any statement.

    0 Did not apply to me at all
    1 Applied to me to some degree, or some of the time
    2 Applied to me to a considerable degree, or a good part of the time
    3 Applied to me very much, or most of the time

1. I found it hard to wind down.
2. I was aware of dryness of my mouth.
3. I couldn't seem to experience any positive feeling at all.
4. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion).
5. I found it difficult to work up the initiative to do things.
6. I tended to over-react to situations.
7. I experienced trembling (e.g., in the hands).
8. I felt that I was using a lot of nervous energy.
9. I was worried about situations in which I might panic and make a fool of myself.
10. I felt that I had nothing to look forward to.
11. I found myself getting agitated.
12. I found it difficult to relax.
13. I felt down-hearted and blue.
14. I was intolerant of anything that kept me from getting on with what I was doing.
15. I felt I was close to panic.
16. I was unable to become enthusiastic about anything.
17. I felt I wasn't worth much as a person.
18. I felt that I was rather touchy.
19. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat).
20. I felt scared without any good reason.
21. I felt that life was meaningless.

**PARTICIPANT DEBRIEFING FORM**

**Project title: "In These Unprecedented Times..."**

Dear Research Participant,

Thank you for your time and participation in this study. This research is being conducted by Samantha Fillion and supervised by Dr. Kateryna Keefer, with the aim of understanding the impacts of COVID19 on everyday life and psychological well-being, and what coping strategies individuals are using in order to cope with related stress during these unprecedented times.

The COVID19 pandemic has had widespread impact on the physical, financial, and mental well-being of many. We want to know what strategies individuals are exercising to cope with the stress, uncertainty, and social disconnection associated with these circumstances. It is also of interest what psychosocial factors are most adaptive and predict better mental well-being. Knowledge gained from this study will be used to better understand what factors put individuals at higher risk for or conversely buffer against negative outcomes such as increased stress, anxiety, and depression. Additionally, while there are undoubtedly negative impacts for many, it is important to consider some of the potential positive impacts that may exist following such significant stressors, such as opportunities for personal growth and resilience.

To show our appreciation for your participation, you will be granted 1 bonus credit via the SONA research participation system to put towards an eligible Psychology course of your choice.

If this study brought up any troubling thoughts or emotions that you feel you need help processing, please consider using the services listed below. These services are confidential and are free of charge or are covered by your student fees (in the case of Trent Student Wellness services).

Telehealth Ontario
1-866-797-0000

Four Counties Crisis
705-745-6484

Student Wellness Centre
https://www.trentu.ca/wellness/
Counselling Services: 705-748-1386
Blackburn Hall, Suite 113

Upon completion of this study, we would be happy to provide you with a summary of the overall findings, if interested. Should you have any additional questions regarding the study or your participation, please do not hesitate to contact the Principal Investigator, Samantha Fillion, at samanthafillion@trentu.ca.

Thank you again for your participation!

Samantha Fillion, Principal Investigator
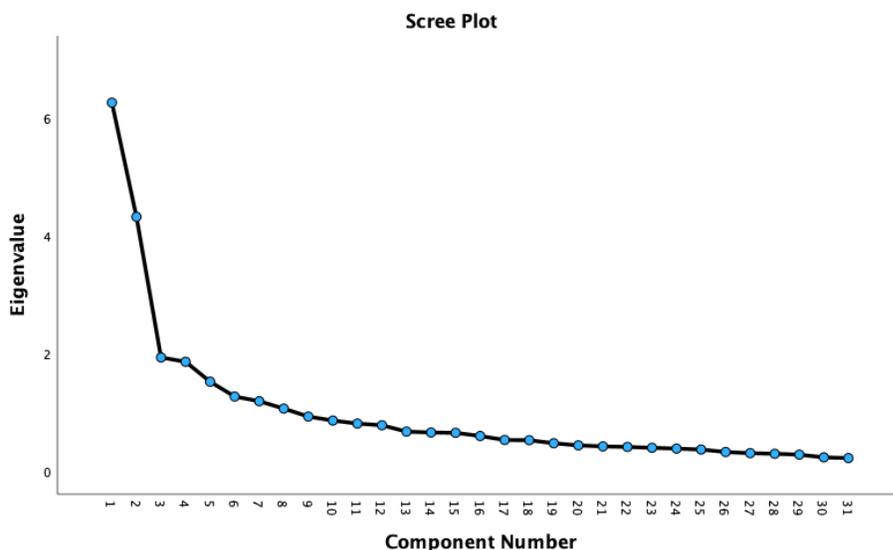
Kateryna Keefer, Supervisor

