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A meta-analytic review of the relationship between attachment styles and posttraumatic growth

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Abstract

Objective: The present review aimed to examine the relationship between attachment styles and posttraumatic growth in adults exposed to traumatizing events.

Method: A systematic literature search resulted in the inclusion of 14 studies in the review. Four correlational meta-analyses of the relationship between the attachment styles of secure, dismissive, preoccupied, and fearful, and posttraumatic growth, were conducted.

Results: These revealed a significant small positive relationship between secure attachment and posttraumatic growth ($r = 0.21, p < 0.001$); a significant small negative relationship between dismissive attachment and posttraumatic growth ($r = -0.12, p < 0.001$), and a weak relationship between preoccupied attachment and posttraumatic growth ($r = -0.04, p = 0.235$), and fearful attachment and posttraumatic growth ($r = 0.08, p = 0.248$).

Conclusions: The relationship between attachment styles and posttraumatic growth is modest and may be better explained by other variables. Nonetheless, findings provide useful information for clinicians regarding the potential small impact of attachment style following traumatizing exposure. Implications for future research are highlighted.
INTRODUCTION

Reactions following direct or indirect exposure to traumatizing events involving actual or threatened death, sexual violation, or serious injury (American Psychiatric Association, 2013) vary based on individual differences and event-related variables (Salo et al., 2005). Posttraumatic growth (PTG; Tedeschi & Calhoun, 1996) describes positive change after the struggle to cope with traumatizing experiences. Research has explored variables associated with PTG to predict those more likely to experience it, and processes facilitating its emergence (Dekel et al., 2011; Tanyi et al., 2015). Tedeschi and Calhoun (2004) emphasized coping responses and cognitive processes in PTG development, with factors such as attachment style considered by some to mediate the relationship between trauma and psychological outcomes (Romeo et al., 2019).

1.1 Attachment and posttraumatic reactions

Attachment is considered influential in how individuals regulate emotion and cope with adversity (Bartholomew & Horowitz, 1991; Bowlby, 1969) due to its role in the early development of an individual’s internal working models. Attachment has therefore been postulated to play a role in posttraumatic reactions. Cognitive models of posttraumatic stress disorder (PTSD; Ehlers & Clark, 2000) have emphasized the role of event-related and self-appraisals in the development of distress, and conceptualizations of complex PTSD (CPTSD; Courtois & Ford, 2013) suggest an individual’s self-concept after trauma is heavily influenced by their internal working model.

Securely attached individuals are characterized by a comfort with interdependence and intimacy, having a balanced view of self and others (Mikulincer et al., 2003). They exhibit appropriate expectations of others’ responsiveness to their needs (Hazan & Shaver, 1987, Mikulincer & Shaver, 2012). Preoccupied individuals, consistent with ambivalent attachment in children (Bartholomew & Horowitz, 1991), have a more negative self-concept, relying on the approval and affection of others to achieve self-acceptance (Main & Solomon, 1990). This attachment style has also been associated with a fear of rejection or abandonment, triggering elevated efforts to seek closeness with others (Brennan et al., 1998). Dismissively attached individuals, consistent with avoidant attachment in children (Bartholomew & Horowitz, 1991), possess an overly positive view of the self as independent and self-sufficient, and a negative view of others. This leads to an avoidance of intimacy and a downplaying of the importance of others (Bartholomew & Horowitz, 1991). A fourth style is generally underrepresented in the literature; fearful (or unresolved) attachment is considered a fundamental breakdown in attachment strategy (Ma, 2006), with continuing states of fear and disorganization (Hesse & Main, 2000; Main & Solomon, 1990). Characterized by a highly negative view of self and others, individuals who present with this attachment pattern desire closeness with others, but are terrified of it (Ma, 2006). These individuals therefore relate to intimacy in a chaotic and unresolved manner (Adams et al., 2018).

It is postulated that attachment styles impact social and emotional adaptation in adults (Bartholomew & Horowitz, 1991), with the relationship between attachment and adaptation largely consistent across cultures (Van IJzendoorn & Sagi-Schwartz, 2008). Insecure attachment styles (dismissive, preoccupied, and fearful) have long
been associated with outcomes that are more negative after trauma (such as greater emotional difficulties and more PTSD symptoms) compared to those with secure attachment (Halpern et al., 2012). This may be due to a failure to activate internal working models for security and utilize social support effectively to facilitate trauma resolution (Ein-Dor & Hirschberger, 2016; Volgin & Bates, 2016). Individuals with dismissive attachment may self-isolate in response to adversity (Adams et al., 2018); not utilizing the support of others to facilitate trauma resolution (Ein-Dor & Hirschberger, 2016). Preoccupied individuals may ineffectively escalate attempts to seek support from others, while fearfully attached individuals may chaotically move between a desire for support, and a rejection of it, frequently sabotaging interpersonal relationships (Adams et al., 2018).

