**Relationships Among Adult Attachment, Social Support, and PTSD Symptoms
in Trauma-Exposed College Students.**

by

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Abstract

Although many people are exposed to trauma, substantially fewer develop posttraumatic stress disorder (PTSD). Given this, studies have examined risk and protective factors for developing PTSD. This literature has established that there is a robust negative correlation between social support and PTSD. Attachment insecurity may be an informative variable to elucidating this relationship, as it is associated with both social support and PTSD. The current study used structural equation modeling to examine the relationships between attachment anxiety, attachment avoidance, general support, trauma support, and four PTSD symptom factors. It was hypothesized that (1) general support would mediate the relationship between attachment and PTSD, and that (2) trauma support would mediate the relationship between general support and PTSD. Two hundred trauma-exposed undergraduate students completed a battery of self-report questionnaires which included the Experience of Close Relationships-Revised, the Interpersonal Support Evaluation List, the Crisis Support Scale, and the PTSD Checklist. Consistent with hypotheses, social support mediated the relationship between attachment and four PTSD symptom factors, and trauma support mediated the relationship between general support and four PTSD symptom factors. These findings call attention to the particular importance of trauma support in PTSD. The results also support the need to conduct further research into the mechanisms involved in the development and maintenance of PTSD.

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Introduction

Trauma exposure is widespread. Estimates suggest that upwards of sixty percent of people in the United States will experience a traumatic event in their lifetime (Kessler, Sonnega, Bormet, Hughes, & Nelson, 1995). Although many people will be exposed to trauma, substantially fewer of them will develop posttraumatic stress disorder (PTSD; American Psychiatric Association, 1994). The conditional risk for developing PTSD after trauma exposure is 8% for men and 20% for women (Kessler et al., 1995). Given that trauma exposure is a necessary but not sufficient factor to predict the development of PTSD, researchers have looked beyond the traumatic event to risk and protective factors that could account for individual differences in developing PTSD.

Two meta-analyses have been conducted to integrate and evaluate the PTSD risk factor studies (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss 2003). Post-trauma social support emerged as one of the most important factors in both studies, with a weighted average effect size of 0.40 (Brewin et al., 2000) and 0.28 (Ozer et al., 2003). After social support, trauma severity and post-trauma life stress exhibited the strongest effects. Trauma severity is built into the diagnostic criteria as an etiological factor, and indeed it makes a strong contribution to who develops PTSD (Dohrenwend et al., 2006).

There are several possible implications of the central roles of social support and additional life stress in these studies. First, the posttrauma environment has a significant impact on psychological adjustment. Second, there is a robust relationship between post-trauma social support and PTSD, in which higher ratings of social support are associated with lower rates of

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PTSD. And third, the perceptions of posttrauma interactions (from supportive through stressful) affect the trajectory of PTSD symptoms.

While the strength of posttrauma risk variables is robust, the relatively smaller effect sizes of pre-trauma variables (as found in the meta-analyses) may not necessarily indicate they are less predictive of PTSD. It is possible that the smaller effect sizes are a function of the distal connection between pre-trauma variables and PTSD, which are connected through proximal posttrauma mediators (King, King, Foy, & Gudanowski, 1996; Brewin et al., 2000), such as social support.

Understanding why there are individual differences in social support could inform explorations of how social support influences risk of PTSD (Joseph, Andrews, William, & Yule, 1992). The relationship between attachment security and social support could be informative to this question. Adult attachment is a construct developed from the lifespan applications of Bowlby (1969) and Ainsworth's (1989) childhood attachment theories. Adult attachment is defined as a person's internal working model of the self and others in relationships. Attachment theory posits that attachment is relevant to all of human development, and that there are individual differences in attachment (Crowell, Fraley, & Shaver, 2008). A person's adult attachment security would be expected to influence their patterns of developing, maintaining, and accessing a social support network. The following literature review identifies hypotheses about how attachment security and post-trauma social support may influence PTSD symptoms. These hypotheses are drawn from the literatures on social support and PTSD, attachment security and PTSD, and attachment security and social support.

