**The relationship between individual coping styles, reported levels of resilience and self-blame cognitions as predictors of post-traumatic stress disorder symptoms.**

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Thesis submitted in partial fulfilment of the requirements of Staffordshire University for the degree of Doctorate in Clinical Psychology

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**THESIS PORTFOLIO: CANDIDATE DECLARATION**

|  |  |
| --- | --- |
| **Title of degree programme** | **Professional Doctorate in Clinical Psychology** |
| **Candidate name** | **Abigail Robinson** |
| **Registration number** | **15027203** |
| **Initial date of registration** | **September 2015** |

|  |
| --- |
| **Declaration and signature of candidate** |
| I confirm that the thesis submitted is the outcome of work that I have undertaken during my programme of study, and except where explicitly stated, it is all my own work.  I confirm that the decision to submit this thesis is my own.  I confirm that except where explicitly stated, the work has not been submitted for another academic award.  I confirm that the work has been conducted ethically and that I have maintained the anonymity of research participants at all times within the thesis.  Signed: Date: 26/04/2018 |

**Abstract**

This thesis consists of three papers: a literature review, an empirical paper and an executive summary. The literature review was conducted to examine the relationship between coping styles and post-traumatic stress disorder (PTSD) in an adult population, focussing specifically on adults whose trauma was of a sexual nature. Seventeen papers were included in the review. The quality and rigour of the papers are assessed, and findings suggest that copying styles predicted PTSD symptoms and in particular maladaptive coping styles. The association between adaptive coping styles and PTSD symptoms is less clear, but findings do pose significant implications for the treatment of individuals who have experienced trauma of a sexual nature. However due to the methodological flaws the findings of these research papers need to be considered with caution.

The empirical paper investigated predictors of PTSD symptoms in a mixed trauma sample. The research was conducted using an online survey, and 87 participants took part. It was hypothesised that demographic variables, coping styles, resilience and self-blame cognitions would predict PTSD symptoms in a regression analysis. However, only maladaptive coping predicted PTSD symptoms, and there were no other significant predictors found. Again these findings are important for clinicians when providing interventions for victims who have experienced a traumatic event, and suggest that the nature of the traumatic event needs considering before delivering therapeutic interventions. Limitations and future areas of research are also discussed.

The last paper consists of an executive summary of the empirical paper. The executive summary summarises all the work completed, and discusses the practical implications and recommendations.

**Paper One: Literature Review**

What is the relationship between coping to post-traumatic stress disorder symptoms in adults who have experienced trauma of a sexual nature?

**Word Count:** 7978words (including tables and figures and excluding references and appendixes as per award requirements)

This paper has broadly been prepared in accordance with the requirements of the Journal of Aggression, Maltreatment & Trauma. Author submission guidelines are listed in Appendix Four.

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# 

# **Abstract**

**Objective**

The aim of this literature review was to examine and summarise research investigating the relationship between coping and post-traumatic stress disorder (PTSD) symptoms in adults who have experienced trauma of a sexual nature. Trauma of a sexual nature was chosen as women are more likely to develop PTSD symptoms and be sexually assaulted.

**Method**

In May 2017; MEDLINE, CINAHL, PSYCInfo, PSYCArticles, SPORTDiscus, eBook Collection, PsycBOOKS, Web of Science, Cochrane Library and the British Library EThos were searched. Additional studies were hand searched from reference sections of identified studies and related reviews.

**Results**

Seventeen papers were identified and are included in the review. All of the papers used quantitative methods, and all looked at the relationship between coping to PTSD symptoms in adults who had been sexually assaulted[[1]](#footnote-1).

**Conclusions**

The findings suggest there is a relationship between coping and PTSD symptoms in adults who have experienced trauma of a sexual nature. In particular there appears to be a relationship between maladaptive coping and increased PTSD symptoms, and maladaptive coping styles should be targeted during interventions. However the findings need to be considered with caution due to methodological flaws. Future research looking at the relationship is needed in different samples including males, and a much broader approach to research in this field is needed.

# **Introduction**

## **Post-Traumatic Stress Disorder (PTSD)**

The Diagnostic and Statistical Manual of Psychiatric Disorders (DSM-III), first published “Post-Traumatic Stress Disorder” (PTSD) in 1980. Since 1980 considerable research has focussed on the aetiology, phenomenology, clinical and neurobiological characteristics, and treatment of PTSD (Nemeroff et al., 2006). Psychological trauma has received many definitions including an experience or event that cannot fully be understood by an individual, causing an inability to process emotional responses and cognitions resulting from a traumatic experience or event (Pearlman & Saakvitne, 1995). PTSD is classed as a trauma and stress related disorder, and major clinical features are described in the DSM-5 (American Psychiatric Association, 2013). The DSM-5 states in order for an individual to be diagnosed with PTSD an individual must experience the following symptoms, persistent re-experiencing of a traumatic event, avoidance of stimuli associated with the event, negative alterations in cognition and mood and increased arousal levels.

## **Theories of PTSD**

Currently there is no universally accepted theory of PTSD, and several theories exist (Elwood, Kahn, Olatunji & Williams, 2009). PTSD was initially described in terms of a stress model, and a profound generalised effect was apparent on individuals, including increased physiological arousal from a trauma (Lanius, Frewen, Vertettern & Yehuda, 2010).

Several cognitive models have been proposed. Ehlers and Clark (2000) suggested PTSD will occur if individuals process either a traumatic event or the aftermath, believing there is serious sense of current threat. The model identifies two key processes leading to the occurrence of a sense of threat. Individual differences in appraisals of the trauma including its sequalae, and individual differences in the nature of the memory for the trauma.

However, the proposed criteria for PTSD in the DSM-V has moved beyond seeing PTSD mainly as a fear response, and now includes a number of emotional states including guilt (Resick & Miller, 2009). Lanius et al. (2010) proposed a model where the fundamental emotion is not fear, and fear is only one component involved in a dysregulated emotional system.

Finally eye movement desensitisation and reprocessing (EMDR) adaptive information processing (AIP) model (Shapiro, 1989), has been proposed. AIP proposes new experiences are assimilated into existing memory networks, and most memories are integrated using past experiences and current understanding. If the experience is traumatic the information processing system stores the memory in a frozen form, and it is not processed in to an adaptive resolution (Shapiro, 2007).

## **Prevalence Rates**

The earliest epidemiological research into trauma exposure was conducted in America using the DSM-III criteria. 1007 adults were included in the study, and the prevalence of exposure to traumatic events was 31.9%. The rate of adults exposed was 23.6% meaning a lifetime prevalence of 9.2% (Breslau, Davis, Andreski & Peterson, 1991). McManus, Bebbington, Jenkins and Brugha (2014) UK Psychiatric Morbidity Survey found 31.4% of adults reported being exposed to at least one traumatic event. 33.3% believed they had PTSD, and 1.9% had been diagnosed by a professional. In a Northern Island sample of 1095 participants Ferry et al. (2008) found a lifetime PTSD prevalence of 8.5%, 11.1% for women, and 5.2% for men.

## **Gender**

There have been documented risk factors for PTSD including several demographic factors including age, race and gender (Brewin, Andrew’s & Valentine, 2000). Female gender has been shown to be a fairly consistent risk factor (Butterfield & Becker, 2002; Dougall et al., 2000; Al-turkait & Ohaeri 2008; Peirce, Kindbom, Waesche, Yuscavage & Brooner, 2008). Overwhelming research demonstrates women are more likely to develop PTSD, however there has been research in military samples demonstrating males are just as likely to develop PTSD (Kang, Dalager, Mahan & Ishii, 2005). Brewin et al. (2000) meta-analysis showed a consistent pattern that women were at a higher risk for developing PTSD than men in civilian populations. Research studies have found this pattern, and when women are exposed to the same type of trauma as men, women are approximately twice as likely to develop PTSD symptoms (Holbrook, Stein & Sieber, 2002; Stein, Walker & Forde, 2000; DeLisi et al., 2003).

Women are more likely to be sexually assaulted than men. The Office for National Statistics focus on violent crime and sexual offences England and Wales survey 2016, showed the largest differences in type of crime experienced was sexual assault. Women (19.9%) were five times more likely than men (3.6%) to be sexually assaulted. Creamer, Burgess and McFarlane (2001) National Survey of Mental Health and Well-being demonstrated women were more likely to report sexual assault and rape (12.9% women and 3.8% men). Research studies have replicated this pattern (Edwards, Holden, Felitti & Anada, 2003; Koenen & Widom, 2009). However, research has suggested males may underreport sexual abuse, resulting in the increase appearance of a greater effect on women (Ullman & Filipas 2005; Walsh, Banyard, Moynihan, Ward & Cohn 2010).

## **Sexual Assault**

Studies of PTSD prevalence rates have demonstrated rates of PTSD are higher in women sexual assault victims, than women who have experienced other events (Resnick, Kilpatrick, Dansky, Saunders & Best, 1993). Norris (1992) found sexual assault lead to the highest rates of PTSD. Butterfield and Becker (2002) reported rape induced PTSD prevalence rates range between 31-94%. Rothbaum, Foa, Riggs, Murdock and Walsh (1992) reported 94% of women experienced PTSD symptoms two weeks after being raped, and nearly 50% of women continued to experience PTSD symptoms months later. This suggests PTSD is often a consequence after being sexually assaulted (Ullman, Townsend, Filipas & Starzynski 2007). However, many research papers include mixed trauma samples, and don’t provide information regarding only sexual assault survivors. The research outlined above showing the detrimental and significant affects sexual assault can have in the development of PTSD symptoms, suggests this specific type of traumatic event should be focussed upon.

**Coping**

Researchers have highlighted the importance of coping in relation to the development of post-traumatic responses. Coping styles used post-traumatically are important modifiers of experienced trauma-related symptoms (Oniszczenko & Laskowska, 2014). Oniszczenko and Laskowska (2014) stated coping styles help to regulate trauma related symptoms, and different coping styles can vary in their effectiveness therefore either enhancing or reducing the impact of trauma. Oniszczenko and Laskowka (2014) found coping styles accounted for the largest variance of intensity in trauma symptoms.

A number of studies have reported coping styles predicted PTSD symptoms after individuals had experienced a traumatic event, including motor vehicle accidents, physical injury, natural disasters and emergency service work (Dougall et al., 2001; Victorson, Farmer, Burnett & Ouellette, 2005; Noble & Schenk, 2008; Kelly, Scott & Bryan, 2014). Research has shown individual differences in coping styles of trauma survivors could have important implications for the development, maintenance and treatment of PTSD (Dorfe, Rabe & Karl, 2008). Ehlers and Clark (2000) cognitive model suggests maladaptive avoidance based coping styles can sustain PTSD symptomology.

## **Definition of Coping**

Despite the apparent importance of coping in the development of PTSD symptoms, no universal definition of coping exists within the literature. An early definition provided by Folkman and Lazarus (1980), defined coping as thoughts and behaviours individuals use to help manage internal and external demands of situations thought to be stressful. This definition has been used widely, and tools to measure coping were developed from this (Billings & Moos, 1981). Subsequently a number of new measures have been developed (Folkman & Moskowitz, 2004).

However, over time definitions have developed and become more complex. Definitions have split coping into “coping response”, and “coping style”. Coping responses comprise of emotional, behavioural and cognitive qualities. It is thought to be a stress specific pattern, where a person’s perceptions, emotion and behaviour prepare for change. Coping style is viewed as a narrower concept of coping, and represents a general observable style of interacting. In this context coping is seen as a trait like variable triggered when the environment changes (Beutler & Moos, 2003). Currently a number of coping styles have been suggested e.g. confrontational and distancing (Merrill, Thomsen, Sinclair, Gold & Miller, 2001).

Coping strategies have also been defined in regards to maladaptive and adaptive strategies. Such strategies are often employed after a traumatic event, and can be attempts to reduce or avoid negative effect (Littleton, Horsley, John & Nelson, 2007). However, such strategies can be ineffective and viewed as maladaptive. Maladaptive strategies include denial and disengagement. These strategies appear to be protective in the short term, however can hinder recovery in the long term (Ullman, Peter-Hagene & Relyea 2014). Adaptive strategies including cognitive restructuring and expressing emotions, and have been shown to lead to better recovery and less PTSD symptoms (Gutner, Rizvi, Monson & Resnick, 2006).

## **Coping Measures**

Interest in coping led to the development of different coping measures. First generation measures mostly were presented in a checklist format, and individuals reordered thoughts and behaviours used to cope with stressful situations (Folkman & Moskowitz, 2004). Examples include Ways of Coping (Folkman & Lazarus, 1980) and the COPE (Carver Scheier & Weintraub, 1989). However, these inventories received several criticisms, the most substantial being recall bias (Folkman & Moskowitz, 2004). Subsequent Stone and Neale (1984) developed the Daily Coping Inventory that measured coping efforts daily.

Narrative approaches have been developed, where individuals are asked to provide narratives regarding stressful events they experience (Folkman & Moskowitz, 2004). This approach has been useful in uncovering information unable to be recorded via inventories (Gottlieb & Gignac, 1996). Currently there is no global standard measure available (Folkman & Moskowitz, 2004).

DiGangi et al’s. (2013) systematic review of pre-trauma risk factors showed coping styles were predisposing risk factors for PTSD symptoms. Littleton et al. (2007) conducted a meta-analysis on the effects of coping on PTSD symptoms in sexual assault victims. Result showed a statistically significant relationship between reliance on avoidance coping and PTSD symptoms. However, this meta-analysis only included studies focussing on either approach or avoidant strategies, and there are other taxonomies of coping patterns in the literature. The current literature review will therefore include all studies that define using a coping measure in their research.

## **Rationale of the review**

Given the evidence regarding the importance of coping in the PTSD literature, and the pervasive effect sexual assault can have on the development of PTSD symptoms, this literature review will consider the body of research that has studied the potential effect coping has on PTSD symptomology in adults that have experienced trauma of a sexual nature. This review focuses on trauma of a sexual nature, as women are more likely to be sexually assaulted, and develop PTSD symptoms than men. When an initial scoping search was completed an overwhelming amount of research in the field focussed on women. Therefore this type of trauma and population was clinically important and interesting and should be focussed on, as it has been neglected perhaps due to the preponderance of research in military settings and the possible understatement of sexual trauma. The aim of the review will provide a holistic and in-depth picture regarding the relationship between coping and PTSD symptoms in this population. The review will identify further areas of research.

## **Research Question**

What is the relationship between coping to post-traumatic stress disorder symptoms in adults who have experienced trauma of a sexual nature?

# **Method**

## **Search Strategy**

The following search terms were used (“post-traumatic stress disorder” OR “posttraumatic stress disorder” OR “post traumatic stress disorder” OR PTSD) AND (coping) AND (predict\* OR associat\* OR relat\*).

The following databases were searched during May 2017; MEDLINE, CINAHL, PSYCInfo, PSYCArticles, SPORTDiscus, eBook Collection (EBSCOhost), PsycBOOKS, Web of Science (all databases), Cochrane Library and the British Library EThos. Additional studies were hand searched from reference sections of identified studies and related reviews. A key researcher within the field was contacted, and from her list of her publications two further studies were identified.

In MEDLINE, CINAHL, PSYCInfo, PSYCArticles, SPORTDiscus, eBook Collection (EBSCOhost), PsycBOOKS, Cochrane Library and the British Library EThos, the PTSD search terms were searched via title, the coping search term via title and abstract, and the relationship terms via abstract. In Web of science there is no option to search via abstract, therefore a more general “Topic” search including title and abstract was used for the coping and relationship search terms. The PTSD search terms were searched via title.

## **Inclusion criteria**

1. Published in English, due to lack of translation resources
2. Participants aged 18 and above at the time of participation
3. Published from 1980 onwards (when PTSD first appeared in the DSM)
4. All participants had experienced a trauma of a sexual nature, or separate analysis on a sub section of participants who had all experienced trauma of a sexual nature

## **Study Selection**

A three-stage screening process was implemented to determine eligibility. Papers were initially filtered by title (A), then abstract (B), then the whole research paper (C). If it was not clear from the abstract if the paper was relevant, the full text paper was read before exclusion (see figure 1).

The search terms produced 1289 results, and after duplicated results were removed and limiters applied 692 titles were screened. 110 abstracts were reviewed, and 47 full papers were read. Upon reading the 47 papers 37 were excluded due to the following; too young (N=6), the paper didn’t measure coping (N=3), mixed trauma sample (N=21), the paper didn’t look at the relationship between coping and PTSD symptoms (N=3), meta-analysis (N=1), paper was not published in English (N=1) and upon researching the abstract further the abstract was from a conference presentation (N=2).

The hand searching process produced an additional 7 papers, and this search strategy yielded 17 papers for review.

## **Critical Appraisal Tool**

A critical appraisal checklist (see appendix 1),was developed based on the most pertinent sources, including questions from Downs and Black’s (1998), appraisal checklist; The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies; and the Critical Appraisal Skills Programme tools (Critical Appraisal Skills Programme, 2014). The checklist was developed using the tools stated above to provide each paper with a score for quality (see appendix 2).Appendix 3 shows a data extraction table, and the quality score for each paper.

**Research Question:** What is the relationship between coping on post-traumatic stress disorder symptoms in adults who have experienced trauma of a sexual nature?

**Search terms:** The search terms used were (“post-traumatic stress disorder” OR “posttraumatic stress disorder” OR “post traumatic stress disorder” OR PTSD) AND (coping) AND (predict\* OR associat\* OR relat\*).

Cochrane Library:

20

EBSCO Host- All Health:

686

Web of Science – All databases:

577

EThos:

6

338 duplicates removed

Total records identified:

1289

Limiters applied – 259 papers removed

* English language
* Age – adults
* Publication year – 1980 onwards

Application of inclusion criteria 37 excluded

47 papers read 10 retained for review

Application of inclusion criteria 63 excluded

692 titles screened, 110 retained for further reading

110 abstracts read 47 retained for further reading

Application of inclusion criteria 592 excluded

# 

Hand searching: 7 papers identified

17 selected for review

*Figure 1:* Literature search process flow chart.