With regard to emotional regulation, Mikulincer and Shaver (2007) suggest that adults with preoccupied attachment use hyperactivating strategies and are hypervigilant to attachment-related environmental stimuli. Following a traumatic event, this tendency may reinforce negative event-related appraisals associated with safety (Mikulincer & Shaver, 2007), thus maintaining PTSD symptoms (Arikan et al., 2016). Adults with dismissive attachment use deactivating strategies to downregulate their attachment system when faced with stressful events, and avoid attachment- and threat-related cues to inhibit negative affect (Arikan et al., 2016). This prevents postevent processing. With regard to fearful attachment, this category demonstrates the highest level of affect dysregulation of the three insecure subtypes. These individuals are thought to lack organized strategies for self-regulation (Adams et al., 2018), therefore increasing vulnerability to psychopathology after trauma (Main & Solomon, 1990). In contrast, securely attached individuals seek proximity to attachment figures to facilitate regulation after traumatic events, therefore supporting alleviation of distress and postevent processing (Arikan et al., 2016).

1.2 Attachment and PTG

The influence of attachment on posttraumatic reactions has led to attempts to understand the relationship between attachment styles and PTG, but findings have been inconclusive (Romeo et al., 2019). Schmidt et al. (2012) suggested that an individual’s attachment style influences event-related appraisals and is therefore related to the cognitive processing integral for PTG. Positive correlations have been consistently demonstrated between PTG and secure attachment (Salo et al., 2005), with Mikulincer et al. (2006) proposing that this may be due to positive conceptions of self, others, and the world, and an increased likelihood to utilise support to make sense of the traumatic event. For insecure attachment types, the relationships with PTG are more varied. Both Arikan and Karanci (2012), and Dekel (2007) demonstrated positive associations between preoccupied attachment and PTG among nonclinical, community samples, while Nelson et al. (2019) demonstrated a negative correlation, also within a community sample. Positive relationships have been observed between dismissive attachment and PTG in survivors of political conflict (Dekel, 2007; Dekel et al., 2011). However, more often than not, this relationship has been found to be negative (Arikan et al., 2016; Romeo et al., 2017). Fearful attachment, while receiving less representation in the literature than the other three categories, has demonstrated a positive correlation with PTG among oncology samples (Romeo et al., 2017, 2019).

1.3 Objective

The current meta-analysis aims to summarize the relationship between PTG and the attachment styles of secure, preoccupied, dismissive, and fearful. Greater understanding of these relationships may facilitate more holistic conceptualizations of individuals presenting to services for support following trauma. Attachment styles frequently inform client formulations, as they have been shown to predict therapeutic alliance and outcome in trauma populations, including those with CPTSD (Reynolds et al., 2017). Should a link between attachment and PTG be
supported, this may provide clinicians with insight into which individuals may be more likely to experience PTG, therefore supporting targeted therapeutic goal-setting. PTG is a recovery-based goal in phase-based therapeutic approaches (Courtois & Ford, 2013), and associated with increased well-being and reduced depression (Helgeson et al., 2006). It is therefore desirable in the aftermath of a traumatic event. The current review aims to understand the relationship between PTG and attachment styles using correlational meta-analytic methodology.

2 | METHOD

2.1 | Review registration and search strategy

The protocol for the review was preregistered on the International Prospective Register of Systematic Reviews (PROSPERO), on the November 12, 2019. The following databases were searched in April 2020, to identify relevant papers: PsycInfo, CINAHL, Medline, Web of Science, and PTSDPubs (formerly PILOTS). A pilot of the search strategy was conducted on October 10, 2019, and agreed by the research team. The search strategy used the terms: “Posttraumatic growth” (mapped to subject headings and exploded) OR “PTG” OR “Benefit-finding” OR “Stren conversion” OR “Growth after trauma” OR “stress related growth” OR “adversarial growth” AND “Attachment.” Results were limited to articles published in the English language and by age of the sample (18 years and over). Unpublished literature, such as dissertations, were also considered to reduce publication bias. Reference lists of papers identified for full-text search were also screened for relevant papers. Articles retained for full-text search were independently screened for eligibility by two reviewers. Disagreements in the eligibility between the two reviewers were resolved by discussion, and if conclusion could not be reached, the article was reviewed by the third and fourth reviewers.

2.2 | Eligibility criteria

The following criteria were applied when screening articles for inclusion in the review:

1. Published in the English language.
2. Focused on participants 18 years of age and over.
3. All participants must have experienced at least one Criterion A traumatic event (Diagnostic and Statistical Manual of Mental Disorders Fifth Edition; DSM-5, APA, 2013).
5. Measured PTG and attachment style using reliable and valid measures with robust psychometric properties.

