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The Impact of Multiple Stressful Life Events on Posttraumatic Growth in Adolescence

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Objective: Posttraumatic growth (PTG) has been primarily recognized as a result of experiencing a single life crisis. The current study investigated how PTG may be attributed to experiences of a multitude of highly stressful life events, and how PTG is correlated with PTSD symptoms, the severity of the event, and the total number of childhood traumas experienced. ***Method:*** Adolescents (N = 139) participated in a survey that assessed six major life events of childhood trauma and rated the severity of each event, posttraumatic stress symptoms (PTSS), and PTG. ***Results:*** The majority of adolescents attributed their PTG experiences to one event, despite experiencing multiple traumas. However, experiencing more events was associated with greater PTSS and some forms of PTG such as changed priorities, increased self-reliance, and establishing a new path in life. Results from regression analyses also showed that trauma severity and PTSS were linearly correlated with PTG, and thus, a curvilinear relationship was not identified. ***Conclusions:*** Cumulative traumatic events may lead to increases in a sense of personal growth, while also increasing distress, in nonclinical adolescents.

Clinical Impact Statement
Adolescents have been shown to experience posttraumatic growth (PTG). It was found that even adolescents who experience multiple traumatic life events often focus on one salient event when recognizing PTG. However, those who report PTG as a result of multiple traumatic events note increases in self-reliance, changed priorities, and identifying new life paths, while also increased distress. These results inform researchers and clinicians that when assessing PTG in adolescents, the focus should not be limited toward the raw number of traumatic events experienced, but rather subjective perceptions of severity, meanings of each event, and core beliefs disruption from each event.

Keywords: posttraumatic growth, multiple traumas, adolescence, distress

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Posttraumatic growth (PTG), the positive changes people experience following a psychological struggle with a highly stressful life event, has been increasingly studied since the term was coined over 2 decades ago (Tedeschi & Calhoun, 1996). Although the vast majority of studies on PTG have been conducted with adults, the phenomenon has been well observed in children and adolescents (Meyerson et al., 2011). Adolescents who have experienced PTG as a result of various stressful life events have reported an array of intrapersonal and interpersonal positive changes, such as feeling stronger or more self-reliant, a greater sense of closeness with other people, appreciating the values in life, embracing different opportunities, and a better understanding of spirituality (Exenberger et al., 2018).

Although it is not rare for people, including children and adolescents, to experience multiple stressful life events (Merrick et al., 2018) and for some to show complex posttraumatic stress disorder (PTSD) symptoms because of that (Cloitre et al., 2009; Suliman et al., 2009), the roles of cumulative traumas in psychological factors have not been well investigated (Kira et al., 2008). The majority of studies on PTG, especially among adolescents, have, thus far, focused on the impact of experiencing a single event, such as a natural disaster (Kilmer & Gil-Rivas, 2010; Jieling & Xinchun, 2017), parental cancer (Kissil et al., 2010), and bullying (Ratcliff et al., 2017). Some studies have considered diverse events; however, they typically ask research participants to choose one focal, often most stressful or severe, life event, and reflect on how much they have changed since that particular event (Ickovics et al., 2006; Taku et al., 2012).

A few studies, although conducted with adult samples, have examined the impact of multiple traumatic events. Qualitatively, experiencing multiple traumatic events led to both positive and negative outcomes in multiple areas of life (Brooks et al., 2021).

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Quantitatively, the more traumatic events experienced, the more PTG was recognized (Haglund et al., 2009; Jirek & Saunders, 2018). Peterson et al. (2008) found that multiple traumas positively correlated not only with increased PTG, but also with increased personal resources and character strengths, such as kindness, bravery, honesty, perseverance, beauty, creativity, curiosity, learning, religiousness, and zest. These studies indicate that experiencing multiple traumas may lead to increased wisdom or sense of growth. In a sample of highly traumatized Palestinian refugees, for example, although PTG was strongly associated with a single event, cumulative traumas also led to growth in specific subdomains of PTG, such as internal/intrapersonal growth that focuses on self-perception or philosophy of life, rather than relational/interpersonal growth that focuses on personal growth in the context of relationships and connectedness with others (Kira et al., 2013).

It is, however, still unclear if people in these studies recognized any connections between their sense of personal growth and experiences of multiple traumas, because when reflecting on PTG, the participants were typically instructed to think about the changes that had occurred because of any events experienced (Peterson et al., 2008) or while thinking back on their experiences throughout the entire year (Haglund et al., 2009) or lifetime (Brooks et al., 2021). An unanswered question is whether people would attribute their sense of growth to a single event, even when they experienced multiple events, or if they recognize their own personal growth precisely because they experienced multiple challenges. Even when people experience multiple events, they may attribute their personal growth to any number of their experienced events or one specific event that is "centered" to their identity (Berntsen & Rubin, 2006). Although one specific event may be more likely to become an anchoring point or a reference point in life history, especially among young individuals, a sense of personal growth may also only be recognized due to the chain of multiple events. It is important to allow the opportunity to reflect on the contributions of each event people might have experienced in their life toward various facets of PTG (e.g., feeling more self-reliant, being more connected with others), without assuming an overall sense of growth should occur as a result of a single or combination of all experiences. It is possible that a specific facet of PTG may be recognized by experiencing a single trauma, whereas other facets of PTG can only be attained by experiencing multiple events. For example, a longitudinal study examining PTG in adolescents after the death of a parent, which may contribute to additional adversities such as financial loss and family upheaval, identified new possibilities and personal strength as the prominent facets of PTG (Wolchik et al., 2009). Given this, the first purpose of the current study is to investigate if adolescents who experienced multiple potentially traumatic life events would associate their sense of growth with one of those events or combinations of those events.