# **Results**

## **Study Characteristics**

The review consisted of seventeen papers using quantitative methods. Studies were from western countries, sixteen from the US and one from Spain. All of the studies used questionnaires. Fifteen of the studies were cross-sectional in design (Bryant- Davis et al., 2011; Littleton & Grills-Taquechel, 2011; Littleton & Henderson, 2009; Najdowski & Ullman, 2009; Ullman, Filipas, Townsend & Starzynski, 2005; Filipas & Ullman, 2006; Cohen & Roth, 1987, Johnson, Sheahan & Chard, 2003; Canton-Cortes & Canton, 2010; Santello & Leitenberg, 1993, Merrill, Thomsen, Sinclair, Gold & Miller, 2001; Ullman, Filipas, Townsend & Starzynski, 2007a; Ullman, Townsend, Filipas & Starzynski, 2007b; Ullman & Peter-Hagene, 2014; Ullman, Peter-Hagene & Relyea 2014), and two were longitudinal (Bryant-Davis et al., 2015; Ullman & Relyea, 2016). All studies reported the research aims or hypothesis.

Most of the studies used validated measures to measure coping and PTSD symptoms, and the papers ranged in date from 1987-2016. Table 1 details a summary of each study included in this review.

## **Review of Methodology**

### **Sample.**

All the studies used women participants, and sample sizes ranged from 86-1863. Participants were recruited from a range different settings including Universities (Filipas & Ullman, 2006; Canton-Cortes & Canton, 2010; Santello & Leitenberg, 1993; Littleton & Henderson, 2009; Littleton & Grills-Taquechel, 2011, local communities (Cohen & Roth, 1987), a clinical setting (Johnson et al., 2003) and a Navy recruit training programme (Merrill et al., 2001). The initial and longitudinal papers by Bryant-Davis et al. (2011 & 2016), used a range of sources including a University, bookstores, academic buildings and dormitories.

Several papers were written by the same lead researcher, and these papers recruited participants from a range of different settings including a local community, Colleges, Universities and agency sources including community centres, cultural centres, substance abuse clinics, mental health agencies and domestic violence and rape crisis centres (Ullman et al., 2005; Najdowski & Ullman, 2009; Ullman et al., 2007a; Ullman et al., 2007b; Ullman & Peter-Hagene, 2014; Ullman et al., 2014; Ullman & Relyea, 2016).

Participants were recruited in different ways. The majority of papers used flyers and notices, and distributed these in a local community and in a local newspaper (Bryant-Davis et al., 2011; Bryant- Davis et al., 2015; Ullman et al., 2007a; Ullman et al., 2007b; Ullman et al., 2005; Najdowski & Ullman, 2009; Cohen & Roth, 1987). The following three papers used the above methods however also used craigslist’s, listservs and email (Ullman & Peter-Hagene, 2014; Ullman et al., 2014; Ullman & Relyea, 2016). Four papers recruited University and college students using flyers and announcements (Canton-Cortes & Canton, 2010; Littleton & Grills-Taquechel, 2011; Littleton & Henderson, 2009; Filipas & Ullman, 2006), and one paper distributed questionnaires packs after a class (Santello & Leitenberg, 1993). One paper recruited participants when attending an outpatient therapy appointment (Johnson et al., 2003), and one paper administered the questionnaires to all Navy recruits as part of their basic training (Merrill et al., 2001).

In most papers, it was difficult to determine if a representative sample was achieved due to the nature of recruiting participants. Most studies did not ask a specific number of individuals, and general advertisements were used instead. Two papers Merrill et al. (2001) and Cohen and Roth (1987), did report the number of participants they asked and who agreed to participate. However, these papers provided no information regarding if a representative sample was achieved. One paper using an outpatient service did not report how many participants were asked, and how many agreed to participate (Johnson et al., 2003).

### **Inclusion/Exclusion Criteria.**

Inclusion and exclusion criteria varied slightly. Littleton & Grills-Taquechel (2011) excluded participants if they were male or under the age of 18. All participants had to respond positively to a screening questionnaire investigating sexual assault. Littleton and Henderson (2009) excluded participants if they had not reported a sexual assault using a screening questionnaire. In addition, the participants who did not identify their acknowledgement status were excluded from further analysis, and participant’s age ranged from 18-54. Johnson et al. (2003) included participants who were attending outpatient therapy appointments, and the participants age ranged between 18-56 years.

Bryant- Davis et al. (2011) inclusion criteria involved women aged 18 years or older with an unwanted sexual experience since the age of 14. In addition, participants had to answer positively to at least one adult sexual experience item, and had answered further questions relating to physical violence and coercive tactics. The follow up paper included an additional criteria which involved individuals completing the measures one year later (Bryant-Davis et al., 2015). The sample ranged in age from 18-71.

Ullman et al. (2005), paper included participants who had answered yes to at least one question on the sexual victimisation questionnaire, and had consumed alcohol over the past 12 months. Women had to be aged 18, and had experienced the unwanted sexual experience from the age 14 or above. The sample’s age range was 18-71.

The following papers by Ullman and colleagues had the same inclusion criteria. Participants were eligible if they were 18 at the time of participation, had an unwanted sexual experience at age 14 or older, and had previously informed someone about the assault. All participants ranged in age from 18-71 (Ullman & Peter-Hagene, 2014; Ullman et al., 2014; Ullman & Relyea, 2016). The following papers by Ullman had the same age range, and the inclusion criteria involved women aged 18 with an unwanted sexual assault since the age of 14 or older (Najdowski & Ullman, 2009; Ullman et al., 2007a; Ullman et al., 2007b).

The inclusion and exclusion criteria for the following five studies was unclear or not stated (Merrill et al., 2001; Filipas & Ullman 2006; Santello & Leitenberg 1993; Canton-Cortes & Canton 2010; Cohen & Roth, 1987). This can have implications in regards to assessing any potential biases, and considering the reliability of the results.

### **Measures.**

### ***Coping.***

Most of the studies used well established measures to measure coping, and a variety of measures were used. Ullman et al. (2005) used two likert items from the Brief COPE (Carver, 1997), to produce a drinking to cope measure. The original validation shows the subscales have produced alphas of .60 or greater except for one, and test-retest correlations of .46 to .86. The two papers by Bryant et al. (2011 & 2015) used two items from the Brief COPE (Carver, 1997), to assess the use of religion in coping. The religious coping subscale has an internal consistency reliability of .78, .81 and .90 (Cronbach’s alpha).

Cohen and Roth (1987) used the Approach-Avoidance Scale (Roth & Cohen, 1986). No further information was provided regarding the coping measure, or its psychometric properties.

Canton-Cortes and Cortes (2010), and Merrill et al. (2001), used the How I Deal with Things Scale. Merrill et al. (2001) used the original scale (Burt & Katz, 1987), and used three subscales constructive, self-destructive and avoidant. The paper reported internal consistencies (Cronbach’s alpha) for the three scales ranging from .77 to .85. Canton-Cortes and Cortes (2010) reported using a 29-item version. They divided the measure into avoidant and approach strategies, and reported internal consistencies of .65 and .75 and test-retest reliability of .68 and .83.

Two papers used the Coping Strategies Inventory (CSI; Tobin, Holroyd & Reynolds, 1984). Santello and Leitenberg (1993) used the CSI to measure disengagement and engagement coping strategies. The paper provided no information regarding the psychometric properties of the CSI. Johnson et al. (2003) used the CSI to measure approach and avoidant strategies. The paper reported original psychometric properties demonstrating good reliability .71 to .94, and test-retest reliability of .67 to .83. Two additional papers used the CSI, however these papers used the 32-item short form (Tobin, Holroyd, Reynolds & Wigal, 1989). Both papers reported previous psychometric properties found by (Tobin, 2001), and Littleton and Henderson (2009), reported in their study alpha coefficients ranging from .67 to .90, and Littleton and Grills-Taquechel (2011), reported coefficients ranging from .73 to .89.

The remaining papers used the Brief COPE (Carver, 1997). This measure has been used widely in the trauma literature, and has been shown to have good internal consistency, reliability and test-retest reliability. Two papers used the measure to create a composite measure of maladaptive coping, and used the behavioural disengagement, denial, self-blame and substance use subscales (Ullman et al., 2014; Ullman & Peter-Hagene, 2014). In the samples, the measure was reliable with a Cronbach’s alpha of .81. Ullman & Peter-Hagene (2014), produced a measure of individual and social coping. The individual and social subscale produced Cronbach’s alphas of .83 and .87 respectively. Ullman and Relyea (2016), produced a measure of maladaptive coping using the denial, behavioural disengagement, substance use and self-blame subscale, and reported a Cronbach’s alpha of .81 in their sample.

Three papers produced an avoidance coping measure using the self-distraction, denial and behavioural disengagement subscales (Najdowski & Ullman, 2009; Ullman, et al., 2007a; Ullman et al., 2007b). Each paper reported good internal consistencies. Najodowski and Ullman (2009) added the searching for meaning subscale to their measure. The paper reported an internal consistency of .77 for their sample. The use of bespoke measures using the Brief COPE makes it difficult to compare the findings.

One paper asked participants if they had done a number of things to cope with their sexual assault. The paper reported one of the researchers had used the responses previously in research, and the literature demonstrated following a traumatic experience these were common coping strategies (Filipas & Ullman, 2006).

### ***PTSD symptoms.***

A variety of measures were used to measure PTSD symptoms. Cohen and Roth (1987) used the Intrusion subscale of the Impact of Events Scale (Zilberg, Weiss & Horowitz, 1982). The paper provided no additional information regarding the measure including its psychometric properties.

Merrill et al. (2001) used the Trauma Symptom Inventory (TSI; Briere, 1995). The inventory is designed to measure symptoms of both chronic and acute traumas. The TSI has 10 scales and Briere (1995) reported all scales were internally consistent with alpha coefficients ranging from .74 to .01, and in the current sample alpha’s ranged from .76 to .89.

Canton-Cortes and Canton (2010) used the Severity of Symptoms of PTSD Scale. The measure uses the DSM-IV criteria (APA, 1994), and measures the presence and intensity of PTSD symptoms. The measure provides a total score of 17 items, and authors of the scale reported test-retest reliability of .89 and internal consistency of .84. Santello and Leitenberg (1993), used the DSM criteria to assess levels of PTSD symptomology. The used the DSM-III-R (APA, 1987) framework. The scale comprised of symptoms relating to re-experiencing, avoidance and hyperarousal. The internal consistency in their sample was .92. The only interview method used was by Johnson et al. (2003). This paper used the Clinician Administered PTSD Scale (CAPS; Blake et al., 1996), which measures PTSD symptoms outlined in the DSM-IV (APA, 1994). The measure is a semi-structure interview used to assess re-experiencing, avoidance and arousal symptoms. The paper only used items measuring PTSD symptomology, and reported inter-rater reliability of .85.

Two papers used the PTSD Symptom Scale (PSS; Foa, Riggs, Dancu & Rothbaum, 1993). The PSS is a 17-item instrument, and a total score can be calculated. The measure has been found to have a 100% specificity for diagnosing PTSD (Foa et al., 1993). Cronbach’s alphas in these samples were .90 and .84 to .86 (Littleton & Grills-Taquechel, 2011; Littleton & Henderson, 2009).

The remaining ten papers used the Posttraumatic Stress Diagnostic Scale (PDS, Foa, 1995) (Najdowski & Ullman, 2009; Ullman et al., 2007a; Ullman et al., 2007b; Ullman et al., 2014; Ullman & Peter-Hagene, 2014; Filipas & Ullman, 2006, Ullman & Relyea, 2016; Ullman et al., 2005; Bryant- Davis et al., 2011; Bryant-Davis et al., 2015). This measure contains 17 items measuring symptom severity relating to intrusion/re-experiencing, arousal and numbing/avoidance. The scale can provide a diagnosis for PTSD based on the DSM. The scale has been validated in sexual assault victims (Foa, Cashman, Jaycox & Perry, 1997). The instrument has been shown to have good test-retest reliability, and good internal consistency Cronbach’s alpha of .92 (Foa et al., 1997). PTSD symptomology can be measured by totalling all of the items.

### **Study Design.**

All the studies used questionnaire designs, and only one study used interviewers to administer the measures. There are several advantages of using self-administrative questionnaires including a wide coverage of the study population, and the avoidance of interviewer bias (Meadows, 2003). The absence of the researcher can allow for greater anonymity, and due to the sensitive nature of the research topic being studied can increase the reliability of the responses (Seale, 2011). However social desirability can be a real problem with questionnaire designs, and sixteen studies sent the questionnaire packs to the participant meaning there was no way of knowing who completed the questionnaires (McLeod, 2014). Questionnaire designs can often lead to an unrepresentative sample, as only those with strong views are likely to want to participate and return the questionnaires (McLeod, 2014). Such designs make it difficult to check for non-response biases, and missing data can have implications for the reliability of the findings (Bird, 2009).

One paper used an interview method to administer the questionnaires (Johnson et al., 2003). This design can be useful when complex questions are being asked (Seale, 2011). The presence of an interviewer allows for clarification if an individual has not understood the question (Bird, 2009). However, the presence of an interviewer can introduce bias, and bias could emerge depending on the characteristics of the interviewer and the way the questions are asked (Seale, 2011).

## **Main Findings**

Fifteen of the studies reported significant findings relating to coping and PTSD symptoms. Two of the studies reported a relationship between coping and PTSD symptoms, however failed to provide any statistical data in the results sections, making it difficult to draw any firm conclusions regarding the results from these studies (Ullman & Peter-Hagene, 2014; Najdowski & Ullman, 2009).

Two studies used analysis of variance statistical tests (Johnson et al., 2003; Littleton & Grills-Taquechel, 2011). Littleton & Grills-Taquechel (2011), used three different coping style terms, “accommodating”, “assimilated” and “over-accommodated”. Their findings showed accommodated individuals scored higher on all coping scales, assimilated individuals had low scores on all the coping scales and over-accommodated individuals had higher scores on the disengagement coping scales and lower scores on the engagement scales. Results showed all the groups varied in their PTSD symptoms, and accommodating individuals reported more PTSD symptoms than the assimilated group, however reported less PTSD than the over-accommodated group. However, no statistical information was provided in regard to these individual differences, making it extremely difficult to compare the three groups and interpret the results. Johnson, Sheahan, and Chard (2003) found individuals with greater levels of avoidant coping exhibited PTSD symptoms.

Six papers used multiple regression to analyse their results. Santello and Leitenberg (1993), reported disengagement coping predicted variance in PTSD symptoms. Canton-Cortes and Conton (2010) reported their results showed self-destructive and evasion coping predicted the total PTSD score, both forms of avoidant coping classified by the paper. The paper reported no relationship was found between approach strategies and PTSD symptoms. The paper looked at the interaction effects between coping strategies and characteristics of abuse, and relationship status with the perpetrator on PTSD symptoms. An interaction effect was found for the nervous/anxious strategy and the relationship with the perpetrator. An interaction effect was found for continuity of the abuse and evasion coping. The paper reported moderating relationships. Self-destructive and evasion coping moderated the relationship between sexual assault and PTSD symptoms. Finally, the paper compared the relationship between coping and PTSD symptoms in the assault group, and a comparison group. A moderator effect was found showing in the assault group a stronger relationship was found between coping and PTSD symptoms.

PTSD symptoms displayed by college students was reported by Filipas and Ullman (2006) to be significantly predicted by the number of maladaptive coping strategies used. A composite measures of avoidance coping was reported to predict PTSD symptoms, and be the strongest predictor in one paper (Ullman et al., 2007a). Bryant et al. (2015) longitudinal study showed changes in PTSD symptoms one year later, was not predicted by religious coping after running a hierarchical liner regression analysis. However a correlation analysis showed one year later individuals who continued to use more religious coping strategies reported greater PTSD symptoms. Cohen and Roth (1987) looked at an interaction effect and reported the use of avoidance and approach strategies simultaneously, was associated with reduced levels of PTSD symptoms.

Structural equation modelling was used in eight of the papers, and a cross-lagged path analysis in one paper. The one paper using path analysis was a longitudinal paper, and reported all reciprocal paths were significant between maladaptive coping and post-traumatic stress symptoms (PTSS). Specifically, the paths from maladaptive coping at time one to PTSS at time two was significant, and the paths from maladaptive coping at time two to PTSS at time three was significant (Ullman & Relyea, 2016).

Bryant-Davis et al. (2011) reported their model showed greater levels of PTSD symptoms was predicted by more regular use of religious coping. Similarly, Ullman et al. (2007b), reported in both of their models reliance on avoidance coping was associated with more PTSD symptoms, and was found to have one of the strongest effects. Ullman et al. (2005) reported drinking to cope was associated with greater PTSD symptoms.

Merrill et al. (2001), reported in both their conditions the strongest predictor of PTSD symptoms was self-destructive coping strategies. Avoidant coping strategies predicted PTSD symptoms. The researchers reported the use of these two coping strategies were the strongest moderators in victim’s adjustment. The structural equation model demonstrated the impact of parental support and abuse severity on adjustment was mediated by coping strategies used by the victims, highlighting the importance of coping strategies. There were significant direct paths in both the identified and anonymous samples. Constructive coping was associated with less symptoms, and avoidant and self-destructive coping was associated with more symptoms.

The remaining four papers looked at maladaptive coping. Littleton and Henderson (2009) reported maladaptive coping had a significant effect on PTSD symptoms, and individuals who used more maladaptive coping reported greater PTSD symptoms in both of their models. Indirect effects were found for maladaptive coping, and both assault violence and social support was related to PTSD symptoms through maladaptive coping.

Ullman et al. (2014) reported correlation statistics showing an increase in PTSD symptoms was related to emotional regulation, which was correlated with maladaptive coping. There was a significant direct path from maladaptive coping to PTSD symptoms. Previous traumatic events and childhood severity was related to the mediating variable of maladaptive coping, and maladaptive coping predicted PTSD symptoms. Statistical information was provided regarding the direct paths, however no statistical information other than a reported significant relationship was provided for the mediating relationship.

Nadjowski and Ullman (2009) reported their path model showed a direct relationship between maladaptive and adaptive coping, however no further information was provided regarding if these paths were statistically significant. In addition, the paper reports historical traumatic life events on PTSD symptoms were partially mediated by maladaptive and adaptive coping which then predicted more PTSD symptoms. However, no further information was provided regarding if this relationship was significant, and the paper provided no statistical data for these findings. An additional mediating effect was reported, and the paper states greater control over recovery was partially mediated by adaptive and maladaptive coping. Greater control over recovery predicted significantly less maladaptive coping, which then predicted more PTSD symptoms. Furthermore, greater adaptive coping was predicted by greater perception of control over recovery, and more PTSD symptoms was predicted by the use of more adaptive coping. In regard to this finding the paper does report a significant finding, however no further statistical data was provided.