2.3 | Data extraction

Data extracted from studies included: country study conducted in, sample size, gender, age range (mean & standard deviations), measures used to calculate PTG and Attachment, the internal reliability (Cronbach’s α) for the total scale/subscales, and effect sizes, extracted as correlation coefficient (r) values for PTG and the attachment subscales. Adult attachment categorizations were used (secure, dismissive, preoccupied, and fearful) and where measures used alternative labeling (e.g., avoidant), these were considered by their adult equivalents (e.g., dismissive).
2.4 | Meta-analytic procedure

Four meta-analyses were conducted, one for each of the reported attachment subscales, using MedCalc Statistical Software, Version 19.1.7 (MedCalc Software Ltd.; 2020). Correlation coefficient $r$ values were transformed into $Z$ values, using Fisher’s $Z$ transformation to correct for standard error skew in the meta-analyses (Hedges & Olkin, 1983). Considering the heterogeneity in sample demographics and measures of PTG and attachment styles across the included studies, a random effects model was selected. $Z$-values were transformed back to $r$ values for interpretation of the results. Heterogeneity of effect sizes was calculated, using the $Q$ and $I^2$ statistics (Higgins et al., 2003).

3 | RESULTS

3.1 | Selection of studies

In total, 202 records were identified in the literature search. Of those, 44 were from PsycInfo, 28 from MedLine, 16 from CINAHL, 91 from Web of Science, and 23 from PTSDPubs. A further publication was found from reference list screening. Forty duplicates were removed, and the remaining 163 articles were screened by title and abstract. From this, 123 articles were identified for exclusion, of which, 28 were qualitative studies, case studies, book chapters, or reviews; 49 did not have a quantitative measure of PTG and/or attachment; 22 studies did not have a traumatic event that met DSM-5 Criterion A; 8 had a sample under 18 years of age; 7 were excluded after contact with the author confirmed meeting exclusion criteria (correlation statistics were unavailable, the total sample did not meet trauma criterion A); 5 were excluded after required data were unavailable from request to the first and second authors; 4 records were dissertations and were unavailable from the associated universities after applications for access. The remaining 40 articles were screened by full-text by 2 reviewers; 4 of which were brought to the third and fourth reviewer for a decision. The number of articles excluded at this stage amounted to 24. Of those, 11 did not meet the DSM-5 criterion A for a traumatic event, one used a duplicate sample of another included paper (the study with the larger sample size was retained), one was a qualitative study, 12 were excluded after required data or information was unavailable after request to the first and second author, and one was excluded because overall PTG score was unavailable after request to the corresponding author. Agreement between the two reviewers was high after full-text screen ($\kappa = 0.90$). Agreement between the third and fourth reviewers was also high ($\kappa = 1$). Study selection can be seen in Figure 1.

Fourteen studies were included in the review. Extracted data can be seen in Table 1. These included 13 cross-sectional studies and 1 longitudinal study (Study no. 3), where correlation statistics were obtained from one time point. Studies were conducted in the following countries: The United Kingdom (UK; Study no. 1), the United States of America (USA; 4, 5, 7, 8, 11, and 14), Israel (2, 3, and 6), Italy (9 and 10), Hungary (12), and Australia (13). A total of 2671 participants were included, with studies having a mean sample size of 190.79 ($SD = 105.42$), and participants having a weighted mean age of 38.44 (range from 18 to 72 years, $M = 41.29$, $SD = 14.77$).

