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Rejection sensitivity and vulnerable attachment: associations with social support and PTSD symptoms in trauma survivors

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ABSTRACT

Background: Although social support has been consistently associated with recovery from psychological trauma and prevention of posttraumatic stress disorder (PTSD), individual differences in seeking or benefitting from social support in trauma survivors are not well understood. Factors associated with negative internal working models of self and others, emotion dysregulation, and interrupted bonds with an individual's social support groups such as vulnerable attachment and rejection sensitivity could contribute to lower experienced social support and higher levels of PTSD.

Objective: The objective of this study was to test a theoretically informed model and investigate how psychosocial variables such as vulnerable attachment styles, rejection sensitivity, and social support are associated with PTSD.

Method: Using a cross-sectional survey and path analyses in 141 survivors of trauma (aged 18–69, $M = 25.20$), the relationship between vulnerable attachment style, rejection sensitivity, and PTSD were investigated.

Results: Higher vulnerable attachment, rejection sensitivity, and lower social support were found to be significant predictors of PTSD symptoms ($f^2 = 0.75$). The relationships from vulnerable attachment to PTSD were mediated by rejection sensitivity and perceived social support. The results supported and extend theoretical models of PTSD that posit a role for predisposing factors in the development and maintenance of the disorder.

Conclusion: The findings suggest a potential benefit of identifying vulnerable groups that could benefit from a refinement of existing PTSD interventions by targeting the maladaptive effects of vulnerable attachment and rejection sensitivity, thus allowing the individual to draw effectively on social support networks.

Sensibilidad al Rechazo y Apego vulnerable: Asociaciones con Apoyo Social y Síntomas de TEPT en sobrevivientes de Trauma

Antecedentes: Aunque el apoyo social se ha asociado consistentemente con la recuperación del trauma psicológico y la prevención del Trastorno de Estrés Postraumático (TEPT), las diferencias individuales en la búsqueda o beneficios del apoyo social en sobrevivientes del trauma no se comprenden bien. Factores asociados con modelos de trabajo internos negativos de sí mismo y de los otros, desregulación emocional, y vínculos interrumpidos con los grupos de apoyo social de un individuo; tal como el apego vulnerable y sensibilidad al rechazo pudiesen contribuir a un bajo apoyo social percibido y altos niveles de TEPT.

Objetivo: el objetivo de este estudio fue probar un modelo informado teóricamente e investigar cómo las variables psicosociales tales como estilo de apegos vulnerables, sensibilidad al rechazo y apoyo social están asociados con el TEPT.

Método: usando una encuesta transversal y Análisis de ruta en 141 sobrevivientes de trauma (edad 18–69, $M = 25.20$); se investigaron la relación entre estilo de apego vulnerable, sensibilidad al rechazo y TEPT.

Resultados: Mayor apego vulnerable, sensibilidad al rechazo, y apoyo social bajo se encontraron que eran predictores significativos de síntomas de TEPT ($f^2 = 0.75$). La relación entre apego vulnerable y TEPT fue mediada por la sensibilidad al rechazo y apoyo social percibido. Los resultados apoyan y amplían los modelos teóricos de TEPT que postulan un rol de los factores predisponentes en el desarrollo y la mantención del trastorno.

Conclusión: Los hallazgos sugieren un potencial beneficio en identificar grupos vulnerables que pudiesen beneficiarse de un refinamiento de las intervenciones existentes de TEPT mediante focalización de los efectos desadaptativos del apego vulnerable y de la sensibilidad al rechazo, lo que permite que el individuo recurra de manera efectiva a las redes de apoyo social.

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拒绝敏感性和脆弱依恋:创伤幸存者中社会支持和 PTSD 症状的关联

背景: 尽管社会支持一直与心理创伤的恢复和创伤后应激障碍 (PTSD) 的预防有关, 但创伤幸存者寻求或受益于社会支持的个体差异尚不清楚。与自我和他人的负面内部工作模式, 情绪失调以及与个人社会支持团体的联系中断的相关因素; 例如 脆弱依恋和拒绝敏感性可能会导致较低的体验社会支持和较高的 PTSD 水平。

目的: 本研究旨在检验一个理论基础模型, 并考查诸如脆弱依恋风格, 拒绝敏感性和社会支持等社会心理变量如何与 PTSD 相关联。

方法: 对 141 名创伤幸存者 (18–69 岁, *M*= 25.20) 进行了一项横断面调查和路径分析; 研究了脆弱依恋风格, 拒绝敏感性和 PTSD 之间的关系。

结果: 发现较高的脆弱依恋, 拒绝敏感性和较低的社会支持是 PTSD 症状的显著预测因素 (f^2 = 0.75)。从脆弱依恋到创伤后应激障碍的关系由拒绝敏感性和感知社会支持中介。结果支持并扩展了 PTSD 的理论模型, 该模型假定诱发因素在疾病的发展和维持中起作用。

结论: 研究结果表明, 通过对现有 PTSD 干预措施进行针对脆弱依恋和拒绝敏感性适应不良影响的改进, 可能有利于识别易感群体可能, 从而使个人能够有效利用社会支持网络。

Psychological trauma, defined as a stressful life event that included actual or threatened death, serious injury, or sexual violence (DSM-5; American Psychiatric Association [APA], 2013), is a common human experience. As many as 63.6% of adults surveyed in six European countries were found to have experienced at least one potential traumatic event in their lifetime (Darves-Bornoz et al., 2008). It is not a surprise that traumatic experiences would increase the risk of post-traumatic stress disorder (PTSD), especially after multiple instances of traumas (Breslau, Chilcoat, Kessler, & Davis, 1999). With such a high prevalence and detrimental effect of traumas, it is important to explore factors that could contribute to the development of PTSD. Individuals with early childhood difficulties may be particularly vulnerable because early adversity impacts individuals' ability to form secure social bonds (i.e. secure attachment), which could be detrimental to their ability to regulate emotional and physiological responses to traumatic events throughout their lives (Lanius, Bluhm, & Frewen, 2011). This emotion dysregulation could affect trauma survivors' ability to form beneficial social support networks with other people (Cloitre, Miranda, Stovall-McClough, & Han, 2005) and, in turn, lead to a more serious impact on mental health.