Ullman and Peter-Hagene (2014) reported their model showed a direct relationship between maladaptive, adaptive individual and adaptive social coping and PTSD symptoms. The paper fails to report if these direct paths were significant. The researchers report indirectly through maladaptive coping more PTSD symptoms was associated with negative reactions to disclosure. Negative reactions were related to individual’s greater use of adaptive coping however this was only weakly related to PTSD symptoms. No mediating relationship was found for adaptive individual coping. Again, this paper only reports these relationships in the text, and no statistical data is provided alongside these reported findings. Fifteen papers employed a cross-sectional design and due to the nature of this design no conclusions can be made regarding causality, or order of effects.

A high proportion of papers do not report the main results clearly, and failed to provide exact probability values and confidence intervals. Providing confidence intervals would have demonstrated to the reader the range of values believed to include the actual true value, and actual probability values who have demonstrated the strength of the significance finding. Such information would have allowed for a more detailed view of the results. This makes it hard to conclude if the findings are justifiable, and compare the results from the different papers.

In reviewing the literature it seems the relationship between coping and PTSD is characterised in different ways. In two papers maladaptive strategies and religious coping predicted an increase in PTSD symptoms, whereas the results for adaptive coping showed mixed results. One paper found the use of more adaptive strategies resulted in less symptoms, however other studies found adaptive strategies predicted more PTSD symptoms. However, the methodological issues are such that these conclusions are tentative at this stage.

### **Data Analysis.**

Only three papers commented on the power or sample size required for their research (Najdowski & Ullman, 2009; Ullman et al., 2005; Ullman et al., 2007a). The remaining studies did not comment on the power of the sample, making it difficult to determine if these papers had an adequate sample to detect a statistically significant effect.

Before data analysis is completed researchers should consider missing data. Missing data can lead to invalid conclusions regarding the results and it can yield biased estimates, and reduce the statistical power of a study (Kang, 2013). Only four studies detailed they accounted for missing data (Ullman & Relyea, 2016; Ullman et al., 2007a; Ullman et al., 2007b; Ullman et al., 2005). It is important to ensure missing data is handled appropriately, and steps are taken accordingly if needed.

# **Discussion**

## **Considerations**

Whilst most of the studies were methodologically rigorous, there are a number of points that need raising before any sound conclusions can be made. Ten studies involved the same researcher, and a number of the studies were produced from the same wave of data collection. It appears three waves of data collection have been carried out. Six papers used participants from the first wave of data collection (Ullman et al., 2007a; Ullman et al., 2007b; Ullman et al., 2005, Najdowski & Ullman, 2009; Bryant-Davis et al., 2011; Bryant-Davis et al., 2015). Two papers were from the second wave (Ullman et al., 2014; Ullman & Peter-Hagene, 2014), and one paper from the third wave of data collection (Ullman & Relyea, 2016). Filipas and Ullman’s (2006) paper used a different sample. This provides a limited pool of participants, as each wave used the same inclusion criteria, the same recruitment methods and recruited individuals from the same geographical area in America. This causes significant implications in terms of generalisability of the results to the wider female population.

The papers produced from the three waves of data collection used the same measure to assess PTSD symptoms, the PDS (Foa, 1995). All papers used either the full Brief Cope or subscales from this measure (Carver, 1997). Again, by using the same measure to assess coping provides limited information regarding the range of coping strategies existing in the literature, and the relationship such strategies/skills have with PTSD symptoms. Such dominance by one researcher in this field has produced a lack of variability in the research. This is potentially causing a disservice in women who have been sexually assaulted, and there is a real need for a broader scope of research within this field.

The measures used to assess PTSD and coping may compromise the reliability and validity of the results. Several studies varied considerably in the time period specified when measuring coping and PTSD. For example, the Brief COPE was used to measure coping regarding either the past 30 days or 12 months. This is a significant time difference, and the studies anchoring participants to complete the measure regarding the past 30 days could have implications for the under-recording of several coping strategies participants may have used. The same variability in the time was evident when measuring PTSD symptoms. Again, the papers only asking individuals to record their symptoms in regards to the past 30 days, may also be getting an underrepresentation of the full range of symptoms their sample may have experienced.

A further consideration is confounding variables, and the implications these can have on the results. The studies varied considerably regarding how much information they provided regarding the completion of the measures. Several studies specifically stated participants were asked to complete the coping and PTSD measure in relation to their sexual assault. However, many studies fail to provide this information, therefore the researcher is unsure if the individuals completed these measures in relation to the specific assault (Bryant- Davis et al., 2011; Littleton & Henderson, 2009; Najdowski & Ullman, 2009; Ullman et al., 2005; Filipas & Ullman, 2006; Cohen & Roth, 1987, Canton-Cortes & Canton, 2010; Merrill et al., 2001; Ullman et al., 2007b). Furthermore, if this is not just a reporting issue and the actual participants were not anchored to their sexual assault, this has implications regarding comparing the findings of these studies to the studies where the participants have been anchored. The papers failing to provide this information still provide data regarding the relationship between coping and PTSD symptoms in relation to adults who have experienced a sexual trauma, however the information recorded regarding coping and PTSD symptoms may not actually be related to a sexual assault.

A significant number of the samples had been exposed to historical traumatic events, therefore these samples could have been a more symptomatic. It may have been difficult for these participants to complete the PTSD measure in relation to their sexual assault.

Several papers included a mixed sample of clinical, and non-clinical participants. This provides a great variability in the samples, making it difficult to assess the generalisability of the results. These individuals could vary considerably in regards to their levels of symptomology.

The findings of this review do support the answering of the research question, and the findings shows a relationship between coping and PTSD symptoms in this sample. Specifically the papers report more maladaptive coping strategies predict an increase in PTSD symptoms. However these results need to be considered with caution due to the methodological flaws, in particular the limited samples used and the inability to generalise the results to the wider population.

## **Future Research**

It appears a considerably broader approach is needed regarding future research into the relationship between coping to PTSD symptoms in adults who have been sexually assaulted. In light of the evidence provided earlier regarding the significant affect sexual assault can have in relation to the development of PTSD symptoms compared to other types of traumatic events, it appears the research field has not taken sexual assault seriously and the extent of this trauma is somehow understated. A wealth of trauma research has been completed in military contexts with male samples, which could have led to the neglect of researching other populations. This review shows the importance of addressing this gender inequality in this field. The research in this field appears to be predominately dominated by one researcher, and several articles have been produced using waves of data collection. There appears to be a lack of variability of research in this field, which needs addressing. However the work of this researcher should be commended, as she has recognised the importance of researching this population.

More research is needed in underrepresented sexually assaulted samples including males and individuals from ethnic minorities. Such research would improve the generalisability of the results, providing useful and clinically relevant information. As stated above males are less likely to disclose sexual assault, and this could have possibly led to limited research in such populations. It is important to consider how barriers to disclosure could be reduced, for such research to take place. Consideration into the process of reporting sexual assault and the possible stigma attached could be considered to foster such disclosures. If such research was carried out, another area of future research could focus on potential gender differences in coping and PTSD symptoms, and conclusions could be drawn regarding any potential differences.

Most of the research focuses on either childhood sexual assault, or assaults experienced from the age of 14. There appears a real lack of research into how adults cope with sexual assault after individuals have been sexually assaulted in adulthood. The length of time passed since the assault occurred could have implications regarding severity of symptomology. It appears more research in populations where the assault has more recently occurred needs to be completed.

A clear picture seems to be evident regarding the relationship between more maladaptive strategies and PTSD symptoms, however this is not replicated in studies looking at adaptive strategies. The studies focussing on adaptive strategies often reported non-significant results, or if a significant result was found for adaptive coping these results were weaker than those found for maladaptive coping. One paper found the use of more adaptive coping strategies predicted more PTSD symptoms (Najdowski & Ullman, 2009). Future research could focus on the inconsistencies found, and provide more information regarding the role of adaptive coping skills to PTSD symptoms.

## **Clinical Implications**

Results of the research suggest targeting and trying to reduce maladaptive coping strategies during therapeutic interventions could help to reduce PTSD symptoms, and help promote recovery. Psychoeducation could play an important role in helping to educate the individual regarding the potential role of maladaptive coping in the development of PTSD symptoms, and clinicians should attempt to understand the function behind such strategies for the individual. Whilst trying to enhance the use of adaptive coping strategies may help reduce symptoms, targeting and focussing on reducing maladaptive coping strategies appears to be more helpful.

## **Limitations of the review**

Only peer review articles were included in the review which could lead to publication bias, and over reporting of results. Some of the papers lack rigour leading to implications regarding the findings from the research, and some of the results need to be considered with caution. Furthermore, a standardised appraisals tool was not used, and an adapted tool was produced from several sources. Finally, a large proportion of studies included in this review involved the same researcher. This has created a narrow focus of research in this field, and a broader research stance needs to be adopted.

# **Conclusions**

The studies included in this review all varied in quality. All studies reported they found a relationship between coping and PTSD symptoms. The evidence consistently suggests the use of more maladaptive coping skills increases PTSD symptoms. More research is needed in different populations including male samples, and additional research focussing on adaptive coping skills could help with some inconsistencies found in the literature. A much broacher approach is needed within this field due to the dominance of one researcher. Clinically the research suggests clinicians should focus on the use of maladaptive coping skills, due to the appeared pervasive influence such strategies have on PTSD symptoms.

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# **Appendices**

## **Appendix 1. Quality Appraisal Checklist**

1. Is the hypothesis/aim/objective of the study clearly described?
2. Did the study explain the scientific background and rationale for the study?
3. Was the method used appropriate to answer the research question?
4. Were the participants recruited from the same population?
5. Was the studies method described in enough detail?
6. Did the study explain how the sample size was arrived at and did the study have sufficient power?
7. Are the characteristics of the participants included in the study clearly described? Have clear inclusion and exclusion criteria been stated?
8. Were those subjects who were prepared to participate representative of the entire population from which they were recruited?
9. Were the measures used fit for purpose?
10. Were the statistical test used to assess the main outcomes appropriate?
11. Are all the main results reported clearly thus the conclusions justifiable?
12. Was missing data accounted for?
13. Does the paper summarise the key results with reference to the study objectives/aims?
14. Are the results interpreted with evidence for and against the researcher’s argument?
15. Are limitations of the study discussed?
16. Are the results generlisable to the local population?
17. Is clinical as well as statistical significance discussed?

## 

## **Appendix 2. Quality Appraisal Table**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Papers | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | Total | % |
| Ullman et al. (2007b) | Y | Y | Y | N | Y | UTD | Y | UTD | Y | Y | P | Y | Y | Y | Y | N | Y | 34 | 74 |
| Santello & Leitenberg  (1993) | Y | Y | Y | Y | N | UTD | N | Y | Y | Y | P | UTD | N | Y | Y | UTD | Y | 21 | 62 |
| Ullman & Peter-Hagene (2014) | Y | Y | Y | N | Y | UTD | Y | UTD | Y | Y | P | UTD | Y | Y | N | N | N | 19 | 56 |
| Merrill et al. (2001) | Y | Y | Y | Y | Y | UTD | P | N | Y | Y | P | P | Y | Y | Y | Y | Y | 27 | 79 |
| Ullman et al. (2014) | Y | Y | Y | N | Y | UTD | Y | Y | Y | Y | P | UTD | Y | Y | Y | N | Y | 23 | 68 |
| Canton-Cortes & Canton (2010) | Y | Y | Y | Y | N | UTD | P | Y | Y | Y | Y | UTD | Y | Y | Y | N | Y | 25 | 74 |
| Ullman et al. (2007a) | Y | Y | Y | N | Y | Y | Y | UTD | Y | Y | P | Y | Y | Y | Y | N | Y | 27 | 79 |
| Littleton & Grills – Taquechel (2011) | Y | Y | Y | N | Y | UTD | Y | UTD | Y | Y | P | UTD | Y | Y | Y | N | Y | 23 | 68 |
| Johnson et al. (2003) | Y | Y | Y | N | P | UTD | Y | UTD | Y | Y | P | UTD | Y | Y | Y | N | Y | 22 | 65 |
| Cohen & Roth (1987) | Y | Y | Y | UTD | N | UTD | N | UTD | UTD | Y | N | UTD | N | N | Y | N | N | 10 | 34 |
| Bryant – Davis et al. (2015) | Y | Y | Y | N | Y | UTD | Y | UTD | Y | Y | P | UTD | Y | Y | Y | N | Y | 23 | 68 |
| Ullman & Ralyea (2016) | Y | Y | Y | N | Y | UTD | Y | N | Y | Y | P | Y | Y | Y | Y | N | Y | 25 | 74 |
| Ullman et al. (2005) | Y | Y | Y | N | Y | Y | Y | UTD | Y | Y | P | Y | Y | Y | Y | N | Y | 25 | 74 |
| Littleton & Henderson (2009) | Y | Y | Y | N | Y | UTD | Y | UTD | Y | Y | P | UTD | Y | Y | Y | P | N | 22 | 65 |
| Bryant – Davis et al. (2011) | Y | Y | Y | N | Y | UTD | Y | UTD | Y | Y | P | UTD | Y | Y | Y | N | Y | 23 | 68 |
| Najdowski & Ullman (2009) | Y | Y | Y | N | Y | Y | Y | UTD | Y | Y | P | UTD | Y | Y | Y | N | Y | 25 | 74 |
| Filipas & Ullman (2006) | Y | Y | Y | Y | P | UTD | P | UTD | P | Y | P | UTD | Y | N | Y | N | Y | 20 | 59 |