3.2 | Quality assessment

An appraisal of quality was conducted for included articles using the National Institute for Health and Care Excellence (NICE) Quality appraisal checklist-quantitative studies reporting correlations and associations (NICE, 2012). Assessment was conducted independently by two reviewers and any disagreements were resolved by discussion. Agreement was high ($\kappa = 0.81$). Overall study quality was high (++), indicating that efforts were made to minimize the risk of bias, such as using reliable and valid questionnaire measures, and considering the role of confounding variables.
Studies 3 and 5 did not appear to have addressed all possible sources of bias. In Study 3, predictor variables; combat severity and reactions to captivity, were measured by scales created for the study, and therefore, did not display adequate psychometric properties. In Study 5, the method of recruitment limited the sample to those help-seeking and was therefore not representative of the wider population of survivors of cancer. Potential confounding variables, such as trauma characteristics, were not considered or controlled for. Study 8 is also worth noting. The authors list in their limitations that while most of the traumatic events experienced by participants likely met criterion A, this was not assessed. Some participants report the sudden death of a family member as their traumatic experience, but details about the cause of death are not provided. The results of the assessment are summarized in Table 1.
<table>
<thead>
<tr>
<th>Study No.</th>
<th>Authors</th>
<th>N</th>
<th>Country</th>
<th>Population: type of trauma</th>
<th>Design</th>
<th>Mean age (SD)</th>
<th>PTG Measure</th>
<th>α</th>
<th>Attachment measure; Subscales</th>
<th>α (subscales)</th>
<th>Correlation coefficients r</th>
<th>Quality appraisal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Arikan et al. (2015)</td>
<td>393</td>
<td>UK</td>
<td>University students; varied traumas</td>
<td>CS</td>
<td>20.30 (2.75)</td>
<td>PTGI</td>
<td>0.87</td>
<td>RQ; Anxiety, Avoidance</td>
<td>Anxious = 0.85</td>
<td>PTGI × Anxious = 0.05</td>
<td>(+++)</td>
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<td>Avoidant = 0.92</td>
<td>PTGI × Avoidant = −0.14**</td>
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<td>2</td>
<td>Cohen and Katz (2015)</td>
<td>148</td>
<td>Israel</td>
<td>Cancer survivors</td>
<td>CS</td>
<td>34.38 (12.41)</td>
<td>HGRC</td>
<td>0.76– 0.87</td>
<td>ECR; Anxious, Avoidance</td>
<td>Anxious = 0.87</td>
<td>PTGI × Anxious = −0.02</td>
<td>(+++)</td>
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<td></td>
<td>Avoidant = 0.90</td>
<td>PTGI × Avoidant = −0.30***</td>
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<td>3</td>
<td>Dekel et al. (2011)</td>
<td>103</td>
<td>Israel</td>
<td>Ex-political prisoners of war (Ex-POWs); conflict-related traumatic events</td>
<td>L</td>
<td>NR</td>
<td>PTGI</td>
<td>0.94</td>
<td>AQ; Secure, Anxious, Avoidant</td>
<td>Secure = 0.70</td>
<td>PTGI × Secure = 0.05</td>
<td>(+)</td>
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<td></td>
<td>Anxious = 0.79</td>
<td>PTGI × Anxious = 0.16</td>
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<td></td>
<td>Avoidant = 0.63</td>
<td>PTGI × Avoidant = 0.04</td>
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<tr>
<td>4</td>
<td>Gwynn (2009)</td>
<td>151</td>
<td>USA</td>
<td>University students and community sample; sexual assault</td>
<td>CS</td>
<td>21.13 (2.39)</td>
<td>PTGI</td>
<td>0.96</td>
<td>ECR; Anxious, Avoidant</td>
<td>Anxious = 0.91</td>
<td>PTGI × Anxious = −0.03</td>
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<td>Avoidant = 0.94</td>
<td>PTGI × Avoidant = 0.07</td>
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<td>5</td>
<td>Kim et al. (2008)</td>
<td>314</td>
<td>USA</td>
<td>Cancer caregivers; spouse with cancer</td>
<td>CS</td>
<td>56.50 (10.62)</td>
<td>BFS</td>
<td>0.95</td>
<td>MAQ; Secure, Anxious, Avoidant</td>
<td>Secure = 0.83</td>
<td>PTGI × Secure = 0.24**</td>
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<td>Anxious = 0.83</td>
<td>PTGI × Anxious = −0.01</td>
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<td>Avoidant = 0.67</td>
<td>PTGI × Avoidant = −0.11</td>
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<td>Husbands:</td>
<td>PTGI × Secure = 0.30 ***</td>