# Appendix B

## Principal Components Analysis of the Brief-COPE Items

### Total Variance Explained

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 6.255 | 20.178 | 20.178 | 6.255 | 20.178 | 20.178 | 3.805 | 12.273 | 12.273 |
| 2 | 4.318 | 13.927 | 34.105 | 4.318 | 13.927 | 34.105 | 3.796 | 12.247 | 24.520 |
| 3 | 1.932 | 6.231 | 40.336 | 1.932 | 6.231 | 40.336 | 3.312 | 10.684 | 35.204 |
| 4 | 1.858 | 5.994 | 46.330 | 1.858 | 5.994 | 46.330 | 2.193 | 7.076 | 42.279 |
| 5 | 1.520 | 4.902 | 51.232 | 1.520 | 4.902 | 51.232 | 2.088 | 6.736 | 49.016 |
| 6 | 1.268 | 4.090 | 55.322 | 1.268 | 4.090 | 55.322 | 1.955 | 6.307 | 55.322 |
| 7 | 1.189 | 3.835 | 59.158 | | | | | | |
| 8 | 1.064 | 3.431 | 62.589 | | | | | | |
| 9 | .928 | 2.994 | 65.583 | | | | | | |
| 10 | .861 | 2.776 | 68.359 | | | | | | |
| 11 | .810 | 2.612 | 70.971 | | | | | | |
| 12 | .781 | 2.518 | 73.489 | | | | | | |
| 13 | .673 | 2.172 | 75.661 | | | | | | |
| 14 | .658 | 2.122 | 77.783 | | | | | | |
| 15 | .652 | 2.105 | 79.888 | | | | | | |
| 16 | .599 | 1.931 | 81.819 | | | | | | |
| 17 | .531 | 1.713 | 83.532 | | | | | | |
| 18 | .527 | 1.701 | 85.233 | | | | | | |
| 19 | .475 | 1.533 | 86.766 | | | | | | |
| 20 | .440 | 1.419 | 88.185 | | | | | | |
| 21 | .422 | 1.363 | 89.548 | | | | | | |
| 22 | .413 | 1.332 | 90.880 | | | | | | |
| 23 | .398 | 1.285 | 92.165 | | | | | | |
| 24 | .385 | 1.242 | 93.407 | | | | | | |
| 25 | .369 | 1.190 | 94.597 | | | | | | |
| 26 | .327 | 1.056 | 95.653 | | | | | | |
| 27 | .307 | .992 | 96.645 | | | | | | |
| 28 | .297 | .960 | 97.604 | | | | | | |
| 29 | .282 | .911 | 98.515 | | | | | | |
| 30 | .236 | .762 | 99.277 | | | | | | |
| 31 | .224 | .723 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.



Scree Plot

### Rotated Component Matrix[a]

| | Component | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| COPE31 | .783 | .005 | .168 | .068 | .028 | -.032 |
| COPE26 | .771 | .098 | -.005 | .100 | .032 | .006 |
| COPE13 | .740 | .027 | .107 | .083 | .185 | -.143 |
| COPE29 | .667 | .235 | .122 | .021 | .051 | -.062 |
| COPE16 | .655 | -.126 | .003 | .277 | .031 | .036 |
| COPE7 | .573 | -.245 | -.021 | .212 | .144 | .062 |
| COPE30 | .520 | .005 | .229 | .235 | .003 | .085 |
| COPE25 | .137 | .773 | .088 | .033 | .020 | .148 |
| COPE2 | -.044 | .747 | .126 | .042 | -.038 | .014 |
| COPE8 | -.101 | .734 | .202 | .039 | .031 | .008 |
| COPE14 | .179 | .724 | .195 | .034 | -.031 | .091 |
| COPE17 | -.120 | .567 | .156 | -.033 | .334 | .246 |
| COPE12 | -.157 | .542 | .289 | -.031 | .257 | .223 |
| COPE1 | .062 | .417 | .113 | .007 | .009 | -.014 |
| COPE11 | .049 | .204 | .851 | .052 | .035 | .078 |
| COPE6 | .093 | .153 | .834 | .062 | .028 | -.017 |
| COPE15 | .066 | .271 | .802 | -.029 | .036 | .043 |
| COPE23 | .153 | .307 | .679 | .026 | .074 | .214 |
| COPE21 | .284 | .131 | .526 | .049 | .253 | -.052 |
| COPE3 | .274 | .089 | .001 | .665 | -.087 | .195 |
| COPE4 | .122 | -.108 | .046 | .645 | .181 | -.102 |
| COPE9 | .305 | .084 | .002 | .637 | -.097 | .285 |
| COPE5 | .059 | .013 | .026 | .511 | .119 | -.202 |
| COPE10 | .306 | .175 | .328 | .410 | .031 | .027 |
| COPE18 | .113 | -.029 | .039 | .311 | .722 | -.041 |
| COPE28 | .140 | -.096 | -.067 | .332 | .640 | .013 |
| COPE20 | -.066 | .351 | .150 | -.222 | .544 | .026 |
| COPE19 | .166 | .015 | .156 | -.022 | .507 | -.042 |
| COPE24 | .012 | .396 | -.002 | -.170 | .473 | .094 |
| COPE22 | -.030 | .163 | .110 | -.009 | .012 | .882 |
| COPE27 | -.024 | .155 | .062 | .016 | -.005 | .873 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