**Key:** Y=Yes, N=No, P= Partially, UTD= Unable to determine, N/A= not applicable

Scoring: Y=2 points, P=1 point, N=0 points, UTD=0 points

## **Appendix 3. Data extraction table**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Author, Date & Country** | **Sample** | **Study Focus** | **Measures Used** | **Findings** | **Strengths** | **Limitations** | **Criteria met by critical appraisal tool (%)** |
| Ullman et al. (2007b)  US | N= 636 women  Mean age 32.3 years,  58% ethnic minority, 42% White, 40% African American, 8% multiracial, 6% Latina, 3% Asian, less than 1% American Indian | Examined the relationship between social support and PTSD, using mediated models. | B-COPE – Avoidance  (1997)  PDS (1995) | Reliance on avoidance coping was associated with more PTSD symptoms, and was found to have one of the strongest effects. | Clinical significance discussed, and area for future research.  Reliable and valid measures used.  Information provided regarding participants were anchored to complete the PTSD measure in relation to their sexual assault.  Standardised regression coefficients provided.  Model had adequate to good fit.  Missing data was discussed, and the steps that were taken. | Findings were not generlisable.  Sample size was not discussed, or if the sample had sufficient power.  Exact p values or confidence intervals were not reported.  Information was not provided regarding the instructions for the coping measure. | 74% |
| Santello & Leitenberg  (1993)  US | N = 110 women | Examined how coping methods are associated with symptoms of distress. | CSI (1984)  PTSD symptoms DSM-III-R (1987) | Disengagement coping predicted variance in PTSD symptoms. | Reliable and valid measures used to measure coping and PTSD symptoms.  Results interpreted for and against the researcher’s arguments.  Clinical implications of the results were discussed. | Unable to determine if the sample had sufficient power.  Inclusion/exclusion criteria was not stated.  Characteristics of the sample were not described.  The data was not clearly described.  Unable to determine if missing data was accounted for.  Unable to determine if the results are generlisable due to lack of information. | 62% |
| Ullman & Peter-Hagene (2014)  US | N= 1863 women  Mean age 31.1 years,  45% African American, 35% White, 2% Asian, 8.1% other, 14% Hispanic | Used a mediation model to examine social reactions to disclosure of assaults and PTSD symptoms. | B-COPE – Maladaptive & Adaptive (1997)  PDS (1995) | Model showed a direct relationship between maladaptive, adaptive individual and adaptive social coping and PTSD symptoms. The paper does not report if these paths were significant.  Indirectly through maladaptive coping more PTSD symptoms was associated with negative reactions to disclosure.  Negative reactions were related to individuals greater use of adaptive coping however this was only weakly related to PTSD symptoms. No statistical information was provided regarding this result. | Future research suggested which included potential clinical implications.  Reliable and valid measures used, and participants were anchored to complete the measures in relation to their sexual assault. | Results are not generlisable.  Clinical significance of the findings are not discussed.  Limitations of the study are not discussed.  Missing data is not discussed.  Results are not clear. The paper suggests a medication effect for coping, however fails to provide any statistical data.  Model shows a direct effect, and standardised coefficients provided however the paper does not report if these findings are statistically significant. | 56% |
| Merrill et al. (2001)  US | N = 1134 women  Age 19.8 years,  60% White, 19% African American, 13% Latina, 3% Asian American,  3% Native American, 2% other | Tested a model in which effects of abuse severity and parental support on long term symptomology are mediated by coping styles. | “How I Deal With Things” Scale (1987)  TSI (1995) | Strongest predictor of PTSD symptoms was self-destructive coping strategies.  Avoidant coping strategies predicted PTSD symptoms.  Constructive coping was associated with less symptoms. | Demographics of the sample provided.  Reliable and valid measures used.  The model had adequate fit.  Missing data was partially accounted for.  Results generlisable.  Statistical significance discussed, and areas for future research.  Recruited participants from the same population. | No clear inclusion/exclusion information provided.  Statistical power of the sample not discussed.  Unable to determine if the PTSD measure was completed in relation to the sexual assault.  Exact p values or confidence intervals not reported.  Coefficients reported however the paper does not state if these are standardised or unstandardised. | 79% |
| Ullman et al. (2014)  US | N= 1863 women  Mean age 36.51 years,  45% African American, 35% White, 2% Asian, 11% other, 7% Multiracial, 13% Hispanic | Investigated if mediators can account for the relationship between PTSD symptoms and other trauma variables. | B-COPE – Maladaptive (1997)  PDS (1995) | More PTSD symptoms was related to emotional regulation which was correlated with maladaptive coping.  There was a significant direct path from maladaptive coping to PTSD symptoms.  Previous traumatic events and childhood severity was related to the mediating variable of maladaptive coping, and maladaptive coping predicted PTSD symptoms. | Reliable and validated measures used to measure coping and PTSD symptoms.  Information was provided stating the participants were anchored to complete the measures in relation to their sexual assault.  Future research and clinical significance discussed. | No information on if the study had sufficient statistical power.  No actual probability values were reordered.  Only information regarding one model of fit was provided.  No confidence intervals were provided.  Missing data was not discussed.  Results were not generlisable. | 68% |
| Canton-Cortes & Canton (2010)  Spain | N= 138 women college students,  Mean age 19.80 years | Measured the relationship between child sexual assault and PTSD symptom severity.  Looked at victims adjustment to an assault, and the role coping strategies can play in this.  Examined the role of coping strategies on PTSD symptomology when considering the victims relationship with the perpetrator.  Looked at the proportion of variance in PTSD symptoms accounted for by the coping strategies used by the different groups. | “How I Deal With Things” Scale  Severity of Symptoms PTSD Scale (1994) | Self-destructive and evasion coping predicted the total PTSD score.  Interaction effect was found for the nervous/anxious strategy and the relationship with the perpetrator. An interaction effect was found for continuity of the abuse and evasion coping.  Self-destructive and evasion coping moderated the relationship between sexual assault and PTSD symptoms.  In the assault group a stronger relationship was found between coping and PTSD symptoms. | Reliable and valid measures used.  All results reported clearly.  Results interpreted with evidence for and against the researcher’s arguments.  Clinical and statistical significance discussed.  Recruited participants from the same population. | Lack of detail regarding the procedure of the research.  Unable to determine if the sample had sufficient power.  Characteristics of the sample only partially described.  Unable to identify how the participants completed the measures, and if they were anchored to their sexual assault.  Results are not generlisable. | 74% |
| Ullman et al. (2007a)  US | N= 699 women  Mean age 32.5 years,  62.9% ethnic minority, 46.2% African American, 37.1% White | Examined psychosocial factors, demographics and background variables in relation to PTSD symptom severity. | B COPE – avoidance coping (1997)  PDS (1995) | Avoidance coping predicted PTSD symptoms, and was reported to be the strongest predictor. | Information provided regarding how the sample size was determined, and that the sample had sufficient statistical power.  Reliable and valid measures used, and clear information provided regarding the participants instructions on how to complete the measures.  Missing data was discussed.  Clinical implications of the results discussed. | Results not detailed in the text of the paper, only in a table.  Exact p values and confidence intervals not reported.  Non- representative sample. | 79% |
| Littleton & Grills – Taquechel (2011)  US | N= 340 women  Mean age 21.6 years,  74.4% European American, 8.5% Latina, 6.4% African American 5.8% Asian American | Used an information processing model of interpersonal violence to classify victims.  Evaluated differences in the groups of victims. The differences that were focussed on were distress, beliefs and assault characteristics.  Evaluated differences in re-victimisation among the three groups of individuals. | CSI (1989)  PSS (1993) | Identified three different coping styles accommodated, assimilated and over-accommodated.  All groups varied regarding their PTSD symptoms.  Accommodating individuals reported more PTSD symptoms than the assimilated group, however reported less PTSD symptoms than the over-accommodated group. | Researchers provide a balanced view regarding their findings.  Used reliable and valid measures, and individuals were anchored to their sexual assault.  The model had good fit.  Considers implications for future research and therapeutic work. | Statistical power was not discussed, unable to determine if the study had sufficient power.  No exact p values provided.  The paper does not provide any statistical information regarding the differences in the three groups PTSD scores.  Missing data was not discussed.  Results are not generlisable to the local population.  Results subject to recall bias. | 68% |
| Johnson et al. (2003)  US | N= 86 women  Mean age 32.77 years,  14% African American, 81.4% Caucasian, 3.5% Hispanic, Latin or Mexican American, 1% identified as another ethnicity | Examined the effect PTSD symptoms and coping strategies can have in the emergence of personality disorders in a sample of women. | CSI (1984)  CAPS (1996) | Individuals with greater levels of avoidant coping exhibited PTSD symptoms. | High inter-rater reliability evident.  Used robust and reliable measures.  Recruited participants from the same population.  Limitations of the study discussed.  Clinical implications and future research discussed. | Unclear procedure, lack of information provided.  Exact p values and confidence intervals not reported.  Unable to determine if missing data was accounted for.  Results not generlisable. | 65% |
| Cohen & Roth (1987)  US | N= 72 women  Mean age 29.7 years | Investigated differences in the recovery of rape survivors, and examined psychological effects of being raped. | Approach-Avoidance Scale  IES – intrusion subscale (1982) | The use of avoidance and approach strategies simultaneously, was associated with reduced levels of intrusion symptoms. | Limitations of the study discussed.  Provided a scientific rationale for the study. | Unable to determine if participants were recruited from the same population.  No information provided regarding the procedure of the study.  Unable to determine if the sample had enough power to detect a statistically significant result.  No information provided regarding the characteristics of the sample.  No information provided regarding the reliability and validity of the measures.  Lack of statistical information provided regarding the results.  Clinical implications not discussed. | 34% |
| Bryant – Davis et al. (2015)  US | N= 252 African American Adult women  Mean age 36.66 years | Investigated the role of religious coping in a one year follow up in relation to PTSD symptoms. | B COPE – Religious (1997)  PDS (1995) | Correlation analysis showed one year later individuals who continued to use more religious coping strategies reported greater PTSD symptoms.  Changes in PTSD symptoms one year later, was not predicted by religious coping. | Provides information regarding how many participants completed the measures at time 1 and 2.  Uses reliable and valid measures, and provides information regarding how the individuals completed the measures.  Exact p values reported.  Clinical relevance of the findings discussed. | The paper does not provide any information regarding any additional methods used in order to obtain the time 2 measures.  Statistical power of the sample is not detailed.  Confidence intervals not reported.  Unable to determine if missing data was accounted for.  Non-representative sample. | 68% |
| Ullman & Ralyea (2016)  US | N= 1021 women  Mean age 36.51 years,  44.9% African American, 35.2% White, 2% Asian, 7% multiracial, 10.9% other, 13.2% Latina or Hispanic | Investigated the relationship between maladaptive coping and post-traumatic stress symptoms over a period of time. | B – COPE – maladaptive (1997)  PDS (1995) | All reciprocal paths were significant between maladaptive coping and PTSS. | Provides response rates for the three data collection points.  Reliable and valid measures used, and clear information provided regarding the completion of the measures.  Standardised path coefficients reported.  Exact p values reported.  Model had good fit.  Missing data accounted for.  Clinical relevance discussed. | The paper does not provide any information regarding any additional methods used in order to obtain the time 2 and 3 measures.  The three different samples differed in regards to age.  Confidence intervals not reported.  Results not generlisable. | 74% |
| Ullman et al. (2005)  US | N= 865 women  Mean age 31.5 years,  60% ethnic minority, 42.2% black, 40% white, 7% multiracial, 7% Latina, 3% Asian, 1% Pacific Islander/Native Hawaiian, American Indian or women of other ethnic background | Used structural equation modelling to explore PTSD symptoms and drinking that has become a problem. | B COPE – problem drinking (1997)  PDS (1995) | Drinking to cope was associated with greater PTSD symptoms. | Clear information provided regarding how the sample size was arrived at, and the study had a sufficient sample size.  Used reliable and valid measures for coping and PTSD symptoms.  The model had good fit and standardised coefficients were reported.  Missing data was discussed and accounted for. | Confidence intervals and exact p values were not reported.  The results are not generlisable. | 74% |
| Littleton & Henderson (2009)  US | N= 353 women  Mean age 21.7 years,  73% European American, 8.1% Latina, 6.4% Black or Caribbean Islander, 5.8% Asian or Pacific Islander, 2.3% multi-ethnic, 0.6% Native American, 4.3% did not state their ethnicity | Tested the effect of acknowledgement status and maladaptive coping in their ability to predict PTSD symptoms. | CSI (1989)  PTSD symptom scale (1993) | Maladaptive coping had a significant effect on PTSD symptoms.  Individuals who used more maladaptive coping reported more PTSD symptoms. | Diverse sample regarding ethnicity.  Reliable and valid measures used, and clear information was provided regarding individuals instructions when completing the measures.  The model has adequate fit, and exact p values were reported. | Previous trauma history was not considered.  Unable to determine if the study had sufficient power.  Unable to determine if path coefficients are standardised.  Fails to report confidence intervals.  Missing data was not discussed.  Clinical relevance of the findings was not discussed. | 65% |
| Bryant – Davis et al. (2011)  US | N = 413 African American Adult women  Mean age 35.31 years | Looked at the recovery of sexual assault survivors, and the role religious coping had in the population’s recovery. | B COPE – Religious (1997)  PDS (1995) | Greater levels of PTSD symptoms where predicted by more regular use of religious coping. | Describes how the sample size was arrived at.  Reliable and valid measures used.  Model had adequate fit.  Confidence intervals reported.  Clinical implications and future research discussed.  Clear information was provided regarding data preparation. | Provides no information regarding the statistical power of the sample.  No information is provided regarding if the participants were anchored to their sexual assault when completing the coping measure.  Exact p values were not reported, and information is not provided regarding if the path coefficients are standardised or unstandardised.  No mention of missing data. | 68% |
| Najdowski & Ullman (2009)  US | N= 969 women  Mean age 32 years,  40% Caucasian, 43% African American, 6% Hispanic, 3 % Asian, 1% other,  7% mixed ethnic background | Looked at the relationship between traumatic life events, self-blame, perceived control over recovery and coping strategies and PTSD symptoms and recovery. | B-COPE – Maladaptive & Adaptive (1997)  PDS (1995) | Path diagram showed a direct relationship between maladaptive and adaptive coping, however no statistical information was provided.  Historical traumatic life events on PTSD symptoms were partially mediated by maladaptive and adaptive coping. This then predicted more PTSD symptoms. No statistical information was provided for these findings.  Greater control over recovery was partially mediated by adaptive and maladaptive coping. Greater control over recovery predicted significantly less maladaptive coping which then predicted more PTSD symptoms.  Greater adaptive coping was predicted by greater perception of control over recovery. More PTSD symptoms was predicted by the use of more adaptive coping. No statistical information was provided regarding this finding. | Sample size and statistical power of the sample detailed.  Used reliable and valid measures, and sufficient detailed provided regarding the instructions participants were provided regarding completion of the measures.  Standardised beta weights were provided.  The model had good fit.  Researchers interpret the results with evidence for and against their findings.  Clinical implications of the findings are discussed. | Path model shows a direct relationship between coping and PTSD symptoms; however, no information is provided regarding if this result was statistically significant.  The paper describes an indirect relationship for coping and suggests coping has an effect on PTSD symptoms however no statistical data was provided regarding this finding.  Confidence intervals were not reported.  Unable to determine if missing data was accounted for.  Results are not generlisable to the local population. | 74% |
| Filipas & Ullman (2006)  US | N= 108 women college students | Investigated sexual assault experiences, coping strategies, re-victimisation and PTSD symptoms. | Used statements to measure coping (Yes/No)  PDS (1995) | More PTSD symptoms were predicted by the number of maladaptive coping strategies used. | The PTSD measure was reliable and valid.  Clinical implications and future research discussed.  Clear hypothesis was provided.  Recruited participants from the same population. | Unable to determine if the sample had sufficient power.  No clear inclusion or exclusion criteria provided.  The coping measure was not reliable or valid, and used statements the researcher had previously used.  Exact p values, confidence intervals, R2 and R2 adjusted values were not reported.  The paper did not report if missing data was accounted for.  Unrepresentative sample.  Demographics of the sexual assaulted subsample were not reported. | 59% |

**N= Sample size. B COPE= Brief COPE (Carver, 1997). CSI= Coping Strategies Inventory (Tobin, Holroyd & Reynolds, 1984). CSI = Coping Strategies Inventory (Tobin, Holroyd, Reynolds & Wigal, 1989). IES= Intrusion subscale of the Impact of Events Scale (Zilberg, Weiss & Horowitz, 1982). TSI= Trauma Symptom Inventory (Briere, 1995). DSM-IV= Diagnostic and Statistical Manual- 4th edition (APA, 1994). DSM-III-R= Diagnostic and Statistical Manual- 3rd edition revised (APA, 1987). Severity of Symptoms PTSD Scale= Severity of Symptoms PTSD Scale DSM-IV (APA, 1996). CAPS= Clinician Administered PTSD Scale (Blake et al., 1996). PSS= PTSD Symptom Scale (Foa, Riggs, Dancu & Rothbaum, 1993). PDS= Posttraumatic Stress Diagnostic Scale (Foa, 1995).**

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* Capitol punishment
* Biological bases of interpersonal aggression
* Preventing violence at home, school, work, or in the community
* Training programs for professionals
* Innovative treatment and model programs
* Children exposed to violence
* War and its effects
* Post Traumatic Stress Disorder
* Psychological and emotional abuse
* Victimization
* Traumatic effects of aggression and assault
* Effects of terrorism

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**Paper Two: Empirical Paper**

The relationship between individual coping styles, reported levels of resilience and self-blame cognitions as predictors of post-traumatic stress disorder symptoms.

**Word Count:** 7975(including tables and figures and excluding references and appendixes as per award requirements)

This paper has broadly been prepared in accordance with the requirements of the Journal of Traumatic Stress Disorders & Treatment. Author submission guidelines are listed in Appendix Nine.

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# **Abstract**

**Objective**

Previous research has shown that coping styles, resilience and self-blame cognitions have predicted the experience of post-traumatic stress disorder (PTSD). However no previous research has examined these variables in conjunction before. Therefore the aim of this present study was to examine the relationship between coping styles, resilience and self-blame cognitions to post-traumatic stress disorder (PTSD) symptoms, to identify the strongest predictor in a mixed adult trauma sample. Age, gender and length of time since the traumatic event was also included in the study, as past research has indicated these variables have also predicted PTSD symptoms.

**Method**

A sample of 87 participants who identified they had experienced a traumatic event took part. A cross-sectional design was used and measures were administered online. Participants completed self-report measures on coping styles, resilience, self-blame cognitions and PTSD symptoms. Demographic information was collected.

**Results**

Multiple regression analyses identified maladaptive coping was the only significant predictor of PTSD symptoms. Maladaptive coping accounted for 45.6% of the variance in scores. No other significant predictors were found.

**Conclusion**

The findings suggest there is a relationship between maladaptive coping style and PTSD symptoms in adults who have experienced a traumatic event. Maladaptive coping increases PTSD symptoms, and this study has found maladaptive coping appears to be a particular strong predictor in predicting PTSD symptoms. It appears maladaptive coping should be targeted during interventions. Further research is needed into exploring the specific types of traumatic events, and potential factors predicting PTSD symptoms depending on the nature of the traumatic event.

**Keywords:** Post-traumatic stress disorder; PTSD; coping styles; resilience; self-blame cognitions.

# **Introduction**

How individuals react to traumatic events varies considerably, and many individuals experience symptoms of Post-traumatic stress disorder (PTSD), immediately after experiencing a traumatic event [1]. A large proportion of such individuals appear to “recover” from their event, however for some individuals the symptoms can continue for years [2]. These individuals can seek treatment, including psychological treatments [1].

The Diagnostic and Statistical Manual of Psychiatric Disorders, Fifth edition (DSM - 5) states, PTSD can be an outcome of experiencing a psychological traumatic event leading to significant impairment across different areas of functioning [3]. Examples of such events include exposure to actual or threatened death, sexual violence or serious injury [3]. To be diagnosed with PTSD requires the following symptoms; involuntary re-experiencing, hyperarousal, emotional numbing and avoidance and negative alterations in cognition and mood to be present for more than a month after the event [3]. A proportion of individuals exposed to a traumatic event develops PTSD, however most do not. The majority of people adapt quickly and recover successfully following the traumatic event [4]. Less successful adaptation to events has drawn lots of attention, and predictors of PTSD has been considerably researched [4].

Reactions to traumatic events became a clinical priority in the United Kingdom (UK) in the 1980’s, after a number of community traumatic events e.g. Bradford football stadium fire. Difficulties facing the UK have included supporting services locally to ensure they are equipped to treat large numbers of people with PTSD. Recently this has been achieved to some degree with the introduction of a range of NHS provisions, however such provisions still vary [5]. Social and welfare costs claims regarding severe disablement because of stress and PTSD in 2003-4 were £103 million, an increase of £55 million claimed five years previously. As a result, PTSD has produced a significant economic burden to the National Health Service (NHS) [6]. The effects of PTSD extend beyond the NHS, and affects quality of life and an individual’s ability to function. The economic burden is felt by families and the wider society [7].

The first epidemiological research into trauma exposure used the DSM-III criteria and was carried out in America. The study included 1007 adults and results showed 31.9% of the sample had been exposed to traumatic events, with a lifetime prevalence rate of 9.2% [8]. The Fundamental Facts about Mental Health (2016), stated 31.15% of men, and 31.2% of women in England has experienced at least one traumatic event. Only 12.8% of individuals had been diagnosed by a professional, and less than half of individuals diagnosed (47.9%) were receiving treatment for their mental health [9].

## **Demographic Factors**

Several demographic factors have been associated with the risk of developing PTSD symptoms including age and in particular gender [10-14].Consistently research shows women are more likely to develop PTSD [4, 15]. A meta-analysis showed women were at a higher risk for developing PTSD in civilian populations [10].Length of time since the individual has experienced the traumatic event has also been shown to be a risk factor for developing PTSD symptoms, with less time since the event predicting such symptoms [16].

## **Psychological Factors**

A number of psychological factors have been associated with the disorder, including beliefs, coping strategies and cognitive-affective reactions. Research has suggested some of the strongest predictors of PTSD relate to psychosocial factors involved in the experiencing of and adaptation to the traumatic event [10, 17-19]. Cognitive models of PTSD have described psychological factors involved in the development and persistence of PTSD symptoms including appraisals, beliefs and coping strategies [1]. Previous research and the resulting models used to understand PTSD symptoms suggest resilience, self-blame and coping styles are particularly important factors when understanding both successful and problematic adaptation to traumatic experiences. These factors will now be explored in more detail.

### **Resilience.**

Resilience has been defined as “the ability to come back from adversity, and positively adapt to change” [20]. Resilience has also been defined as the ability to “bounce back” or show better than expected functioning after a negative life event [21]. There are several terms associated with resilience in the literature including “hardiness”, “courage” and “optimism” [20, 22]. Resilience is not simply the opposite of psychopathological vulnerability, rather it is now viewed as a separate concept which can be improved [23].