The second purpose of this study addresses why PTG in previous literature was found to be "positively," although weakly, correlated with the total amount of life crises (Haglund et al., 2009; Jirek & Saunders, 2018). Generally, the number of cumulative adverse life events are associated with negative psychological outcomes among adolescents (Kira et al., 2012; Layne et al., 2014). These seemingly contradictory relationships have been well explained empirically and theoretically in PTG literature (Tedeschi et al., 2018), indicating the coexistence of positive and negative changes resulting from trauma and that PTG is not the same as a lack of distress, but rather occurs while experiencing psychological struggle with challenged worldviews. According to a PTG theoretical model (Tedeschi et al., 2018), PTG process starts when individuals' core beliefs were disrupted by experiencing a highly stressful life crisis. However, PTG is not an immediate process; through coping to manage emotional distress and experiencing intrusive rumination, individuals allow for more deliberate and constructive rumination, and eventual schema change, resulting in the recognition of PTG. In this process, individuals may disclose and express their experiences to others, all of which makes the PTG process as paradoxical, in nature. In fact, Shakespeare-Finch and Lurie-Beck (2014) conducted a meta-analysis on the relationships between PTG and negative psychological outcomes resulting from trauma, such as PTSD and posttraumatic stress symptoms (PTSS) and concluded that these two constructs showed both linearly positive and curvilinear relationships. The inverted-U shape relationship that was repeatedly found in adult samples indicated that PTG is greatest when the level of PTSS or severity of the events was not too low or high (Kleim & Ehlers, 2009). And yet, not all studies have supported a curvilinear relationship among adolescents (Sleijpen et al., 2016), as others revealed a positive relationship (Vloet et al., 2014) or no relationship at all (Glad et al., 2013).

Perhaps, the range of severity is a potential reason why studies show mixed results that indicate both linear and curvilinear relationships. If the trauma is perceived to be too severe, PTG is likely to be suppressed, which creates an inverted-U shape relationship, because PTG is also likely to be suppressed when the event is perceived to be less severe. This is because, if the experience is unlikely to challenge an individual's views and beliefs about the world and themselves, the PTG process is unlikely to be initiated (Taku et al., 2015). However, if the study sample does not include a higher end, that is, those who perceive a trauma as extremely severe, the curve is unlikely to be drawn downward, making it a linear relationship. These notions are consistent with the self-regulation theory (Benight et al., 2018). This theory features a "critical threshold" in which a person experiences such high levels of adversity and posttraumatic stress that they may not be able to successfully regain a sense of control. The theory suggests, therefore, that PTG may be more likely to be recognized not only when experiencing moderate levels of symptoms or degree of severity, but also after experiencing a moderate, but not excessively high number of traumatic events. It is because, experiencing a moderate number of traumatic events may provide individuals with different challenges and opportunities to cope, ruminate, and seek social support. The literature on adult PTG so far has demonstrated a linearly positive association between the total number of cumulative traumas and PTG (Haglund et al., 2009; Jirek & Saunders, 2018; Peterson et al., 2008), however, little research in this area has focused on adolescents. Thus, the second purpose of this study is to investigate both linear and curvilinear relationships between three stress indicators (i.e., the total number of childhood traumas, the severity of the traumas, and current stress symptoms) and PTG in adolescents.

In sum, the first purpose of the study is to investigate if multiple events are likely to be catalysts for specific facets of PTG, when adolescents are not forced to choose one focal event when reflecting on their PTG experiences. We hypothesized that certain facets

of PTG, such as increased self-reliance or recognizing new opportunities in life, may be attributed to multiple traumatic events, whereas the other facets of PTG, such as better understanding of spiritual matters, may be attributed to single most impactful life event, even when people experience multiple traumas. The second purpose is to test whether a linear or a curvilinear relationship will be found between PTG and the total number of childhood traumas, the severity of events, and current stress symptoms in nonclinical adolescents. We hypothesized that a curvilinear relationship will be found with PTG only if a sufficient number of adolescents report severe trauma, but if not, it should show a positive but weak linear relationship.

Method

Participants

Adolescents enrolled in a psychology class through a public high school completed a pencil-and-paper survey (N = 165). Participants who were 18 years or older (n = 10) and who had not experienced a stressful life event (n = 16) were excluded, resulting in the final sample size of 139 ranging in age from 15 to 17. The majority of participants were White (51%) and female (63%). See Table 1 for complete demographics.

Measures

Trauma History and Severity of the Events

Participants were asked to disclose their trauma history using a modified version of the Traumatic Event Survey for children (TES; Elliott, 1992), which asks participants to report if any of the following six traumas happened in childhood: (a) death of a very close friend or family member; (b) major upheaval between parents, such as divorce and separation; (c) stressful or traumatic sexual experience including rape and molestation; (d) physical violence such as child abuse, mugged, assaulted other than sexual; (e) traumatic injuries or illnesses; and (f) any additional events that the participants experienced, which included an open-ended section where participants could describe the event. The TES was modified for this study by asking participants to report the degree of stressfulness when it happened (1 = *not at all* to 7 = *extremely*) following each event in order to obtain the subjective severity of events experienced.