| ITEM | | NEW CATEGORY (FACTOR) | ASSIGNED CATEGORY OF COPING |
|---|---|---|---|
| COPE7 | giving up trying to deal with it | NEGATIVE EMOTION-FOCUSED COPING | behavioural disengagement |
| COPE13 | criticizing self | NEGATIVE EMOTION-FOCUSED COPING | self-blame |
| COPE16 | giving up attempt to cope | NEGATIVE EMOTION-FOCUSED COPING | behavioural disengagement |
| COPE26 | blaming self for things that happened | NEGATIVE EMOTION-FOCUSED COPING | self-blame |
| COPE29 | worrying about what I am going to do [SUPPLEMENTED ITEM] | NEGATIVE EMOTION-FOCUSED COPING | failure of emotion regulation |
| COPE30 | taking it out on other people [SUPPLEMENTED ITEM] | NEGATIVE EMOTION-FOCUSED COPING | failure of emotion regulation |
| COPE31 | blaming self for being too emotional [SUPPLEMENTED ITEM] | NEGATIVE EMOTION-FOCUSED COPING | failure of emotion regulation |
| COPE1 | turning to work or other activities to take my mind off things | PRO-ACTIVE COPING | self-distraction |
| COPE2 | concentrating efforts on doing something about the situation I'm in | PRO-ACTIVE COPING | active coping |
| COPE8 | taking action to try to make situation better | PRO-ACTIVE COPING | active coping |
| COPE12 | trying to see it in a different light to make it seem more positive | PRO-ACTIVE COPING | positive reframing |
| COPE14 | trying to come up with strategy about what to do | PRO-ACTIVE COPING | planning |
| COPE17 | looking for something good in what is happening | PRO-ACTIVE COPING | positive reframing |
| COPE25 | thinking hard about what steps to take | PRO-ACTIVE COPING | planning |
| COPE6 | getting emotional support from others | SOCIAL SUPPORT SEEKING | use of emotional support |
| COPE11 | getting help from other people | SOCIAL SUPPORT SEEKING | use of instrumental support |
| COPE15 | getting comfort and understanding from someone | SOCIAL SUPPORT SEEKING | use of emotional support |
| COPE21 | expressing my negative feelings | SOCIAL SUPPORT SEEKING | venting |
| COPE23 | trying to get advice or help from other people about what to do | SOCIAL SUPPORT SEEKING | use of instrumental support |
| COPE3 | saying to myself this isn't real | AVOIDANCE | denial |
| COPE4 | using alcohol to make myself feel better | AVOIDANCE | substance use |
| COPE5 | using cannabis or other drugs to make myself feel better | AVOIDANCE | substance use |
| COPE9 | refusing to believe that it has happened | AVOIDANCE | denial |
| COPE10 | saying things to let my unpleasant feeling escape | AVOIDANCE | venting |
| COPE18 | making jokes about it | ACCEPTANCE | humor |
| COPE19 | distracting myself (eg. tv, reading, social media, online browse/shop) | ACCEPTANCE | self-distraction |
| COPE20 | accepting reality of fact it has happened | ACCEPTANCE | acceptance |
| COPE24 | learning to live with it | ACCEPTANCE | acceptance |
| COPE28 | making fun of situation | ACCEPTANCE | humor |
| COPE22 | find comfort in religion or spiritual beliefs | RELIGION | religion |
| COPE27 | praying or meditating | RELIGION | religion |

## Independent-Samples Mann-Whitney U Tests

Mann-Whitney U Test was performed to test whether PTGI scores differed by psychological/psychiatric disorder status. The results indicated that those who reported one or more diagnosis of a psychological/psychiatric disorder (Mean rank = 350.97, $n$ = 313) did not significantly differ in their PTGI level from those who reported not having a psychological/psychiatric disorder (Mean rank = 375.56, $n$ = 416), $z$ = -1.56, $p$ = 0.12.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig.[a,b] | Decision |
|---|---|---|---|---|
| 1 | The distribution of PTG is the same across categories of DISORDER. | Independent–Samples Mann–Whitney U Test | .119 | Retain the null hypothesis. |
| 2 | The distribution of DASS is the same across categories of DISORDER. | Independent–Samples Mann–Whitney U Test | <.001 | Reject the null hypothesis. |

a. The significance level is .050.
b. Asymptotic significance is displayed.

**Independent-Samples Mann-Whitney U Test**

**DISORDER**
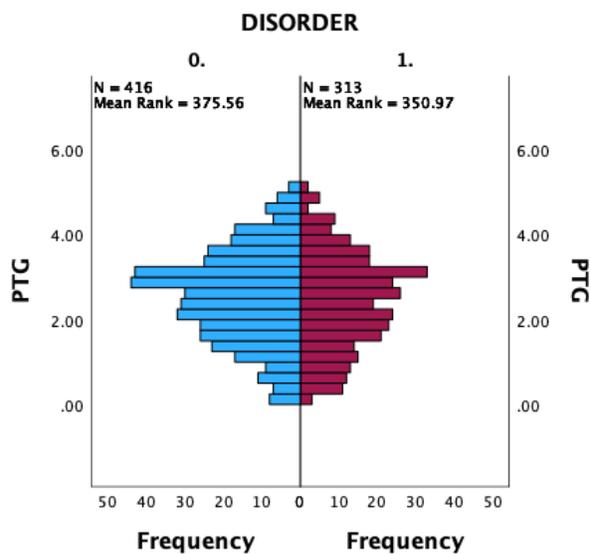


| Independent-Samples Mann-Whitney U Test Summary | |
|---|---|
| Total N | 729 |
| Mann–Whitney U | 60711.500 |
| Wilcoxon W | 109852.500 |
| Test Statistic | 60711.500 |
| Standard Error | 2814.117 |
| Standardized Test Statistic | −1.561 |
| Asymptotic Sig.(2–sided test) | .119 |