A resiliency model has been presented in response to trauma [24]. This model stipulates dynamic variables interacting when an individual experiences a traumatic event, and this interaction determines resilient behaviour [25]. This model is integrative and identifies interactions among several variables, and how these variables can work together to create a range of adaptive behaviours and degrees of resiliency after experiencing a traumatic event [25]. Traumatic events can influence cognitive schemas of the self, and pre-existing personality including its structure, defences and ego processes [25]. Such events activate allostatic stress response patterns, which manages human stress responses. The activation of response patterns includes different areas of functioning e.g. affect modulation and utilisation of protective factors [26]. How some individuals respond after experiencing trauma is on a continuum of adaptation and resilience. At the positive end of the continuum are individuals who show optimal coping and can keep a positive outlook from their experience [25].

Researchers have found less resilient individuals have reported more PTSD symptoms [27]. It is possible that individuals who are affected by post-traumatic symptoms may at the same time see themselves as less resilient. This perception is consistent with negative self-schemas held by individuals with PTSD symptoms [27]. Researchers have reported resiliency levels have predicted PTSD symptoms in different populations, and in particular war veterans [14, 28–31]. Components of resiliency have been found to be negatively associated with symptom severity in a sample of war veterans [32]. The significance of resilience has now been acknowledged by the Military, and the United States Army programme incorporates a Comprehensive Solider Fitness (CSF) designed specially to boost resiliency [33]. The results of the CSF can be used by clinicians to teach individuals strategies to enhance resilience, and having these strategies may result in fewer PTSD symptoms [31]. Research into resiliency-strengthening interventions has shown some promising success [34].

In terms of clinical practice resilience is now incorporated into models of well-being, and has moved from historical models of ill health. This recent shift to models of wellness and resilience enhancing models have started to inform government public health policy, and highlight preventative strategies, [35, 36]. The literature regarding PTSD and resilience suggests following a traumatic experience resilience can be learnt [25]. Furthermore, resilience has been defined as “modifiable”, and can increase with appropriate interventions [37].

The results of previous research show resilience can predict PTSD symptoms [27, 29, 31]. Therefore, improving an individual’s level of resilience could reduce mental health effects, and it has been suggested resiliency can be taught and then improved [20]. Interventions using cognitive and behavioural techniques have been shown to help improve and develop resiliency [20, 38]. Providing these types of interventions could help to prevent or reduce psychological symptoms of the trauma related experiences [20]. Resilience is clearly an important factor in the adaptation of individuals to traumatic events. It is becoming an increasing focus for intervention. The current study aims to refine understanding of the role played by resilience in researching its ability to predict PTSD symptoms, and examining the strength of resilience when predicting PTSD symptoms alongside other variables shown to predict PTSD symptoms.

### **Self-blame.**

Self-blame can be defined as the belief about causality, where an individual perceives they are responsible for the event leading to “self-criticism” and appraisals of low “self-worth” [39]. As stated above negative self-schemas can influence PTSD symptoms experienced by individuals [38]. Schemas held by individuals who have experienced a traumatic event can include information about the type of causal attributions offered for traumatic life events [40]. These perceptions around causal attributions have been identified as a potential vulnerability factor for PTSD [41].

PTSD theories have highlighted the significance of cognitive distortions including self-blame in the development and maintenance of the disorder [1]. A cognitive model that offers one of the most detailed theories regarding the maintenance and treatment of PTSD has been presented widely in the PTSD literature [17]. This model [1], suggests when individuals process the traumatic information in a way that creates a continual sense of threat, pathological responses can arise. A mechanism contributing to this sense of threat includes negative appraisals relating to the trauma or its sequelae [17].

Several appraisals can create the perception of threat, including the way an individual perceives they have behaved during the event [1]. Such appraisals can have serious implications, especially if they are of a self-blaming nature e.g. “I deserve that bad things happen to me” [17]. Other people involved in the victim’s life can be uncertain regarding how they should respond to the individual, and may believe not talking about the event will help to prevent further distress [1]. However, this lack of discussion could be interpreted by the victim that others believe they were to blame, which is likely to produce PTSD symptoms [1].

Previous studies have shown after experiencing a traumatic event; PTSD severity can be predicted by cognitive distortions [42, 43]. Negative appraisals about the event can be intrusive leading to a vicious cycle where trauma related thoughts and emotions are suppressed. This could increase cognitive intrusions relating to the traumatic event, and could intensify emotional distress [44]. Several researchers have reported that they found that self-blame cognitions predicted PTSD symptoms [45–49].

The clinical implications of the findings regarding self-blame provide numerous ideas for future research [50]. In particular, if the relationship between maladaptive cognitions and negative emotions was researched, a greater understanding could be developed to improve interventions targeting self-blame given the significant effect of this cognition including the significant effect self-blame can have on victim’s adjustment post trauma [50, 51]. Even though specific interventions have been developed focussing on trauma-related guilt [52], less attention has been placed on how to provide effective interventions for individuals with self-blame cognitions who have experienced, in particular, interpersonal traumas. As dysfunctional cognitions can be addressed with cognitive processing therapy and cognitive restructuring, research may indicate such therapies need to focus on self-blame [53]. There is a need for continual understanding of self-blame cognitions to develop treatment interventions for individuals with PTSD difficulties [50].

However, there remain some inconsistencies in the research regarding the effect self-blame cognitions have on PTSD symptomology, and some research with stroke victims found self-blame cognitions did not significantly predict PTSD symptoms [54]. Previous research appears to focus on a specific type of traumatic event, which may influence the effect self-blame cognitions have on PTSD symptomatology within different samples. In summary, self-schemas are important in understanding the impact of traumatic events, and self-blame appears to be a promising focus for intervention. However, the relationship remains unclear, and the current study aims to identify if there is a relationship between self-blame cognitions and PTSD symptomology in a non-specified trauma population.

### **Coping Styles.**

Coping has been defined as a process where an individual tries to manage the demands placed upon them by stressful events. Such events are thought to be those surpassing an individual’s personal resources [55]. Coping has also been defined as cognitive, affective or behavioural strategies some individual uses to manage stress generated by an experience [56].

Coping styles used after a traumatic event can influence the experience of post-traumatic symptoms. Regarding psychological adjustment they are an important part of this process, and can help to regulate symptoms experienced due to the trauma [57]. Coping styles can differ in their effectiveness, and can either increase or decrease the effects of experiencing a traumatic event [57]. Differences in coping skills of individuals who have experienced trauma can be important regarding the development, maintenance and treatment of PTSD symptoms [58].

A model of PTSD suggests PTSD symptoms can be maintained by maladaptive - avoidance based coping styles [1]. When individuals perceive a sense of threat, they can use a range of such strategies to try and control the threat [1]. Such strategies are linked with appraisals the individual’s holds regarding the event/sequelae, and their beliefs about how to cope with the trauma [1]. This model states how the disorder can be maintained through maladaptive behavioural coping strategies, and these strategies include thought suppression and distraction to control symptoms [17]. Negative appraisals about the event or its sequelae are then unable to change due to these maladaptive coping strategies. This model has stated how cognitions and coping factors can impact on PTSD, and these elements have been reliably supported by empirical research [17].

Researchers have suggested that one of the main psychological processes accountable for the maintenance and development of PTSD symptoms is experiential avoidance [59]. Treatments for PTSD try to target experiential avoidance through “re-living” the trauma. However due to the nature of the difficulties associated with PTSD, individuals can often be reluctant or unable to “relive” such traumatic memories [60]. It is therefore argued PTSD treatments need to be developed to make them more bearable [61]. Researchers have found that only 20% of individuals were able to engage in exposure treatments [62]. Therefore, it appears apparent a key focus of effective interventions would be to support individuals to develop their coping skills in the face of trauma.

Due to the apparent importance of coping in the PTSD literature, several studies have researched the ability of coping styles to predict PTSD symptoms. A number of studies have reported how coping styles have predicted PTSD symptoms after individuals have experienced a range of traumatic events including sexual abuse, natural disasters, physical health conditions, rescue/emergency work, birth trauma and motor vehicle accidents [4, 63-67]. Currently many different coping measures exist, and several coping style taxonomies have been suggested [68]. Two of these taxonomies include maladaptive and adaptive coping styles [69].

Maladaptive coping strategies are cognitive and behavioural strategies individuals use to reduce distress, however such strategies do not target the basis of the distress itself [63]. Such strategies include cognitive and behavioural disengagement, denial and substance misuse. These strategies are used to cope with the distress after experiencing a traumatic event, and can maintain the psychological symptoms of PTSD [70]. Maladaptive strategies immediately after the traumatic event can be protective, as they can protect the individual from the reality of their experience. However in the longer term these strategies can inhibit recovery as to recover from such an event individuals need to cope with the event itself, and its effects [63]. Several studies report that maladaptive coping strategies have predicted PTSD symptoms [71–73].

Adaptive coping can be defined as successful strategies and include cognitive restructuring, expressing emotions and seeking social support. Such strategies can be viewed as a protective factor against symptoms of PTSD [63]. Improved recovery is associated with such strategies, and a decrease in PTSD symptoms [74]. Adaptive methods such as acceptance is an adaptive strategy which helps to reduce any individual difficulties via positive reframing, and having an optimistic view [75]. Researchers have reported that adaptive coping strategies have predict fewer PTSD symptoms [64, 76, 77].

Clinically coping has been shown to be an important factor to address in therapy, and research has suggested clinicians need to address possible effects of learnt coping strategies, reducing the reliance on maladaptive strategies and improving adaptive coping strategies [78-80]. However some researchers have found adaptive coping does not predict PTSD symptoms [81]. Whilst there appears to be a consistent and clear picture regarding the role of maladaptive coping strategies, the research on PTSD symptoms and the role of adaptive coping is mixed. The present study aims to address this inconclusiveness.

## **Present Study**

The research findings stated above have highlighted all the variables have been shown to predict PTSD symptoms independently, although there remains the need for clarification in some cases. Moreover, there appears to be no research that has studied the different variables in conjunction, with one another. Therefore, there is a rationale and clinical need to combine these factors in a multiple regression study to explore their possible effect and establish which factors are the strongest predictors within a general trauma population. This is the principle aim and unique element of the research, to identify which are the significant and strongest predictors of PTSD symptomology. Therefore, the present study aims to explore the relationship between self-blame cognitions, levels of resilience and coping styles as predictors of PTSD symptomatology, in a sample of individuals in the general population who have experienced a traumatic event. Based on past research age, gender and length of time since the traumatic event was also included to see what impact they may have, and to see if these variables predicted PTSD symptoms.

The following specific research question will be addressed:

1. Which variables are shown to be the strongest predictor of PTSD symptomology?

It is hypothesised that:

1. Maladaptive coping styles, adaptive coping styles, resilience and self-blame cognitions will predict PTSD symptoms.
2. More maladaptive coping, less adaptive coping, more self-blame cognitions and lower levels of resilience will predict higher levels of PTSD symptomology.
3. Age, gender and length of time since the traumatic event will predict PTSD symptomology.

# **Materials and Method**

# **Design**

A cross sectional design using internet mediated research (IMR), was used to quantitatively explore the relationship between age, gender, length of time since the traumatic event, coping styles, resilience and self-blame cognitions as predictors of PTSD symptoms using multiple regression analysis.

## **Participants**

In order to identify the sample size needed for the multiple regression analysis a power analysis was completed for this study. With seven variables, a G\* power calculator was used [82] to determine the sample size. With power set at 0.8 [83], and significance at 0.5, for a medium effect size (0.15) 103 participants were required**.** Other cross-sectional research looking at PTSD symptoms have used similar sample sizes to this study [84]. This study recruited 87 participants meaning this study is slightly underpowered.

Participants were recruited from the social media site Facebook. The research was advertised in the form of a short post followed by a link advertised on the principle investigators research page. The link was made available for other Facebook users to share. Crowdsourcing was used to share the link, with the principle investigator also sharing the link on other Facebook pages or groups where permission had been sought from an administrative representative. A sample of 87 participants were recruited to participate, and 408 individuals accessed the link meaning 21.3 % of individuals who accessed the link completed the questionnaires. 65 participants were women (74.7%), and 22 were men (25.3%). In order to participate in the study participants had to be aged eighteen or above with no upper age limit, and the mean age for the sample was 38.8 (SD = 11.4, range 18-66). Participants had to be literate and fluent in English, had experienced a traumatic event/events from the qualifying list of events taken from the DSM-5, [3], and needed to be residing in the UK. The nature of the participants’ traumatic events were recorded (see Appendix 1). Six participants did not record the nature of their traumatic event. Participants were excluded if they were currently or have previously engaged in psychology therapy related to their trauma difficulties.

# **Measures (see appendix 6)**

*Brief Cope – (Carver, 1997)*

The Brief Cope was developed from the full length COPE Inventory [85] and is a 28 item self-report scale with fourteen subscales. The scales include: (1) Active Coping, (2) Planning, (3), Positive Reframing, (4), Acceptance, (5) Humor, (6) Religion, (7) Using Emotional Support, (8) Using Instrumental Support, (9) Self-Distraction, (10) Denial, (11) Venting, (12) Substance Use, (13) Behavioral Disengagement, and (14) Self-Blame. The subscales 1 – 8 can be combined to give totals for adaptive coping, and subscales 9 – 14 can be combined to give totals for maladaptive coping [86]. Previous research supports the validity of adaptive and maladaptive coping [87]. The measure is designed to assess the varying coping strategies used by individuals in response to certain situations [88]. The measure uses a 4-point Likert scale (1= “I haven't been doing this at all to”) to (4= “I've been doing this a lot”). Total scores on each of the scales are calculated by summing the appropriate items for each scale. It has been reported the scale has good internal consistency, and Cronbach’s alphas ranging from .50 to .90, and .81 to .87 [86, 63].

*Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin & Orsillo, 1999)*

This inventory is designed to measure trauma-related thoughts and beliefs [89]. This 36-item self-report measure contains three subscales: Negative Thoughts about the Self, Negative Thoughts about the World and Self-Blame. Participants indicate on a 7-point Likert scale the extent to which various statements are representative of their thinking (1 = totally disagree to 7 = totally agree). Responses are anchored to a specific traumatic experience. The subscales of the PTCI have good internal reliability, with Cronbach’s alphas of .97 for Negative Thoughts about the Self, .88 for Negative Thoughts about the World and .86 for Self-Blame [89]. The self-blame subscale (5 items) was used in the current study, based on the factor loadings reported by [89]. Previous research has also used the self-blame subscale [90].

*Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003)*

The CD-RISC is designed to measure resilience, as a function of successful stress coping ability. Participants indicate on a 5-point Likert scale the extent to which various statements are true of themselves (0 = “not at all true” to 4 = “true nearly all of the time”). Respondents are asked to think and rate the items in relation to the past month, and with higher scores indicating greater resilience. This 25 - item self-report measure contains four subscales, and yields a total score that will be used for the purpose of this study. The scale has been found to have good internal reliability, with Cronbach’s alphas of .98, for positive acceptance of change, .89 for tolerance of negative affect, .98 for belief in fate, .93 for availability of secure relationships, and .99 for the total scale [37].

*Impact of Event Scale – Revised (IES-R; Weiss & Marmar, 1997)*

The IES-R is a 22 item-self report scale and is designed to measure PTSD symptomology. The measure is not for diagnosing PTSD, but it is an appropriate instrument measuring the subjective response to a specific traumatic event in an adult population [91]. The IES-R is a revised version of the original Impact of Events Scale [92], and the IES-R has added a third cluster of symptoms, hyperarousal to the avoidance and intrusion subscales [93]. Scores on the IES – R range from 0 – 88, with no cut off score. Research does however suggest thresholds ranging from 22 to 33 could indicate significant levels of distress [94]. Participants indicate on a 5-point Likert scale how distressing or difficult each item has been in the past seven days (0 = “not at all” to 4 = “extremely”). The scale provides a total score and has three subscales: intrusion, avoidance and hyperarousal. The scale has high internal reliability, with Cronbach’s alpha of .95, for the total scale, .90 for intrusion, .86 for avoidance, and .85 for hyperarousal [95].

## **Procedure**

Ethical approval for this study was sought and gained from Staffordshire University’s Health Sciences ethics panel (see Appendix 7). Facebook the social media site was used to recruit participants through advertisements on the social medial site. These advertisements were in the form of a short post (see Appendix 2), and within these short post contained a URL link to an internet-based survey hosted by an online survey software programme named Qualtrics. These short posts detailed the nature and inclusion criteria for the study. The questionnaires took around 10-15 minutes to complete, and participants were regularly informed regarding the data collection period. Upon visiting the website, participants were presented with the list of qualifying traumatic events for this study (see Appendix 3), followed by the participant information sheet (see Appendix 4). This information sheet provided all the relevant details enabling the participant to decide if they wanted to participate, alongside a list of sources of support. After reading the information sheet the individual proceeded to a demographic information sheet (see Appendix 5), where the individual was asked to provide their age, gender and date they experienced their traumatic event. If an individual had experienced more than one traumatic event, they were asked to record the date of the event they considered being the most traumatic. The participants were then presented with the four questionnaires (see Appendix 6) relating to PTSD symptoms, coping styles, resilience and self-blame cognitions. If participants had experienced more than one traumatic event they were asked to complete the IES-R, Brief Cope and the PTCI in relation to the event they found the most traumatic. After completing the questionnaires the participant information sheet was presented again to the participants, in case they need to make note of any relevant email addresses or contact details. All responses were anonymous, and the participants were given the opportunity to contact the principle investigator to request a participant information sheet for them to retain if desired.

## **Statistical analysis**

SPSS Statistics software (version 24) for Windows [96] was used to analyse the data. Initially the data were screened for missing and improbable data, and then multiple regression analyses were used to explore the relationship between the predictor variables, and their ability to predict PTSD symptoms.

## **Epistemological position**

Epistemological positions in student research have been shown to be pivotal in how the researcher approaches and processes new information [97]. This research used a quantitative method, which is traditionally a “positivist” position; that the world is observable. Statistical techniques and survey methods are central to this research position [98]. A positivist position believes with any research phenomenon there is a single objective reality, irrespective of the researcher’s beliefs [99]. Such a position uses a structured approach in carrying out research by first identifying a research topic, then developing hypotheses’ and finally employing appropriate research methodology [100].

The main researcher’s position is one of a critical realist. This position states there are different realms of reality, and observable behavioural patterns can be explained in experimental settings by examining the linear relationship between variables but knowledge of the world gained in a single setting could be wrong [101]. Therefore the role of researchers is to continue to search for knowledge about casual mechanisms in a variety of contexts [102]. Nevertheless, in this context, it remained consistent with a critical realist position to answer this question in using a quantitative design. Once the researcher had identified a research topic and hypothesis the appropriate research methodology was then easily identified. It was felt a survey method would be the most appropriate methodology to answer the research question.