1.1. Posttraumatic stress disorder (PTSD) and social support

PTSD is described as a stress-related disorder following traumatic events as defined in the Diagnostic and Statistical Manual (DSM-5; APA, 2013), where one experienced, witnessed, learned, or was repeatedly exposed to a situation where there is a sense of actual or threatened death, serious injury, or sexual violation. In England and Wales, PTSD has a 8% prevalence in young adults (Lewis et al., 2019). PTSD has a range of symptoms associated with functional impairments including but not limited to, re-experiencing, avoidance, hyperarousal, and emotional numbing (DSM-5, 2013). There are numerous factors that could affect the

development of PTSD (Ehlers & Clark, 2000) and among them social support has been identified as a consistent predictor with medium effect size (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003).

Perceived social support was found to have a protective effect against the development of PTSD (Johansen et al., 2020) as well as acting as a buffer that helps to reduce the severity of PTSD symptoms (Schumm, Briggs-Phillips, & Hobfoll, 2006). This observed protective effect could be because social support builds on a higher social functioning in an individual, which later improves overall life satisfaction that helps protect against PTSD (Tsai et al., 2014). Another study suggested that social support builds resilience by providing guidance for coping with the situation and by boosting an individual's self-esteem (Hyman, Gold, & Cott, 2003).

Similarly, the network orientation model draws on the idea that past experience shaped the attitude and expectation towards the usefulness of engaging with social support in time of need (Tolsdorf, 1976). It was found that negative network orientation, stemming from past social rejections (i.e. where an individual was being denied becoming part of a group or becoming someone, such as friends or significant others, they expected to be to others), mediates the relationship between social support and PTSD severity (Clapp & Beck, 2009). This suggests that the individual's perception of social support is important for the maintenance of PTSD symptoms. Moreover, psychological distress from PTSD may perpetuate the cycle of lack of social support due to negative appraisal of social interactions and social isolation (Gurung, Taylor, & Seeman, 2003). Given the significance of social support for a person's resilience towards PTSD, it is important to understand individual differences in factors that preceded or influenced how individuals experience social support. In particular, we need to investigate factors that affect a person's ability to seek and gain from social support, adult vulnerable attachment and rejection sensitivity.

1.2. The role of adult vulnerable attachment for PTSD and social support

Through the network orientation model an individual's attitude and expectation of social support can be explained. Attachment theory complements our understanding of the nature of social bonds within the social support groups, and explains why social support is an important factor for PTSD (Flannery, 1990; Lanius et al., 2011). People with insecure attachments are readily more likely to appraise the support from their social support group as negative, especially in an ambiguous situation (Collins & Feeney, 2004), which is also consistent with the negative network orientation model. Bowlby's (1969) internal working model posited that infants form an interpersonal bond with their primary caregiver which shapes internal working models of self and others, and this specific type of bond is a base for social relationships later in life. For instance, when parents are responsive to a child's need, they will form a secure bond with each other. A securely attached baby will grow up to be an adult with effective emotional regulation that can easily adapted to stressful situations. In contrast, children who were not comforted by their parents form an insecure anxious bond with their caregiver. Anxiously attached children often have negative internal working model of self and have hyperactivating emotional regulation, such as hypervigilance to abandonment, later in life. Avoidantly attached children often have negative internal working model of others and avoid intimacy (hypoactivating emotion regulation) with others later in life due to inconsistent caregiving they received in the past. These two types of insecure attachments were defined in a clinical context as enmeshed and fearful vulnerable attachment styles respectively (Bifulco, Mahon, Kwon, Moran, & Jacobs, 2003). These attachment styles were often stable from early childhood to adulthood, especially for secure attachment, but attachments can also vary over time (Opie et al., 2020). A longitudinal study found that early infant attachment were important for emotional regulation later in life (Girme, Jones, Fleck, Simpson, & Overall, 2020). However, studies had focused on the relationship between adult attachments and mental health (Chopik, Nuttall, & Oh, 2021; Dark-Freudeman, Pond, Paschall, & Greskovich, 2020). Moreover, it was found that insecure adult attachment played important role in social relationship, which subsequently led to poor mental health (Wei, Russell, & Zakalik, 2005). Both, having anxious or avoidance adult attachment is highly associated with low perceived social support (Mallinckrodt & Wei, 2005). In fact, a study found that adults with insecure attachments perceived social support critically negative which was in line with the orientation network model (Wallace & Vaux, 1993). Those who have a secure relationship, on the other hand, reported higher levels of support and seek more social supports in times of need (Florian, Mikulincer, & Bucholtz, 1995). It comes therefore as no surprise that attachment is related to PTSD. In fact, PTSD was found to be associated with higher levels of both anxious and avoidant types of attachment (Dekel, 2007), whereas others found that only anxious attachment was associated with PTSD whereas avoidant attachment was associated with lower posttraumatic growth (Arikan, Stopa, Carnelley, & Karl, 2016). Because the existing evidence is still inconsistent, it is important to investigate the association between attachment and PTSD, in particular the role of vulnerable attachment. In summary, both attachment style and social support contribute to the development of PTSD, and attachment style and perceived social support have been associated, but it is not well understood how the three variables are associated. Theoretically informed by the cognitive model of PTSD (Ehlers & Clark, 2000), we would predict that vulnerable attachment style, as a predisposition factor, leads to lower perceived support which in turn is associated with higher PTSD. Moreover, previous research had emphasized the importance of adult attachment in psychosocial and psychopathological adjustment, thus this study also focused on adult attachment rather than early childhood. There is one additional factor that could determine how an individual accesses and perceives social support during recovery from trauma; rejection sensitivity. This is one's predisposition to expect and strongly react to being rejected (Downey, Khouri, & Feldman, 1997). Rejection sensitivity is the result of rejection in caregiver and social interactions, and therefore could be the link between attachment and how social support is being perceived.

1.3. The role of rejection sensitivity

Parental neglect or dismissive behaviours can also have an impact on an individual's rejection sensitivity. Rejection sensitivity refers to one's predisposition to expect and strongly react to being rejected (Downey et al., 1997).

In accordance with the network orientation model that explain social support, rejection sensitivity originated from past experience of rejection, which then increases maladaptive social behaviours, such as social avoidance (London, Downey, Bonica, & Paltin, 2007). Rejection sensitivity is related to insecure attachment styles in many ways. For instance, they can both elicit hypoactivating and hyperactivating strategies of proximity-seeking under stress in an individual (Downey,

Feldman, & Ayduk, 2000). Vulnerable attachment styles and the caregiver's behaviours were also found to be significant predictors for rejection sensitivity, which supported the idea that rejection sensitivity was built from past experiences (Erozkan, 2009).

