



Ruminative reminiscence predicts COVID-related stress symptoms while reflective reminiscence and social reminiscence predict post-COVID growth

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Abstract

Reminiscence refers to the process or act of thinking or telling about past experiences. Few studies address the relationship between reminiscence functions and trauma-related cognitions and emotions. This study aimed to expand the previous literature by investigating the frequency of different types of reminiscence during the COVID-19 pandemic and their relations to the likelihood of developing post-traumatic growth (PTG) and post-traumatic stress disorder (PTSD), using an adult sample. Altogether, 184 participants ($M_{age} = 30.38$; $SD = 10.95$) completed the Reminiscence Functions Scale to report the purposes for which they shared their experiences during the first two waves of COVID-19. They also responded to the COVID-Transitional Impact Scale, Post-Traumatic Stress Disorder Checklist for DSM-5, Post Traumatic Growth Inventory, Revised Form of The Multidimensional Scale of Perceived Social Support, and Connor-Davidson Resilience Scale, when considering the first two waves of COVID-19. The results demonstrated that pro-social reminiscence and self-positive reminiscence were significantly more common than self-negative reminiscence. Yet, these differences disappeared when the presence of COVID virus was controlled. Pro-social and self-positive reminiscence significantly predicted PTG beyond demographic characteristics, COVID-19 impact, social support, and resilience. In contrast, only self-negative reminiscence predicted PTSD beyond COVID-19 impact and demographic characteristics. Furthermore, serial mediation analysis indicated that pro-social reminiscence predicted PTG via its association with perceived social support and resilience. Our findings suggest the benefit of using reminiscence therapy-type interventions to facilitate PTG and reduce PTSD after large-scale disasters like pandemics.

Keywords Reminiscence functions · Post-COVID stress · Post-COVID growth · Pro-social reminiscence · COVID-19

The process or act of thinking or telling about past experiences is termed reminiscence (Bluck et al., 2005; Bluck & Levine, 1998; Butler, 1963; Webster, 1993). Webster (1993) defined eight different functions of reminiscing past experiences: death preparation, problem-solving, bitterness revival, identity, conversation, intimacy maintenance, boredom reduction, and teaching/informing. Later, Cappeliez and O'Rourke (2006) combine all eight of these functions to explain the reminiscence and well-being relationship. In

their tripartite model of reminiscence functions, they defined three functions: self-positive, self-negative, and pro-social functions. Self-positive functions include death preparation, problem-solving, and identity functions. These three functions are considered self-positive functions because they enable individuals to reflect on their lives and construct a capable self-view. In line with the model, there was a positive correlation between these functions and mental health (Cappeliez et al., 2005). Self-negative functions are intimacy maintenance, boredom reduction, and bitterness revival functions. These functions reflect continuous inner struggles with negative past experiences. They reflect incoherence in the self and the life story. Thus, these functions were found to have positive associations with depression and anxiety (Cappeliez et al., 2005). The pro-social category refers to the conversation and teach–inform functions. These functions create opportunities to increase positive emotions

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in social encounters (Cappeliez et al., 2005). As opposed to positive and negative-self functions, pro-social functions indirectly contribute to well-being by affecting self-positive or self-negative functions (O'Rourke et al., 2013). There is a growing body of research about functions of reminiscence and their relationship to mental health (Bohlmeijer et al., 2007; Cappeliez & O'Rourke, 2006; O'Rourke et al., 2013; Cappeliez & Robitaille, 2010; Hofer et al., 2017).

The COVID-19 pandemic officially started in China in December 2019 and has spread rapidly around the world causing more than six million deaths. Due to the high infection rate, high speed of transmission, large-scale quarantine implementations, reports of medical supply shortages, and associated economic difficulties, COVID-19 has given rise to a scary and uncertain situation for many (Di Crosta et al., 2020), and has therefore caused profound psychological distress all over the world (Serafini et al., 2020). Furthermore, being infected could lead to psychological traumas and associated problems such as post-traumatic stress disorder (PTSD), depression, and anxiety (Horesh & Brown, 2020; Kira et al., 2023; Lei & Klopach, 2020). Anxiety and depression have frequently been observed in many countries including Turkey throughout COVID-19 (Luo et al., 2020). Previous epidemic studies have found that 39% of the MERS survivors had PTSD six months after they recovered from the disease, and more than half of the survivors of SARS developed PTSD after the SARS period (Yuan et al., 2021). Similarly, many COVID-19 survivors reported some distress symptoms such as acute respiratory distress (ARDS), alterations of conscious states, and traumatic medical treatments (e.g., tracheotomy) which could result in PTSD development (Yuan et al., 2021). Indeed, the prevalence of COVID-related PTSD symptoms was approximately 7% in China (Liu et al., 2020), 18% in Ireland (Karatzias et al., 2020), and 35% in Italy (Di Crosta et al., 2020).

Cappeliez and O'Rourke (2006) tripartite model proposes that reminiscence may take a significant role in how people cope with critical life events and traumatic experiences. People usually start to review their lives and to think about the meaning of life as a natural response to a traumatic life experience such as the loss of significant other and facing death (Butler, 1963; Parker, 1995, 1999; Wong, 1995). Previous studies also confirmed that people reminisce more in stressful times and during transitions (Haight et al., 1998, 2000; Parker, 1999). However, there are very few studies that have investigated the relationship between reminiscence functions and cognitions and emotions associated with traumatic and stressful experiences (see Kalaycı-Çelik & Uzer, 2022; Korte et al., 2011 for exceptions). Therefore, we don't know how different types of reminiscences could be related to how people process traumatic and stressful events. Elucidating how different types of reminiscences are related to trauma-related cognitions would be important to understand

the possible mechanisms responsible for the relationship between reminiscence and well-being. This study aims to fill this gap and investigates the relationship between reminiscence functions and trauma-related cognitions during the widespread collective trauma that is COVID-19 (Horesh & Brown, 2020; Kira et al., 2023; Lei & Klopach, 2020), which has significantly affected the lives of billions across the world.

Reminiscence functions and post-traumatic cognitions

Post-traumatic growth (PTG) refers to the positive changes in how one perceives him/herself, his/her relationships with others, and views about the world after a traumatic experience (Tedeschi & Calhoun, 2004). Consistent with Cappeliez and O'Rourke (2006)'s tripartite model, reminiscing memories for pro-social and self-positive functions could help to maintain one's sense of integrity during a trauma (Cappeliez et al., 2005; Korte et al., 2011; Parker, 1999). According to Tedeschi and Calhoun (2004), PTG occurs as a result of the persistent processing of traumatic events that enables one to build new schemas, goals, and meanings.

The literature has also emphasized the importance of reminiscence therapy on the well-being of patients who have been experiencing life-threatening illnesses (Haight et al., 2000; Sherman, 1985; Melendez Moral et al., 2015). Reminiscence therapy includes analyzing and discussing past experiences. Narrating a traumatic experience may enable a person to re-evaluate and re-appraise the trauma in a more adaptive manner (Smorti, 2011). For example, previous research has demonstrated that instrumental reminiscence, which involves recalling and analyzing how one coped with stressful circumstances, helps a person improve levels of self-control and use the resources to solve problems in stressful situations (Parker, 1999). Furthermore, integrative reminiscence, in which memories are recalled for examining, appraising, and self-understanding, reduces depressive symptomatology (Melendez Moral et al., 2015).