# **Results**

A variety of traumatic experiences were reported, and the length of time since the participants had experienced their traumatic event varied considerably (in months; *M = 108.09, SD= 135.67*). Descriptive statistics for the criterion variable and predictor variables are presented in Table 1. There was a wide range in scores evident with the IES-R, the Brief Cope scales and the resilience measure.

**Table. 1**

*Descriptive Statistics for Predictor Variables (Adaptive Coping, Maladaptive Coping, Self-Blame and Resilience) and the Criterion Variable (PTSD Symptoms)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Measure | IES-R | Adaptive coping | Maladaptive coping | Self-blame | Resilience |
| Mean (SD) | 44.80 (22.95) | 32.68 (7.80) | 25.08 (7.71) | 2.97 (1.80) | 53.34 (20.38) |
| Range | 3-88 | 4-49 | 4-41 | 1-7 | 6-98 |

Bivariate correlations were undertaken to examine the relationship between the predictor variables and criterion variable (Table 2). Maladaptive coping was significantly moderately positively related to the PTSD symptom score (*r= 0.675, p<0.001*). There was a moderate significant negative relationship between total resilience and PTSD symptom score *(r=-.549, p<0.001).* The PTSD symptom score was weakly positively related to adaptive coping and *(r =.005, p>.48)* and self-blame cognitions *(r =.190, p> .04).* There was a weak positive relationship between the PTSD symptoms score and all the additional variables including age *(r=.133, p>.11)*, gender *(r=.133, p>.23)*, and length of time since the traumatic event *(r=.165, p>.06).* Participants rating themselves higher on maladaptive coping, adaptive coping and self-blame cognitions, and lower on resilience had more PTSD symptoms.

**Table. 2**

*Pearson’s Correlation Matrix for the Criterion Variable (PTSD symptoms) and the Predictor Variables (Age, Gender, Length of Time since the Traumatic Event, Adaptive Coping, Maladaptive Coping, Self-Blame and Resilience)*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Measure | IES-R | Age | Gender | Length time since event | Ad Cope | Mal Cope | Self-blame | Resilience |
| IES-R | - | .133 | .081 | .165 | .005 | .675\*\*\* | .190 | -.549\*\*\* |
| Age | .133 | - | -.295\* | .558\*\*\* | .098 | .169 | .013 | -.081 |
| Gender | .133 | -.295\* | - | -.111 | .024 | -.018 | .142 | -.161 |
| Length time since event | .165 | .558\*\*\* | -.111 | - | -.080 | .155 | .061 | -.262 |
| Ad Cope | .005 | .098 | .024 | -.080 | - | .249 | -.053 | .017 |
| Mal Cope | .675\*\*\* | .169 | -.018 | .155 | .249 | - | .274 | -.608\*\*\* |
| Self-blame | .190 | .013 | .142 | .061 | -.053 | .274 | - | -.311\* |
| Resilience | -.549\*\*\* | .110 | -.161 | -.262 | .017 | -.608\*\*\* | -.311\* | - |

\*. Correlation is significant at the .05 level (two-tailed)

\*\*. Correlation is significant at the .01 level (two-tailed)

\*\*\*. Correlation is significant at the .001 level (two – tailed). Note: IES-R, Impact Events Scale Revised (Weiss & Marmar, 1997); Ad Cope, Adaptive coping scales of the Brief Cope, (Carver, 1997 ); Mal Cope, Maladaptive coping scales of the Brief Cope, (Carver, 1997); PTCI, Post Traumatic Cognitions Inventory (Foa, Clark, Tolin & Orsillo, 1999): CD-RISC, (Connor Davidson Resilience Scale, 2003).

Normality checks were completed including homoscedasticity, multicollinearity, residuals for bias and independence of errors. The Durbin Watson test showed the residuals were independent, and the VIF and Tolerance statistics showed there was no multicollinearity between the variables. The assumptions needed for multiple regression were met, and there were no significant violations in the data (see appendix 8). The results of the initial multiple regression analysis are shown in table 3. The enter method was used and initially all the variables were entered: age, gender, length of time since the traumatic event, adaptive coping, maladaptive coping, self-blame cognitions and resilience. Total PTSD symptoms was entered as the criterion variable. The model was significant (F (7, 79) = 11.596, p< 0.001), and accounted for 51.4% (R2) of the variance, 47.1% when adjusted (adjR2). Maladaptive coping styles was the only significant predictor of PTSD symptoms. The findings, therefore, show partial support for the study hypothesis that maladaptive coping style would predict PTSD symptoms, though adaptive coping styles, self-blame cognitions, resilience, age, gender and length of time since the traumatic event did not predict PTSD symptoms.

**Table. 3**

*Summary of Initial Regression Analysis using the enter method: Unstandardised and Standardised Coefficients, confidence intervals reported in parentheses and P-Values of variables as predictors of PTSD symptoms*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B | SE B | β | p |
| Constant | 12.9  (-23.10, 48.47) | 17.98 |  | .48 |
| Age | 0.13  (-2.28, 0.54) | 0.21 | .06 | .53 |
| Gender | 4.93  (-3.98, 13.83) | 4.47 | .09 | .27 |
| Length of time since event | -0.00  (-0.04, 0.03) | 0.02 | -.01 | .92 |
| Adaptive Coping | -0.47  (-0.96, 0.03) | 0.25 | -.16 | .07 |
| Maladaptive Coping | 1.83  (1.20, 2.48) | 0.32 | .62\*\*\* | .001 |
| Self-blame Cognitions | -0.70  (-2.83, 1.43) | 1.07 | -.05 | .51 |
| Resilience | -0.19  (-0.43, -0.05) | 0.12 | -.17 | .12 |

*Note.* R2 = .51.4, Adjusted R2 = .47.1

All the non-significant predictors were then removed to improve the precision of the model, and the multiple regression analysis was re-run with just maladaptive coping to examine the predictive power of this variable in predicting PTSD symptoms (see Table 4). The model was significant (F (1, 85) = 71.204, p< 0.001), and accounted for 45.6% (R2) of the variance, and 44.9% when adjusted (adjR2).

**Table. 4**

*Summary of Multiple Regression Analysis using the enter method: Unstandardised and Standardised Coefficients and P-Values of maladaptive coping variable as a predictor of PTSD symptoms*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B | SE B | β | p |
| Constant | -5.61  (-18.04, 6.81) | 6.25 |  | .37 |
| Maladaptive  Coping | 2.01  (1.54, 2.48) | 0.24 | .68\*\*\* | .001 |

*Note.* R2 = .45.6, Adjusted R2 = .44.9

# **Discussion**

## **Summary of Findings**

The present study examined the relationship between coping styles, self-blame cognitions and levels of resilience in predicting PTSD symptoms. The aim of the research was to identify which variables predicted PTSD symptoms, and which variables were the strongest predictor within a mixed trauma sample. The study also examined the relationship between age, gender and length of time since the traumatic event in predicting PTSD symptoms. The multiple regression analysis identified maladaptive coping was the only significant predictor of PTSD symptoms in this study. The research hypothesis was somewhat supported as it was predicted maladaptive coping would predict PTSD symptoms. However none of the other variables reached significance, and the remaining hypothesises was not supported as adaptive coping, self-blame cognitions, resilience, age, gender and length of time did not predict PTSD symptoms. These findings are consistent with the inconsistencies in the research base regarding the role of these predictors, and confirm the lack of clarity regarding the role of these predictor variables in the PTSD literature and these variables need understanding in more depth.

Age, gender and length since the traumatic event did not predict PTSD symptoms, which is inconsistent with a wealth of previous research [10-16]. However there has been some research to show these variables have not predicted PTSD symptoms [13, 103]. Surprisingly gender did not predict PTSD symptoms, as women have been found to be such a consistent predictor of PTSD symptoms previously [4, 10, 15]. One potential explanation for this is the use of online social media to collect the responses. There has been a growth in online research in recent times, and perhaps this method of data collection allows the participant greater distance from the researcher and additional reassurance of anonymity. This type of research may enable men to be more open about their distress. It appears important to explore the use of online research and the difference between face to face research, and the possible function an online survey provides.

Resilience did not predict PTSD symptoms which is inconsistent with a number of previous studies [28-31]. However, there have been some research showing levels of resiliency did not predict PTSD symptoms [104,105]. Possible reasons for the inconsistency are twofold. The impact of military personnel and the problems with measurement. A large proportion of research into the role resilience plays and its ability to predict PTSD symptoms has been completed in military samples [31, 32]. Therefore resiliency may be more important in military samples, and the significance of resiliency in such a population has been acknowledged by the army [31]. Interventions designed to improve resiliency such as the (CSF) [33], therefore may be more important in a military population. Previous research has also questioned the ability of the CD-RISC and its ability to successfully measure resiliency, due to the complexity of this construct and the difficulty is using a questionnaire to accurately measure such a complex concept [104].

Similar to resilience in this sample self-blame cognitions did not predict PTSD symptoms. The evidence base on self-blame cognitions is inconsistent, and these findings confirm previous inconsistencies found. Several studies have found self-blame cognitions have predicted PTSD symptoms [45–49], other researchers have found self-blame cognitions have not predicted PTSD symptoms [34, 106, 107]. The inconsistencies around self-blame cognitions appear to be related to context, and the specific type of trauma experience. Whilst in sexual abuse and physical assault survivors self-blame cognitions appear more pertinent [45, 48, 49], in physical health traumas self-blame cognitions appear to not predict PTSD symptoms [54, 107].

It is possible physical health traumas could have similarities with natural disasters and viewed as uncontrollable events, rather than traumas of an interpersonal nature where an individual’s behaviour or actions could be seen as possible causes of the traumatic event [107]. Researchers have reported specific forms of dysfunctional cognitions related to the traumatic event, can differ depending on the nature of the traumatic event [106]. Therefore, as the sample in the present study consisted of a mixed trauma population, this could possibly explain why self-blame cognitions did not predict PTSD symptoms.

As with previous research adaptive coping strategies did not predict PTSD symptoms [81,108], however many studies have found adaptive coping has predicted these symptoms [76, 77]. Potentially the reason why an adaptive coping style did not predict a reduction in PTSD symptoms as hypothesised, is that adaptive coping styles need the availability of other factors for such coping strategies to be successfully implemented [81]. To use such active coping strategies, as being able to express how you feel and having available both social and instrumental support, requires the availability of social support and resources to use such strategies [81]. Having the availability of social support and material resources can help an individual have a sense of control over their situation [81]. Furthermore, when seeking social support which results in an unsupportive response, can lead to increased distress for the individual [109]. In the present study the researcher did not record information such as the participant’s resources, and a possible lack in such resources could have explained the findings. The findings suggest adaptive coping needs to be understood in more depth, including the extent to which such coping strategies and the implementation of them requires support from others as opposed to an individual being able to implement them successfully alone.

In the initial multiple regression analysis when all the predictor variables were entered, maladaptive coping styles accounted for 51.4% of the variance in predicting PTSD symptoms. Upon all non-significant variables being removed maladaptive coping accounted for a large proportion of the variance 45.6%, highlighting the importance and predictive ability of maladaptive coping in predicting PTSD symptoms. These results show the sizable effect maladaptive coping has in predicting PTSD symptoms in this sample, and how meaningful maladaptive coping could be. The magnitude of this finding is even more evident when comparing the variance maladaptive coping accounted for in this study with previous research. Previous researchers have found in their research 21.4% and 37% of the variance in predicting PTSD symptoms was accounted for by two predictor variables, one being maladaptive coping [110- 112]. The impact maladaptive coping has in the sample is extensive, and again this is illustrated by previous research finding less variance was accounted for in their study 37.4%, and this model had four predictor variables [113]. When comparing the amount of variance maladaptive coping accounted for as a single predictor compared to other research, highlights the true effect this variable had in the present study.

The finding regarding maladaptive coping and its predictive power is consistent with previous research and theories of PTSD, linking healthy adaptation to traumatic events with variances in coping style [1]. As psychological variables are more easily modified then demographic variables, it is imperative to identify such variables as possible areas to focus on during interventions [4].

This finding is consistent with previous research demonstrating maladaptive coping styles predict PTSD symptoms [63-67]. Such maladaptive styles can be passive and concentrate on emotion-focussed attempts, and it could be expected that such a style is related to the development and maintenance of PTSD symptoms [114, 115]. Maladaptive strategies in the short term can help to cope with the immediate aftermath of the traumatic event, however these strategies become dysfunctional in the long term and can prolong distress [113]. Individuals may use such strategies in the short term due to the often chaotic and uncontrollable nature of an individual’s response, which relies on the applicability of such strategies to help cope and regain some level of control [72].

The use of avoidance; trying to avoid or push away certain thoughts can increase the frequency and intensity of such thoughts [116]. This can result with an individual experiencing increased distress, rather than coping effectively. If an individual continues to employ such strategies avoidance of triggers could impact upon daily functioning, which in turn could increase the experience of avoidance and intrusion symptoms [117]. Active thought suppression is another maladaptive coping strategy individuals can deploy after experiencing a traumatic event as described in a model of PTSD [1]. Often when an individual tries to supress such thoughts in a similar way to avoiding them, this can result in an increase in distress as often it can make the thought more apparent. These thoughts can then help to maintain PTSD symptoms by creating negative emotions, and by promoting the use of maladaptive coping strategies [1]. Maladaptive strategies of self-criticism and unproductive counterfactual thinking, can contribute to the continued experience of PTSD symptoms [118].

Maladaptive coping strategies can be used when an individual still perceives there is a sense of threat evident, and the threat needs controlling [1]. Individuals can use maladaptive coping strategies to try and avoid the sense of threat and control it, and can chose from a range of strategies depending on the individual’s belief about how best to cope successfully with the trauma [1]. Such control strategies can maintain PTSD symptoms by producing such symptoms, stopping individuals from changing their appraisals regarding the trauma and stopping change in the individual’s memory of the event [1]. Therefore, when individuals use such maladaptive coping strategies e.g. avoidance, the research and theory detailed above demonstrates how PTSD symptoms can be produced, and more importantly maintained.

A cognitive model of PTSD describes how the sense of threat after an event can lead to the occurrence of PTSD symptoms [1]. Appraisals of the trauma and or its sequel is a crucial process maintaining a sense of threat. Such appraisals can maintain PTSD symptoms as these promote the individual to use dysfunctional coping strategies, which then exacerbates symptoms [1]. Whilst some of the findings from this research offer support to the model regarding the role coping strategies can play in the maintenance and development of symptoms, some inconsistencies remain.

## **Limitations**

This study was slightly under-powered for a medium effect size, and multiple regression analysis. The lower number of participants recruited for this study is likely to have limited the results. A slightly larger sample would be required to adequately investigate the true predictive power of the predictor variables to PTSD symptoms. In addition the cross-sectional nature of the design means no conclusions can be made regarding order of effects, or causality.

Concerns have been raised regarding the factorial stability of the PTCI measure [106]. Previous research has demonstrated a lack of concurrent validity regarding the self-blame measure, questioning its ability to measure self-blame cognitions [106]. It has been suggested the self-blame subscale should be developed considering the role the nature of the traumatic event plays, and the amount of blame could be dependent on the nature of the event and whether this influences the psychometric properties of the scale [106].

Using anonymous online social media as a method of data collection involves self-identification by individuals that they meet the inclusion/exclusion criteria. There is no way of knowing that the individual has provided true demographic information [119]. Online research requires and individual to have access to a computer, and many older individuals, individuals of a minority background and people with limited income may not have access to such resources [120]. Therefore this method of data collection could have led to a nonrepresentative sample.

## **Future Research**

The findings of the present study suggest the question needs exploring in further detail, and there may be specific relationships between the variables and the nature of the traumatic event. The findings of this study and previous research [106, 107], would suggest when exploring the relationship between psychological variables and PTSD symptoms, context is extremely important including the specific nature of the trauma and the participant population being researched. In regards to the experience of distress again the context appears to be important, and future research could focus on exploring the variables included in this study however with different populations where the sample consists of individuals who have experienced the same type of trauma, rather than a mixed trauma sample. Future research could then establish which factors are important in regards to the development and maintenance of PTSD symptoms in specific trauma populations.

Due to the increase in online research and the possibility individuals may be dishonest regarding their demographic information [119], future research could attempt to explore and understand the validity of online research and the extent to which people may be dishonest. Using a questionnaire based design does not access the reality and construction of the individual’s experience [121]. Using this design is helpful to get an overall sense of the issues involved, however this information still remains distant from the individual’s life. Therefore, further research could attempt to explore the experience and understanding people themselves have of their traumatic event.

## **Clinical Implications**

Findings of the present study demonstrate the differences in coping style can predict PTSD symptoms, in particular maladaptive coping styles. Clinically it may be useful to start with identifying the individual’s coping style, as this would provide information to clinicians regarding the individual’s coping strategies. Upon identifying an individual’s coping style/strategies if these appear to be maladaptive, an initial starting point could focus on psycho-education regarding the implications such strategies could have. Interventions could then focus on any dysfunctional strategies that either stop memory elaboration, or intensify symptoms [1]. Cognitive behavioural approaches including cognitive processing and cognitive restructuring could be used to help with such aims [1, 122]. Additionally reducing the reliance of maladaptive strategies by increasing positive approaches to coping, and teaching individual’s alternative ways to cope with symptoms may also reduce their distress [67, 123].

The study’s findings suggest in order to maximise clinical relevance, the clinician needs to take into consideration the specific nature of the individual’s traumatic event. This could then provide important information regarding the type of intervention an individual would need, and the content of the intervention that should be delivered depending on the specific context and type of trauma the individual has experienced. This will ensure clinical practice is more fully based on the evidence emerging in this field.

# **Conclusion**

This study investigated the relationship between age, gender, length of time since the traumatic event, coping styles, self-blame cognitions and levels of resilience, in predicting PTSD symptoms a combination that had not been previously explored. Maladaptive coping was the only significant predictor of PTSD symptoms, and this finding adds to the evidence base regarding the strength of maladaptive coping in predicting such symptoms. Further research is needed with different samples, to explore the context specific nature these variables have in predicting PTSD symptoms.