The network orientation model can also explain the relationship between rejection sensitivity and perceived social support. Individuals with high rejection sensitivity readily perceived social interaction as threatening which then lead to lower social network satisfaction and support (Lazarus, Southward, & Cheavens, 2016). Moreover, rejection sensitivity was found to predict a decrease in level of social support (Zielinski & Veilleux, 2014). Interestingly, trauma exposure can also increase aggression individuals with high rejection sensitivity, which may hinder their ability to seek support (Mendez, Mozley, & Kerig, 2020) although research in this area is still very limited. Taken together, rejection sensitivity has a negative impact on social support and hence it could affect recovery from trauma and facilitate PTSD but to date the association between PTSD and rejection sensitivity has not been investigated. Therefore, this paper will focus on attachment, rejection sensitivity, and their involvement in social support, which were all significant social contributors that can sustain the symptoms of PTSD.

1.4. Rationale and aims of the study

The network orientation model stated the importance of attachment and rejection sensitivity in the maintenance of PTSD symptoms. However, there is still a lack of studies investigating associations between these factors, especially between rejection sensitivity and PTSD. Studies that will provide evidence on how rejection sensitivity impacts PTSD will help identify early risk factors that could lead to the development of PTSD. This information will be useful for preventative measure, and potentially intervention, against PTSD. Therefore, the objective of this study is to test the assumptions of the network orientation model by investigating the associations between rejection sensitivity, attachment style, social support, and PTSD

symptoms. Based on the existing literature we reviewed here, a hypothetical model can be drawn (see Figure 1). From Erozkan's (2009) study, it was expected that vulnerable insecure attachment style would predict high rejection sensitivity. Based on the network orientation model (Tolsdorf, 1976), it was then expected that vulnerable attachment and high rejection sensitivity would predict low social support. Finally, meta-analysis by Ozer et al. (2003) suggested that lower social support would predict higher PTSD symptoms. These paths can be visualized in the model in Figure 1. Thus, it is hypothesized that 1) there will be a significant positive association between rejection sensitivity, dysfunctional attachment styles, and PTSD symptoms; 2) there will be a significant negative association between perceived social support and rejection sensitivity, dysfunctional attachment styles, and PTSD symptoms; and 3) the effect of rejection sensitivity and attachment styles on PTSD symptoms will be mediated by perceived social support.

2. Method

2.1. Design

The study used a cross-sectional correlational survey design with rejection sensitivity, attachment dimensions anxiety and avoidance, social support as predictors, and PTSD symptoms as an outcome variable.

2.2. Participants

Participants were 141 adults (70 males, 67 females, 4 not specified) aged between 18 and 69 (M = 25.20; SD = 7.86) from all over the world, mostly in the UK but also included the US and Australia. The majority of the participants were students (n = 56; employed for wages = 44, others = 41) of others ethnical background (n = 98, British = 42). The participant were recruited via social media, Prolific recruitment website, and advertisement flyers across the University of Exeter campus. The participants were screened using a 'Life Event Checklist for DSM-5' (Weathers et al., 2013) in order to check if they had experienced trauma and
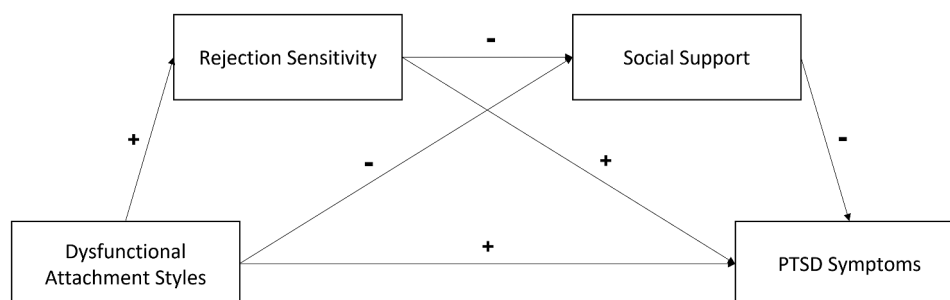

Figure 1. A proposed model of the relationship between rejection sensitivity, social support, attachment styles, and PTSD symptoms. + indicates positive relationship, − indicates negative relationships.
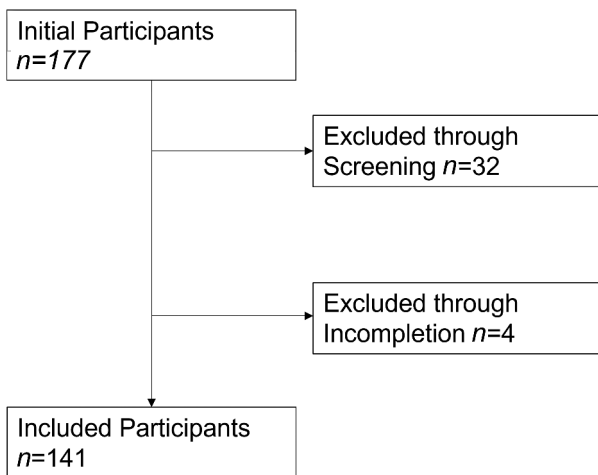
Figure 2. A flow chart summarizing the participants included in the study.

were eligible for the survey. Participants who had never experienced any traumas were excluded from the study. Participants were given the opportunity to enter a prize draw to win a grand prize of £20 or four smaller prizes of £5. All participants gave written informed consent for study participation and the protocol was approved by the University of Exeter ethics committee.

Target sample size was determined using a power calculation in G*Power for multiple regression analysis with four predictors that indicated that a total sample size of 77 is needed to be recruited to detect a medium effect ($f^2 = 0.15$) at a statistical power of 0.80 and an α of .05 (Faul et al., 2009; Figure 2).

2.3. Materials

2.3.1. Life Events Checklist for DSM-5 (LEC-5; Gray, Litz, Hsu, & Lombardo, 2004)

The questionnaire used as a screening tool for past traumatic experiences. The questionnaire consisted of 16 distressful events that could resulted in PTSD (e.g. natural disaster, physical assault, motor vehicle accident, etc.) and 6 responses (Happened to me, Witnessed it, Learned about it, Part of my job, Not sure, Doesn't apply). Participants were asked to go through each event and indicate if they had experienced any of them in the past.