In contrast, obsessive-type reminiscence (i.e., self-negative reminiscence) might impede the processing of trauma and thus increase post-traumatic stress symptoms including intrusive thoughts and memories related to trauma (Bohanek et al., 2005). Obsessive reminiscence involves regrets about the past and unattainable goals, where the individual gets caught in intrusive rumination about negative aspects of the past. This impedes coherent processing of the traumatic event and reduces the opportunity to re-appraise the trauma more adaptively. In line with this argument, obsessive rumination is associated with increased levels of distress, depression, and anxiety (Nolen-Hoeksema, 2000).

The present study integrates Cappeliez and O'Rourke's (2006) tripartite model and Tedeschi and Calhoun's (2004) dual process model to understand how different types of reminiscence during the COVID-19 pandemic are associated with the likelihood of developing PTG and PTSD. According to these models, the self-positive function can be related to PTG since they facilitate trauma processing. In contrast, self-negative functions are more strongly associated with PTSD. Ruminative features of self-negative rumination may also increase negative appraisals about the event and its associates (Ehlers & Clark, 2000; Tedeschi & Calhoun, 2004). Furthermore, the intrusive and ruminative nature of self-negative reminiscence may impair trauma processing, which may result in an incoherent traumatic event representation. In the tripartite model (Cappeliez & O'Rourke, 2006), pro-social reminiscences do not involve reviewing the past; instead, they provide opportunities to experience positive affect in encounters with others in the present. Consistent with this claim, some of the previous studies reported no direct association between pro-social function and well-being, and they suggested that pro-social function exhibits an indirect association via its association with self-positive and self-negative functions (O'Rourke et al., 2011; O'Rourke et al., 2013; O'Rourke et al., 2015). Different from many other traumatic events, the COVID pandemic is particularly associated with increased social distancing, self-isolation, and self-quarantine (Serafini et al., 2020). Therefore, pro-social reminiscence might be critical in coping with COVID. Thus, the present research also investigates whether pro-social reminiscence could be associated with factors that would increase the likelihood of PTG, such as psychological resilience and social support. We believe that the present study would contribute to expanding the previous reminiscence theories (e.g., tripartite model of reminiscence functions) to trauma and mental health area by showing how different types of reminiscence are associated with different trauma-related cognitions. Furthermore, we believe that identifying factors that would give rise to post-COVID growth and post-COVID stress could be a promising way to overcome the challenges associated with COVID (Tamiolaki & Kalaitzaki, 2020).

Tedeschi and Calhoun (2004) have proposed that individual characteristics (e.g., resilience), social support, and cognitive processing are significant factors that are strongly related to PTG. Among these variables, social support is most frequently studied within many PTG studies (Ebrahim & Alothman, 2021; Idås et al., 2019; Scignaro et al., 2011). Perceived social support from family members, close friends, and significant others could be important in helping people to deal with stress during COVID (Labrague, 2021; Saltzman et al., 2020; Szkody et al., 2021). Studies have shown that social support reduces one's feelings of abandonment and strengthens their coping skills (Martins et al.,

2011). These studies imply that perceived social support could be an important factor that predicts PTG.

Resilience refers to one's ability to adapt to extremely negative situations (Tusaie & Dyer, 2004), and has been demonstrated to be positively correlated with post-traumatic growth (Bensimon, 2012). Previous research also demonstrated that social support promotes resilience among children with childhood trauma histories (Marriott et al., 2014). Researchers suggest that high social support may promote resilience because it creates behaviors that help to regulate stress reactions. For example, in a study of patients having a cardiac illness, high social support was associated with increased problem-focused coping skills.

Some researchers have proposed that some reminiscence types can be related to mental health through their associations with positive emotions (Alea & Bluck, 2003); for example, some studies demonstrated that sharing memories to create conversations and inform others increase positive emotions in such interactions (Cappeliez et al., 2005; Cappeliez & O'Rourke, 2006). Furthermore, a qualitative study on the reminiscence functions of Holocaust Survivors' memories demonstrated that teaching/informing others about one's past gives rise to perceived social support and connections between people (O'Rourke et al., 2013).

The current study

The present paper argues that the way people communicate their experiences during a trauma like COVID-19 can be related to how they process trauma, which in turn may influence whether a traumatic experience will result in post-traumatic stress disorder (PTSD) or post-traumatic growth (PTG). This argument was proposed based on Cappeliez and O'Rourke (2006)'s tripartite model and Tedeschi and Calhoun's (2004) dual model of trauma processing. Tedeschi and Calhoun's (2004) dual model argues that people may develop psychological and emotional strength in response to the challenges of traumatic events in addition to post-traumatic stress reactions (e.g., post-traumatic stress disorder (PTSD)). Thus, this study investigated the frequency of different types of reminiscence during the COVID-19 pandemic, and their relations to the likelihood of developing PTG and PTSD. The study tested whether increased pro-social reminiscing is associated with increased levels of PTG via increased levels of social support and resilience. Finally, it tested whether the increased psychological impact of COVID would mediate the relationship between self-negative functions and PTSD.

Based on Cappeliez and O'Rourke (2006)'s tripartite model and Tedeschi and Calhoun's (2004) dual model of trauma processing, we formulated the following hypotheses:

1. People will share their past experiences to form social and emotional bonds more frequently than to self-reflect and ruminate during COVID.
2. Self-positive and pro-social functions will significantly predict PTG after controlling for demographic characteristics, social support, resilience, and COVID impact, whereas self-negative functions will predict PTSD symptoms after controlling for demographic characteristics and COVID impact.
3. The increased use of pro-social functions would be associated with increased perceived social support, and increased levels of perceived social support would be associated with higher levels of resilience, which in turn would be associated with increased levels of PTG. In other words, we predicted a serial mediation model in which social support and resilience should mediate the relationship between pro-social function and PTG (Fig. 1).
4. The increased use of self-negative function would be associated with an increased psychological impact of COVID, and increased perceived psychological impact would be associated with increased levels of PTSD (Fig. 2).

participants were males. Fifty-nine percent of the participants had a bachelor’s degree or higher. Forty-one percent of them had a high school degree. Thirty-eight percent were from low SES, 39% came from middle SES, and 23% were from high SES. Thirty-one percent of the participants were married. Eighty-four percent of the participants had never been diagnosed with a psychiatric illness. Among those who had been diagnosed with a psychiatric illness, 10% had received treatment with an average duration of 1.95 years ($SD = 2.20$). Ninety-five percent of the diagnoses were depression and anxiety disorders.

Only 7% of the participants were living alone between March 2020 and June 2021. Thirty-two percent of the participants reported that they rarely went outside for shopping or other needs. Nineteen percent reported that they were going outside very often for shopping and other needs. Seventy percent reported that they rarely went to restaurants or other places for socializing during COVID. Only 7% of the participants reported that they went outside very often for.