Mann-Whitney U Test was performed to test whether DASS scores differed by psychological/psychiatric disorder status. The results indicated that those who reported one or more diagnosis of a psychological/psychiatric disorder (Mean rank = 452.85, *n* = 313) endorsed significantly higher levels of DASS than those who reported not having a psychological/psychiatric disorder (Mean rank = 297.86, *n* = 415), *z* = 9.85, *p* < .01.

**Independent-Samples Mann-Whitney U Test**

**DISORDER**
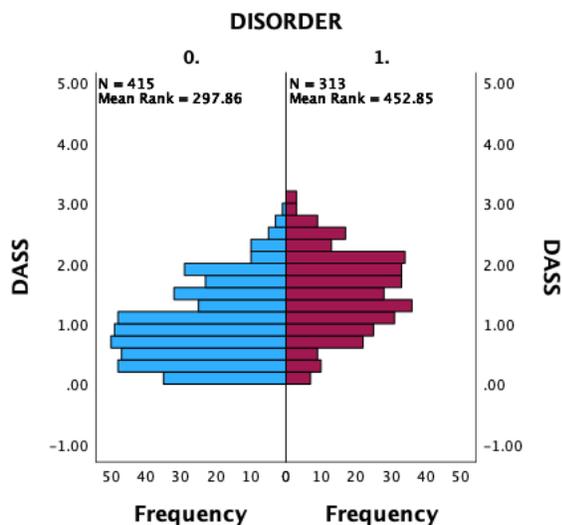


| Independent-Samples Mann-Whitney U Test Summary | |
|---|---|
| Total N | 728 |
| Mann–Whitney U | 92602.000 |
| Wilcoxon W | 141743.000 |
| Test Statistic | 92602.000 |
| Standard Error | 2808.508 |
| Standardized Test Statistic | 9.847 |
| Asymptotic Sig.(2–sided test) | <.001 |