2.3.2. Rejection Sensitivity Questionnaire – Adult Version (RSQ-A; Berenson et al., 2009)

This questionnaire is an adaptation of the RS questionnaire (Downey & Feldman, 1996). The questionnaire consisted of nine questions. Each question presented a scenario of social situation. The participants then rated how they would response to each situation. The questionnaire is widely used in the research of RS. The questionnaire also has high internal consistency (Cronbach alpha = 0.74) and test–

retest reliability (α = .83) (Berenson, Downey, Rafaeli, Coifman, & Paquin, 2011). To calculate the total rejection sensitivity scores, the score from sub-questions B were reverse coded to obtain an expected acceptance score. These scores were multiplied by the score from sub-questions A to obtain the rejection sensitivity score for each question. These were then divided by 9 to obtain the total rejection sensitivity score for each participant. The higher score indicates higher sensitivity to rejection.

2.3.3. PTSD Checklist for DSM-5 (PCL-5; Blevins, Weathers, Davis, Witte, & Domino, 2015)

This is a 20-item self-report that assess the symptoms of PTSD. The questions involve the symptoms of PTSD and the participants rate whether they have experienced these symptoms in the past months. The PCL-5 showed a high internal consistency (α = .94) and test–retest reliability (r = .82). They also show high validity.

2.3.4. The multidimensional scale of perceived social support (Zimet, Dahlem, Zimet, & Farley, 1988)

This is a 12-items self-report questionnaire about perceived social support. The questions are divided into three categories; family, friends, and significant other. The participants respond on a 7-points Likert scale whether they agree with each statement. The questionnaire showed high reliability on all categories (family = .90, friends = .94, significant other = .90). The questionnaire also showed high validity through a number of studies (Zimet, Powell, Farley, Werkman, & Berkoff, 1990).

2.3.5. Vulnerable Attachment Style Questionnaire (VASQ; Bifulco et al., 2003)

This is a 22-items self-report questionnaire assessing participants' attachment styles. Each item is a statement describing interpersonal relationship; for example, 'I take my time getting to know people', and 'People let me down a lot'. The participants then rate how much they agree with each statement. The responses can be scored into two dimensions; insecurity/mistrust and degree of proximity/distance. Each subscale has somewhat high internal consistency (insecurity = .82, proximity = .67). Moreover, the scales also show high validity when compared with attachment style interview.

2.4. Procedure

The survey was set up on Qualtrics. Participants were recruited through various means, mostly through Prolific (n = 64). Interested participants were given a link to the survey. They were greeted with the information page, followed by a consent form page. This is

immediately followed by the LEC as a screening questionnaire. Only participants who chose 'happened to me', 'witnessed it', 'learned about it', or 'part of my job', in at least one of items were able to proceed to the rest of the survey. This was to make sure the participants had experienced a trauma as defined by the DSM-5.

Those excluded were greeted with a debrief page explaining the study and why they were not eligible for the study. Included participants could proceed to RSQ-A, PCL-5, perceived social support scale, and VASQ. Once completed, they were direct to debrief page followed by the end page where they could leave their email for the prize draw.

2.5. Analyses strategy

All analyses were performed using SPSS software version 27. There were no missing data or outliers in the data set. To check for normality a K-S test was done on the PCL-5 scores, which was found to be significantly non-normal ($D(141) = 0.97$, $p = .001$). For this reason, all the following tests were done with a robust 95% bootstrapped confidence intervals. For regression analysis, the residuals of regression were investigated with predicted probability plot and it showed that the residuals were normally distributed. Moreover, the predicted values and residuals scatter plot showed homoscedasticity in the data. For these reasons, the linearity can be assumed. The variance inflation factor values for all predictors were all below 1.30 which fulfilled the assumption of multicollinearity.

In order to investigate the first two hypotheses, a multiple linear regression analysis with PCL-5 as outcome variable and RSQ-A, VASQ, and MSPSS as predictor variables was done. The mean VIF scores for the model was 1.27, therefore the multicollinearity was not a concern (Bowerman & O'connell, 1990). In accordance with the theory, both RSQ-A and VASQ were added to step one as they were believed to be equal predictors of PTSD symptoms. The MSPSS was then added to step two to see if it is also a significant predictor of PTSD.

To investigate the original proposed model and hypothesis 3, a mediation analysis was done with 95% bootstrapped confidence intervals (Hayes, 2017). This is to investigate if rejection sensitivity has an effect on PTSD symptoms, and if this effect is mediated through social support. Hence, the outcome variable is PCL-5 whereas independent variable and mediated variable are RSQ-A and MSPSS, respectively.

3. Results

3.1. Descriptive analysis

The descriptive data are shown in Table 1. For the vulnerable attachment style scale, higher scores

Table 1. The descriptive statistics for the measured variables.

	M	SD	Min	Max
RSQ-A (1–49)	15.47	7.15	2.78	43.89
VASQ (22–110)	66.06	10.91	38.00	98.00
MSPSS (1–7)	5.02	1.29	1.00	7.00
PCL-5 (0–80)	32.96	19.14	0.00	71.00

RSQ-A = Rejection Sensitivity Questionnaire-Adult Version; VASQ = Vulnerable Attachment Style Questionnaire; MSPSS = Multidimensional Scale of Perceived Social Support; PCL-5 = PTSD Checklist for DSM-5.

indicate high level of vulnerable attachment styles. Similarly, high MSPSS and PCL-5 scores indicate high perception of social support and symptoms of PTSD, respectively. 53.9% of the participants ($n = 76$) scored above 31 which indicated a probable PTSD (Wortmann et al., 2016).

3.2. Zero order correlations

Table 2 indicated medium-to-large correlations amongst all of the measures given to the participants. All correlations were positive except the correlations between perceived social support and the rest of the measures.

3.3. Regression analysis

Table 3 shows multiple regression analysis where PLC-5 measure was used as a dependent variable and RSQ-A, MSPSS, and VASQ were entered as predictor variables. The overall model was significant, $F(1,137) = 7.66$, $p = .006$ and explained 43% of variance.

Table 2. The zero-order correlation analysis between the measured variables.

Variable	1	2	3	4
1. Rejection sensitivity (RSQ-A)	-			
2. Vulnerable attachment style (VASQ)	0.37**	-		
3. Social support (MSPSS)	−0.44**	−0.32**	-	
4. PTSD severity (PCL-5)	0.50**	0.54**	−0.45**	-

RSQ-A=Rejection Sensitivity Questionnaire-Adult Version; VASQ = Vulnerable Attachment Style Questionnaire; MSPSS = Multidimensional Scale of Perceived Social Support; PCL-5 = PTSD Checklist for DSM-5.