Social Support and PTSD

Social support has been defined as "information leading the individual to believe that he or she is cared for, loved, esteemed, valued, and belonging to a network of communication and mutual obligations (Cobb, 1976)." It occurs across a variety of levels, from the individual level, to loved ones, to the community level (Litz & Maguen, 2007). Given the robust correlation between social support and PTSD in the risk factor literature, a central question is whether it is the presence of posttrauma social support that decreases the likelihood of developing PTSD, or whether it is the absence of adequate social support that increases the risk of PTSD (Brewin et al.; Ozer et al.). There is evidence for both of these effects (for a review, see Charavustra & Cloitre, 2008). In some studies, perceptions of negative social responses and the absence of social support increases the risk of PTSD (Davis, Brickman, & Baker, 1991, Ullman & Filipas 2001; Andrews, Brewin, & Rose, 2003). In other studies, trauma support protects against the development of PTSD and contributes to posttraumatic growth (Dalgleish, Joseph, Thrasher, Tranch, & Yule, 1996; King, King, Fairbank, Keane, & Adams, 1998). The benefits of posttrauma support may also depend upon the source of support and type of trauma experienced (Kaspersen, Matthiesen, & Gotestam, 2003). Notably, neutral responses by the social network may also be particularly damaging after trauma (Pruitt & Zoellner, 2008). Regardless of the directionality, it is clear that perceptions of the quality of the support received are more important than the size of the support network or the frequency of contact (Haber, Cohen, Lucas, & Baltes, 2007).

Most studies in this literature are cross-sectional, prohibiting causal inferences. However, some longitudinal evidence exists to suggest directionality. Kaniasty and Norris (2008) examined perceived social support and presence or absence of PTSD diagnosis in a sample of natural

disaster victims. They conducted initial interviews 6 months after flooding and mudslides in 9 Mexican states caused hundreds of fatalities and hundreds of thousands of displacements. Three follow-up assessments were conducted at 6-month intervals. At 12 months, previous social support predicted current PTSD. At 18 months, previous PTSD and previous social support both predicted current PTSD and current social support. At 24 months, previous PTSD predicted current social support. This suggests the directionality of the relationship between PTSD and social support may vary over time (for theoretical discussion of this point, see Litz & Maguen, 2007).

Using two time points, Laffaye, Cavella, Drescher, and Rosen (2008) examined the relationship between PTSD, social support, and interpersonal stress, with respect to multiple sources of support, among veterans with chronic PTSD. They observed several unanticipated findings, including that Time 1 interpersonal resources and stressors did not predict Time 2 PTSD. Also, PTSD at Time 1 did not lead to interpersonal stress at Time 2, and social factors at Time 1 did not influence symptoms at Time 2. There were also differences by support source. Relationships with veteran peers were characterized as supportive and stress free, whereas marital relationships were characterized as sources of both support and stress. The absence of the expected finding that social support would influence later PTSD in a study of veterans with chronic symptoms suggests that the timing of social support may be critical if it is to have a protective influence on PTSD symptoms.

Combining the findings of both longitudinal studies, one possible inference is that early after the trauma, social support may be a protective factor for PTSD, whereas over time the factors may influence each other until a point at which chronic PTSD comes to exert a negative effect on social support. Indeed, chronic experience of some PTSD symptoms would by

definition corrode available social support (e.g., habitual avoidance of people and places, emotional numbing, irritability). Nevertheless, early after the trauma, social support does appear to protect against the development of PTSD. A suggested mechanism of this protection is that social support encourages people to process their emotions of the trauma, before they develop habits of coping through avoidance (Charavustra & Cloitre, 2008). Given the temporal variability seen in longitudinal studies, examinations of the relationship between social support and PTSD would benefit from considering the quality of support at different points in time since the trauma.