**Spearman's Rho Correlations**

| Spearman's rho | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. NLES_RateAvg | .305** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. NLES_Total | .951** | .562** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. DASS_Dep | .367** | .255** | .380** | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. DASS_Anx | .364** | .273** | .362** | .691** | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. DASS_Stress | .329** | .303** | .348** | .730** | .757** | | | | | | | | | | | | | | | | | | | | | | | |
| 6. DASS | .391** | .303** | .403** | .903** | .894** | .910** | | | | | | | | | | | | | | | | | | | | | | |
| 7. PTG_Relate | .004 | .146* | .025 | -.135* | .037 | .049 | -.028 | | | | | | | | | | | | | | | | | | | | | |
| 8. PTG_New | .059 | .101* | .064 | -.169** | .024 | .015 | -.056 | .714** | | | | | | | | | | | | | | | | | | | | |
| 9. PTG_Strength | .047 | .093* | .029 | -.201** | -.03 | -.046 | -.111** | .731** | .768** | | | | | | | | | | | | | | | | | | | |
| 10. PTG_Life | .025 | .134** | .036 | -.216** | -.027 | .007 | -.096** | .686** | .749** | .722** | | | | | | | | | | | | | | | | | | |
| 11. PTG_Spiritual | .006 | .047 | .018 | -.069 | .021 | -.024 | -.032 | .386** | .436** | .422** | .399** | | | | | | | | | | | | | | | | | |
| 12. PTG | .036 | .134** | .045 | -.190** | .011 | .011 | -.072 | .902** | .894** | .882** | .841** | .548** | | | | | | | | | | | | | | | | |
| 13. PTG_4Score | .036 | .131** | .041 | -.208** | -.002 | .005 | -.086* | .876** | .901** | .899** | .883** | .457** | .988** | | | | | | | | | | | | | | | |
| 14. EQI_Intra | -.072 | -.066 | -.063 | -.419** | -.398** | -.370** | -.439** | .072 | .113** | .189** | .157** | .079* | .136** | .152** | | | | | | | | | | | | | | |
| 15. EQI_Inter | -.031 | .049 | -.035 | -.145* | -.063 | -.034 | -.090* | .373** | .211** | .279** | .283** | .031 | .311** | .319** | .261** | | | | | | | | | | | | | |
| 16. EQI_Adapt | -.017 | .048 | 0 | -.055 | -.02 | .031 | -.016 | .233** | .276** | .333** | .319** | .115** | .297** | .319** | .127** | .334** | | | | | | | | | | | | |
| 17. EQI_Stress | -.282** | -.229** | -.305** | -.375** | -.404** | -.467** | -.454** | -.027 | -.037 | .018 | -.004 | -.028 | -.021 | -.014 | .420** | .238** | .093* | | | | | | | | | | | |
| 18. MSPSS_SigOth | -.101** | .065 | -.082* | -.151** | -.073* | -.001 | -.089 | .353** | .180** | .219** | .206** | -.042 | .259** | .268** | .147** | .361** | .184** | .079* | | | | | | | | | | |
| 19. MSPSS_Fam | -.298** | -.061 | -.244** | -.376** | -.271** | -.223** | -.325** | .342** | .186** | .232** | .264** | .131** | .286** | .284** | .242** | .329** | .185** | .251** | .396** | | | | | | | | | |
| 20. MSPSS_Friend | -.136** | -.034 | -.101* | -.247** | -.160** | -.139** | -.204** | .401** | .189** | .239** | .216** | .039 | .293** | .288** | .171** | .417** | .151** | .153** | .451** | .500** | | | | | | | | |
| 21. MSPSS_School | -.100** | -.053 | -.115** | -.280** | -.162** | -.180** | -.235** | .317** | .236** | .245** | .237** | .076* | .287** | .290** | .091* | .204** | .098* | .082* | .248** | .358** | .477** | | | | | | | |
| 22. MSPSS | -.220** | -.05 | -.197** | -.363** | -.227** | -.201** | -.298** | .464** | .249** | .301** | .297** | .067 | .364** | .366** | .212** | .413** | .191** | .199** | .669** | .750** | .798** | .701** | | | | | | |
| 23. COPE_NegEmot | .383** | .297** | .420** | .604** | .594** | .611** | .666** | .034 | -.027 | -.077* | -.065 | -.037 | -.025 | -.041 | -.430** | -.03 | -.055 | -.482** | .005 | -.241** | -.147** | -.146** | -.192** | | | | | |
| 24. COPE_Proactive | .05 | .150** | .062 | -.133** | .046 | .06 | -.019 | .466** | .535** | .509** | .516** | .275** | .556** | .563** | .145** | .280** | .454** | .053 | .207** | .257** | .219** | .204** | .269** | .04 | | | | |
| 25. COPE_SocSupport | .086* | .205** | .130** | .099** | .207** | .273** | .204** | .457** | .274** | .287** | .286** | .117** | .374** | .362** | .034 | .344** | .227** | -.124** | .355** | .297** | .313** | .157** | .353** | .278** | .467** | | | |
| 26. COPE_Avoid | .331** | .235** | .337** | .355** | .391** | .375** | .408** | .095* | .092* | .042 | .061 | .061 | .088* | .077* | -.203** | -.04 | .016 | -.367** | -.100** | -.122** | -.034 | -.014 | -.083* | .464** | .098** | .224** | | |
| 27. COPE_Accept | .147** | .082* | .082 | .159** | .178** | .205** | .201** | .144** | .156** | .226** | .116** | .027 | .167** | .176** | -.080* | .134** | .129** | -.183** | .080* | .019 | .095* | .013 | .046 | .214** | .255** | .239** | .193** | |