Table 3. The summary of regression analysis where PCL-5 was a dependent variable.

	b [95% Confidence Intervals]	SE b	β	p
Step 1				
Constant	−29.03 [−44.38, −13.68]	7.76		<.001
Rejection Sensitivity (RSQ-A)	0.94 [0.56, 1.32]	0.19	0.35	<.001
Vulnerable Attachment Styles (VASQ)	0.72 [0.47, 0.97]	0.13	0.41	<.001
Step 2				
Constant	−6.40 [−28.45, 15.65]	11.15		0.57
Rejection Sensitivity (RSQ-A)	0.74 [0.34, 1.13]	0.20	0.28	<.001
Vulnerable Attachment Styles (VASQ)	0.65 [0.41, 0.90]	0.12	0.37	<.001
Social Support (MSPSS)	−3.02 [−5.18, −0.86]	1.09	−0.20	.006

R^2 = .40 for step 1; ΔR^2 = .03 for step 2 ($p = .006$).

It was found that rejection sensitivity and vulnerable attachment styles significantly predicted PTSD symptoms in the study samples. When social support was added to the model, all variables still predicted the PTSD symptoms. This change in model was also significant.

3.4. Mediation analysis

The mediation analysis to test Hypothesis 3, revealed a significant indirect effect of vulnerable attachment styles via rejection sensitivity on PTSD symptoms ($b = .10$, 95% CI [.01, .23]). The effect of vulnerable attachment styles on PTSD via social support was also significant ($b = .08$, 95% CI [.001, .19]). Overall, the indirect effect of vulnerable attachment styles on PTSD symptoms via rejection sensitivity and perceived social support was significant ($b = .04$, 95% CI [.01, .10]). A significant total direct effect from vulnerable attachment style to PTSD symptoms was retained ($b = .78$, 95% CI [.53, 1.02]). The summary of the mediation analyses between variable can be seen in Figure 3. It is worth noting that the analysis was done with age and gender as covariates in an attempt to control the contributions they made on the variables. Both gender ($b = 2.25$, $p = .03$) and age ($b = -.20$, $p = .006$) were significantly associated with reported rejection sensitivity. However, age ($b = 0.01$, $p = .48$) and gender ($b = -.03$, $p = .87$) were not significantly associated with social support, and only gender ($b = 8,94$, $p < .001$) was associated with PTSD symptoms.

6. Discussion

This study aimed to investigate psychosocial factors relating to PTSD. Using a regression approach, a theoretically informed model tested three hypotheses in a cross-sectional study. We found significant associations between rejection sensitivity, vulnerable attachment styles, social support, and PTSD symptoms. More specifically, high levels of vulnerable attachment were associated with higher rejection sensitivity and higher PTSD symptom severity. Social

support was negatively associated with these variables increase. Mediation analysis showed vulnerable attachment style, rejection sensitivity, and social support all contributed directly to the developments of PTSD symptoms. Both indirect effects from vulnerable attachment styles via rejection sensitivity, and via social support, were significant. Furthermore, there was a sequential mediation from vulnerable attachment to PTSD symptoms via rejection sensitivity and perceived social support. The results supported the hypothesis that the effect of rejection sensitivity and attachment styles on PTSD symptoms was partially mediated by perceived social support.

These findings extended our understanding of factors contributing to individual differences in social support and its effect on PTSD symptoms in the following ways:

Firstly, the findings suggested a sequential pathway from attachment to PTSD via rejection sensitivity and social support, which help address the importance of rejection sensitivity on PTSD symptoms. Similarly, the data revealed the importance of rejection sensitivity as a predictor of social support, which reflected the previous literature by both Lazarus et al. (2016) and Zielinski and Veilleux (2014). The results also supported the network orientation model (Tolsdorf, 1976) through the mediation analysis. That is, rejection sensitivity and vulnerable attachment styles could associate with changes in the symptoms of PTSD through the influence they have on social support. Moreover, the analysis did reveal an association between rejection sensitivity and attachment styles, this again supported the previous evidence in the field of attachment (Erozkan, 2009; Khoshkam, Bahrami, Ahmadi, Fatehizade, & Etemadi, 2012). Secondly, social support was found to be associated with lower levels of PTSD symptoms. This is congruent with previous research that suggests perceived social support has a protective effect and acts as a buffer against PTSD severity (Johansen et al., 2020; Schumm et al., 2006). Based on theoretical considerations (Ehlers & Clark, 2000; Tolsdorf, 1976), we have conceptualized perceived social support as a mediator of the link between vulnerable attachment and
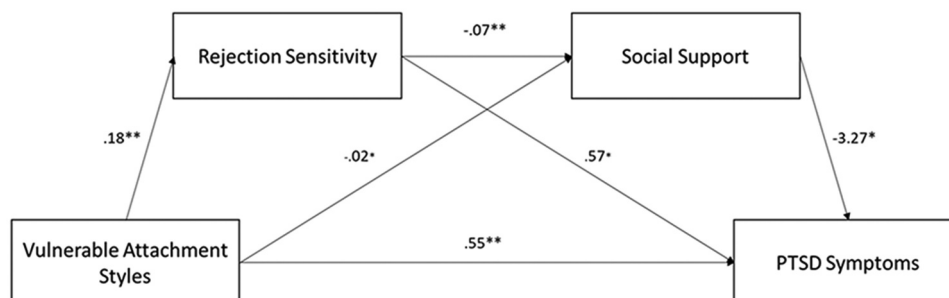
Figure 3. Standardized regression coefficients for the relationship between vulnerable attachment style and PTSD symptoms as mediated by rejection sensitivity and perceived social support. *$p < .05$, **$p < .001$.

rejection sensitivity with PTSD symptoms hypothesizing that vulnerable attachment and rejection sensitivity could lead to lower social support which in turn leads to higher PTSD. Whilst this needs to be replicated in a longitudinal design in which the predictor precedes the mediator and the mediator precedes the outcome, we found preliminary support for a protective effect of lower vulnerable attachment and rejection sensitivity and higher social support on lower PTSD in a path model. Conversely, we found that both higher rejection sensitivity and vulnerable attachment styles were associated with higher PTSD symptoms. We also found positive associations between vulnerable attachment and rejection sensitivity this supporting Downey, Khouri, and Feldman (1997) hypotheses that these two constructs are related.