The Crisis Support Scale (CSS; Elklit, Pedersen, & Jind, 2001), was developed to separately assess immediate post-trauma and current social support. Additionally, it specifically examines trauma-specific support (hereafter referred to as "trauma support"), as opposed to questionnaires that measure social support more generally. The CSS enables temporal differentiation in perceptions of trauma support, with the caveat that ratings are made concurrently, and therefore ratings of prior trauma support may well be influenced by current support. Studies using the CSS have demonstrated that trauma support decreased over time for survivors of a cruise ship disaster (Joseph, Andrews, Williams, & Yule, 1992), and that women reported less trauma support than did men (Elklit, Pederson, & Jind, 2001). Trauma support predicted PTSD symptoms over and above attributional style and coping style (Joseph, Williams, & Yule, 1992), and higher levels of trauma support were related to better psychological outcome (Joseph, Andrews, Williams, & Yule, 1992).

Social acknowledgement is a related construct that overlaps conceptually with trauma support. A study creating a measure of social acknowledgement (the Social Acknowledgement Questionnaire; Maercker & Muller, 2004) defines this construct as having three factors: (1) recognition as a trauma victim, (2) perceptions of post-trauma disapproval/rejection by family,

and (3) perceptions of post-trauma disapproval/rejection by society. When examining validity evidence for social acknowledgement in a sample of ex-political prisoners, social acknowledgement accounted for an additional 11% of the variance in PTSD symptoms, beyond the contributions of general social support, gender, age, and duration of the trauma ($R^2 = .28$); whereas when the order was reversed, general social support only accounted for an additional 3% of variance in PTSD. In a prospective study examining social acknowledgement and other predictors of PTSD severity among German crime victims (Mueller, Moergeli, & Maercker, 2008), perceptions of disapproval by family and society was related to PTSD symptoms, whereas perceptions of being recognized as victim or survivor were not related to symptoms. Further, perception of general disapproval regarding the trauma at time 1 was predictive of time 2 PTSD symptoms above and beyond demographic variables and time 1 PTSD symptoms.

These findings from studies using the CSS and the Social Acknowledgement Questionnaire suggest that the examination of social support as a mechanism between attachment and PTSD should include a measure of trauma support in addition to the typically used measures of general support.

Attachment Security and Social Support

Further understanding of the relationship between social support and PTSD can be obtained by exploring personality factors that could play a role in individual differences in social support, such as attachment security. Attachment security is a person's internal working model of the self and others in relationships. Attachment security is developed during childhood through relationships with caregivers. Secure attachment is characterized by two primary activities: exploration of the world with the confidence that the attachment figure will be there upon return, and seeking and being in proximity to the attachment figure during times of threat

and distress. Attachment security is relatively stable, though it can also be influenced by significant relationships with the various attachment figures throughout life (Fraley, 2002).

From a theoretical standpoint, relationships with attachment figures are important because they either provide, or fail to provide, a sense of security. This in turn leads to the development of different styles of coping with distress. If the parent and child have formed a secure bond, then the distressed child will seek proximity to, and support from, the caretaker. Subsequently, he or she will develop confidence in his or her ability to tolerate and cope with distress with or without a caretaker. When parental behaviors do not foster a sense of safety, a variety of insecure attachment styles can develop. An avoidant approach develops when a child learns to avoid and deny their emotional distress and to withdraw from others during times of distress. An anxious approach develops when a child is overly dependent upon an attachment figure, and subsequently during distressed periods the child will feel anxious about the availability of the caretaker. This anxious approach can develop into a feeling of having to rely on others to cope with distress, and a lack of confidence in one's ability cope alone. Given this, attachment security allows for theoretical predictions to be drawn about a person's use and perceptions of support in periods of distress.