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

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

**Pearsons Correlations**

| | PTG1 | PTG2 | PTG3 | PTG4 | PTG5 | PTG6 | PTG7 | PTG8 | PTG9 | PTG10 | PTG11 | PTG12 | PTG13 | PTG14 | PTG15 | PTG16 | PTG17 | PTG18 | PTG19 | PTG20 | PTG21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DASS1 | .099** | -0.013 | -0.021 | -0.011 | -0.065 | 0.033 | 0.023 | 0.024 | 0.054 | -0.033 | -0.001 | -0.004 | 0.006 | -0.031 | 0.031 | 0.016 | 0.029 | -0.071 | -0.014 | -0.027 | 0.06 |
| DASS2 | .106** | 0.047 | 0.054 | 0.055 | 0.02 | 0.065 | .079* | 0.057 | .145** | .086* | .083* | .125** | 0.046 | 0.071 | 0.069 | .088* | .097** | 0.001 | 0.072 | 0.001 | .085* |
| DASS3 | -0.027 | -.232** | -.151** | -.189** | -.074* | -.156** | -0.057 | -.156** | -0.091* | -.168** | -.145** | -.165** | -.222** | -.080* | -0.051 | -.149** | -.096** | -.096** | -.149** | -.165** | -.121** |
| DASS4 | 0.054 | -.081* | -0.013 | -0.02 | -0.048 | -.092* | 0.024 | -0.054 | 0.007 | -0.052 | -0.064 | -0.052 | -0.059 | 0.029 | 0.062 | -0.006 | 0.041 | -0.068 | 0.012 | -0.049 | -0.031 |
| DASS5 | -0.008 | -.166** | -.073* | -.137** | -.114** | -.107** | -.092* | -.116** | -0.057 | -.128** | -.190** | -.133** | -.200** | -0.061 | -0.028 | -0.064 | -.100** | -.105** | -0.069 | -.125** | -0.054 |
| DASS6 | .134** | 0.021 | 0.045 | -0.067 | -0.012 | 0.027 | 0.065 | 0.028 | .100** | -0.036 | -0.01 | -.115** | -0.029 | 0.067 | .090* | 0.062 | 0.046 | 0.009 | 0.072 | 0.026 | .133** |
| DASS7 | 0.031 | -.104** | 0.022 | -0.059 | 0.007 | -0.03 | 0.013 | -0.035 | -0.003 | -0.063 | -.082* | -0.059 | -.127** | -0.062 | 0.029 | -0.004 | 0.037 | 0.005 | -0.006 | -0.013 | 0.02 |
| DASS8 | .074* | -0.031 | 0.003 | -0.041 | -0.023 | 0.02 | 0.012 | -0.009 | 0.057 | -0.041 | -0.051 | -0.066 | -0.064 | -0.017 | .073* | 0.03 | 0.063 | -0.028 | 0.024 | -0.001 | .073* |
| DASS9 | .074* | -0.004 | 0.012 | -0.054 | 0.007 | 0.043 | 0.028 | 0.038 | .093* | -0.042 | -0.018 | -0.06 | -0.057 | -0.013 | .115** | 0.068 | 0.053 | -0.001 | 0.054 | 0.036 | .091* |
| DASS10 | -0.005 | -.199** | -.142** | -.200** | -0.065 | -.144** | -.092* | -.129** | -0.036 | -.168** | -.167** | -.144** | -.213** | -.143** | -0.055 | -.089* | -.088* | -.079* | -.106** | -.114** | -0.043 |
| DASS11 | .117** | -0.049 | -0.035 | -0.072 | -0.007 | -0.029 | 0.032 | -0.051 | 0.045 | -0.024 | -0.032 | -.093* | -0.061 | 0.017 | 0.024 | 0.005 | 0.008 | -0.046 | .080* | -0.037 | 0.034 |
| DASS12 | 0.045 | -.089* | -.085* | -.154** | -.090* | -0.06 | -0.005 | -0.064 | -0.017 | -.099** | -.090* | -.116** | -.089* | -0.043 | 0.018 | -0.006 | -0.026 | -.124** | -0.039 | -.082* | 0.02 |
| DASS13 | -0.025 | -.196** | -.114** | -.153** | -0.059 | -.114** | -0.062 | -.136** | -0.03 | -.102** | -.149** | -.160** | -.223** | -.122** | -0.017 | -0.04 | -.090* | -.101** | -0.068 | -.106** | -0.03 |
| DASS14 | .097** | -0.028 | -0.015 | -0.066 | 0.021 | 0.032 | 0.032 | 0.009 | .126** | 0.031 | 0.012 | -0.014 | -0.013 | 0.028 | 0.026 | 0.031 | 0.032 | 0.058 | 0.067 | 0.024 | .092* |
| DASS15 | .087* | -.082* | -0.006 | -0.05 | -0.002 | -0.031 | 0.053 | -0.007 | .106** | -0.054 | -0.049 | -.084* | -.101** | -0.014 | .077* | 0.047 | 0.037 | -0.004 | 0.031 | 0.001 | .077* |
| DASS16 | -0.02 | -.194** | -.135** | -.147** | -0.026 | -.124** | -0.042 | -.115** | -0.004 | -.101** | -.101** | -.118** | -.179** | -0.072 | -0.004 | -.075* | -0.038 | -0.002 | -0.045 | -0.04 | 0 |
| DASS17 | -0.034 | -.220** | -.126** | -.217** | -0.061 | -.153** | -0.042 | -.120** | -0.008 | -.136** | -.120** | -.151** | -.217** | -.122** | -0.02 | -0.063 | -0.07 | -0.032 | -0.068 | -0.066 | -0.03 |
| DASS18 | .090* | -0.022 | 0.013 | 0.001 | 0.004 | 0.066 | 0.043 | 0.063 | .124** | -0.035 | -0.02 | -0.04 | 0.005 | -0.002 | 0.07 | .098** | .084* | -0.009 | 0.072 | 0.04 | .117** |
| DASS19 | 0.039 | -0.017 | -0.017 | -0.035 | 0.013 | -.079* | 0.028 | -0.015 | 0.02 | -0.047 | -0.047 | -0.019 | -0.03 | -0.005 | 0.041 | 0.006 | 0.038 | -0.015 | 0.014 | -0.026 | 0.008 |
| DASS20 | .089* | -0.053 | 0.019 | -.084* | -0.005 | -0.001 | 0.033 | 0.006 | .085* | -0.064 | -0.055 | -.078* | -0.052 | 0 | .091* | 0.056 | 0.065 | 0.026 | 0.031 | 0.019 | .093* |
| DASS21 | -0.047 | -.249** | -.079* | -.181** | -0.06 | -.153** | -.080* | -.154** | -0.063 | -.163** | -.158** | -.171** | -.239** | -.134** | -0.031 | -.084* | -.080* | -0.038 | -.109** | -.114** | -0.07 |