Posttraumatic Growth

PTG was assessed with a modified version of the PTG Inventory (PTGI; Tedeschi & Calhoun, 1996). The modified version uses the first 10 items of the 21-item PTGI (Dominick et al., 2020). Participants were asked after each item to select which of the events they experienced might attribute to growth on that item by providing a list of all the potential experienced events. For example, participants would select level of growth from the item "I established a new path for my life," and then would indicate which traumatic event(s) they had experienced that contributed to establishing a new path for their life. Supplemental File A (Figure S1) shows the ways that the PTGI was modified for this study. Each item was rated from 0 (*not at all*) to 5 (*very great degree*). Total scores could range from 0 to 50, with higher scores indicating higher levels of PTG. For data analysis, mean scores were calculated by dividing the total score by the number of items in the inventory to maintain comparability of the measure. Thus, mean scores could range from 0 to 5. Cronbach's alpha in the current sample was .81, which is comparable to or higher than that of previous studies (e.g., Exenberger et al., 2018; Vloet et al., 2014).

Posttraumatic Stress Symptomology

PTSS was assessed using the Impact of Events Scale—Revised (IES-R, Weiss & Marmar, 1997). Participants were instructed to

Table 1
Demographic Variables of Participants (N = 139)

Variable	Total N = 139 $M(SD)$ $N(\%)$	1 event n = 55 $M(SD)$ $n(\%)$	2 events n = 43 $M(SD)$ $n(\%)$	3+ events n = 41 $M(SD)$ $n(\%)$
Sex				
Male	47 (33.80)	26 (55.32)	13 (27.66)	8 (17.02)
Female	91 (65.50)	29 (31.87)	29 (31.87)	33 (36.26)
Missing/not disclosed	1 (0.70)		1 (100.00)	
Age	16.91 (0.33)	16.93 (0.26)	16.91 (0.37)	16.90 (0.37)
Race				
Caucasian	70 (50.40)	28 (40.00)	21 (30.00)	21 (30.00)
African American	22 (15.80)	8 (36.36)	9 (40.91)	5 (22.73)
Asian	23 (16.50)	11 (47.83)	6 (26.09)	6 (26.09)
Middle Eastern	12 (8.60)	5 (41.67)	4 (33.33)	3 (25.00)
Other	12 (8.60)	3 (25.00)	3 (25.00)	6 (50.00)
Religious association				
Christianity	66 (47.48)	26 (39.39)	23 (34.85)	17 (25.76)
Judaism	23 (16.55)	12 (52.17)	3 (13.04)	8 (34.78)
Islamic	13 (9.35)	6 (46.15)	4 (30.77)	3 (23.08)
Agnostic	21 (15.11)	3 (14.29)	8 (38.10)	10 (47.62)
Other or missing	16 (11.51)	8 (50.00)	5 (31.25)	3 (18.75)
PTSS	1.32 (0.81)	0.96 (0.72)	1.34 (0.78)	1.76 (0.73)
Event Severity	5.28 (1.39)	4.63 (1.73)	5.60 (1.16)	5.44 (0.95)
PTGI	2.46 (1.00)	2.31 (1.06)	2.47 (1.02)	2.65 (0.91)

report how distressing each of the 22-item symptoms had been in the past week on a Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). Participants could have a total score between 0 and 88. Scores of 33 or higher raise clinical concern. In this sample, 60 (43.5%) participants scored higher than 33. For data analysis and comparability of measures, mean scores were calculated by dividing the total score by the number of items in the inventory. Thus, mean scores could range from 0 to 4. Cronbach's alpha for the IES-R in the current sample was .92, which is also comparable to that of previous studies (e.g., Chopko, 2010).

Procedure

The study was approved by the university's Institutional Review Board. Participants were recruited through high school classes and were told that participation was voluntary. Participants were given a week to decide whether to participate, after which both child assent and caregiver permission were obtained. Participants completed the measures in a class setting. Researchers went through the survey with participants page by page, reading directions and answering any questions, especially regarding event attribution with the modified version of the PTG Inventory (see the Figure S1). Data collection took approximately 45 min per class and participants were given a $5 gift card following completion of the study.

Data Analysis

After descriptive statistics were obtained, those who did not meet criteria (i.e., age and trauma) were excluded from the analyses. Three groups were then created: those who experienced a single trauma (n = 55), those who experienced two traumas (n = 43), and those who experienced three or more traumas (n = 41). To measure severity in relation to the events that contributed to PTG, mean stress scores were calculated based on the attributed event(s) under the PTGI item, and the corresponding stress rating for each event. Whether multiple events contributed to PTG was investigated by comparing the frequencies of those who experienced multiple traumas to examine if they identified a single trauma or multiple traumas for each item of PTG. The relation between the three stress indicators (i.e., the total number of childhood traumas, the severity of the traumas, and current stress symptoms) and PTG was tested using correlation and regression analyses to assess linear and curvilinear relationships. Significance level was set at .01 to avoid Type I error.