There are two very distinct and productive lines of attachment research that have emerged out of the original works of Bowlby and Ainsworth. These research lines use two different approaches to the measurement of the attachment security experienced by adults (Crowell, Fraley, & Shaver, 2008). The developmental psychology approach categorizes people into attachment security styles, based upon a trained coder's evaluation of an adult's description of their childhood relationship with their caregiver. This primarily involves researcher administration of the Adult Attachment Interview, followed by researcher coding of both

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coherence and attachment style, which is typically categorized as either autonomous (secure), dismissing, or preoccupied. The personality and social psychology approach measures adult attachment dimensionally, using self-report measures that examine how attachment concerns relate to adults' current functioning in relationships. The dimensional measures of adult attachment are best represented by two latent factors that are suggested as underlying adult attachment: attachment anxiety and attachment avoidance (Roisman et al., 2007). Comparisons between the Adult Attachment Interview and the self-report measures of adult attachment security indicate that they are measuring two related but distinct phenomena. Therefore, it is important to consider how attachment was measured when interpreting the generalizability of research findings in the attachment literature.

In a prospective study examining attachment categories and social support processes, Larose and Bernier (2001) found that a preoccupied attachment style was negatively associated with satisfaction with support, trust, and self- and other- reports of help-seeking, and was positively correlated with loneliness. They also found that dismissing attachment was negatively correlated with trust, help-seeking, and peer assistance, and was positively correlated with peer reports of social withdrawal. In a study measuring adult parental attachment security on a continuum of secure to insecure (Larose, Guay, & Boivin, 2002), attachment insecurity was associated with low ratings of (1) perceived emotional support and (2) social support received from college peers, whereas it was not associated with peer ratings of the frequency of support-seeking behavior. However, the latter finding should be interpreted with caution, as there may not have been sufficient power with only 85 of 125 participants with peer ratings, and, more importantly, the reasonable likelihood that participant attachment style could be confounded with

attrition on this measure, as those with less secure attachment could be expected to be more likely to not identify a friend to complete the peer questionnaire.

Studies examining attachment dimensionally have found similar results, in that low attachment security has been associated with deficits in social support. Using the Experiences in Close Relationships – Revised (ECR-R), Barry, Lakey, and Orehek (2007) found that college students' report of attachment anxiety and attachment avoidance in their relationships with their mothers, fathers, and romantic partners, exhibited a strong relationship with low ratings of perceived social support from each attachment figure. Similarly, Mallinckrodt and Wei (2005), using the ECR-R with college students, found that attachment anxiety and attachment avoidance were both positively correlated with psychological distress and negatively correlated with perceived social support. Further, the relationship between these variables was mediated through low social self-efficacy and low emotional awareness. And in a study using perceived social support as a mediator variable rather than an outcome variable, it has also been found that perceived social support mediates the relationship between attachment anxiety and depressive symptoms in participants with advanced cancer (Rodin, Walsh, Zimmermann, Gagliese, Jones, et al., 2007).

Of particular note to the present research question is a study that examined attachment and social support in a sample of adults who reported a history of childhood physical abuse. Severity of physical abuse was associated with perception of social support provided by family and friends, peers, and authority figures, through the mediating role of attachment security (Muller, Gragtmans, & Baker, 2008). Although this study examined attachment and social support among people who had experienced trauma, it did not examine the impact of these variables on PTSD, nor did it examine attachment across the two underlying dimensions of adult

attachment. Nevertheless, these findings are informative about the relationship between attachment and social support one might expect to see in a trauma exposed sample, when attempting to predict variability in PTSD.

Attachment Security and PTSD

The preceding sections reviewed the association between social support and PTSD, and the associations between attachment and social support. There is also a evidence for an association between attachment and PTSD. In general, studies in this area suggest that secure attachment is associated with fewer PTSD symptoms among trauma-exposed individuals (e.g., Mikulincer, Horesh, Eilati, & Kotler, 1999; Muller, Sicoli, & Lemieux, 2000; Fraley, Fazzardi, Bonanno, & Dekel, 2006; Aspelmeier, Elliott, & Smith, 2007; O'Connor & Elklit, 2008). From a theoretical perspective, there is a clear application of attachment theory to understanding a person's response to trauma. Secure attachment involves exploration away from a secure base during times of safety, and seeking proximity and reassurance from that secure base during times of stress and threat. By definition, trauma threatens one's sense of safety. In this vein, studies have examined how attachment is relevant to people who have been exposed to trauma, and how attachment influences the effects of the trauma on the development of PTSD.