In terms of COVID-related risk factors, 10% of the participants had risk factors (e.g., age, chronic illness) associated with COVID. Sixty percent of the participants had a family member with COVID-associated risk factors. Fifty percent of the participants were in quarantine at least once during COVID. Thirty-six percent of the participants were diagnosed with COVID at least once, and 83% of the participants had a family member or a very close person who was diagnosed with COVID at least once. Nineteen percent of the participants lost one of their family members due to COVID. Table 1 illustrates the PTSD, PTG, Social Support, Resilience, and COVID-Impact scores of the participants.

Method

Participants

One-hundred eighty-four adults from Turkey ($M_{age} = 30.38$; $SD = 10.95$; $Min = 19$; $Max = 66$) participated to the study. Twenty-three percent of the

Fig. 1 Serial mediational model of pro-social reminiscence (Pro-social R.), social support, resilience, and post-traumatic growth (PTG)

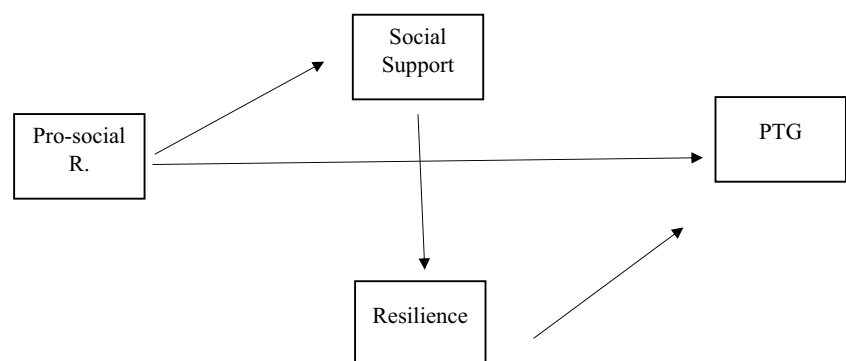
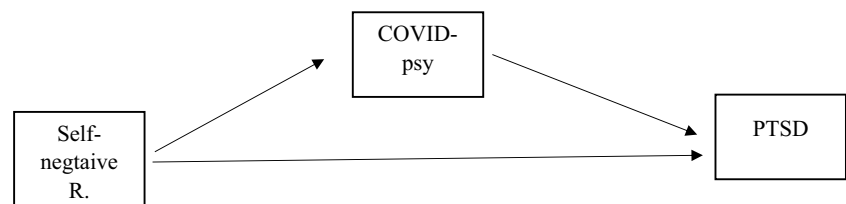


Fig. 2 Simple mediational model of self-negative reminiscence (Self-negative R.), COVID psychological impact (COVID-psy), and post-traumatic stress (PTSD)



Materials

COVID-Transitional Impact Scale (COVID-TIS)

A modified version of the TIS-12 (Svob et al., 2014), the COVID-TIS (Heanoy et al., 2021), was used to assess the degrees of the material and psychological changes brought about by the COVID-19 Pandemic (i.e., COVID-impact). COVID-TIS has 10 items measuring material changes (the first 5 items) and psychological changes (the last 5 items) on a 5-point Likert-Type scaling (1 = strongly disagree to 5 = strongly agree). Turkish version of TIS was used for the current sample (Uzer, 2020; Uzer et al., 2020). Example items are “This event has changed my attitudes” and “This event has changed the people I spend time with.” The internal consistency coefficients of COVID-TIS were 0.87 (*Cronbach’s* $\alpha_{material}$ = 0.79; *Cronbach’s* $\alpha_{psychological}$ = 0.88) for the current sample. Corrected item-total correlations for the TIS scale also ranged between 0.22 and 0.79. Previous research indicated that transitional impact measured by the TIS scale strongly predicted event centrality and PTSD symptoms among participants diagnosed with post-traumatic stress disorder (PTSD; Uzer et al., 2020). Thus, in the present study, this scale was used to objectively assess the material and psychological impact that the COVID pandemic has had on participants’ lives.

Reminiscence Functions Scale (RFS)

This scale was used for which purposes participants shared their experiences during the COVID pandemic. The following instructions were used:

“In many periods of life, people reflect on the past and recall various memories. These memories may come to our minds spontaneously, we can especially try to remember them, share them with others or reflect on them and keep them to ourselves. The questions we will ask you now aim to understand for what purposes you shared or thought about your experiences

during the pandemic (i.e., between March 2020 and June 2021). So, you must have told or thought about the events you described during this particular period of the pandemic. But, these events do not necessarily have to have happened during the pandemic period. Please read each item carefully and choose the option that suits you best. To remind you again, the sentence “I reminisced what I have experienced” given at the beginning of the following items may include events that occurred during or before the pandemic. But the act of reminiscing these experiences must have been done during the pandemic period we refer to.”

RFS was originally developed by J.D. Webster in 1993. The scale has 43 items. Later, Robitaille et al. (2010) had the revised form of RFS. This revised form has 29 items. There are 8 factors which are identity, problem solving, death preparation, intimacy maintenance, boredom reduction, bitterness revival, teach/inform, and conversation. Participants indicate how often they reminisce their memories during COVID-19 for each statement ranging from “never” (1) to “very frequently” (6). Example items are “because remembering my past helps me define who I am now” (item 26), “to remind me that I have the skills to cope with present problems” (item 18), “because I feel less fearful of death after I finish reminiscing” (item 33), “to pass the time during idle or restless hours” (item 11), “to remember an earlier time when I was treated unfairly by others” (item 17), “to create a common bond between old and new friends” (item 22), and “in order to teach younger persons about cultural values” (item 23). Internal consistency coefficients were between 0.74 and 0.89 (Webster, 1993, 1997). The Turkish adaptation of RFS was completed by Kalaycı-Çelik and Uzer (2022) which has a reliability coefficient of 0.95. In the current sample, the reliability coefficient of the total scale was 0.94 (*Cronbach’s* $\alpha_{self-positive}$ = 0.91, *Cronbach’s* $\alpha_{self-negative}$ = 0.89, *Cronbach’s* $\alpha_{pro-social}$ = 0.78).

Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5)

PCL-5 is a 20-item questionnaire developed from DSM-5 diagnosis criteria to measure stress after a traumatic experience. Turkish adaptation was conducted by Boysan et al. (2017) Items are rated on 5 point scale (1–5). Example items are “How overwhelmed were you with repetitive, disturbing dreams about the stressful event?”, “How overwhelmed were you when you lose interest in activities you used to enjoy doing?” Higher scores represent higher PTSD levels. The checklist has four sub-scales based on DSM-5 criteria: re-experiencing (B criteria), avoidance (C criteria), negative alterations (D criteria), and hyper-arousal (E criteria). The reliability of the scale for the current sample was 0.94.

Table 1 PTSD, PTG, Social Support, Resilience, and COVID-Impact Scores of the Participants

| | Mean | SD | Min | Max |
|----------------|-------|-------|-----|-----|
| PTSD | 59.38 | 16.53 | 10 | 100 |
| PTG | 70.91 | 22.54 | 21 | 119 |
| Social Support | 63.53 | 15.52 | 20 | 84 |
| Resilience | 86.22 | 15.81 | 45 | 125 |
| COVID-Impact | 30.52 | 8.38 | 10 | 50 |

PTSD Post-traumatic stress disorder, PTG Post-traumatic growth

Participants completed the form for considering their feelings and emotions during COVID.