Results

Participants reported experiencing an average of 2.12 (SD = 1.23) traumatic events. Overall, 79% of participants reported a death, 36% reported major parental upheaval (divorce/separation), 14% experienced sexual assault, 10% an act of violence, 28% experienced a significant injury, and 47% reported other types of traumas, such as mental health crises, parental injury or illness, being a victim of fire, bullying, rejection from social groups, nonfatal suicide attempt, family members being in jail, family deported to another country, and being homeless. On average, the adolescents reported moderate levels of growth (M = 2.46, SD = 1.00) following their stressful life experiences and moderate levels of PTSS (M = 1.32, SD =.81). Mean severity of events was also calculated, indicating moderate levels of stress (M = 5.28, SD = 1.39). When comparing the overall PTG levels among the three groups (those who experienced one trauma, those who experienced two traumas, and those who experienced three or more traumas), the results were nonsignificant, $F(2, 134) = 1.78$. However, when comparing the 10 facets of PTG among the three groups, two of the 10 PTG items were significant. The first was Item 1: "I changed my priorities about what is important in life," $F(2, 132) = 4.97$, $p < .01$. Tukey's post hoc comparison indicated that those who experienced three or more traumas (estimated M = 3.59, 95% CI [3.16, 4.01], SE = .22) reported greater growth than those who experienced a single trauma (estimated M = 2.69, 95% CI [2.31, 3.07], SE = .19) at $p < .01$. The second was Item 7: "I established a new path for my life," $F(2, 129) = 12.00$, $p < .001$. Those who experienced three or more traumas (estimated M = 2.95, 95% CI [2.43, 3.47], SE = .26) and those who experienced two traumas (estimated M = 2.56, 95% CI [2.06, 3.06], SE = .25) reported greater growth than those who experienced a single trauma (estimated M = 1.33, 95% CI [.86, 1.79], SE = .24) at $p < .001$. In addition, when comparing PTSS, the results indicated significant group differences, $F(2, 135) = 14.14$, $p < .001$. Tukey's post hoc results revealed that those who experienced three or more traumas (estimated M = 1.76, 95% CI [1.53, 1.99], SE = .12) reported greater PTSS than those who experienced a single trauma (estimated M = .95, 95% CI [.75, 1.15], SE = .10) at $p < .001$.

Next, as shown in Table 2, among those who experienced a total of two traumas (n = 43), approximately 70% to 80% of them attributed one of the events to each form of PTG, except the item "I know better that I can handle difficulties" which was perceived to be associated with both traumas by 37.9%. Results were similar among those who experienced a total of three or more traumas (n = 41), however, in addition to the same PTGI item of handling difficulties, the items, "I have a greater sense of closeness with others" and "I more clearly see that I can count on people in times of trouble", were also attributed to multiple traumas by close to 40% of the adolescents.

Correlations between total childhood events, event severity, PTSS, and each of the PTGI item are shown in Table 3. The total number of childhood events was positively associated with three facets of the PTG: changed priorities, self-reliance, and establishing a new path. Event severity and PTSS were positively associated with total PTGI, and PTSS was also positively associated with establishing a new path. Curvilinear relationships were not significant.

Discussion

The current study is the first to investigate if various facets of self-recognized PTG are attributable to experiences of multiple traumas when adolescents are not forced to choose one focal event when reflecting on PTG experiences. This study revealed that, although the majority of teenagers who experienced multiple traumas still attributed their sense of growth to one event, causal attributions depended on the facets of personal growth. When we focused on adolescents who experienced two or more childhood traumatic life events, PTG related to finding a new path, changed priorities in life, and having an increased self-reliance were more likely to be recognized and were associated with the total number of events experienced.

Table 2
Number of Events Attributed to PTG (N = 84)

	2 events (n = 43)		3+ events (n = 41)		
PTGI item	N(%) of participants who chose 1 event	N(%) of participants who chose 2 events	N(%) of participants who chose 1 event	N(%) of participants who chose 2 events	N(%) of participants who chose 3 or more events
1	24 (75.0)	8 (25.0)	26 (74.3)	4 (11.4)	5 (14.3)
2	24 (77.4)	7 (22.6)	24 (70.6)	8 (23.5)	2 (5.9)
3	16 (80.0)	4 (20.0)	21 (91.3)	2 (8.7)	0 (0.00)
4	23 (79.3)	6 (20.7)	22 (66.7)	5 (15.2)	3 (18.2)
5	17 (70.8)	7 (29.2)	19 (79.2)	1 (4.2)	4 (16.7)
6	20 (74.1)	7 (25.9)	21 (61.8)	10 (29.4)	3 (8.8)
7	18 (75.0)	6 (25.0)	21 (75.0)	3 (10.7)	5 (14.3)
8	19 (73.1)	7 (26.9)	20 (60.6)	9 (27.3)	4 (12.1)
9	20 (74.1)	7 (25.9)	21 (70)	6 (20)	3 (10)
10	18 (62.1)	11 (37.9)	20 (57.1)	5 (14.3)	10 (28.6)

Note. PTGI Items: 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. The total percentage or frequency for each row varies because some participants (median 25 across items) only indicated their level of growth without identifying which event triggered the sense, leaving it missing.