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<td>PTGI × Anxious = −0.24 **</td>
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<td>PTGI × Avoidant = −0.13</td>
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<td>6</td>
<td>Levi-Belz and Lev-Ari (2019)</td>
<td>131</td>
<td>Israel</td>
<td>Suicide-loss survivors; suicide of family/close friend</td>
<td>CS</td>
<td>40.70 (14.3)</td>
<td>PTGI</td>
<td>0.96</td>
<td>RQ; Secure, Anxious, Avoidant</td>
<td>NR</td>
<td>PTGI × Secure = 0.46 ***</td>
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<td>PTGI × Anxious = 0.06</td>
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<td></td>
<td>PTGI × Avoidant = −0.18*</td>
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<td>7</td>
<td>Nelson et al. (2019)</td>
<td>292</td>
<td>USA</td>
<td>Adult survivors of child sexual abuse (CSA)</td>
<td>CS</td>
<td>41.64 (12.67)</td>
<td>PTGI</td>
<td>0.94</td>
<td>ECR-SF; Anxious, Avoidant</td>
<td>Anxious = 0.76</td>
<td>PTGI × Anxious = −0.19***</td>
<td>(+++)</td>
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<td></td>
<td>Avoidant = 0.79</td>
<td>PTGI × Avoidant = −0.12 ***</td>
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<thead>
<tr>
<th>Study No.</th>
<th>Authors</th>
<th>N</th>
<th>Country</th>
<th>Population; type of trauma</th>
<th>Design</th>
<th>Mean age (SD)</th>
<th>PTG Measure</th>
<th>α</th>
<th>Attachment measure; Subscales</th>
<th>α (subscales)</th>
<th>Correlation coefficients r</th>
<th>Quality appraisal</th>
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<td>8</td>
<td>Owens (2016)</td>
<td>229</td>
<td>USA</td>
<td>University students; varied events</td>
<td>CS</td>
<td>19.26 (3.70)</td>
<td>PTGI</td>
<td>0.94</td>
<td>ECR-SF, Anxious, Avoidant</td>
<td>Anxious = 0.71</td>
<td>PTGI × Anxious = &lt;.01</td>
<td>(+++)</td>
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<td></td>
<td>Avoidant = 0.84</td>
<td></td>
<td>PTGI × Avoidant = −0.20**</td>
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<tr>
<td>9</td>
<td>Romeo et al. (2019)</td>
<td>123</td>
<td>Italy</td>
<td>Breast cancer survivors</td>
<td>CS</td>
<td>54.30 (8.00)</td>
<td>PTGI</td>
<td>0.93</td>
<td>RQ; Secure, Anxious, Avoidant</td>
<td>NR</td>
<td>PTGI × Secure = 0.097</td>
<td>(+++)</td>
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<td></td>
<td>Avoidant = −0.028</td>
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<td>PTGI × Avoidant = −0.072</td>
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<td>Fearful = 0.028</td>
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<td>10</td>
<td>Romeo et al. (2017)</td>
<td>108</td>
<td>Italy</td>
<td>Breast cancer survivors</td>
<td>CS</td>
<td>59.30 (7.80)</td>
<td>PTGI</td>
<td>0.93</td>
<td>RQ; Secure, Anxious, Avoidant</td>
<td>Range from 0.32 to 0.79 (Estimated from literature)</td>
<td>PTGI × Secure = 0.144</td>
<td>(+++)</td>
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<td>Anxious = 0.133</td>
<td></td>
<td>PTGI × Avoidant = −0.140</td>
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<tr>
<td>11</td>
<td>Schmidt et al. (2012)</td>
<td>54</td>
<td>USA</td>
<td>Breast and prostate cancer survivors</td>
<td>CS</td>
<td>53.80 (10.51)</td>
<td>PTGI</td>
<td>0.92</td>
<td>MAQ; Secure</td>
<td>Range from 0.64 to 0.72</td>
<td>PTGI × Secure = 0.37 **</td>
<td>(+++)</td>
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<tr>
<td>12</td>
<td>Tanyi et al. (2015)</td>
<td>152</td>
<td>Hungary</td>
<td>Breast cancer patients currently undergoing treatment</td>
<td>CS</td>
<td>59.12 (10.77)</td>
<td>PTGI</td>
<td>NR</td>
<td>ECR-SF, Anxious, Avoidant</td>
<td>Anxious = 0.87</td>
<td>PTGI × Anxious = −0.009</td>
<td>(+++)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Avoidant = 0.90</td>
<td></td>
<td>PTGI × Avoidant = −0.050</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Volgin and Bates (2016)</td>
<td>100</td>
<td>Australia</td>
<td>Community sample; variety of events</td>
<td>CS</td>
<td>35.00 (NR)</td>
<td>PTGI</td>
<td>NR</td>
<td>ECR; Anxious, Avoidant</td>
<td>NR</td>
<td></td>
<td>(+++)</td>
</tr>
<tr>
<td>14</td>
<td>Wooloff (2014)</td>
<td>373</td>
<td>USA</td>
<td>Licensed Mental Health professionals; Vicarious traumatization</td>
<td>CS</td>
<td>NR</td>
<td>PTGI-SF</td>
<td>NR</td>
<td>RQ; Secure</td>
<td>NR</td>
<td>PTGI × Secure = 0.070</td>
<td>(+++)</td>
</tr>
</tbody>
</table>