In the categorical attachment literature, attachment security moderates the relationship between trauma and PTSD. A secure attachment style is negatively correlated with the development of PTSD symptoms for Israeli Jewish settlers in the Gaza strip (Mikulincer, Horesh, Eilati, & Kotler, 1999) and for women who experienced childhood sexual abuse (Aspelmeier, Elliott, & Smith, 2007). In a study of treated and non-treatment seeking childhood Holocaust survivors and a control group (Cohen, Dekel, & Solomon, 2002), an avoidant attachment style accounted for 8.5% of the variability in PTSD symptoms, as part of a regression

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model that accounted for 41.8% of PTSD symptom variance (trauma type, treatment status, and demographic variables accounted for the remainder).

Studies using the Adult Attachment Interview (AAI) have found that being classified as unresolved/disorganized in attachment security was associated with increased likelihood of PTSD symptoms among Vietnam veterans with combat-related PTSD (Nye, Katzman, Bell, Kilpatrick, Brainard, & Haaland, 2008), among inpatients with various disorders and trauma histories (Riggs, Paulson, Tunnell, Sahl, Atkison, & Ross, 2007), and among women with PTSD relating to childhood experiences of physical or sexual abuse (Stovall-McClough & Cloitre, 2006).

Among studies that transform dimensional attachment ratings into four categorical attachment styles (typically: secure, dismissive, preoccupied, and fearful), fearful and preoccupied attachment styles were associated with higher report of PTSD symptoms. This finding was replicated in samples of adults who experienced childhood abuse (Muller, Sicoli, & Lemieux, 2000) and in a longitudinal study of people who were in or near the World Trade Center during the terrorist attack of September 11th, 2001 (Fraley, Fazzari, Bonanno, & Dekel, 2006). However, some inconsistencies emerged in these studies, in that a dismissing style was found to be predictive of low PTSD symptoms in one study (Muller et al., 2000), whereas it was found to be predictive of high PTSD symptoms in the other study (Fraley et al., 2006).

Attachment Security, Social Support, and PTSD

Charavustra and Cloitre (2008) review the associations among attachment security, social support, and trauma, and then present a conceptual framework for PTSD risk and recovery as highly dependent on social phenomena. They situate trauma itself in a social context by identifying how witnessing a trauma, or learning of an attachment figure being placed in danger,

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poses a threat to one's own feelings of safety. From an evolutionary standpoint, a threat to close others is also a threat to oneself, because survival is tied to the strength of the group and the ability of its members to depend upon one another. Similarly, exposure to cruelty, even if no physical harm is directly threatened, is a traumatic threat because of the loss of sense of safety that can follow from observing the violation of social norms that govern a rule-guided group. Taken from the general sense of safety level to the individual bonds level, trauma perpetrated upon children by their attachment figures, the very people bestowed with providing safety and upon whom they must depend for survival, significantly influences children's ability to develop expectations of social support and compromises their capacity for emotion regulation. The relative impact of the trauma based upon the closeness of the perpetrator also provides an example of how the social context of the trauma can lead to differential outcomes.

Charavustra and Cloitre discuss the importance of social support to psychological outcome after trauma. They suggest that social interactions within a functional social network can provide a sense of safety through both the presence of reliable interpersonal connections and through opportunities to regulate emotions of fear, anxiety, and mistrust. Therefore, differences in social bonds and social support can lead to differential PTSD outcomes, because "low social support leads to avoidant coping and positive support decreases PTSD avoidant behaviors … suggest[ing] that social support may modulate the trauma victim's capacity to approach and process trauma-related feelings, and this may account for some of its influence on the development and recovery from PTSD (p. 308-309)."