Findings indicated that the majority of teenagers attributed one event to most facets of perceived PTG despite experiencing multiple traumas. Perhaps the single event may have been especially significant or challenging for these teenagers, while other events might not have disrupted core beliefs enough to be attributed to PTG. This interpretation is consistent with previous findings indicating positive relationships between challenged core beliefs and PTG (Taku et al., 2015), as well as event centrality (i.e., the extent to which a person feels a particular event has become part of his or her identify) and PTG (Brooks et al., 2017; Groleau et al., 2013; Johnson & Boals, 2015). The single event attributed to the majority of PTG facets may also have caused more intrusive rumination regarding "the" specific event for these adolescents, which has also been found to mediate the relationship between childhood trauma and PTG (Brooks et al., 2019). Further, trauma may hierarchically organize to build wisdom and personal resources (Webster & Deng, 2015), making an individual more likely to be resilient or reach a ceiling after experiencing multiple events, and more likely to focus on a highly disruptive event rather than subsequent events. Additionally, because experiencing a variety of traumatic events was associated with changed priorities, establishing a new path in life, and self-reliance, adolescents experiencing additional stressors or life crises may accumulate more wisdom than those who experienced one trauma, and are therefore more likely to recognize multiple aspects of PTG that still relate to confidence and self-reliance. Previous literature supports this claim, as childhood trauma can establish self-differentiation, which is defined as the development of a sense of self and one's ability to be close to but separate from significant others, characterized by autonomy and independence, and is predictive of higher levels of PTG (Hooper et al., 2008).

The second purpose of this study was to test if a curvilinear relationship would be found between stress perceptions and self-recognized PTG in nonclinical adolescents. We looked at three indices of stress: event severity, PTSS, and the total number of traumas. Overall, a curvilinear relationship was not supported. A positive linear relationship was found between event severity and total PTG as well as PTSS and PTG which is consistent with previous findings where cumulative trauma demonstrated a linear relationship with PTG (Haglund et al., 2009; Jirek & Saunders,

Table 3
Linear and Curvilinear Correlations Between Stress Indicators and PTG (N = 139)

	Total events		Event severity		PTSS	
Measure	Linear	Curvilinear	Linear	Curvilinear	Linear	Curvilinear
PTGI 1 Changed priorities	.27**	−.05	.18	−.02	.21	.09
PTGI 2 Greater appreciation	.10	−.07	.15	−.08	.12	−.11
PTGI 3 New interests	.10	−.15	−.02	−.01	.20	−.06
PTGI 4 Self-reliance	.24**	.01	.09	−.04	.18	.01
PTGI 5 Spiritual matters	.04	.01	.22	.11	.16	−.10
PTGI 6 Count on others	−.13	.06	.15	.01	−.03	−.20
PTGI 7 New path	.34**	−.28	.20	.03	.39**	−.12
PTGI 8 Close with others	−.10	.06	.21	.11	−.01	−.04
PTGI 9 Express emotion	−.08	.01	.08	−.06	.01	−.15
PTGI 10 Handle difficulties	.13	−.04	.08	−.06	.14	.05
PTGI Total	.15	−.07	.23**	.03	.23**	−.10

** $p < .01$.

2018; Peterson et al., 2008). The total number of traumatic events was not significantly associated with PTG, indicating that the sheer number of traumatic events may not relate to overall PTG and that other factors of events, such as their severity, have a larger impact on recognizing growth. This finding is supported by previous literature which found that the total number of traumatic events experienced did not significantly correlate with PTG (Chopko, 2010). For this reason, an individual may experience multiple potentially traumatic events, but perhaps only one of those events was stressful enough to challenge their core beliefs, resulting in PTG. Participants who experienced highly stressful events were more likely to attribute these events to their perceived PTG rather than the less stressful events experienced, indicating that factors such as stress and core belief disruption are more pertinent to experiencing PTG than just the raw number of events experienced.

While the current study is unique in exploring the relationship between trauma severity and self-recognized PTG as a result of multiple events, there are some limitations to consider. The sample is not representative of the general population nor a clinical sample as it consisted of high school students who are primarily White and female. Due to those factors, as well as the smaller sample size, there was limited variability in trauma severity in that few participants reported high levels of stress or PTSS, which restricts the generalizability of this sample. The data were collected using self-report measures; therefore, trauma severity and event recall may be limited or biased. Relying on the first 10 items of the PTGI is another major issue. Although the short form of the PTGI is available (Cann et al., 2010), it includes an item specific to religious change which may not be considered personal growth or positive change for all adolescents in the U.S. (Taku, 2011). Given that the PTGI-X has been developed to resolve this problem (Tedeschi et al., 2017), it would have been ideal to use the brief version of the PTGI-X once it becomes available. Furthermore, the current study examined the ten PTG facets by investigating the results at the item level, future studies should refine the data analytical methods so that they would not rely on the item-level analysis.

There are several directions this study can suggest. First, we suggest examining time since the event, because it has been recently suggested to affect the curvilinear relationship (Dar & Iqbal, 2020). Time since each traumatic event may elucidate why adolescents were more likely to attribute PTG to one event, despite experiencing multiple. Cumulative trauma has been linearly associated with PTG, with earlier, first-time experiences correlating with higher PTG (Jirek & Saunders, 2018). Young adults who experienced multiple life events (both positive and negative), were more likely to list a recent event as contributing to 25% of their growth, and on average, rated a single, most important event as contributing to 35% of their growth (Anderson & Lopez-Baez, 2011). Furthermore, the amount of time elapsed since a childhood trauma may influence an adolescent's ability to make meaning and cognitively process a trauma, relating to subsequent PTG. Therefore, considering investigating the amount of time elapsed since each event in relation to PTG would be helpful.