Note: (+++), the study has been designed or conducted in such a way as to minimize the risk of bias (NICE, 2012); (+), the study may not have addressed all potential sources of bias (NICE, 2012); Anxious attachment subtype corresponds to adult attachment type of preoccupied; avoidant attachment subtype corresponds to adult attachment type of dismissive. Abbreviations: CS, cross-sectional design; L, longitudinal design; NR, not reported, PTG, posttraumatic growth. *p < 0.05, **p < 0.01, ***p < 0.001.
3.3 | Meta-Analyses

3.3.1 | Effect size for the relationship between secure attachment and PTG

A random-effects meta-analysis of 7 studies (1 study was split by gender of spouse) with a total combined sample size of 1206 revealed a total effect size of 0.21, with a 95% confidence interval (CI) falling between 0.10 and 0.32 ($Z = 3.75; p < 0.001$). This represents a statistically significant small effect size, suggests that more securely attached individuals may experience greater PTG although the effect was small. The studies demonstrated medium-to-high heterogeneity, $Q = 25.28, p = 0.001$, with 72.31% of the variance in effect size due to between study variance, $I^2 = 72.31, 95\%$ CI [43.21, 86.50]. Figure 2 shows the forest plot for all included studies for this relationship. All studies demonstrated a positive relationship between secure attachment and PTG. The majority fell within the small-to-medium effect size range ($r = 0.46$ to $r = 0.05$), with Dekel et al. (2011) and Wooloff (2014) demonstrating little to no significant effect. Schmidt et al. (2012) larger CI is due to the smaller sample size in this article, when compared with the other studies. Levi-Belz and Lev-Ari (2019) falls within the medium-to-large range. It was the only study directly targeting suicide loss.

3.3.2 | Effect size for the relationship between dismissive attachment and PTG

A random effects meta-analysis of 12 studies (1 was split by gender of spouse) with a total combined sample size of 2244 revealed a total small effect size of $-0.12$, with a 95% CI from $-0.17$ to $-0.07$ ($Z = -4.54, p < 0.001$). This small negative correlation suggests that individuals with a dismissive attachment have a tendency to experience less PTG although the effect was small. Low heterogeneity was demonstrated, $Q = 16.67, p = 0.162$. Just over a quarter

<table>
<thead>
<tr>
<th>Study</th>
<th>ES (r)</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dekel et al., 2011</td>
<td>0.05</td>
<td>8.54%</td>
</tr>
<tr>
<td>Kim et al., 2008 Husbands</td>
<td>0.24</td>
<td>12.77%</td>
</tr>
<tr>
<td>Kim et al., 2008 Wives</td>
<td>0.30</td>
<td>13.27%</td>
</tr>
<tr>
<td>Levi-Belz &amp; Lev-Ari, 2019</td>
<td>0.46</td>
<td>10.86%</td>
</tr>
<tr>
<td>Romeo et al., 2019</td>
<td>0.10</td>
<td>10.20%</td>
</tr>
<tr>
<td>Romeo et al., 2017</td>
<td>0.14</td>
<td>8.96%</td>
</tr>
<tr>
<td>Schmidt et al., 2012</td>
<td>0.370</td>
<td>4.48%</td>
</tr>
<tr>
<td>Wooloff, 2014</td>
<td>-0.07</td>
<td>30.93%</td>
</tr>
<tr>
<td>Total (random effects)</td>
<td>0.20</td>
<td>100%</td>
</tr>
</tbody>
</table>

**FIGURE 2**  Forest plot for the relationship between PTG and secure attachment by study, with effect sizes (ES) and % weight. PTG, posttraumatic growth
of the variance in effect size was due to variance between the studies, $I^2 = 28.03$, 95% CI [0.00, 62.75]. All but two studies (Dekel et al., 2011; Gwynn, 2009) demonstrated a negative relationship between dismissive attachment and PTG, and all fell within the small effect size range for correlation coefficients ($r = -0.30$ to $r = 0.07$). Gwynn (2009) and Dekel et al. (2011) demonstrated a nonsignificant correlation. Cohen and Katz (2015) fell within the medium range. This can be seen in Figure 3.

### 3.3.3 | Effect size for the relationship between preoccupied attachment and PTG

Examination of this relationship included 12 studies with a total combined sample size of 2224 (1 was split by gender of spouse) and demonstrated a weak, nonsignificant relationship; $r = -0.04$ ($Z = -1.19, p = 0.235$), with a 95% CI of $-0.09$ to $0.02$. These findings suggest a negligible relationship between preoccupied attachment and PTG. Moderate heterogeneity was revealed, $Q = 22.74, p = 0.030$ The $I^2$ indicated that 47.22% of the variance in correlational effect sizes can be explained by the variability between the included studies, $I^2 = 47.22$, 95% CI [0.00, 72.26]. Overall, there were inconsistencies in the direction of the relationship between preoccupied attachment and PTG, with nine studies demonstrating a negative correlation, and three demonstrating a positive correlation, ranging from $r = 0.16$ to $r = -0.24$. The majority of studies fell within the range indicating a weak correlation between the variables. These findings are presented in Figure 4.