They further describe how attachment further elucidates the influence of social processes on PTSD. For example, children under threat restore their sense of safety through proximity to a caretaker, who provide comfort and soothing that relieves distress and provides direction about

how to negotiate the world, enabling a return to exploration away from the secure base. For adults, the attachment styles they have developed continues to influence their accessing of social support when under threat, such that those who are securely attached use a combination of self-generated emotion regulation with a recognition of the limit when they can no longer self-regulate, at which point they seek the support of others. In contrast, if someone has not developed this style of emotion-regulation, their emotion regulation and support-seeking behaviors will follow a different pattern, such as avoidant coping, that does not relieve distress or restore a sense of safety.

To this writer's knowledge, only two empirical studies have simultaneously examined attachment, social support, and PTSD, in a trauma-exposed sample as of October of 2009. Cloitre, Stovall-McClough, Zorbas, and Charavustra (2008) examined the effects of attachment organization, emotion regulation, and expectations of support on functional impairment among women who experienced and/or witnessed abuse during childhood. In a mixed-trauma sample, O'Connor and Elklit (2008) examined the influence on PTSD of attachment organization, coping style, negative affectivity, trauma support, and cognitive schemas. These studies indicated that trauma-exposed participants with insecure attachment styles report lower expectations of support (Cloitre et al., 2008), lower perceptions of received support (O'Connor & Elklit, 2008), and higher ratings of PTSD symptoms (O'Connor & Elklit, 2008).

Cloitre et al. (2008) assessed 109 treatment-seeking women who experienced childhood abuse through experiencing one or more of the following: physical abuse, sexual abuse, neglect, and witnessing domestic violence. Seventy-eight percent of participants were diagnosed with PTSD based on the Clinician-Administered PTSD Scale. Attachment organization regarding childhood caregiver was coded categorically, grouping those coded on the AAI as preoccupied,

dismissing, and fearful into an insecure attachment group, and comparing this group with those categorized as securely attached. Negative emotion regulation and low expectations of social support mediated the relationship between attachment insecurity and functional impairment in work, social, family, and spouse domains. Although PTSD symptoms were not used as an outcome variable in the study, these findings are informative regarding the relationship between attachment and expectations of support in a primarily PTSD sample. The functional impairment outcome measures can be considered a marker of PTSD severity for several of the participants, enabling the interpretation that low expectations of social support may in part mediate the relationship between insecure attachment and PTSD.

Nevertheless, it would be useful to replicate this mediation relationship using PTSD symptoms as an outcome to provide a direct test of the mediation relationship suggested by Charavustra and Cloitre (2008). Some of this study's limitations would be buffered by further research. Grouping different types of attachment insecurity into one group loses some differences in support that would be expected for people whose attachment is more avoidant or more anxious in nature. Further, their sample may better represent the mechanisms associating anxious attachment with psychological outcome, because only 14 of their 109 participants were classified as dismissive. This overrepresentation of anxious attachment in their insecurely attached group may have been a function of people with a dismissing attachment style being less likely to respond to a flyer offering treatment for problems relating to childhood abuse experiences. Finally, the construct of adult attachment organization regarding childhood experiences (measured with the AAI) has not converged with self-report measures of adult attachment styles (Crowell, Fraley, & Shaver, 2008). Therefore, it would be useful to examine social support as a proposed mediator between attachment and PTSD using dimensional

measures of adult attachment, which is the recommended measurement approach when assessing self-report of current relationship-related emotion and behavior (Crowell, Fraley, & Shaver, 2008).