Second, there have been ongoing debates as to the authenticity of self-reported PTG and the issues surrounding the methodologies used to measure PTG (Jayawickreme et al., 2021). As seen in the Janus face model (Zoellner & Maercker, 2006), researchers postulate there being two sides of self-reported PTG: namely, a self-transcending or constructive side and an illusory, self-deceptive side. Although these two aspects may not be mutually exclusive, one side may be particularly dominant under certain conditions for adolescents, depending on their psychological mindedness, self-understanding, and awareness (Kilmer et al., 2014). Given that the current study focused on self-recognized PTG at one point in time by reflecting on past traumas, future studies should continue elaborating conceptually and methodologically in order to understand the full picture of PTG experiences among adolescents.

Third, examining core belief disruption may determine how likely it is that an adolescent will associate an event with PTG. Especially at this developmental stage, some teenagers may perceive their experiences as very severe and disruptive due to the lack of other previous experiences, which in turn may result in increased salience of early trauma. Individual events that are less severe may be less likely to disrupt one's core beliefs or lead to rumination, limiting the recognition of growth after the experience due to the decreased salience of trauma. Thus, a more severe and impactful traumatic event may overshadow the influences of less severe events. Future studies should consider measuring the degree to which core beliefs were disrupted in correspondence to each event experienced. Furthermore, one study found that avoidant coping and intrusive thoughts mediated the relationship between number of traumatic event types and PTG, as well as childhood trauma events and PTG (Brooks et al., 2019), indicating that survivors may engage in avoidant coping when overwhelmed and lack control, which in turn may minimize PTG. But the same study also found intrusive thoughts to be a mediator between traumatic events and greater PTG (Brooks et al., 2019), as intrusive thoughts are likely to be fostered when an individual's core beliefs are shaken, which in turn may facilitate the PTG process. These findings suggest that the trajectory of PTG is again paradoxical. Still, the experience of multiple traumas may predispose some individuals to report growth (Brooks et al., 2021); thus, it is important to examine the long-term developmental effects of cumulative traumas on adolescents.

Overall, existing PTG literature, including the PTG theoretical model (Tedeschi et al., 2018), has thus far largely focused on describing a single traumatic experience. More research must be conducted allowing participants to freely associate events with PTG, rather than focusing on one singular event, to clarify aspects of growth that may be unique to experiencing multiple traumas.

References

Anderson, W. P., Jr., & Lopez-Baez, S. I. (2011). Measuring personal growth attributed to a semester of college life using the Posttraumatic Growth Inventory. *Counseling and Values*, *56*(1–2), 73–82. https://doi.org/10.1002/j.2161-007X.2011.tb01032.x

Benight, C. C., Harwell, A., & Shoji, K. (2018). Self-regulation shift theory: A dynamic personal agency approach to recovery capital and methodological suggestions. *Frontiers in Psychology*, *9*, 1738. https://doi.org/10.3389/fpsyg.2018.01738

Berntsen, D., & Rubin, D. C. (2006). The centrality of event scale: A measure of integrating a trauma into one's identity and its relation to post-traumatic stress disorder symptoms. *Behaviour Research and Therapy*, *44*(2), 219–231. https://doi.org/10.1016/j.brat.2005.01.009

Brooks, M., Graham-Kevan, N., Lowe, M., & Robinson, S. (2017). Rumination, event centrality, and perceived control as predictors of post-traumatic growth and distress: The cognitive growth and stress model.

British Journal of Clinical Psychology, *56*(3), 286–302. https://doi.org/10.1111/bjc.12138

Brooks, M., Graham-Kevan, N., Robinson, S., & Lowe, M. (2019). Trauma characteristics and posttraumatic growth: The mediating role of avoidance coping, intrusive thoughts, and social support. *Psychological Trauma: Theory, Research, Practice, and Policy*, *11*(2), 232–238. https://doi.org/10.1037/tra0000372

Brooks, M., Graham-Kevan, N., Robinson, S., & Lowe, M. (2021). "I get knocked down, but I get up again" – A qualitative exploration of posttraumatic growth after multiple traumas. *Traumatology*, *27*(3), 274–284. https://doi.org/10.1037/trm0000299

Cann, A., Calhoun, L. G., Tedeschi, R. G., Taku, K., Vishnevsky, T., Triplett, K. N., & Danhauer, S. C. (2010). A short form of the Posttraumatic Growth Inventory. *Anxiety, Stress, and Coping*, *23*(2), 127–137. https://doi.org/10.1080/10615800903094273

Chopko, B. A. (2010). Posttraumatic distress and growth: An empirical study of police officers. *American Journal of Psychotherapy*, *64*(1), 55–72. https://doi.org/10.1176/appi.psychotherapy.2010.64.1.55

Cloitre, M., Stolbach, B. C., Herman, J. L., van der Kolk, B., Pynoos, R., Wang, J., & Petkova, E. (2009). A developmental approach to complex PTSD: Childhood and adult cumulative trauma as predictors of symptom complexity. *Journal of Traumatic Stress*, *22*(5), 399–408. https://doi.org/10.1002/jts.20444

Dar, I. A., & Iqbal, N. (2020). The curvilinear association between posttraumatic distress and posttraumatic growth among pellet gun victims: The moderating roles of time since trauma and age. *Journal of Traumatic Stress*, *33*(6), 1130–1136. https://doi.org/10.1002/jts.22564

Dominick, W., Walenski-Geml, A., & Taku, K. (2020). The impact of pets on posttraumatic growth and stress symptoms in adolescents. *Anthrozoos*, *34*(4), 547–560. https://doi.org/10.1080/08927936.2020.1771059

Elliott, D. M. (1992). *Traumatic Events Survey (TES)*. Unpublished psychological test. Los Angeles: Harbor-UCLA Medical Center. Retrieved September 15, 2015, from Author.