Together our findings imply that both rejection sensitivity and attachment styles could be important predisposing factors that contribute to the development and maintenance of PTSD. This is in line with Ehlers and Clark's (2000) cognitive model of PTSD in which vulnerable attachment and rejection sensitivity can be conceptualized as prior experience/beliefs that influence social support which acts as strategy intended to control symptoms of persistent PTSD. The correlation between vulnerable attachment styles and social support confirmed the finding by Mallinckrodt and Wei (2005). Moreover, the association between attachment and PTSD symptoms was also mediated by social support, which was congruent with network orientation model that predisposing factors could affect perceived social support, which in turn affect the severity of PTSD. It is important to point out that the observed mediation was found even after gender and age were added into the model as covariates. It was not surprising that gender and age would influence rejection sensitivity as previous studies suggested that younger women may experience higher level of interpersonal stress compared to their counterparts (Rudolph, 2002). Moreover, gender differences might associate with different levels of PTSD symptoms. This effect could be due to higher initial PTSD symptoms and dissociations during trauma, which are commonly higher in women than in men (Irish et al., 2011). Thus, controlling for these factors could improve the validity of model as they could influence the variables being investigated.

6.1. Limitations and strengths

It is worth noting that this study has some limitations. First, this study employed a cross-sectional design. This means the causal direction could not be inferred from the results and the authors are aware of the critique of mediation analyses in cross-sectional design (Antonakis, Bendahan, Jacquart, & Lalive, 2010). Due to this limitation, a reverse relationship between the variables is also possible. Thus, it is possible that PTSD symptoms could affect the level of social support, rejection sensitivity, and attachment. However, the aim of the study was to establish theoretically informed relationship between the variables.

The study also used a scale that measured adult attachment only. This could potentially be a problem as there were still ambiguity due to instability in attachment styles across the lifespan. Because the study did not assess early childhood attachment, it is not possible to conclude whether childhood attachment has important influence on other variables investigated.

Due to the nature of the screening tool, participant' traumatic childhood experiences, such as those assessed by Childhood Trauma Questionnaire (Bernstein et al., 2003), were not assessed. This is because the study focussed and complied with the DSM-5 criteria for PTSD diagnosis. Therefore, it was not possible to conclude if the association with social support was directly related to childhood trauma as well. It was, however, inferred that higher levels of vulnerable attachment and rejection sensitivity have been previously associated with higher levels of childhood adversity (Bifulco et al., 2003; Downey & Feldman, 1997). The participants were also relatively young with the mean age of 25 as well as have relatively low rejection sensitivity scores that did not reflect those observed in clinical samples (Gao, Assink, Cipriani, & Lin, 2017). The lack of variations in age and rejection sensitivity scores could affect the generalizability of the results. Although all study participants had a history of psychological trauma in line with DSM-5 criteria, only about 50% showed clinical levels of PTSD severity. Thus, the relationship between attachment styles, rejection sensitivity, and social support should be investigated in clinical populations including those currently treatment seeking. Moreover, the use of self-report questionnaire could affect the validity of the results due to factors such as varying introspective ability in participants. Therefore, the representation of data should be interpreted with caution.

The study only used English language questionnaires. The participants were recruited from all over the world, mostly English-speaking countries, but due to the nature of the online study it cannot be ruled out that non-native English speaker participants passed the screening. This is mainly through Prolific platform, which allows anyone from any countries to join. This means there could be some misinterpretation of the questionnaire that used technical words as well as cultural differences. However, participants still need basic understanding of English to be able to join Prolific and navigate their website. It was also specified

on the website that only those with some proficiency in English language could be advertised. The platform did allows the data to be collected across many different cultures, which improved the generalizability of the results.

Despite the limitation, this study had a number of strengths. Firstly, the study investigated novel associations between rejection sensitivity and PTSD symptoms, while using social support to help clarify the relationship between the two. Moreover, the results came from individuals with a wide range of trauma histories including natural disasters and sexual assaults, which reflected the experience of both physical and interpersonal trauma survivors.

To build up on these findings, further research should establish a causal direction of the relationship between these variables. A longitudinal design would help investigating the order in which, attachment, rejection sensitivity, social support, and PTSD symptoms develop over time. This will also help solidify the evidence for the network orientation model by taken childhood experiences into account to see how they progress over time. Thus, future studies that use lifespan longitudinal design could help validate the relationship between the variables investigated. Future studies may look at the underlying mechanism for the relationship between each variables. For instance, investigating the attitude of people with different levels of rejection sensitivity on their perceived social support could provide an insight on why those with low rejection sensitivity have increased level of social support and lower PTSD symptoms. Instead of correlational studies, future research could use experimental design to investigate the causal relationship between the variables. One example is to manipulate the feeling of rejection in those with high and low rejection sensitivity. Afterwards, their perception and reaction towards social situation can be measured. This will provide a concrete evidence if rejections sensitivity affect or influence how social support is formed in a social situation. New studies can extend into the development of intervention. Based on the results, interventions can focus on building a strong social support, especially for those with vulnerable attachment styles and high rejection sensitivity, after trauma experiences to prevent the development of PTSD.

7. Conclusion

This paper aimed to investigate the contribution of adult vulnerable attachment, rejection sensitivity, and social support in explaining PTSD. Based on network orientation theory, a model hypothesizing that vulnerable attachment and rejection sensitivity exert their effect on PTSD via the effect they have on social support was proposed and confirmed. Rejection sensitivity, dysfunctional attachment, and perceived social support were all significant predictors of PTSD symptoms. Moreover, the relationship between vulnerable attachment on PTSD symptoms and rejection sensitivity on PTSD symptoms were both mediated by perceived social support. These finding provided a support for the proposed model. This model is important as it brought to light the impact rejection sensitivity and vulnerable attachment styles have on PTSD.

Disclosure statement

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Data availability statement

The data associated with this study are available at the University of Exeter Repository website at https://doi.org/10.24378/exe.3323 and upon request from the author.