### 3.3.4 | Effect size for the relationship between fearful attachment and PTG

Only two included studies reported and/or calculated the correlation statistics for fearful attachment and PTG with a total combined sample size of 231. Both demonstrated a positive relationship ($r = 0.03$ and $r = 0.13$), where
the overall effect size was 0.08, with a 95% CI from 0.05 to 0.21 ($Z = 1.16, p = 0.248$). This modest small effect suggests that individuals with a fearful attachment may experience some PTG, but it was not statistically significant. The studies demonstrated low heterogeneity, $Q = .57; p = 0.451$, with 0% of the variance in effect size due to variance between studies, $I^2 = 0.00$. However, the small number of studies included further reduces the generalizability and reliability of this deduction, and it is notable that both studies have the same authors. This can be seen in Figure 5.

3.4 | Publication bias

Funnel plots for each of the meta-analyses were generated and analyzed for asymmetry; while these could be interpreted as demonstrating some publication bias, not all correlation coefficients included in the review showed statistical significance, suggesting this bias may not be excessive.

4 | DISCUSSION

4.1 | Overview and interpretation of results

Following a systematic literature search and the application of inclusion criteria, 14 studies were included in the review. This was less than expected considering the growth of research in the area. Many were excluded because the adverse experience of participants could not be classified as a traumatic event. While loosening this criterion
would have resulted in the inclusion of more studies, this would have compromised review quality. Many also did not report correlation statistics for overall PTG and the attachment subscales, necessary for conducting the meta-analyses.

Overall, the results indicated that the relationship between attachment and PTG is modest. The meta-analysis of seven studies for secure attachment and PTG revealed a significant small positive relationship, suggesting that securely attached individuals may experience PTG. This finding was consistent across all included studies, with the exception of one which showed a positive medium correlation. All studies ranged from nearly zero, to a moderate-to-strong relationship. The positive relationship aligns with wider findings (Salo et al., 2005), and the consensus that securely attached individuals may be more likely to experience PTG (Mikulincer et al., 2006). This may be due to the increased likelihood of secure individuals to source comfort from others and adaptively use it in times of adversity (Kafetsios & Sideridis, 2006; Wu & Yang, 2012). Securely attached adults may more effectively use coping strategies such as social support, which may facilitate PTG (Tedeschi & Calhoun, 2004).

The relationship between PTG and dismissive attachment demonstrated a significant small negative correlation across 12 studies, suggesting that dismissively attached individuals may be less likely to experience PTG. All but two of the included studies demonstrated a negative relationship. This finding is consistent with other studies (Lev-Ari & Levi-Belz, 2019; Yu et al., 2016), but again, this relationship was weak. Dismissive attachment may only play a minor role in reduced PTG. Other variables, such as avoidant coping, may moderate this relationship. Dismissive individuals are more likely to use avoidance in response to adverse events (Lynch, 2013; Wu & Yang, 2012). Considering the mechanisms of change in PTG, dismissive adults may be more likely to withdraw from others after trauma to avoid or suppress negative emotions (Ein-Dor et al., 2010), preventing trauma processing (Schroeters et al., 2010). This may inhibit the emergence of PTG (Ein-Dor et al., 2010). The moderating impact of variables, such as avoidant coping and social support, on the relationship between attachment and PTG, may be worthy of further investigation.

FIGURE 5  Forest plot of the relationship between PTG and fearful attachment, with effect sizes (ES) and % weight. PTG, posttraumatic growth
As for preoccupied attachment, the meta-analysis of 12 studies found no significant relationship between preoccupied attachment and PTG. There was wide variation in correlation coefficients, with eight of the included studies demonstrating a negative relationship, and four revealing a positive relationship. Reported relationships were again modest in nature (Dekel, 2007; Lev-Ari & Levi-Belz, 2019). Preoccupied individuals tend to engage in highly intense and ineffective attempts to obtain support from others (Ein-Dor et al., 2010). As this inhibits self-regulation, an association with PTG may therefore be unlikely. The negative self-concept, characteristic of these individuals (Bartholomew & Horowitz, 1991), may inhibit experience of the individual domains of PTG, for example, a self-appraisal of strength (Tedeschi & Calhoun, 1996). These individuals are also likely to demonstrate attentional bias to threat-related information in the environment (Mikulincer & Shaver, 2007), therefore perpetuating symptoms of PTSD. The association between attachment preoccupation and elevated distress after trauma, the inefficient use of coping strategies and difficulties with self-regulation and interdependence, may impact the likelihood of a relationship with PTG.

Only two studies reported the correlation between PTG and fearful attachment and a small nonsignificant positive relationship was found. The included correlations were particularly small and the number of studies in this meta-analysis limits the interpretation of findings. Previous research has reported a small negative relationship (Lev-Ari & Levi-Belz, 2019).