Exenberger, S., Ramalingam, P., & Höfer, S. (2018). Exploring posttraumatic growth in Tamil children affected by the Indian Ocean Tsunami in 2004. *International Journal of Psychology*, *53*(5), 397–401. https://doi.org/10.1002/ijop.12395

Glad, K. A., Jensen, T. K., Holt, T., & Ormhaug, S. M. (2013). Exploring self-perceived growth in a clinical sample of severely traumatized youth. *Child Abuse & Neglect*, *37*(5), 331–342. https://doi.org/10.1016/j.chiabu.2013.02.007

Groleau, J. M., Calhoun, L. G., Cann, A., & Tedeschi, R. G. (2013). The role of centrality of events in posttraumatic distress and posttraumatic growth. *Psychological Trauma: Theory, Research, Practice, and Policy*, *5*(5), 477–483. https://doi.org/10.1037/a0028809

Haglund, M. E., aan het Rot, M., Cooper, N. S., Nestadt, P. S., Muller, D., Southwick, S. M., & Charney, D. S. (2009). Resilience in the third year of medical school: A prospective study of the associations between stressful events occurring during clinical rotations and student well-being. *Academic Medicine*, *84*(2), 258–268. https://doi.org/10.1097/ACM.0b013e31819381b1

Hooper, L. M., Marotta, S. A., & Lanthier, R. P. (2008). Predictors of growth and distress following childhood parentification: A retrospective exploratory study. *Journal of Child and Family Studies*, *17*, 693–705. https://doi.org/10.1007/s10826-007-9184-8

Ickovics, J. R., Meade, C. S., Kershaw, T. S., Milan, S., Lewis, J. B., & Ethier, K. A. (2006). Urban teens: Trauma, posttraumatic growth, and emotional distress among female adolescents. *Journal of Consulting and Clinical Psychology*, *74*(5), 841–850. https://doi.org/10.1037/0022-006X.74.5.841

Jayawickreme, E., Infurna, F. J., Alajak, K., Blackie, L. E. R., Chopik, W. J., Chung, J. M., & Zonneveld, R. (2021). Post-traumatic growth as positive personality change: Challenges, opportunities, and recommendations. *Journal of Personality*, *89*(1), 145–165. https://doi.org/10.1111/jopy.12591

Jieling, C., & Xinchun, W. (2017). Post-traumatic stress symptoms and post-traumatic growth among children and adolescents following an earthquake: A latent profile analysis. *Child and Adolescent Mental Health*, *22*(1), 23–29. https://doi.org/10.1111/camh.12175

Jirek, S. L., & Saunders, D. G. (2018). Cumulative adversity as a correlate of posttraumatic growth: The effects of multiple traumas, discrimination, and sexual harassment. *Journal of Aggression, Maltreatment & Trauma*, *27*(6), 612–630. https://doi.org/10.1080/10926771.2017.1420720

Johnson, S. F., & Boals, A. (2015). Refining our ability to measure posttraumatic growth. *Psychological Trauma: Theory, Research, Practice, and Policy*, *7*(5), 422–429. https://doi.org/10.1037/tra0000013

Kilmer, R. P., & Gil-Rivas, V. (2010). Exploring posttraumatic growth in children impacted by Hurricane Katrina: Correlates of the phenomenon and developmental considerations. *Child Development*, *81*(4), 1211–1227. https://doi.org/10.1111/j.1467-8624.2010.01463.x

Kilmer, R. P., Gil-Rivas, V., Griese, B., Hardy, S. J., Hafstad, G. S., & Alisic, E. (2014). Posttraumatic growth in children and youth: Clinical implications of an emerging research literature. *American Journal of Orthopsychiatry*, *84*(5), 506–518. https://doi.org/10.1037/ort0000016

Kira, I. A., Aboumediene, S., Ashby, J. S., Odenat, L., Mohanesh, J., & Alamia, H. (2013). The dynamics of posttraumatic growth across different trauma types in a Palestinian sample. *Journal of Loss and Trauma*, *18*(2), 120–139. https://doi.org/10.1080/15325024.2012.679129

Kira, I., Lewandowski, L., Somers, C. L., Yoon, J. S., & Chiodo, L. (2012). The effects of trauma types, cumulative trauma, and PTSD on IQ in two highly traumatized adolescent groups. *Psychological Trauma: Theory, Research, Practice, and Policy*, *4*(1), 128–139. https://doi.org/10.1037/a0022121

Kira, I. A., Lewandowki, L., Templin, T., Ramaswamy, V., Ozkan, B., & Mohanesh, J. (2008). Measuring cumulative trauma dose, types, and profiles using a development-based taxonomy of traumas. *Traumatology*, *14*(2), 62–87. https://doi.org/10.1177/1534765608319324

Kissil, K., Niño, A., Jacobs, S., Davey, M., & Tubbs, C. Y. (2010). "It has been a good growing experience for me": Growth experiences among African American youth coping with parental cancer. *Families, Systems & Health*, *28*(3), 274–289. https://doi.org/10.1037/a0020001

Kleim, B., & Ehlers, A. (2009). Evidence for a curvilinear relationship between posttraumatic growth and posttrauma depression and PTSD in assault survivors. *Journal of Traumatic Stress*, *22*(1), 45–52. https://doi.org/10.1002/jts.20378