Post-Traumatic Growth Inventory (PTGI)

PTGI was originally developed by Tedeschi and Calhoun (1996) to measure the level of growth that occurs after traumatic experiences. PTGI is a self-report scale which has 21 items and includes five sub-scales: perceived new opportunities, interpersonal relations, individual strength, spiritual change, and understanding the value of life. Each item is rated on a 6-point scale (0–5). The Cronbach's α values for the five factors were 0.84, 0.85, 0.72, 0.85, and 0.67, respectively. Instead of five factors, three factors were obtained in the Turkish version. These factors were changes in interpersonal relations, changes in life philosophy, and personal strength perception. Their alpha values were 0.86, 0.87, and 0.88, respectively (Dirik & Karanci, 2008). Example items are “I realized better that I can face difficulties”, “I started to put more effort into my relationships” and “I have become more accepting of needing others”. The internal consistency coefficient of the total scale was 0.94. In the current sample, it was also 0.94. Participants completed the form by considering their thoughts and experiences during COVID-19.

Revised form of the Multidimensional Scale of Perceived Social Support (MSPSS)

It was originally developed by Zimet et al. (1988). The scale consists of 12 items. The items measure support coming from three groups. These three groups are identified as family, friends, and a significant other. Each item has a 7-point Likert-type measurement (1: Definitely not – 7: Definitely yes). Turkish adaptation was conducted by Eker and his colleagues (Eker et al., 2001). Example items are “My friends really try to help me”, “I have friends with whom I can share my joys and sorrows”, and “My family (for example, my mother, father, wife, children, siblings) is willing to help me make my decisions”. Higher scores represent higher levels of perceived support. The Cronbach's alpha values showed high scores from 0.81 to 0.98 in non-clinical samples, and from 0.92 to 0.94 in clinical samples. Cronbach's alpha values of the Turkish adaptation were between 0.80 and 0.95. In the current sample, the internal reliability coefficient was 0.90 for the total scale. Participants completed the form by considering perceived social support during COVID-19.

Connor-Davidson Resilience Scale (CD-RISC)

The Connor-Davidson Resilience scale (CD-RISC) was developed by Connor and Davidson (2003) to assess resilience. It comprises of 25 items, each rated on a 5-point scale

(1–5), with higher scores reflecting greater resilience. Example items are “My past achievements give me confidence in tackling new challenges.”, “I believe that I will reach my goals even if there are obstacles”, and, “I think that everything happens for a reason, be it good or bad”. The internal consistency coefficient was 0.89 in the original version. The Turkish version's Cronbach's alpha coefficient was 0.92 (Karairmak, 2010). In the present sample, Cronbach's alpha was 0.92. Participants completed the form considering the COVID-19 period.

Procedure

The convenience sampling method was used to recruit participants. Data were collected online via Qualtrics between February 2022 and April 2022. Participants who provided their written consent completed the demographic information form. In addition, they answered COVID-related questions which assessed their and their families' risk factors, diagnostic status, and quarantine conditions between March 2020 and June 2021. Next, the following scales were presented in random order: COVID-Transitional Impact Scale, Reminiscence Functions Scale, Post-Traumatic Stress Disorder Checklist for DSM-5, Post Traumatic Growth Inventory, Revised Form of The Multidimensional Scale of Perceived Social Support, and Connor-Davidson Resilience Scale. Participants completed all scales taking into account the period between March 2020 and June 2021. During this period, COVID-19 caused thousands of death, large-scale restrictions such as nationwide lockdown and online schooling were applied, and vaccination has not yet begun for people under 50. Twenty-seven people started the survey but did not complete it. Therefore, their data were not used. The participants were presented with the scales in a randomized order. Their anonymity was ensured by not asking for any personal identifying information (e.g., name or address). On average, it took 25.07 min ($SD = 11.12$; $min = 10$ $max = 60$) to complete the study. Furthermore, the reliability scores of the scales obtained in the present study were comparable with those found in previous studies (Connor & Davidson, 2003; Dirik & Karanci, 2008; Tedeschi & Calhoun, 1996; Webster, 1993, 1997; Zimet et al., 1988). Therefore, the data were assumed to be reliable.

COVID situation in Turkey

The first case in Turkey was officially reported on March 11, 2020. From March 2020 to February 2022, approximately 14 million COVID cases were reported, and 94,000 people lost their lives due to COVID. The first nationwide restrictions including lockdown started on April 2020. Schools including universities provided online education from March 2020 to June 2021. The remote and/or rotating

working practices were initiated on March 22, 2020. The highest number of cases was reported on December 8, 2020, and it was 33,198. On June 2020, restrictions were gradually cancelled. For instance, remote working practices for public institutions ended on June 2020. On 20 November 2020, the curfew on people over 65, and on people under 20 was reinstated, and businesses and places of worship were ordered to cease their activities in closed areas. Grocery stores and pharmacies remained open with legal capacity limitations. On December 2021, cases and hospitalizations rates were at record highs. At the beginning of March 2021, the Turkish government eased the restrictions, even though virus rates were still quite high. On 29 April 2021, the virus rate became among the highest in Europe. Thus, Turkey entered its nationwide lockdown from 29 April 2021 to May 17, 2021. Vaccination started on January 14, 2021, with health workers and people over 65. As of June 25, 2021, those aged 18 and over started to receive their vaccinations. Full-time face-to-face education started on September 6, 2021. The masking requirement was lifted indoors except for schools, hospitals, and recreational institutions in March 2022. On May 2022, the mask requirement was abolished everywhere except in hospitals.

Results

The results were presented in two sections. First, descriptive results and correlation among variables were presented. In this section, whether some factors (e.g., being infected, presence of COVID-related loss) in our sample created a difference in terms of the main variables of interest was also examined. Next, the main results were included. In conducting hierarchical regression, we entered COVID-impact as a single composite variable rather than entering psychological change and material change scores as two separate variables. First, we did not have a theoretical reason to assume that each will have a different effect on PTG and PTSD. Second, they were highly correlated ($r = 0.49$, $p = 0.0001$), and including them separately did not change the results. However, in the last hypothesis, we predicted that perceived psychological impact (not material changes created by COVID circumstances) would mediate the association between self-negative function and PTSD. We assumed that material changes such as changes in people's activities and places visited were not likely to be influenced by reminiscence types but rather they would be more direct consequences of the constraints imposed by the COVID pandemic such as quarantine. In contrast, changes in one's attitudes and beliefs would more likely be influenced by reminiscence types. Therefore, in the mediation model, only psychological change (but not material change) was included.

Preliminary results

First, we tested whether participants who have been diagnosed with an illness were different from the rest of the sample in terms of our main variables of interest such as reminiscence functions, PTG, PTSD, COVID-Impact, social support, and resilience. They were not significantly different from the rest of the sample in terms of PTG, PTSD, social support, and resilience (all $ps > 0.05$). However, those who were diagnosed with an illness reported significantly higher self-positive ratings than those who were not ($t(182) = 2.21$; $p = 0.03$). In contrast, there were not significant differences between the two groups in self-negative and pro-social functions (all $ps > 0.05$).