References

American Psychiatric Association. (2013). Anxiety disorders. In *Diagnostic and statistical manual of mental disorders* (5th ed.). doi:10.1176/appi.books.9780890425596.dsm05

Antonakis, J., Bendahan, S., Jacquart, P., & Lalive, R. (2010). On making causal claims: A review and recommendations. *The Leadership Quarterly*, 21(6), 1086–1120. doi:10.1016/j.leaqua.2010.10.010

Arikan, G., Stopa, L., Carnelley, K. B., & Karl, A. (2016). The associations between adult attachment, posttraumatic symptoms, and posttraumatic growth. *Anxiety, Stress, & Coping*, 29(1), 1–20. doi:10.1080/10615806.2015.1009833

Berenson, K. R., Downey, G., Rafaeli, E., Coifman, K. G., & Paquin, N. L. (2011). The rejection–rage contingency in borderline personality disorder. *Journal of Abnormal Psychology*, 120(3), 681. doi:10.1037/a0023335

Berenson, K. R., Gyurak, A., Downey, G., Ayduk, O., Mogg, K., Bradley, B., & Pine, D. (2009). Rejection sensitivity and disruption of attention by social threat cues. *Journal of Research in Personality*, 43, 1064–1072. doi:10.1016/j.jrp.2009.07.007

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., ... Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse & Neglect*, 27(2), 169–190. doi:10.1016/S0145-2134(02)00541-0

Bifulco, A., Mahon, J., Kwon, J. H., Moran, P. M., & Jacobs, C. (2003). The Vulnerable Attachment Style Questionnaire (VASQ): An interview-based measure of attachment styles that predict depressive disorder. *Psychological Medicine*, *33*(6), 1099–1110. doi:10.1017/S0033291703008237

Blevins, C. A., Weathers, F. W., Davis, M. T., Witte, T. K., & Domino, J. L. (2015). The Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. *Journal of Traumatic Stress*, *28* (6), 489–498. doi:10.1002/jts.22059

Bowerman, B. L., & O'Connell, R. T. (1990). *Linear statistical models: An applied approach*. Boston, MA: Brooks/Cole.

Bowlby, J. (1969). *Attachment and loss* (Vol. 1, Attachment). New York: Basic Books.

Breslau, N., Chilcoat, H. D., Kessler, R. C., & Davis, G. C. (1999). Previous exposure to trauma and PTSD effects of subsequent trauma: Results from the Detroit area survey of trauma. *American Journal of Psychiatry*, *156*(6), 902–907. doi:10.1176/ajp.156.6.902

Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology*, *68*(5), 748. doi:10.1037/0022-006X.68.5.748

Chopik, W. J., Nuttall, A. K., & Oh, J. (2021). Relationship-specific satisfaction and adjustment in emerging adulthood: The moderating role of adult attachment orientation. *Journal of Adult Development*, 1–13. doi:10.1007/s10804-021-09380-6.

Clapp, J. D., & Beck, J. G. (2009). Understanding the relationship between PTSD and social support: The role of negative network orientation. *Behaviour Research and Therapy*, *47*(3), 237–244. doi:10.1016/j.brat.2008.12.006

Cloitre, M., Miranda, R., Stovall-McClough, K. C., & Han, H. (2005). Beyond PTSD: Emotion regulation and interpersonal problems as predictors of functional impairment in survivors of childhood abuse. *Behavior Therapy*, *36*(2), 119–124. doi:10.1016/S0005-7894(05)80060-7

Collins, N. L., & Feeney, B. C. (2004). Working models of attachment shape perceptions of social support: Evidence from experimental and observational studies. *Journal of Personality and Social Psychology*, *87*(3), 363. doi:10.1037/0022-3514.87.3.363

Dark-Freudeman, A., Pond, R. S., Jr, Paschall, R. E., & Greskovich, L. (2020). Attachment style in adulthood: Attachment style moderates the impact of social support on depressive symptoms. *Journal of Social and Personal Relationships*, *37*(10–11), 2871–2889. doi:10.1177/0265407520941091

Darves-Bornoz, J. M., Alonso, J., de Girolamo, G., Graaf, R. D., Haro, J. M., Kovess-Masfety, V., … Gasquet, I. (2008). Main traumatic events in Europe: PTSD in the European study of the epidemiology of mental disorders survey. *Journal of Traumatic Stress*, *21* (5), 455–462. doi:10.1002/jts.20357

Dekel, R. (2007). Posttraumatic distress and growth among wives of prisoners of war: The contribution of husbands' posttraumatic stress disorder and wives' own attachment. *American Journal of Orthopsychiatry*, *77*(3), 419–426. doi:10.1037/0002-9432.77.3.419

Downey, G., & Feldman, S. I. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of personality and social psychology*, *70*(6), 1327.

Downey, G., Feldman, S., & Ayduk, O. (2000). Rejection sensitivity and male violence in romantic relationships. *Personal Relationships*, *7*(1), 45–61. doi:10.1111/j.1475-6811.2000.tb00003.x

Downey, G., Khouri, H., & Feldman, S. I. (1997). Early interpersonal trauma and later adjustment: The mediational role of rejection sensitivity. In: D. Cicchetti, and S. L. Toth (Eds.), *Developmental perspectives on trauma: Theory, research, and intervention* (pp. 85–114). University of Rochester Press.

Downey, G., Khouri, H., & Feldman, S. I. (1997) Early interpersonal trauma and later adjustment: The mediational role of rejection sensitivity. In: Cicchetti, D., and Toth, S. L. (Eds.), *Developmental perspectives on trauma: Theory, research, and intervention*, 85-114. New York: University of Rochester Press.

Ehlers, A., & Clark, D. M. (2000). A cognitive model of post-traumatic stress disorder. *Behaviour Research and Therapy*, *38*(4), 319–345. doi:10.1016/S0005-7967(99)00123-0

Erozkan, A. (2009). Rejection sensitivity levels with respect to attachment styles, gender, and parenting styles: A study with Turkish students. *Social Behavior and Personality: An International Journal*, *37*(1), 1–14. doi:10.2224/sbp.2009.37.1.1

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160.

Flannery, R. B., Jr. (1990). Social support and psychological trauma: A methodological review. *Journal of Traumatic Stress*, *3*(4), 593–611. doi:10.1002/jts.2490030409

Florian, V., Mikulincer, M., & Bucholtz, I. (1995). Effects of adult attachment style on the perception and search for social support. *The Journal of Psychology*, *129*(6), 665–676. doi:10.1080/00223980.1995.9914937

Gao, S., Assink, M., Cipriani, A., & Lin, K. (2017). Associations between rejection sensitivity and mental health outcomes: A meta-analytic review. *Clinical Psychology Review*, *57*, 59–74. doi:10.1016/j.cpr.2017.08.007

Girme, Y. U., Jones, R. E., Fleck, C., Simpson, J. A., & Overall, N. C. (2020). Infants' attachment insecurity predicts attachment-relevant emotion regulation strategies in adulthood. *Emotion 21* (2) 260–272 https://doi.org/10.1037/emo0000721 .