Layne, C. M., Greeson, J. K., Ostrowski, S. A., Kim, S., Reading, S., Vivrette, R. L., Briggs, E. C., Fairbank, J. A., & Pynoos, R. S. (2014). Cumulative trauma exposure and high risk behavior in adolescence: Findings from the national child traumatic stress network core data set. *Psychological Trauma: Theory, Research, Practice, and Policy*, *6*(Suppl. 1), S40–S49. https://doi.org/10.1037/a0037799

Merrick, M. T., Ford, D. C., Ports, K. A., & Guinn, A. S. (2018). Prevalence of adverse childhood experiences from the 2011-2014 behavioral risk factor surveillance system in 23 states. *JAMA Pediatrics*, *172*(11), 1038–1044. https://doi.org/10.1001/jamapediatrics.2018.2537

Meyerson, D. A., Grant, K. E., Carter, J. S., & Kilmer, R. P. (2011). Posttraumatic growth among children and adolescents: A systematic review. *Clinical Psychology Review*, *31*(6), 949–964. https://doi.org/10.1016/j.cpr.2011.06.003

Peterson, C., Park, N., Pole, N., D'Andrea, W., & Seligman, M. E. P. (2008). Strengths of character and posttraumatic growth. *Journal of Traumatic Stress*, *21*(2), 214–217. https://doi.org/10.1002/jts.20332

Ratcliff, J. J., Lieberman, L., Miller, A. K., & Pace, B. (2017). Bullying as a source of posttraumatic growth in individuals with visual impairments. *Journal of Developmental and Physical Disabilities*, *29*, 265–278. https://doi.org/10.1007/s10882-016-9523-z

Shakespeare-Finch, J., & Lurie-Beck, J. (2014). A meta-analytic clarification of the relationship between posttraumatic growth and symptoms of

posttraumatic distress disorder. *Journal of Anxiety Disorders*, *28*(2), 223–229. https://doi.org/10.1016/j.janxdis.2013.10.005

Sleijpen, M., Haagen, J., Mooren, T., & Kleber, R. J. (2016). Growing from experience: An exploratory study of posttraumatic growth in adolescent refugees. *European Journal of Psychotraumatology*, *7*(1), 28698. https://doi.org/10.3402/ejpt.v7.28698

Suliman, S., Mkabile, S. G., Fincham, D. S., Ahmed, R., Stein, D. J., & Seedat, S. (2009). Cumulative effect of multiple trauma on symptoms of posttraumatic stress disorder, anxiety, and depression in adolescents. *Comprehensive Psychiatry*, *50*(2), 121–127. https://doi.org/10.1016/j.comppsych.2008.06.006

Taku, K. (2011). Commonly-defined and individually-defined posttraumatic growth in the U.S. and Japan. *Personality and Individual Differences*, *51*(2), 188–193. https://doi.org/10.1016/j.paid.2011.04.002

Taku, K., Kilmer, R. P., Cann, A., Tedeschi, R. G., & Calhoun, L. G. (2012). Exploring posttraumatic growth in Japanese youth. *Psychological Trauma: Theory, Research, Practice, and Policy*, *4*(4), 411–419. https://doi.org/10.1037/a0024363

Taku, K., Cann, A., Tedeschi, R. G., & Calhoun, L. G. (2015). Core beliefs shaken by an earthquake correlate with posttraumatic growth. *Psychological Trauma: Theory, Research, Practice, and Policy*, *7*(6), 563–569. https://doi.org/10.1037/tra0000054

Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, *9*(3), 455–471. https://doi.org/10.1002/jts.2490090305

Tedeschi, R. G., Cann, A., Taku, K., Senol-Durak, E., & Calhoun, L. G. (2017). The Posttraumatic Growth Inventory: A revision integrating existential and spiritual change. *Journal of Traumatic Stress*, *30*(1), 11–18. https://doi.org/10.1002/jts.22155

Tedeschi, R. G., Shakespeare-Finch, J., Taku, K., & Calhoun, L. G. (2018). *Posttraumatic growth: Theory, research, and applications*. Routledge. https://doi.org/10.4324/9781315527451

Vloet, A., Simons, M., Vloet, T. D., Sander, M., Herpertz-Dahlmann, B., & Konrad, K. (2014). Long-term symptoms and posttraumatic growth in traumatised adolescents: Findings from a specialised outpatient clinic. *Journal of Traumatic Stress*, *27*(5), 622–625. https://doi.org/10.1002/jts.21955

Webster, J. D., & Deng, X. C. (2015). Paths from trauma to intrapersonal strength: Worldview, posttraumatic growth, and wisdon. *Journal of Loss and Trauma*, *20*(3), 253–266. https://doi.org/10.1080/15325024.2014.932207

Weiss, D. S., & Marmar, C. R. (1997). The impact of event Scale—Revised. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 399–411). Guilford Press.

Wolchik, S. A., Coxe, S., Tein, J. Y., Sandler, I. N., & Ayers, T. S. (2009). Six-year longitudinal predictors of posttraumatic growth in parentally bereaved adolescents and young adults. *Omega: Journal of Death and Dying*, *58*(2), 107–128. https://doi.org/10.2190/OM.58.2.b

Zoellner, T., & Maercker, A. (2006). Posttraumatic growth in clinical psychology - a critical review and introduction of a two component model. *Clinical Psychology Review*, *26*(5), 626–653. https://doi.org/10.1016/j.cpr.2006.01.008

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