The same comparisons were done with participants who were infected. They were not significantly different from the rest of the sample in terms of PTG, PTSD, COVID-impact, social support, and resilience (all $ps > 0.05$). However, those who had COVID reported significantly higher self-negative reminiscence ratings than those who did not ($t(182) = 2.83$; $p = 0.01$). In contrast, there were not significant differences between the two groups in self-positive and pro-social functions (all $ps > 0.05$).

Finally, reminiscence functions, PTG, PTSD, social support, resilience, and COVID-impact scores were compared across those who lost a family member due to COVID and those who did not. The two groups were not significantly different from each other in terms of PTG, PTSD, COVID-impact, social support, and resilience (all $ps > 0.05$). However, those who lost their family members reported significantly higher self-negative and self-positive reminiscence ratings ($t(182) = 2.09$; $p = 0.04$) than those who did not ($t(182) = 2.18$; $p = 0.03$). In contrast, there were not significant differences between the two groups in pro-social function ($p = 0.55$). Therefore, these three variables (i.e., previous diagnosis, COVID virus status, and COVID-related loss) were used as covariates in the main analyses.

Pearson correlation coefficients were computed to investigate how reminiscence functions, post-traumatic stress, and post-traumatic growth are correlated with each other (Table 2). The results indicated that there was a positive significant correlation between self-positive function and PTG ($r_{self-positive} = 0.38$, 95% CI [0.25, 0.51], $p < 0.001$). PTG was also positively correlated with pro-social function ($r_{pro-social} = 0.37$, 95% CI [0.23, 0.48], $p < 0.001$). However, self-negative function was not significantly associated with post-traumatic growth ($r_{self-negative} = -0.13$, 95% CI [-0.28, 0.02], $p = 0.07$). PTSD was significantly correlated with both self-positive and self-negative functions ($r_{self-positive} = -0.30$, 95% CI [-0.45, -0.14], $p = 0.0001$; $r_{self-negative} = 0.31$, 95% CI [-0.45, -0.16], $p < 0.001$); whereas it was not significantly correlated with pro-social function ($r_{pro-social} = 0.07$, 95% CI [-0.09, 0.22], $p = 0.36$).

Table 2 Correlations among Reminiscence Functions, PTSD, PTG, Social Support, Resilience and COVID-Impact

| | SP | SN | PS | SS | Resilience | PTG | PTSD | COVID-Impact |
|------------|----|------|------|------|------------|------|-------|--------------|
| SP | 1 | .68* | .49* | .07 | .12 | .38* | -.30* | .43* |
| SN | | 1 | .31* | -.06 | -.13 | -.13 | .31* | .28* |
| PS | | | 1 | .18* | .23* | .37* | .07 | .23* |
| SS | | | | 1 | .40* | .30* | -.13 | -.06 |
| Resilience | | | | | 1 | .48* | -.14 | .01 |
| PTG | | | | | | 1 | .20* | .29* |
| PTSD | | | | | | | 1 | .38* |

SP Self-positive, SN Self-negative, PS Pro-social, SS Social Support, PTG Post-traumatic Growth, PTSD Post-traumatic Stress Disorder, COVID-Impact Impact of COVID measured by COVID-TIS scale

* $p < .05$

Main results

Comparison of self-positive, self-negative and pro-social functions of reminiscence

We predicted that people will share their past experiences to form social and emotional bonds more frequently than to self-reflect and ruminate during COVID. Since previous psychiatric diagnosis history, COVID virus status, and COVID-related loss all differed in terms of reminiscence functions we controlled these variables by including them as separate independent factors.

Three separate 2×3 Mixed ANOVAs with the last factor as repeated measures were conducted to identify which functions were used more by the participants as a function of previous psychiatric diagnosis history, COVID virus status, and COVID-related loss. The mean score of each function was used for comparison. Bonferroni adjustments were used to reduce Type I Error in multiple comparisons.

The 2 (diagnostic status) \times 3 (function type) Mixed ANOVA results indicated a significant main effect of function type ($F(2, 364) = 4.41, p = 0.01$). There was no main effect of diagnostic status ($F(1, 182) = 3.23, p = 0.07$). There was no significant interaction between function type and diagnosis status ($F(2, 364) = 1.32, p = 0.27$). Post-hoc comparisons demonstrated that frequency of self-positive function was significantly higher than the frequency of self-negative function ($Mean Difference = 0.24, SE = 0.08, p = 0.02$). The difference between pro-social function and self-negative function was not statistically significant ($Mean Difference = 0.20, SE = 0.09, p = 0.16$). The difference between self-positive function and pro-social function was not statistically significant from each other ($Mean Difference = 0.04, SE = 0.08, p = 0.99$).

The 2 (COVID virus status) \times 3 (function type) Mixed ANOVA results indicated a significant main effect of function type ($F(2, 364) = 10.25, p = 0.0001$). There was no main effect of COVID virus status ($F(1, 182) = 3.53, p = 0.06$). There was also a significant interaction between function

type and COVID virus status ($F(2, 364) = 3.60, p = 0.03$). Simple effect analyses demonstrated that for those who were not infected; frequency of pro-social function was significantly higher than the frequency of self-negative function ($Mean Difference = 0.46, SE = 0.11, p = 0.0001$). Frequency of self-positive function was significantly higher than the frequency of self-negative function ($Mean Difference = 0.33, SE = 0.10, p = 0.01$). The difference between pro-social function and self-positive function was not statistically significant ($Mean Difference = 0.13, SE = 0.10, p = .54$). For those who were infected; there were no differences between self-positive ($M = 3.20, SE = 0.10$), self-negative ($M = 3.10, SE = 0.09$), and pro-social functions ($M = 3.21, SE = 0.09$; all $ps > 0.05$).

The 2 (COVID-related loss status) \times 3 (function type) Mixed ANOVA results indicated that there was no significant main effect of function type ($F(2, 364) = 2.70, p = 0.07$). There was no main effect of COVID-related loss status ($F(1, 182) = 3.62, p = 0.06$). There was no significant interaction between function type and COVID-related loss status ($F(2, 364) = 2.45, p = 0.09$).

These results were partly consistent with our predictions. Overall, pro-social reminiscence was more frequent than self-negative reminiscence. Furthermore, self-positive reminiscence was also as common as pro-social reminiscence. However, when we accounted for the presence of COVID virus, the frequency of self-negative reminiscence also increased, and the observed differences disappeared.

Relationships among reminiscence functions, post-traumatic stress, and post-traumatic growth

We predicted that self-positive and pro-social functions would significantly predict PTG after controlling for demographic characteristics, COVID-related characteristics, social support, and resilience, whereas self-negative functions would predict PTSD symptoms after controlling for demographic characteristics and COVID-related characteristics.

Hierarchical regression analysis was conducted to test whether reminiscence functions predicted PTG beyond demographic (i.e., age, SES, gender, and previous psychiatric illness history), COVID-related characteristics (i.e., COVID virus status, and COVID-related loss status, and COVID-impact), social support, and psychological resilience. In the first step demographic characteristics, COVID-related characteristics, social support, and psychological resilience were entered into the regression, and in the second step reminiscence functions were entered.