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# **Appendix 1. Nature of traumatic events**

|  |  |  |
| --- | --- | --- |
| *Nature of traumatic event* | Frequency of the event | Percentage of the sample\* |
| Serious injury | 3 | 3.8% |
| War | 4 | 4.9% |
| Death | 23 | 28.4% |
| Medical event | 25 | 30.9% |
| Sexual abuse | 10 | 12.3% |
| Motor vehicle accident | 8 | 9.9% |
| Domestic violence | 2 | 2.5% |
| Suicide | 1 | 1.2% |
| Taken hostage | 1 | 1.2% |
| Physical assault | 4 | 4.9% |

\*Percentage of sample that recorded nature of traumatic event.

# **Appendix 2. Advert for study**

Have you experienced a traumatic event?

Are you aged 18 or over?

Are you living in the UK?

Please note that exposure to the following information/material in the provided link could cause distress and can trigger psychological discomfort for some. Individuals’ who have previously or are currently undergoing treatment for PTSD or other related difficulties should refrain from participation, due to the possible adverse effect of participation on your treatment.

If these apply to you and you would like to take part in research that will help others to know what factors can predict PTSD symptoms and potentially help others that have experienced a traumatic event, then please click the link below.

To find the full list of traumatic events please click the link below……

# **Appendix 3. List of qualifying traumatic events**

**Have you directly experienced any of the following events(s)?**

Exposure to actual or threatened death Serious Injury

Threatened or actual sexual violence/violation Kidnapped

Threatened or actual physical assault Torture

Exposure to war as a combat or civilian Taken hostage

Terrorist attack Incarceration as a prisoner of war Severe accident

Natural or human made disasters Event causing head trauma Serious motor vehicle accident

Sudden catastrophic medical event

Threatened or actual violent assault

Inappropriate sexual experience – without violence or injury

**Have you witnessed in person any of the following event(s) as it has occurred to others?**

Observing threatened or serious injury Unnatural death

Exposure to actual or threatened death War or disaster Physical or sexual abuse/violence Severe accident

Severe domestic violence

Medical catastrophe in one’s child

**Have you learnt that the following traumatic event(s) has happened to a close family member of close friend?**

Exposure to actual or threatened death that was either violent or accidental

Violent personal assault Suicide

Serious accident Serious Injury

Sexual violence/violation

**Have you experienced extreme or repeated exposure to adverse details of any of the following traumatic event(s)? – (e.g. first responders collecting human remains; police officers repeatedly exposed to details of child abuse)** (Exposure does not apply through electronic media, television, films or pictures, unless the exposure is work related)

Exposure to actual or threatened death Serious injury

Sexual violence/violation

**If you have experienced any of the events listed above, and you are interested in taking part in the research please now go on to read the participant information sheet which will provide you with more details. Thank you.**

# **Appendix 4. Participant information sheet**

**Participant Information Sheet**

**Title of project:** The relationship between individual coping styles, reported levels of resilience and self-blame cognitions as predictors of post-traumatic stress disorder symptoms.

**Name of researcher:** Abigail Robinson

**Invitation and Summary**

We would like to invite you to take part in our research study. We want to find out what can predict individuals will experience Post-Traumatic Stress disorder (PTSD) symptoms after a traumatic event. If you would like to join the study this is completely up to you, but before you make your decision we would like you to understand why the research is being done, and what it involves. You may also wish to share and discuss this with a member of your family, or a friend. This information sheet will be made available to you again after you have completed the questionnaires, so you can take note of any email addresses or contact details you may need. When you have started to complete the questionnaires you can also press the back button at the bottom of the page to view this information sheet again for any details you might need.

You have been invited to participate in this study because you have self-identified experiencing a recognised traumatic event listed on the previous page, and you have identified that you have not engaged or are currently not engaging in psychological intervention sessions related to your trauma/PTSD difficulties.

**Part 1 – What is involved**

**What is the purpose of the study?**

The study aims to explore the relationship between self-blame cognitions, reported levels of resilience and coping styles, as predictors of PTSD symptomatology. The study looks at whether these factors can increase or decrease the number of symptoms you may have.

**Do I have to take part?**

No, your participation is entirely voluntary. This information sheet provides you with all the information you need to help you decide if you want to participate. You can request a copy of this information sheet by emailing the lead researcher, using the email address stated in part 3. You can change your mind during the study, and withdraw without giving a reason up to two weeks after participating using your unique ID number.

**What do I have to do?**

If you agree to take part in the study it would involve you completing four online questionnaires. These questionnaires will take you around 10-15 minutes in total to complete, and you are asked not to consider your answers for too long.

You will also be asked to complete a demographic information sheet which will ask you to provide your age, gender and the length of time that has passed since you experienced your traumatic event, for research purposes only.

**What are the possible benefits of taking part?**

We cannot guarantee the study will help you, and we are unsure what the outcome of the research will be. This is why we are conducting the research to try and help us to understand what factors can predict individuals will experience PTSD symptoms. The results may help services to support other people who have experienced a traumatic event, and provide a service that could potentially improve the recovery for these individuals.

**What are the possible risks of taking part?**

If you decide to take part in the study this will involve you spending some time thinking about your traumatic event. When completing the questionnaires this could make you feel upset, angry, anxious or low in mood. If you have any of these feelings and want to speak to someone, there is a list of contacts at the end of this information sheet with possible sources of support. If at any point you contact the researcher and express any risk to yourself or others, the academic supervisor will be informed.

**Will my taking part in the study be kept confidential?**

Yes. All the data collected from you will remain confidential, and will be safeguarded. You will not be asked to provide any identifiable information. The data will not be traceable to any participant, as no names or any other personal details will be collected or appear in any publications as a result of this study. You will be given a unique participant number by the researcher, and this number will be used on all the data collected throughout the study associated with you.

If you do want to take part in the study please **read part** two which provides you with a little more detail about the study.

**Part 2 – Supporting Information**

**What will happen if I choose to stop taking part in the study?**

You can withdraw from the study up to two weeks after you have completed the questionnaires. Please take note of your ID number and keep this safe. You can contact the researcher quoting your ID number, and your information will be removed from the study and destroyed. Your unique ID number is:

(*Unique ID number will be automatically generated and entered here by Qualtrics)*

**Will my information be kept confidential?**

Yes. Your responses will be saved electronically on a password protected secured database on a laptop computer, and on a password protected encrypted memory stick. The data collected will only be accessible to the researcher and research team, and will be stored for ten years for academic purposes. The data will be destroyed following research guidelines.

**What will happen to the results of this study?**

Your results will only be used for this study. Participants can often want to find out the results of the study, and if you do you can contact the researcher for a summary of the final report. The contact details are provided at the end of this information sheet. The results will be written up for my thesis for my Doctorate in Clinical Psychology, and submitted to a peer-reviewed journal for publication.

**Who has reviewed the study?**

The study has been subject to scientific review by Staffordshire University, who will also sponsor this study. Staffordshire Universities Ethics Committee have approved this study.

If you have any problems or concerns about any part of this study, you should ask to speak to the main researcher Abigail Robinson who will try and help. The researcher will do their best to answer any questions, and can be contacted on XXXXX. Alternatively, if you have any issues regarding the researcher, or are still unhappy or wish to complain you can contact the supervisor involved: Dr Peter Oakes on XXXXX.

**Part 3 – Further information and contact details**

Before deciding if you want to take part in the research you may want to discuss the study and find out more information. You can contact the main researcher on:

Abigail Robinson – lead researcher: XXXXX. If you feel you would like to talk to someone further regarding your traumatic event you can contact your **GP**. Alternatively, please see below contacts for possible sources of support.

**Samaritans - Email:** [**jo@samaritans.org**](mailto:jo@samaritans.org)**, Telephone: 116 123**

**Mind – Email:** [**info@mind.org.uk**](mailto:info@mind.org.uk)**, Telephone: 0300 123 3393**

**ASSIST Trauma Care - Email:** [**http://assisttraumacare.org.uk**](http://assisttraumacare.org.uk)**, Telephone: 01788 560800**

**Anxiety UK - Email:** [**https://www.anxietyuk.org.uk**](https://www.anxietyuk.org.uk)**, Telephone: 0844 477 5774**

**Birth Trauma Association - Email:** [**http://www.birthtraumaassociation.org.uk/**](http://www.birthtraumaassociation.org.uk/)

**Combat Stress – Email:** [**https://www.combatstress.org.uk**](https://www.combatstress.org.uk)**, Telephone: 0800 1381 619**

**Victim Support - Email:** [**https://www.victimsupport.org.uk**](https://www.victimsupport.org.uk)**, Telephone: 0808 169 9111**

# **Appendix 5. Demographic information sheet**

**Demographic Information Sheet**

Gender: (male, female, prefer not to say)

Age: (years)

Date of the traumatic event. If you have experienced more than one traumatic event, record the date of the event you found the **most** traumatic: (MM/YYYY)

Date completed the questionnaires: (DD/MM/YYYY)

**Instructions**

Please now go on to complete the **four** questionnaires. If you have experienced more than one traumatic event please complete the **Impact of Event Scale – Revised**, **Posttraumatic cognitions inventory (ptci)** and the **Brief COPE** questionnaires, in regards to the event you found the **most** traumatic.

# **Appendix 6. Questionnaire pack**

**IMPACT OF EVENTS SCALE-Revised (IES-R)**

INSTRUCTIONS: Below is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you DURING THE PAST SEVEN DAYS with respect to \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (event) that occurred on \_\_\_\_\_\_\_\_\_\_\_\_\_

(date). How much have you been distressed or bothered by these difficulties?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Not at all** | **A little bit** | **Moderately** | **Quite a bit** | **Extremely** |
| Any reminder brought back feelings about it | 0 | 1 | 2 | 3 | 4 |
| I had trouble staying asleep | 0 | 1 | 2 | 3 | 4 |
| Other things kept making me think about it | 0 | 1 | 2 | 3 | 4 |
| I felt irritable and angry | 0 | 1 | 2 | 3 | 4 |
| I avoided letting myself get upset when I thought about it or was reminded of it | 0 | 1 | 2 | 3 | 4 |
| I thought about it when I didn’t mean to | 0 | 1 | 2 | 3 | 4 |
| I felt as if it hadn’t happened or wasn’t real | 0 | 1 | 2 | 3 | 4 |
| I stayed away from reminders about it | 0 | 1 | 2 | 3 | 4 |
| Pictures about it popped into my mind | 0 | 1 | 2 | 3 | 4 |
| I was jumpy and easily startled | 0 | 1 | 2 | 3 | 4 |
| I tried not to think about it | 0 | 1 | 2 | 3 | 4 |
| I was aware that I still had a lot of feelings about it, but I didn’t deal with them | 0 | 1 | 2 | 3 | 4 |
| My feelings about it were kind of numb | 0 | 1 | 2 | 3 | 4 |
| I found myself acting or feeling as though I was back at that time | 0 | 1 | 2 | 3 | 4 |
| I had trouble falling asleep | 0 | 1 | 2 | 3 | 4 |
| I had waves of strong feelings about it | 0 | 1 | 2 | 3 | 4 |
| I tried to remove it from my memory | 0 | 1 | 2 | 3 | 4 |
| I had trouble concentrating | 0 | 1 | 2 | 3 | 4 |
| Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart | 0 | 1 | 2 | 3 | 4 |
| I had dreams about it | 0 | 1 | 2 | 3 | 4 |
| I felt watchful and on-guard | 0 | 1 | 2 | 3 | 4 |
| I tried not to talk about it | 0 | 1 | 2 | 3 | 4 |

**Total IES-R Score: -**

**Brief COPE**

These items deal with ways you've been coping with the stress in your life since your traumatic event. There are many ways to try to deal with problems.

These items ask what you've been doing to cope with this one. Obviously, different people deal with things in different ways, but I'm interested in how you've tried to deal with it. Each item says something about a particular way of coping. I want to know to what extent you've been doing what the item says. How much or how frequently.

Don't answer on the basis of whether it seems to be working or not-just whether or not you're doing it. Use these response choices. Try to rate each item separately in your mind from the others.

Make your answers as true FOR YOU as you can.

**1 =** I haven't been doing this at all

**2 =** I've been doing this a little bit

**3 =** I've been doing this a medium amount

**4 =** I've been doing this a lot

**Please write your**

**answer below**

|  |  |
| --- | --- |
| 1. I've been turning to work or other activities to take my mind off things. |  |
| 1. I've been concentrating my efforts on doing something about the situation I'm in. |  |
| 1. I've been saying to myself "this isn't real”. |  |
| 1. I've been using alcohol or other drugs to make myself feel better. |  |
| 1. I've been getting emotional support from others. |  |
| 1. I've been giving up trying to deal with it. |  |
| 1. I've been taking action to try to make the situation better. |  |
| 1. I've been refusing to believe that it has happened. |  |
| 1. I've been saying things to let my unpleasant feelings escape. |  |
| 1. I've been getting help and advice from other people. |  |
| 1. I've been using alcohol or other drugs to help me get through it. |  |
| 1. I've been trying to see it in a different light, to make it seem more positive. |  |
| 1. I've been criticizing myself. |  |
| 1. I've been trying to come up with a strategy about what to do. |  |
| 1. I've been getting comfort and understanding from someone. |  |
| 1. I've been giving up the attempt to cope. |  |
| 1. I've been looking for something good in what is happening. |  |
| 1. I've been making jokes about it. |  |
| 1. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping. |  |
| 1. I've been accepting the reality of the fact that it has happened. |  |
| 1. I've been expressing my negative feelings. |  |
| 1. I've been trying to find comfort in my religion or spiritual beliefs. |  |
| 1. I've been trying to get advice or help from other people about what to do. |  |
| 1. I've been learning to live with it. |  |
| 1. I've been thinking hard about what steps to take. |  |
| 1. I've been blaming myself for things that happened. |  |
| 1. I've been praying or meditating. |  |
| 1. I've been making fun of the situation. |  |

**Posttraumatic cognitions inventory (ptci)**

We are interested in the kind of thoughts which you may have had after a traumatic experience. Below are a number of statements that may or may not be representative of your thinking. Please read each statement carefully and tell us how much you AGREE or DISAGREE with each by putting the appropriate number between 1 & 7 in the box to the right of the statement. People react to traumatic events in many different ways. There are no right or wrong answers to these statements.

**1 2 3 4 5 6 7**

totally disagree disagree neutral agree agree totally

disagree very much slightly slightly very much agree

very much slightly slightly very much agree

|  |  |  |
| --- | --- | --- |
| 1. | The event happened because of the way I acted |  |
| 2. | The event happened to me because of the sort of person I am |  |
| 3. | Somebody else would have stopped the event from happening |  |
| 4. | Somebody else would have not gotten into this situation |  |
| 5. | There is something about me that made the event happen |  |

**Connor – Davidson Resilience Scale 25 (CD-RISC-25)**

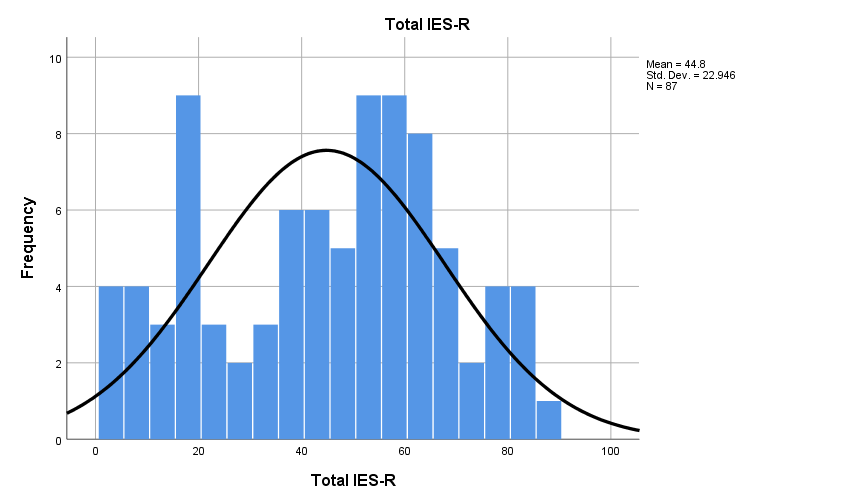
Unable to produce measure due to copyright laws.

# **Appendix 7. Ethical approval for study**

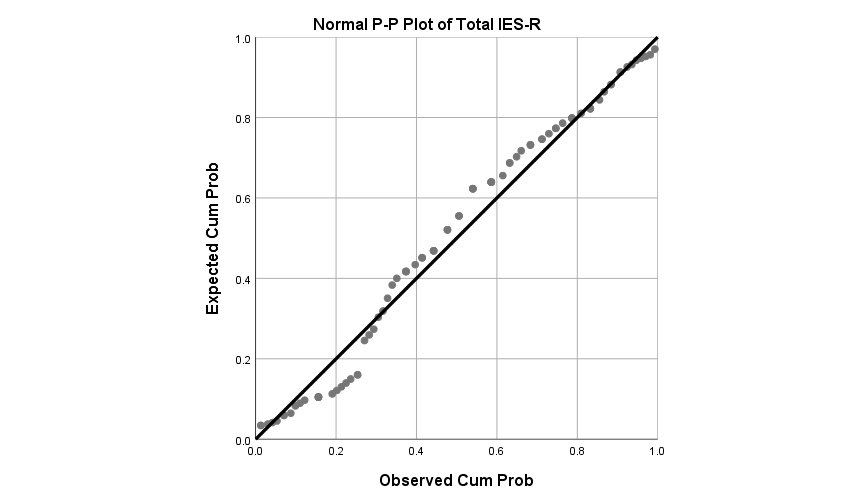
****

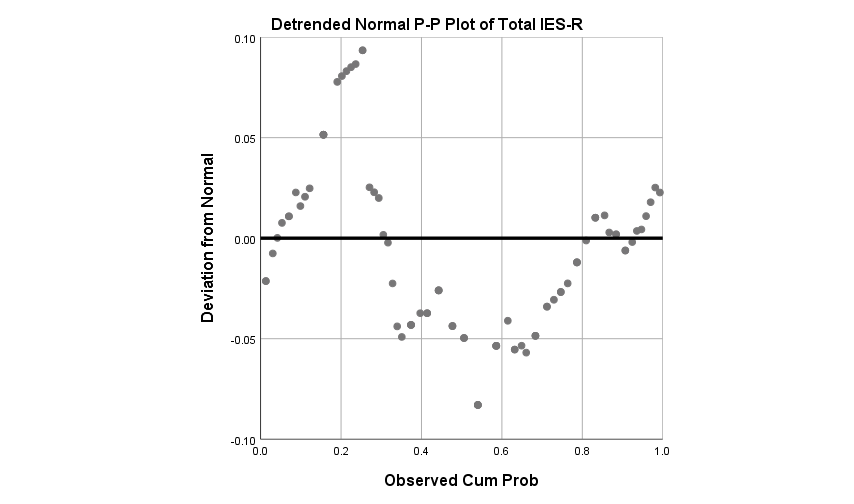
# **Appendix 8. Histogram and P-Plot IES-R measure**

*Figure* 1.Histogram demonstrating normal distribution

****

*Figure 2*. P-P plot demonstrating no violation of normality in IES-R





# **Appendix 9. Author Guidelines for submission to Journal of Traumatic Stress Disorder and Treatment**

**Article Preparation Guidelines**

**Manuscript title:** The title should be limited to 25 words or less and should not contain abbreviations. The title should be a brief phrase describing the contents of the paper.