Following a traumatic event, fearful individuals may sabotage interpersonal relationships in their attempts to manage distress (Adams et al., 2018). This, coupled with a heightened difficulty with affect regulation and negative concept of self and others, may increase posttraumatic distress (Ehlers & Clark, 2000; Main & Solomon, 1990). These individuals may have a greater propensity to moderate-to-severe PTSD (Pascuzzo et al., 2015), relating to higher PTG (Shakespeare-Finch & Lurie-Beck, 2014). However, further investigation into this relationship is warranted before conclusions are reached.

Assessment tools broadly consider only three attachment categories (Brennan et al., 1998; Carver, 2013). The Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991) measures four, including the fearful category. The limited representation of this style in the current review may be related to the attachment measures used, and greater endorsement of tools assessing only three attachment styles. It may also be considered in light of issues with its conceptualization as an attachment category (Green & Goldwyn, 2002). Additionally, fearful attachment is understood to be represented by disorganized characteristics (e.g., desiring closeness with others but also fearing it) which may make the measure of this subtype difficult, in terms of internal consistency. The two included studies did not report internal consistency statistics for the fearful subscale of the measure. Other studies measuring attachment using the RQ (no. 1, 6, and 14) did not report the correlation statistics for the fearful subscale and overall PTG.

The meta-analyses indicate that the association between attachment styles and PTG is modest. Further exploration of the relationship between the two variables is warranted to understand the associated psychological processes. A correlational relationship alone may be reductionist. The association may be better represented with a moderating variable, such as social support, as is presented in some of the literature (Volgin & Bates, 2016; Wu & Yang, 2012).

4.2 Limitations and Strengths

Studies examining PTG and attachment styles are currently hindered by several methodological limitations. For example, only five included studies measured PTSD, a factor demonstrated to impact PTG (Shakespeare-Finch & Lurie-Beck, 2014). Only three reported whether or not participants were engaged in psychological therapy, an established confounding variable in the exploration of PTG (Calhoun & Tedeschi, 1999). There was significant variation in measures used to assess attachment style. Psychometric properties for all measures were either reported in the study or documented in the literature base. However, Cronbach’s $\alpha$ for some subscales were not above the recommended cut-off of 0.7 (Nunnally, 1978) for internal consistency (e.g., Dekel et al., 2011; Kim et al., 2008). As discussed above, many studies did not classify the experience of a traumatic event as an inclusion criteria, therefore bringing the reliability of the
measurement of PTG into question. One study included in the current review (Owens, 2016) reported that while the majority of participants had experienced a criterion A event, this was not assessed. Therefore, the experience of some participants may be questioned in terms of criterion A legitimacy (e.g., the sudden death of a family member).

Regarding the current study, it was strengthened by the inclusion of unpublished literature (e.g., dissertations), and the quality assessment demonstrated a low risk of publication bias in included studies. Heterogeneity was demonstrated in the characteristics of included studies, in terms of populations, cultures, and types of traumas experienced, demonstrating greater external validity. Yet, generalizability may be of concern especially for fearful attachment where only two studies could be included. Even the analysis for secure attachment was limited to seven sound studies that met inclusion. Thus, the findings from the secure and fearful attachment analyses may not be as robust as those of dismissive and preoccupied, where 12 studies each were included. Beyond the development of methodologically rigorous studies, future research should examine variables thought to impact the relationship between PTG and attachment style (e.g., trauma type, social support, culture). Fearful attachment is also significantly underrepresented in the literature in this area, and this warrants attention. The use of correlation coefficients to conduct the meta-analyses, and the exclusion of studies which presented other data, such as regression coefficients, may have limited the pool of studies for this review. This may also be a point of consideration for future reviews.

A further limitation relates to the cross-sectional nature of correlational studies included in the review. Caution, therefore, needs to be exercised in reaching conclusions about the directionality of the relationship between attachment styles and PTG. In the current review, it was deemed helpful to discuss the results in light of attachment influencing PTG, from the perspective of clinical and theoretical implications.

4.3 Conclusion

This review demonstrated a small positive effect of secure attachment, and a small negative effect of dismissive attachment, on PTG. A weak relationship was found between preoccupied and fearful attachment, and PTG. Attachment styles may make a small contribution to PTG and assessment of client attachment styles may be of benefit in informing intervention strategies that facilitate movement from traumatic stress to traumatic growth. However, it is likely that related constructs, such as social support may be more influential in PTG. These factors warrant further empirical exploration.

PEER REVIEW
The peer review history for this article is available at https://publons.com/publon/10.1002/jclp.23156

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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