Results demonstrated that demographic characteristics, COVID-related characteristics, resilience, and social support, and reminiscence functions all explained 40% of variance in PTG scores ($F(12, 171) = 9.38, p = 0.0001$). Inclusion of reminiscence functions explained 8% more variance in PTG scores ($F(3, 171) = 7.96, p = 0.0001$). The final model indicated that demographic characteristics except for age, COVID-related characteristics, and social support did not significantly predict PTG scores after controlling for reminiscence functions and resilience. Age significantly predicted PTG scores. Resilience significantly predicted PTG scores. Self-positive and pro-social functions significantly predicted PTG scores; whereas self-negative function did not significantly predict PTG scores (Table 3).

Another hierarchical regression analysis was conducted to test whether reminiscence functions predicted PTSD beyond demographic characteristics beyond demographic (i.e., age, SES, gender, and previous psychiatric illness history), and COVID-related characteristics (i.e., COVID virus status, and COVID-related loss status, and COVID-impact). Since resilience and social support were not correlated with PTSD we did not include these variables in predicting PTSD. Results demonstrated that demographic characteristics, COVID impact and reminiscence functions all explained 31% of variance in PTSD scores ($F(10, 173) = 7.82, p < 0.001$).

The inclusion of reminiscence functions explained 2% more variance in PTSD scores ($F(3, 173) = 1.86, p = 0.14$). Final model indicated that age, gender, and COVID impact significantly predicted PTSD scores after controlling for reminiscence functions. Self-positive and pro-social functions did not significantly predict PTSD scores; whereas only self-negative function significantly predicted PTSD scores (Table 4). These results were consistent with our predictions. Increased uses of self-positive and pro-social reminiscences predicted increased post-COVID growth; whereas increased self-negative reminiscence predicted increased post-COVID stress. Overall, the results confirmed our predictions.

Relationships among pro-social function, resilience, social support, and post-traumatic growth

We predicted a serial mediation model in which social support and resilience should mediate the relationship between pro-social function and PTG. To test whether pro-social reminiscence is also indirectly associated with PTG through social support and resilience, we conducted a serial mediation analysis (Model 6) via PROCESS macro (Hayes, 2013). A bias-corrected bootstrap confidence interval calculated based on 10,000 bootstrap samples was used to test the significance of the serial mediation.

Overall serial mediation model explained 31% of the variance in PTG scores ($F(3, 180) = 26.51, p < 0.001$). The serial mediation analysis indicated that there were significant indirect associations between pro-social reminiscence and PTG through social support and resilience ($\beta = 0.14$ (0.06) 95% CI [0.03, 0.28]). As shown in Fig. 3a, the more likely the memory is shared for pro-social functions, the more likely the social support is received ($\beta = 0.68$ (0.28), $t = 2.44, p = 0.02$), and the higher the social support, the more likely a person becomes resilient ($\beta = 0.38$ (0.07),

Table 3 Summary of the regression analysis predicting PTG

| Predictors | R | ΔR^2 | β | t | ΔF | p |
|---------------------------------------|-----|--------------|---------|-------|------------|--------|
| Step 1 variables | .56 | .31 | | | 8.80 | .0001* |
| Age | | | -.14 | -2.10 | | .04* |
| Men (vs women) | | | -.09 | -1.37 | | .17 |
| SES | | | -.01 | -.10 | | .92 |
| Previous psychiatric illness | | | .01 | .19 | | .85 |
| COVID infection status (no vs yes) | | | -.08 | -1.19 | | .24 |
| COVID-related loss status (no vs yes) | | | -.04 | -.70 | | .49 |
| COVID-impact | | | .04 | .59 | | .56 |
| Resilience | | | .40 | 5.76 | | .0001* |
| Social Support | | | .11 | 1.56 | | .12 |
| Step 2 variables | .63 | .08 | | | 7.96 | .0001* |
| Self-positive function | | | .21 | 2.05 | | .04* |
| Self-negative function | | | -.12 | -1.39 | | .17 |
| Pro-social function | | | .21 | 2.33 | | .02* |

Table 4 Summary of the regression analysis predicting PTSD

| Predictors | R | ΔR^2 | β | t | ΔF | p |
|---------------------------------------|-----|--------------|---------|-------|------------|--------|
| Step 1 variables | .54 | .29 | | | 10.23 | .0001* |
| Age | | | -.24 | -3.48 | | .001* |
| Men (vs women) | | | -.15 | -2.25 | | .03* |
| SES | | | -.08 | -.17 | | .25 |
| Previous psychiatric illness | | | -.06 | -.97 | | .33 |
| COVID infection status (no vs yes) | | | -.00 | -.01 | | .99 |
| COVID-related loss status (no vs yes) | | | .05 | .83 | | .41 |
| COVID-impact | | | .30 | 4.21 | | .0001* |
| Step 2 variables | .56 | .02 | | | 1.87 | .14 |
| Self-positive function | | | .02 | .14 | | .89 |
| Self-negative function | | | .18 | 1.96 | | .05* |
| Pro-social function | | | -.06 | -.59 | | .56 |

$t=5.43$, $p<0.001$), and the higher the resilience, the more likely PTG occurs ($\beta=0.53$ (0.10), $t=5.45$, $p<0.001$). In addition, the pro-social function also predicted post-traumatic growth independent of its associations through social support and resilience ($\beta=1.46$ (0.36), $t=4.10$, $p<0.001$). Consistent with our prediction, social support and resilience mediated the relationship between pro-social function and post-COVID growth.

Relationships among self-negative function, COVID psychological impact, and post-traumatic stress disorder

We predicted that COVID's psychological impact would mediate the relationship between self-negative function and PTSD. We conducted a simple mediation analysis (Model 4) via PROCESS macro (Hayes, 2013) to test whether self-negative function and PTSD have an indirect association through COVID psychological impact. A bias-corrected bootstrap confidence interval calculated based on 10,000 bootstrap samples was used to test the significance of the mediation. Since COVID virus status and COVID-related loss both differed in terms of self-negative function, we controlled these variables by including them as covariates.

Overall the model explained 21% of the variance in PTSD scores ($F(4, 179)=11.78$, $p<0.001$). The simple mediation analysis indicated that there was a significant indirect association between self-negative reminiscence and PTSD through COVID psychological impact ($\beta=0.11$ (0.05) 95% CI [0.03, 0.22]). As shown in Fig. 3b, the more likely the memory is shared for self-negative functions, the higher the perceived COVID psychological impact ($\beta=0.10$ (0.03), $t=3.02$, $p=0.003$), and the perceived COVID psychological impact, the more likely a person develops PTSD symptoms ($\beta=1.17$ (0.23), $t=5.00$, $p<0.001$). In addition, the self-negative function also predicted post-traumatic stress independent of COVID loss, COVID virus status, and perceived psychological impact ($\beta=0.35$ (0.10), $t=3.41$, $p=0.001$).

Consistent with our prediction, the perceived psychological impact of COVID mediated the relationship between self-negative function and post-COVID stress.