Gray, M. J., Litz, B. T., Hsu, J. L., & Lombardo, T. W. (2004). Psychometric properties of the life events checklist. *Assessment*, *11*(4), 330–341. doi:10.1177/1073191104269954

Gurung, R. A. R., Taylor, S. E., & Seeman, T. E. (2003). Accounting for changes in social support among married older adults: Insights from the MacArthur studies of successful aging. *Psychology and Aging*, *18*(3), 487–496. doi:10.1037/0882-7974.18.3.487

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Publications.

Hyman, S. M., Gold, S. N., & Cott, M. A. (2003). Forms of social support that moderate PTSD in childhood sexual abuse survivors. *Journal of Family Violence*, *18*(5), 295–300. doi:10.1023/A:1025117311660

Irish, L. A., Fischer, B., Fallon, W., Spoonster, E., Sledjeski, E. M., & Delahanty, D. L. (2011). Gender differences in PTSD symptoms: An exploration of peritraumatic mechanisms. *Journal of Anxiety Disorders*, *25*(2), 209–216. doi:10.1016/j.janxdis.2010.09.004

Johansen, V. A., Milde, A. M., Nilsen, R. M., Breivik, K., Nordanger, D. Ø., Stormark, K. M., & Weisæth, L. (2020). The relationship between perceived social support and PTSD symptoms after exposure to physical assault: An 8 years longitudinal study. *Journal of Interpersonal Violence*, https://doi.org/10.1177/0886260520970314 .

Khoshkam, S., Bahrami, F., Ahmadi, S. A., Fatehizade, M., & Etemadi, O. (2012). Attachment style and rejection sensitivity: The mediating effect of self-esteem and worry among Iranian college students. *Europe's Journal of Psychology*, 8(3), 363–374. doi:10.5964/ejop.v8i3.463

Lanius, R. A., Bluhm, R. L., & Frewen, P. A. (2011). How understanding the neurobiology of complex post-traumatic stress disorder can inform clinical practice: A social cognitive and affective neuroscience approach. *Acta Psychiatrica Scandinavica*, 124(5), 331–348. doi:10.1111/j.1600-0447.2011.01755.x

Lazarus, S. A., Southward, M. W., & Cheavens, J. S. (2016). Do borderline personality disorder features and rejection sensitivity predict social network outcomes over time? *Personality and Individual Differences*, 100, 62–67. doi:10.1016/j.paid.2016.02.032

Lewis, S. J., Arseneault, L., Caspi, A., Fisher, H. L., Matthews, T., Moffitt, T. E., and Danese, A. (2019). The epidemiology of trauma and post-traumatic stress disorder in a representative cohort of young people in England and Wales. *The Lancet Psychiatry*, 6(3), 247–256.

London, B., Downey, G., Bonica, C., & Paltin, I. (2007). Social causes and consequences of rejection sensitivity. *Journal of Research on Adolescence*, 17(3), 481–506. doi:10.1111/j.1532-7795.2007.00531.x

Mallinckrodt, B., & Wei, M. (2005). Attachment, social competencies, social support, and psychological distress. *Journal of Counseling Psychology*, 52(3), 358. doi:10.1037/0022-0167.52.3.358

Mendez, L., Mozley, M. M., & Kerig, P. K. (2020). Beyond trauma exposure: Discrimination and posttraumatic stress, internalizing, and externalizing problems among detained youth. *Journal of Interpersonal Violence*, https://doi.org/10.1177/0886260520926314 .

Opie, J. E., McIntosh, J. E., Esler, T. B., Duschinsky, R., George, C., Schore, A., and Olsson, C. A. (2020). Early childhood attachment stability and change: A meta-analysis. *Attachment & Human Development* 23 (6) , 897–930 doi:10.1080/14616734.2020.1800769.

Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, 129(1), 52. doi:10.1037/0033-2909.129.1.52

Rudolph, K. D. (2002). Gender differences in emotional responses to interpersonal stress during adolescence. *Journal of Adolescent Health*, 30(4), 3–13. doi:10.1016/S1054-139X(01)00383-4

Schumm, J. A., Briggs-Phillips, M., & Hobfoll, S. E. (2006). Cumulative interpersonal traumas and social support as risk and resiliency factors in predicting PTSD and depression among inner-city women. *Journal of Traumatic Stress: Official Publication of the International Society for Traumatic Stress Studies*, 19(6), 825–836. doi:10.1002/jts.20159

Tolsdorf, C. C. (1976). Social networks, support, and coping: An exploratory study. *Family Process*, 15(4), 407–417. doi:10.1111/j.1545-5300.1976.00407.x

Tsai, J., Harpaz-Rotem, I., Armour, C., Southwick, S. M., Krystal, J. H., & Pietrzak, R. H. (2014). Dimensional structure of DSM-5 posttraumatic stress disorder symptoms: Results from the national health and resilience in veterans study. *The Journal of Clinical Psychiatry*, 76(5), 546–553. doi:10.4088/JCP.14m09091

Wallace, J. L., & Vaux, A. (1993). Social support network orientation: The role of adult attachment style. *Journal of Social and Clinical Psychology*, 12(3), 354–365. doi:10.1521/jscp.1993.12.3.354

Weathers, F. W., Blake, D. D., Schnurr, P. P., Kaloupek, D. G., Marx, B. P., & Keane, T. M. (2013). The life events checklist for DSM-5 (LEC–5). Instrument available from the National Center for PTSD.

Wei, M., Russell, D. W., & Zakalik, R. A. (2005). Adult attachment, social self-efficacy, self-disclosure, loneliness, and subsequent depression for freshman college students: A longitudinal study. *Journal of Counseling Psychology*, 52(4), 602. doi:10.1037/0022-0167.52.4.602

Wortmann, J. H., Jordan, A. H., Weathers, F. W., Resick, P. A., Dondanville, K. A., Hall-Clark, B., . . . Litz, B. T. (2016). Psychometric analysis of the PTSD Checklist-5 (PCL-5) among treatment-seeking military service members. *Psychological Assessment*, 28(11), 1392. doi:10.1037/pas0000260

Zielinski, M. J., & Veilleux, J. C. (2014). Examining the relation between borderline personality features and social support: The mediating role of rejection sensitivity. *Personality and Individual Differences*, 70, 235–238. doi:10.1016/j.paid.2014.07.005

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment*, 52(1), 30–41. doi:10.1207/s15327752jpa5201_2

Zimet, G. D., Powell, S. S., Farley, G. K., Werkman, S., & Berkoff, K. A. (1990). Psychometric characteristics of the multidimensional scale of perceived social support. *Journal of Personality Assessment*, 55(3–4), 610–617 https://doi.org/10.1080/00223891.1990.9674095