**Author Information:**Complete name and affiliation of all the authors, including contact details of corresponding author (Telephone, Fax and E-mail address).  
**Abstract:**The Abstract should be informative and completely self-explanatory, briefly present the topic, state the scope of the experiments, indicate significant data, and point out major findings and conclusions. The abstract should summarize the manuscript content in 300 words or less. Standard nomenclature should be used and abbreviations should be avoided. The preferable format should accommodate a description of the study background, methods, results and conclusion. The Abstract should be followed by a list of keywords (3-10) and abbreviations.

**Text:**

**Introduction:** The introduction should set the tone of the paper by providing a clear statement of the study, the relevant literature on the study subject, and the proposed approach or solution. The introduction should be general enough to attract a reader’s attention from a broad range of scientific disciplines.

**Materials and Methods:** This section should provide a complete overview of the design of the study. Detailed descriptions of materials or participants, comparisons, interventions and types of analysis should be mentioned. However, only new procedures should be described in detail; previously published procedures should be cited, and important modifications of published procedures should be mentioned briefly. Capitalize trade names and include the manufacturer's name and address.

**Results:**The Results section should provide complete details of the experiment that are required to support the conclusion of the study. The results should be written in the past tense when describing findings in the authors' experiments. Previously published findings should be written in the present tense. Results and Discussion may be combined or in a separate section. Speculation and detailed interpretation of data should be included in the Discussion section, not in the Results section.

**Acknowledgement:**  
This section includes acknowledgment of people, grant details, funds, etc.  
**Note:** If an author fails to submit his/her work as per the above instructions, they are pleased to maintain clear titles namely headings, subheadings and respective subtitles.

Only published or accepted manuscripts should be included in the reference list. Meetings abstracts, conference talks, or papers that have been submitted but not yet accepted should not be cited. All personal communications should be supported by a letter from the relevant authors.

SciTechnol uses the numbered citation (citation-sequence) method. References are listed and numbered in the order that they appear in the text. In the text, citations should be indicated by the reference number in brackets. Multiple citations within a single set of brackets should be separated by commas. A range should be given where there are three or more sequential citations. Example: "... now enable biologists to simultaneously monitor the expression of thousands of genes in a single experiment [1, 5-7, 28]." Make sure the parts of the manuscript are in the correct order for the relevant journal before ordering the citations. Figure captions and tables should be at the end of the manuscript.

Because all references will be linked electronically as much as possible to the papers they cite, proper formatting of the references is crucial. Please use the following style for the reference list:   
**Examples:**

**Published Papers**

1. Laemmli UK (1970) Cleavage of structural proteins during the assembly of the head of bacteriophage T4. Nature 227: 680-685.
2. Brusic V, Rudy G, Honeyman G, Hammer J, Harrison L (1998) Prediction of MHC class II- binding peptides using an evolutionary algorithm and artificial neural network. Bioinformatics 14: 121-130.
3. Doroshenko V, Airich L, Vitushkina M, Kolokolova A, Livshits V, et al. (2007) YddG from Escherichia coli promotes export of aromatic amino acids. FEMS Microbiol Lett 275: 312-318.  
   **Note:** Please list the first five authors and then add "et al." if there are additional authors.

**Books**

1. Baggot JD (1999) Principles of drug disposition in domestic animals: The basis of Veterinary Clinical Pharmacology. (1st edtn), W.B. Saunders company, Philadelphia, London, Toranto.
2. Zhang Z (2006) Bioinformatics tools for differential analysis of proteomic expression profiling data from clinical samples. Taylor & Francis CRC Press.

**Conferences**Hofmann T (1999) The Cluster-Abstraction Model: unsupervised learning of topic hierarchies from text data. Proceedings of the International Joint Conference on Artificial Intelligence.

**Tables:**

These should be used at a minimum and designed as simple as possible. We strongly encourage authors to submit tables as .doc format. Tables are to be typed double-spaced throughout, including headings and footnotes. Each table should be on a separate page, numbered consecutively in Arabic numerals and supplied with a heading and a legend. Tables should be self-explanatory without reference to the text. Preferably, the details of the methods used in the experiments should be described in the legend instead of in the text. The same data should not be presented in both table and graph form or repeated in the text. Cells can be copied from an Excel spreadsheet and pasted into a word document, but Excel files should not be embedded as objects.   
Note: If the submission is in PDF format, the author is requested to retain the same in .doc format in order to aid in completion of process successfully.

**Figures:**

The preferred file formats for photographic images are .doc, TIFF and JPEG. If you have created images with separate components on different layers, please send us the Photoshop files.

All images MUST be at or above [intended display size](http://www.pubmedcentral.nih.gov/about/intended_disp_size.html), with the following image resolutions: Line Art 800 dpi, Combination (Line Art + Halftone) 600 dpi, Halftone 300 dpi. See the [Image quality specifications chart](http://www.pubmedcentral.nih.gov/about/image_quality_table.html) for details. Image file must be cropped as close to the actual image as possible.

Use Arabic numerals to designate figures and upper case letters for their parts (Figure 1). Begin each legend with a title and include sufficient description so that the figure is understandable without reading the text of the manuscript. Information given in legends should not be repeated in the text.

**Figure legends** should be typed in numerical order on a separate sheet.

**Tables and Equations as Graphics**

If equations cannot be encoded in MathML, submit them in TIFF or EPS format as discrete files (i.e., a file containing only the data for one equation). Only when tables cannot be encoded as XML/SGML they can be submitted as graphics. If this method is used, it is critical that the font size in all equations and tables is consistent and [legible](http://www.pubmedcentral.nih.gov/about/legible.html) throughout all submissions.

* [Suggested Equation Extraction Method](http://www.pubmedcentral.nih.gov/about/equation_process.html)
* [Table Specifications](http://www.pubmedcentral.nih.gov/about/tablespec.html)
* [Equation Specifications](http://www.pubmedcentral.nih.gov/about/equationspec.html)

**Supplementary Information**

Discrete items of the Supplementary Information (for example, figures, and tables) referred to an appropriate point in the main text of the paper.  
Summary diagram/figure included as part of the Supplementary Information (optional).

All the Supplementary Information must be supplied as a single PDF file and file size should be within the permitted limits. Images should be maximum of 640 x 480 pixels (9 x 6.8 inches at 72 pixels per inch) in size.

**Paper Three: Executive Summary**

The relationship between individual coping styles, reported levels of resilience and self-blame cognitions as predictors of post-traumatic stress disorder symptoms.

**Word Count:** 2120(including tables and figures and excluding references and appendixes as per award requirements)

**Contents page**

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# **Summary**

Experiencing a traumatic event is surprisingly common and in 2016 the Fundamental Facts about Mental Health stated 31.15% of men, and 31.2% of women who live in England had experienced such an event (Fear, Bridges, Hatch, Hawkins & Wessely, 2016). Upon experiencing a traumatic event people can react in different ways. Most people appear to be ok, however some people can have post-traumatic stress disorder (PTSD) symptoms after experiencing a traumatic event (Rothbaum, Foa, Riggs, Murdock & Walsh, 1992).

Researchers have investigated whether it is possible to identify the factors that might predict whether people will have PTSD symptoms. These include a range of psychological and demographic factors (Brewin, Andrews & Valentine, 2000; Ozer, Best, Lipsey & Weiss, 2003). Demographic factors found to predict PTSD symptoms include age, gender and length of time since the traumatic event (Kelly, Scott & Bryan, 2014; Brewin, Andrews & Valentine, 2000; Harris, Young, Rae, Jalaludin & Solomon; 2008). Psychological factors found to predict PTSD symptoms include coping styles, self-blame and resilience (Shenesey & Langhinrichsen-Rohling, 2015; Filipas & Ullman, 2006; Ullman & Relyea, 2016). Coping styles are the strategies individuals use to try and manage stressful events (Lazarus & Folkman, 1984). These strategies can either be helpful or unhelpful. Helpful adaptive strategies include accepting the event has happened, and getting support from others. Unhelpful maladaptive strategies include denying the event has happened, and using alcohol or drugs to cope with the event. Self-blame refers to the amount the individual believes they are responsible for the trauma (Beck, 1967), and resilience can be defined as how well an individual can cope with a traumatic event (Connor & Davidson, 2003).

This means that women and younger people are more likely to experience symptoms after a traumatic event. People are also more likely to experience symptoms in the short term after the event. People who blame themselves for the traumatic event that happened to them, people who are less resilient and people that use certain coping styles are also more likely to experience PTSD symptoms. Coping styles, self-blame and resilience can be focussed on when an individual accesses psychological support, therefore felt important to research (Wilson, 2004; Ehlers & Clark, 2000; Speck, Noble, Kollmar & Schenk, 2014).

However there have been some inconsistencies in the research about these factors, and some researchers have found that age, gender, adaptive coping styles, self-blame cognitions and resilience have not predicted PTSD symptoms (Field, Norman, Barton, 2008; Harris, Young, Rea Jalaludin & Solomon, 2008; Noble & Noble & Schenek, 2008; Canton-Cortes & Canton, 2010; van der Walt, Suliman, Martin, Lammers & Seedat, 2014)

These inconsistencies show a need for further clarification in some cases. Also, it appeared there was no research study investigating the different factors together in one study; therefore, there was a need to find out which factors were significant predictors and which factors were the strongest predictors in people who have experienced different types of trauma. This was the main aim and of the research, to identify which factors were the strongest predictors of PTSD symptoms.

It was hoped the findings could potentially help and inform services, by enabling practitioners to understand more about how people experience and adapt to traumatic events. This information could then potentially influence the development of treatment interventions and highlight to clinicians what areas needed to be focused upon.

The research had the following aim;

* To investigate the relationship between age, gender, length of time since the traumatic event, self-blame, resilience and coping styles as predictors of a difficult reaction to traumatic events, with people in the general population who had experienced a traumatic event.

It was hypothesised that:

1. Maladaptive coping styles, adaptive coping styles, resilience and self-blame cognitions will predict PTSD symptoms.
2. More maladaptive coping, less adaptive coping, more self-blame cognitions and lower levels of resilience will predict higher levels of PTSD symptomology.
3. Age, gender and length of time since the traumatic event will predict PTSD symptomology.

# **Method**

The research question for the study was:

* Which factors are shown to be the strongest predictor of PTSD symptomology?

Research data was collected using the internet, and the individuals that took part answered four questionnaires. This type of research was used to investigate the relationship between age, gender, length of time since the traumatic event, resilience, self-blame cognitions, and coping styles as predictors of PTSD symptoms.

The social media site Facebook was used to recruit participants. A short post advertising the research was posted on the main researcher’s research page including a link to the study website. Other Facebook users could share the link, and the main researcher shared the link on other Facebook pages once permission had been given. 87 participants participated in the study, and 65 participants were female (74.7%), and 22 were male (25.3%) see figure 1. To be eligible to take part individuals had to be aged 18 or over. In addition, participants needed to be fluent in English, living in the United Kingdom (UK) and literate. Individuals had to have experienced a traumatic event that was listed on the study’s website. Individuals did not take part in the research if they were currently or had engaged in psychology therapy in the past associated with their trauma difficulties.

*Figure 1.* Percentage of males and females that participated in the study.

The study was ethically approved by Staffordshire University’s Health Science ethics committee. Upon the individual seeing the research advert on Facebook, accessing the study’s website via the link on the advert and identifying the met the inclusion criteria, the individual was then presented with the participant information sheet. If the individual decided to take part in the research they were asked to complete a demographic information sheet, and provide their age, gender and date they experienced their traumatic event. The participants were then asked to complete four questionnaires on PTSD symptoms, coping styles, resilience and self-blame cognitions. Taking part in the research was anonymous, and participants were able to withdraw from the study if they wished.

All the questionnaires were standardised, and the Brief Cope (Carver, 1997) was used for individuals to record how they coped with the traumatic event. The Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin & Orsillo, 1999), was used for individuals to record how much they blamed themselves for the traumatic event, and the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003), was used the measure the individuals’ resiliency levels. Finally, the Impact of Event Scale – Revised (IES-R; Weiss & Marmar, 1997), was used to record PTSD symptoms. If the individual had experienced more than one traumatic event they were asked to complete the Brief Cope, PTCI and IES-R for the event they found the most traumatic.

# **Key Findings**

* Different traumas were reported including serious injury, sexual abuse and medical events.
* The length of time that had passed since the participants had experienced their traumatic event varied a lot. For some participants it was only months, whereas for others it was several years.
* Participants who used more maladaptive coping e.g. denying the event happened and adaptive coping e.g. using humour to cope with the trauma, were more likely to blame themselves for the reason the traumatic event happened, were less resilient and had more PTSD symptoms.
* Maladaptive coping was the only predictor of PTSD symptoms, meaning the more maladaptive coping styles people had the more PTSD symptoms they had.

Notwithstanding this, the research produced several findings that, if confirmed by future research will be important for the understanding of practitioners and individuals who experience traumatic events.

In terms of a relationship between maladaptive coping styles and PTSD symptoms, as figure 2 shows, 45.6% was accounted for by this predictor but 54.4% was not. This means that there will be other factors that will also help explain why some people experience PTSD symptoms. These factors could include previous traumas and childhood difficulties.

*Figure 2.* Percentage of PTSD symptoms accounted for by maladaptive coping.

# **Conclusions and Implications for Practice**

The results showed maladaptive coping was the only significant predictor, and the results of this study appear to support inconsistencies found by others. Age, gender and length of time did not predict PTSD symptoms which is inconsistent with a lot of previous research (Brewin, Andrews & Valentine, 2000; Harris, Young, Rae, Jalaludin & Solomon, 2008; Kelly, Scott & Bryan, 2014). Resilience, adaptive coping and self-blame cognitions did not predict PTSD symptoms. Some researchers have found these variables have not predicted PTSD symptoms whilst others have (Field, Norman, Barton, 2008; Canton-Cortes & Canton, 2010; van der Walt, Suliman, Martin, Lammers & Seedat, 2014; Shenesey & Langhinrichsen-Rohling, 2015; Filipas & Ullman, 2006; Ullman & Relyea, 2016). The results of this study support the inconsistencies found by others.

Previous research has shown that resiliency is really important in military samples (Blackburn & Owens, 2016). However this sample included people who had experienced a range of different traumatic events, and may explain why resiliency was found to not predict PTSD symptoms. Similar to resilience some researchers have stated that individuals are more likely to blame themselves for the reason the trauma happened to them, if the event involved either a sexual or interpersonal assault for example (Beck, Coffey, Palyo, Gudmundsdottir, Miller, & Colder, 2004). The results of this study show further research is needed to identify the impact of resilience and self-blame cognitions on different trauma populations. Adaptive coping strategies did not predict PTSD symptoms. Researchers suggest for individuals to use adaptive coping strategies they need certain resources (Canton-Cortes & Canton, 2010). This study did not identify such levels of resources, and therefore this could have explained the findings.

The key finding of this study however is the central importance of maladaptive coping as a potential risk factor for developing and maintaining PTSD symptoms. Compared to previous research by Lynch and Health 2017, this study showed that maladaptive coping was more able to predict PTSD symptoms. Ehlers and Clarks (2000), model describes how maladaptive coping strategies can maintain PTSD symptoms, and this study demonstrates that maladaptive strategies such as denying the event has happened can be used to avoid feeling threatened and control the situation. This in turn can maintain the symptoms people have and the distress they experience following traumatic events.

# **Limitations**

There are some limitations to this study.

* The study was slightly under-powered, which means the number of participants was slightly low for the analysis that was used. For the study to have reached power 103 participants were needed. The sample recruited limits the extent to which the results can be applied.
* The self-blame subscale has been questioned about its ability to accurately measure self-blame cognitions, and researchers have suggested the sub-scale needs developing taking into consideration the type of event (Beck, Coffey, Palyo, Gudmundsdottir, Miller & Colder, 2004).
* As the study used social media to collect the data, this required participants to self-identify if they met the inclusion/exclusion criteria. Therefore the researcher was unaware if the individuals gave accurate demographic information about themselves (Wright, 2005).
* The study required participants to have access to a computer, and certain people are less likely to have access to one (Madden, 2003). Therefore, this meant the sample could have been nonrepresentative, and limits the extent to which the findings can be applied to the general population.

# **Recommendations**

Based on the findings of the research the following has been recommended:

* The research question needs exploring in more detail, as it may be possible the relationship between the predictor variables and PTSD symptoms is dependent on the type of traumatic event or participant population. Future research is needed to find out which factors can predict PTSD symptoms in different trauma populations.
* Further research to be completed about the validity of online research, and how truthful individuals are when completing online research.
* For healthcare providers to identify individuals coping styles when an individual seeks support professionally.
* For clinicians to provide psycho-education about the role maladaptive coping styles can have in the maintenance and development of PTSD symptoms.
* Use a cognitive behavioural therapy approach in psychological sessions to focus on cognitive progressing and cognitive restructuring (Ehlers & Clark, 2000).
* Discuss with individuals the possibility of reducing the use of maladaptive coping strategies, and talk about other ways in which individuals can cope with their symptoms using more positive approaches (Speck, Noble, Kollmar & Schenk, 2014).
* For healthcare providers to think about the type of traumatic event an individual has experienced, and then depending on this provide an intervention context and event specific.

# **Dissemination**

Participants were informed they could contact the researcher for a copy of this summary, and they were provided with information on how to contact the main researcher. Participants were informed the research would be submitted to a peer-reviewed journal for publication.

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1. The words ‘sexually assaulted’ is mainly used in this review as an umbrella term for all forms of sexual trauma an individual experienced that was measured by the research papers. [↑](#footnote-ref-1)