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

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

**Spearman's Correlations**

| | PTG1 | PTG2 | PTG3 | PTG4 | PTG5 | PTG6 | PTG7 | PTG8 | PTG9 | PTG10 | PTG11 | PTG12 | PTG13 | PTG14 | PTG15 | PTG16 | PTG17 | PTG18 | PTG19 | PTG20 | PTG21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DASS1 | .090* | -0.019 | -0.018 | -0.016 | -0.058 | 0.034 | 0.023 | 0.022 | 0.054 | -0.032 | 0.001 | -0.011 | -0.002 | -0.032 | 0.017 | 0.005 | 0.026 | -0.07 | -0.013 | -0.028 | -0.027 |
| DASS2 | .095** | 0.041 | 0.057 | 0.053 | 0.03 | 0.049 | 0.071 | 0.042 | .137** | .074* | .074* | .115** | 0.039 | 0.068 | 0.059 | .078* | .083* | -0.009 | 0.057 | -0.007 | 0.001 |
| DASS3 | -0.024 | -.228** | -.149** | -.190** | -0.064 | -.156** | -0.058 | -.155** | -.087* | -.175** | -.155** | -.184** | -.225** | -.083* | -0.062 | -.151** | -.106** | -.106** | -.145** | -.170** | -.165** |
| DASS4 | 0.065 | -.094* | -0.013 | -0.021 | -0.037 | -.106** | 0.014 | -0.066 | -0.007 | -0.054 | -0.07 | -0.067 | -.073* | 0.023 | 0.036 | -0.021 | 0.022 | -0.06 | 0.005 | -0.066 | -0.049 |
| DASS5 | -0.008 | -.166** | -0.069 | -.139** | -.091* | -.104** | -.093* | -.115** | -0.058 | -.127** | -.189** | -.138** | -.205** | -0.06 | -0.034 | -0.063 | -.098** | -.111** | -0.07 | -.126** | -.125** |
| DASS6 | .132** | 0.009 | 0.045 | -0.072 | 0.002 | 0.022 | 0.065 | 0.02 | .099** | -0.041 | -0.011 | -.123** | -0.036 | 0.064 | .082* | 0.055 | 0.041 | 0 | 0.066 | 0.02 | 0.026 |
| DASS7 | 0.025 | -.118** | 0.02 | -0.057 | 0.018 | -0.025 | 0.011 | -0.042 | -0.005 | -0.064 | -.091* | -0.065 | -.132** | -0.067 | 0.024 | -0.024 | 0.028 | 0.012 | -0.012 | -0.025 | -0.013 |
| DASS8 | 0.068 | -0.045 | 0.009 | -0.043 | -0.016 | 0.019 | 0.014 | -0.016 | 0.058 | -0.047 | -0.05 | -0.068 | -0.065 | -0.019 | 0.069 | 0.018 | 0.062 | -0.028 | 0.021 | -0.004 | -0.001 |
| DASS9 | .076* | -0.011 | 0.014 | -0.059 | 0.006 | 0.042 | 0.027 | 0.032 | .091* | -0.043 | -0.02 | -0.07 | -0.06 | -0.013 | .112** | 0.057 | 0.047 | -0.015 | 0.051 | 0.035 | 0.036 |
| DASS10 | 0.001 | -.199** | -.134** | -.199** | -0.041 | -.142** | -.093* | -.130** | -0.039 | -.166** | -.169** | -.144** | -.212** | -.145** | -0.054 | -.081* | -.088* | -.092* | -.101** | -.120** | -.114** |
| DASS11 | .117** | -0.059 | -0.031 | -.074* | 0.007 | -0.031 | 0.033 | -0.054 | 0.044 | -0.027 | -0.029 | -.098** | -0.065 | 0.017 | 0.024 | -0.002 | 0.008 | -0.062 | .077* | -0.038 | -0.037 |
| DASS12 | 0.045 | -.089* | -.081* | -.157** | -.075* | -0.058 | 0.003 | -0.064 | -0.012 | -.097** | -.084* | -.117** | -.085* | -0.044 | 0.016 | -0.004 | -0.02 | -.128** | -0.038 | -.081* | -.082* |
| DASS13 | -0.024 | -.199** | -.107** | -.152** | -0.04 | -.115** | -0.061 | -.138** | -0.03 | -.102** | -.147** | -.167** | -.225** | -.123** | -0.017 | -0.042 | -.095* | -.116** | -0.062 | -.110** | -.106** |
| DASS14 | .095** | -0.034 | -0.013 | -0.053 | 0.041 | 0.031 | 0.033 | 0.001 | .122** | 0.025 | 0.011 | -0.019 | -0.02 | 0.029 | 0.02 | 0.027 | 0.026 | 0.047 | 0.061 | 0.015 | 0.024 |
| DASS15 | .080* | -.093* | -0.007 | -0.05 | 0.007 | -0.031 | 0.052 | -0.012 | .107** | -0.054 | -0.049 | -.091* | -.101** | -0.014 | 0.07 | 0.04 | 0.032 | -0.014 | 0.03 | -0.001 | 0.001 |
| DASS16 | -0.023 | -.210** | -.135** | -.155** | -0.014 | -.127** | -0.046 | -.126** | -0.015 | -.110** | -.114** | -.133** | -.191** | -.078* | -0.022 | -.082* | -0.049 | -0.028 | -0.053 | -0.054 | -0.04 |
| DASS17 | -0.035 | -.222** | -.122** | -.216** | -0.045 | -.152** | -0.045 | -.133** | -0.017 | -.141** | -.125** | -.155** | -.217** | -.124** | -0.027 | -0.069 | -.076* | -0.054 | -0.06 | -.073* | -0.066 |
| DASS18 | .083* | -0.034 | 0.015 | 0 | 0.013 | 0.053 | 0.044 | 0.054 | .110** | -0.055 | -0.03 | -0.052 | -0.003 | -0.01 | 0.059 | .090* | .078* | -0.009 | 0.059 | 0.036 | 0.04 |
| DASS19 | 0.032 | -0.032 | -0.018 | -0.041 | 0.031 | -.083* | 0.026 | -0.018 | 0.017 | -0.056 | -0.056 | -0.023 | -0.032 | -0.001 | 0.031 | -0.004 | 0.023 | 0.008 | 0.008 | -0.032 | -0.026 |
| DASS20 | .088* | -0.063 | 0.018 | -.094* | 0.02 | 0.001 | 0.026 | -0.002 | .090* | -.073* | -0.061 | -.086* | -0.061 | -0.001 | .079* | 0.035 | 0.051 | 0.033 | 0.023 | 0.014 | 0.019 |
| DASS21 | -0.042 | -.250** | -0.068 | -.180** | -0.043 | -.154** | -.089* | -.162** | -0.072 | -.165** | -.160** | -.177** | -.248** | -.148** | -0.047 | -.097* | -.095* | -0.047 | -.112** | -.130** | -.114** |