Discussion

This study aimed to understand how sharing memories during COVID-19 could be associated with post-COVID stress symptoms and post-COVID growth processes. First, we investigated which type of reminiscence was more commonly used during COVID. Considering the nature of the pandemic, we predicted that pro-social reminiscence should be more common than other reminiscence types. Since the COVID pandemic is associated with a large-scale social quarantine, people have a stronger need to feel socially safe and close to others. Results partially confirmed our hypotheses. It was found that memories are shared for pro-social reasons more frequently than for self-negative reasons. Results also demonstrated that self-positive reminiscence was as common as pro-social reminiscence. But after controlling for the presence of COVID virus, self-negative reminiscence was as common as pro-social reminiscence and self-positive reminiscence. These results indicate that during COVID, people share their experiences predominantly to take a lesson from their experiences, help others, create opportunities to experience positive feelings in social interactions, reflect on COVID experiences, solve problems that arise from the event, accept mortality, and extract meaning out of their experiences (Cappeliez et al., 2005). Yet, when people had COVID themselves, they also share their experiences to ruminate about the past, to rehash lost opportunities as frequently as to self-positive and pro-social functions. There is a lack of research that directly compares self-positive, self-negative, and pro-social reminiscence within a sample exposed to a large-scale trauma. There has only

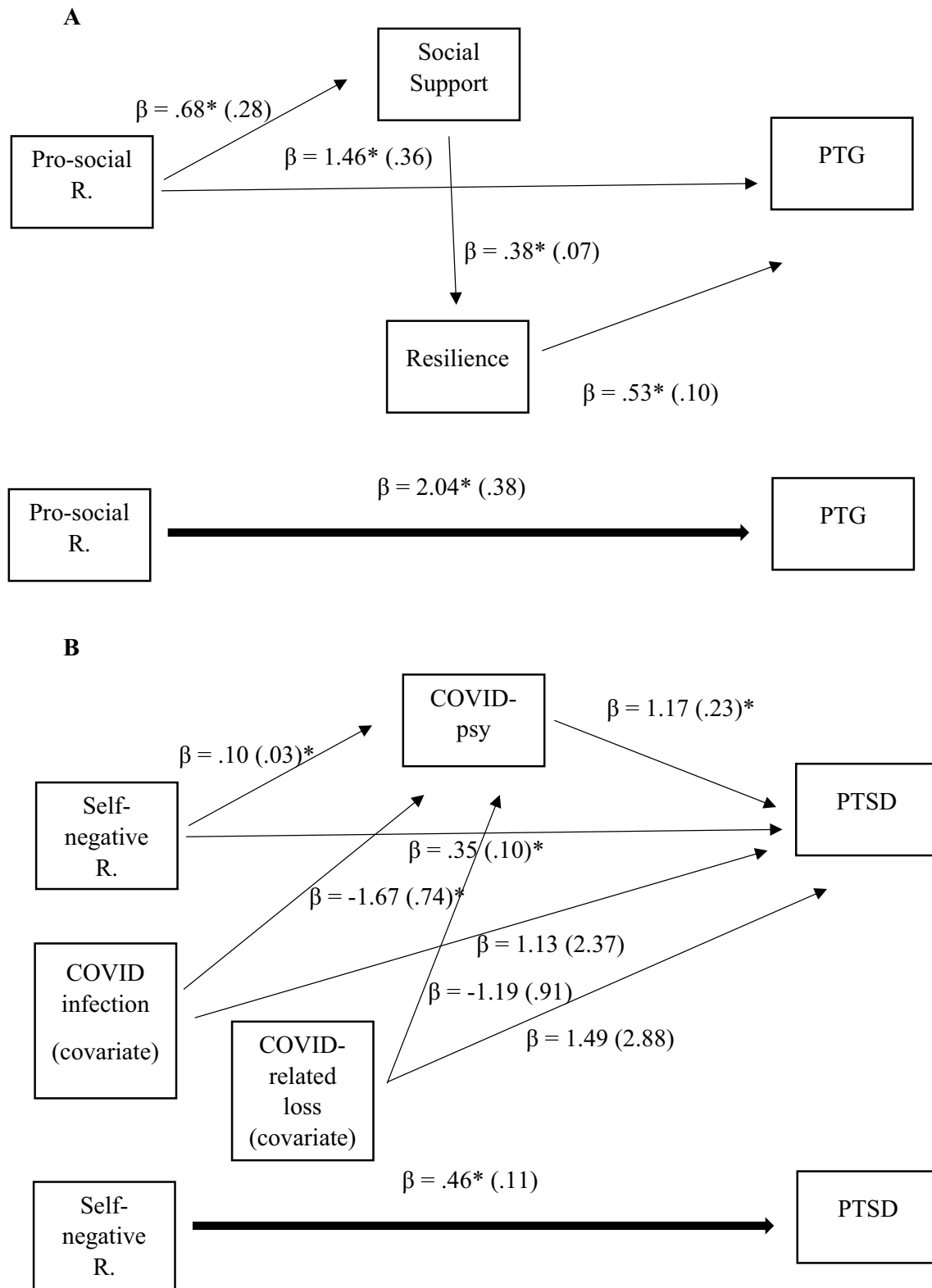


Fig. 3 **A** Serial mediational model of pro-social reminiscence (Pro-social R.), social support, resilience, and post-traumatic growth (PTG). *Note.* In the model, bold arrow represents the total effect of pro-social reminiscence on PTG. β s represent unstandardized coefficients. * $p < .05$. **B** Simple mediational model of self-negative remi-

niscence (Self-negative R.), COVID psychological impact (COVID-psy), and post-traumatic stress (PTSD). *Note.* In the model, bold arrow represents the total effect of self-negative reminiscence on PTSD. β s represent unstandardized coefficients. * $p < .05$

been one controlled research study concerning the frequency of certain reminiscence styles across traumatized and non-traumatized groups. King et al. (2015) found that Holocaust survivors used self-negative reminiscence more frequently than other Israeli and older Canadian comparison samples. In contrast, the use of self-positive and pro-social functions did not differ across the three groups. The authors suggest that the lack of difference concerning self-positive and pro-social functions demonstrates resilience among Holocaust survivors. Increased use of both pro-social and self-positive reminiscence may also imply resilience among our sample. Another reason self-positive reminiscence and pro-social reminiscence were used more frequently than self-negative reminiscence could be because the majority of our sample represents relatively less traumatized individuals during COVID-19. When we accounted for the presence of COVID virus, differences between self-negative and other functions disappeared.

We then tested whether self-positive and pro-social functions predicted post-COVID growth beyond demographic characteristics, social support, COVID impact, and psychological resilience. The results confirmed our predictions. According to Janoff-Bulman (2010), shattered assumptions by a traumatic event can be reconstructed by elaborative thinking, a process that is similar to self-positive reminiscence. Smorti (2011) also postulated that narrating a traumatic experience to make meaning of and cope with crises helps a person to understand, evaluate, and re-elaborate on the trauma more functionally. This can explain why self-positive reminiscence predicts PTG.

In addition to self-positive reminiscence, reminiscence for pro-social purposes predicts post-COVID growth. As reported earlier, pro-social reminiscence fosters social interactions and increases the opportunities to feel positive emotions during social interactions. Our results also confirm that during COVID, where social interactions have been severely reduced, sharing experiences with others may increase the intensity of positive emotions, even if the social interaction is limited. Accordingly, the level of perceived social isolation and loneliness may also decrease. In addition, when people inform each other about difficulties, they are more likely to recognize that they are not alone in their struggle against the challenges created by the pandemic. Furthermore, knowledge exchange during these interactions may help people to ascribe meaning to the difficulties experienced and develop new perspectives about the pandemic. In line with our findings, recent research has also reported the presence of PTG in the context of the current threat of COVID-19 (Vazquez et al., 2021).

Here, our research also indicates that pro-social reminiscence increases the likelihood of PTG by increasing perceived social support and resilience. Our results imply that pro-social reminiscence may increase the opportunity to

access caring and supportive social connections. Previous studies have also demonstrated that social support is strongly related to how people tolerate adversity in major disasters that affect large groups, and is also correlated with increased resilience and PTG (Xu & Ou, 2014). Saltzman et al. (2020) studied the influence of social support in large-scale disasters including floods, Hurricane Katrina, and mining disasters, and demonstrated that social support was extremely critical for coping, recovering, and preventing mental health difficulties. Specifically, our results suggest that pro-social reminiscence may increase one's feeling of social connection and social safety. Individuals who feel more socially safe and connected to others when suffering from adversities are more likely to feel stronger and become more resilient. Those who are more resilient are more likely to show greater PTG in the context of the COVID pandemic. This is consistent with the finding that social support is a primary coping method associated with increased PTG and resilience among people suffering from extensive disasters (Northfield & Johnston, 2021; Saltzman et al., 2020).

Our results demonstrate that younger people and women are more likely to develop PTSD than older people and men. Furthermore, a higher perceived impact of COVID on one's life has emerged as one of the strongest predictors of increased levels of post-traumatic stress. This finding implies that exposure to the COVID-19 pandemic can trigger PTSD. Our findings are consistent with previous research reporting PTSD symptoms among the general adult population during the early phases of the pandemic (Karatzias et al., 2020).

Self-negative reminiscence predicts post-traumatic stress both directly and through its indirect association with the perceived psychological impact of COVID in our study. Bitterness revival, boredom reduction, and intimacy maintenance are the self-negative reminiscence functions (Cappeliez & O'Rourke, 2006). Bitterness revival refers to sharing memories to ruminate about difficult times, lost opportunities, unattained goals, and past regrets. Intimacy maintenance involves remembering and rehashing memories of lost ones (Alea & Bluck, 2003). Boredom reduction refers to sharing memories to reduce boredom and to create an interest in the present moment (Cappeliez & O'Rourke, 2006). These self-negative functions involve rumination about conflicts, losses, and regrets. They are usually negative in nature and associated with a loss of meaning and purpose in life. They represent discontinuity and fragmentation in the self and one's life story. Therefore, they are typically associated with anxiety, depression, and post-traumatic stress (Cappeliez et al., 2005). Our findings suggest that sharing or thinking about past experiences during COVID to ruminate on conflicts, losses, and regrets may increase one's perceived negative appraisal of COVID and its impact on one's attitudes, beliefs, and sense of self. Additionally,

Ehlers and Clark (2000) proposed that engaging in rumination about trauma prevents the individual from focusing on the core details of the trauma and therefore impairs the processing of a coherent trauma narrative. They also argue that rumination increases negative appraisals about the event. Our findings are also congruent with Ehlers and Clark (2000)'s conceptual model and suggest that sharing or thinking about past experiences during COVID for self-negative functions may also impair a coherent representation of COVID, and thus increase post-traumatic stress symptoms such as intrusive thoughts and memories associated with trauma (Bohanek et al., 2005).

Practical implications

The findings of this research have several implications regarding efforts to enhance well-being during a trauma like COVID-19. Our results suggest that self-positive and pro-social reminiscences are important when processing trauma and they increase the likelihood of developing positive changes after trauma. In contrast, self-negative reminiscence is a risk factor for developing PTSD after a trauma. These results imply that interventions designed to improve the psychological health of the survivors of the pandemic should focus on the survivors' use of increased reflective and pro-social reminiscences and decreased self-negative reminiscence. Teaching adults to practice self-positive reminiscence will help them to identify and enhance their strengths, problem-solving, and coping skills. By doing so, people will appreciate their worth, virtue, and wisdom, and create more meaningful and productive lives. Self-positive reminiscence is also helpful to deal with loss and generate self-compassion (Freire, 2000). Establishing and maintaining all of these are important to increase resilience to trauma.

Reminiscence therapy techniques were designed to help older adults develop ego integrity (Erikson, 1959) by encouraging their identity, problem-solving capacities, and life purpose through self-positive reminiscence. These techniques also help reduce self-negative reminiscences such as bitterness revival, intimacy maintenance, and boredom reduction (Korte et al., 2011). This study implies that reminiscence therapy techniques would also be very useful for COVID trauma survivors to facilitate post-COVID growth and reduce stress after COVID.

Limitations

There are some limitations associated with the present study that should be noted. First, this study tested a mediation model by using cross-sectional data. However, a causal claim between reminiscence functions and post-traumatic cognitions

related to the COVID period cannot be made without using longitudinal or experimental designs. This is because it's also possible that the ways of sharing memories during the COVID period could be similar to those used before the pandemic. Furthermore, it is possible that the reminiscence functions do not increase one's perceived social support and resilience; instead, one's strong social connections and positive mood aroused from one's resilience may increase the tendency to narrate memories for certain intentions. Similarly, as the perceived negative psychological impact of COVID increases one's use of self-negative function may increase rather than one's increased use of self-negative function leading to a negative appraisal of COVID's psychological impact. Second, all measures including the reminiscence functions measure were based on retrospective self-report measures. Therefore, we could find different results if data were collected immediately after the second wave. The lack of a control condition where we could have investigated the functions of reminiscence before COVID is also a limitation because we cannot determine that the differences are due to COVID. Finally, we can generalize the results only to populations that share the same characteristics as our sample.

Conclusion

The present study aimed to understand how sharing memories during COVID-19 could be associated with post-COVID stress symptoms and post-COVID growth processes. The present study integrates the tripartite model and dual model of trauma processing, and findings support the relationship between reminiscence functions and post-traumatic cognitions related to COVID-19 in a sample of young adults from Turkey. The results mainly imply that sharing memories during COVID for creating meaning, accepting mortality, solving problems, instructing others, and creating a conversation is related to increased social support, psychological resilience, and positive changes after COVID. On the contrary, reminiscing memories to rehash the negative past is related to experiencing stress after COVID. To date, reminiscence therapy has mainly been considered a useful therapy technique for older adults to cope with aging-related challenges such as dementia (Lazar et al., 2014). The results of this study suggest that the use of reminiscence therapy-type interventions would be beneficial to facilitate PTG and reduce PTSD after large-scale disasters such as a pandemic.

Author contributions The first three authors made equal contributions. They collected data, wrote the method and results sections, and helped in data analyses. The corresponding author formulated and designed the study, constructed and tested the hypotheses, conducted most of the analyses, and wrote the introduction and discussion sections of the manuscript.

Data availability The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Conflict of interest There is no conflict of interest to declare. The study has been reviewed and approved by TED University Human Research Ethics Board.

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