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

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

**Pearsons Correlations of DASS-Depression and PTGI Items**

| | DASS3 | DASS5 | DASS10 | DASS13 | DASS16 | DASS17 | DASS21 |
|---|---|---|---|---|---|---|---|
| 1. I changed my priorities about what is important in life. | -0.03 | -0.01 | -0.01 | -0.03 | -0.02 | -0.03 | -0.05 |
| 2. I have a greater appreciation for the value of my own life. | -.23** | -.17** | -.20** | -.20* | -.19* | -.22** | -.25** |
| 3. I developed new interests. | -.15** | -.07* | -.14** | -.11** | -.14* | -.13** | -.08* |
| 4. I have a greater feeling of self-reliance. | -.19** | -.14** | -.20** | -.15** | -.15** | -.22** | -.18** |
| 5. I have a better understanding of spiritual matters. | -.07* | -.11** | -0.06 | -0.06 | -0.03 | -0.06 | -0.06 |
| 6. I more clearly see that I can count on people in times of trouble. | -.16** | -.11** | -.14** | -.11** | -.12** | -.15** | -.15** |
| 7. I established a new path for my life. | -0.06 | -.10* | -.09* | -0.06 | -0.04 | -0.04 | -.08* |
| 8. I have a greater sense of closeness with others. | -.16** | -.12** | -.13** | -.14** | -.12** | -.12** | -.15** |
| 9. I am more willing to express my emotions. | -.09* | -0.06 | -0.04 | -0.03 | 0 | -0.01 | -0.06 |
| 10. I know better that I can handle difficulties. | -.17** | -.13** | -.17** | -.10** | -.10** | -.14** | -.16** |
| 11. I am able to do better things with my life. | -.15** | -.19** | -.17** | -.15** | -.10** | -.12** | -.16** |
| 12. I am better able to accept the way things work out. | -.10** | -.13** | -.14** | -.16** | -.19** | -.15** | -.17** |
| 13. I can better appreciate each day. | -.22** | -.20** | -.21** | -.22** | -.18** | -.22** | -.24** |
| 14. New opportunities are available which wouldn't have been otherwise. | -.08* | -0.06 | -.14** | -.12** | -0.07 | -.12** | -.13** |
| 15. I have more compassion for others. | -0.05 | -0.03 | -0.06 | -0.01 | 0 | -0.02 | -0.03 |
| 16. I put more effort into my relationships. | -.15** | -0.06 | -.09* | -0.04 | -.08* | -0.06 | -.08* |
| 17. I am more likely to try to change things which need changing. | -.10** | -.10** | -.09* | -.10* | -0.04 | -0.07 | -.08* |
| 18. I have a stronger religious faith. | -.10** | -.11** | -.08* | -.10** | 0 | -0.03 | -0.04 |
| 19. I discovered that I'm stronger than I thought I was. | -.15** | -0.07 | -.11** | -0.07 | -0.05 | -0.07 | -.11** |
| 20. I learned a great deal about how wonderful people are. | -.17** | -.13** | -.11** | -.11** | -0.04 | -0.07 | -.11** |
| 21. I better accept needing others. | -.12** | -0.05 | -0.04 | -0.03 | 0 | -0.03 | -0.07 |

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

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