O'Connor and Elklit (2008) assessed a mixed-trauma sample using a self-report measure to categorize participants into attachment styles (secure, dismissive, fearful, and preoccupied). The trauma types endorsed by participants were predominantly bereavement, threat of violence, violence, accident, and witnessing or learning about trauma to a close other. After grouping participants by attachment style, group means were compared across PTSD symptoms (current and lifetime), trauma support (current and past), coping style, negative affectivity, and cognitive schemas of self and world. PTSD symptoms differed by attachment group, such that securely attached participants reported the lowest level of current and lifetime PTSD symptoms, whereas dismissive and fearfully attached participants reported the highest levels of current and lifetime PTSD symptoms. Those with a preoccupied attachment style had a mean severity level between these groups. Ratings of trauma support also differed by attachment style, such that participants who were securely attached reported the highest levels of current and past trauma support, whereas participants who were fearfully attached reported the lowest levels of past and current trauma support. This study measured several variables relevant to the proposed mechanisms of Charavustra and Cloitre (2008); however, the analyses did not explore the interrelationships between these variables, such that it is unclear which variables have shared variance, and which may account for PTSD beyond the variance explained by other predictors. Also, as with Cloitre et al. (2008), this study examined attachment categorically, which may not be as closely associated with current psychopathology as dimensional measures of attachment (Roisman et al., 2007).

Current Study

The purpose of the current study was to clarify the relationship between social support and PTSD by testing the relationships between adult attachment, social support, trauma support, and PTSD symptom factors. A multivariate statistical approach was used to enable the modeling of latent constructs (e.g., attachment anxiety) underlying multiple indicators of the construct (e.g., caregiver attachment anxiety and peer attachment anxiety) while also accounting for measurement error (Kline, 2004). Of specific benefit to the variables of interest in this study, SEM allows for testing of the complex relationships between multiple endogenous variables (two types of social support) that intervene between multiple hypothesized exogenous variables (attachment anxiety and attachment avoidance) and one or more hypothesized outcome variables (four PTSD symptom factors).

Figure 1 presents the proposed model with hypothesized direct paths between attachment avoidance, attachment anxiety, general support, trauma support, and PTSD symptom factors. It was hypothesized that attachment anxiety and attachment avoidance would be indirectly related to PTSD symptom factors through direct paths through general support and then trauma support. Further, it was hypothesized that general support and PTSD symptom factors would be indirectly related through a direct path between general support and trauma support, and direct paths from trauma support to PTSD symptom factors. The absence of paths between attachment and PTSD symptom factors illustrates the hypothesis that the relationship between the attachment variables and PTSD symptom factors would be fully mediated through the two measures of social support. The absence of paths between general support and PTSD symptom factors illustrates the hypothesis that the relationship between general support and PTSD symptoms would be fully mediated through trauma support.

Method

Sample

Participants were 352 undergraduate students enrolled in psychology courses offering extra credit for research participation at Auburn University. They were recruited by announcement through an online extra credit system (Sona Systems), and then participated in a research session in which they completed a battery of self-report measures. All participants who attended this session were eligible to register for an optional second session in which they completed a second questionnaire and completed a diagnostic interview. The current study uses data collected during the first session. The Auburn University Institutional Review Board approved this protocol.

From the full sample of 352, participants were excluded in the following sequential steps: if they did not follow directions or answer to item content ($n = 3$); if they did not provide enough information about their index event for it to be coded for criterion A1 of trauma ($n = 43$); if their index event was coded as not meeting criterion A1 ($n = 88$); if they did not endorse criterion A2 experiences of fear, helplessness, or horror during or after their event ($n = 2$); and if their index event happened within the last 6 months ($n = 16$). The final sample consisted of 200 participants.

The time period exclusion rule was used to exclude participants for two reasons. The first reason was to ensure that more than a month had passed after the index trauma, consistent with criterion E and to differentiate reported symptoms from Acute Stress Disorder. The second reason was to ensure that two distinct time periods were being assessed on the Crisis Support

Scale, when participants were reporting on the three months immediately following the trauma (past trauma support) and the most recent three months (current trauma support).

Of the final sample, participants were mostly female (71%) and Caucasian (82%) or African American (11%). Average age was 20.4 years (*SD* = 2.9). Most were full-time students (97%) and unmarried (98%). Twenty-eight percent were in their freshman year, 25% in their sophomore year, 23% in their junior year, and 24% in their senior year.

Procedure

Participants completed a questionnaire packet as part of a larger protocol assessing responses to stressful life events, personality functioning, and psychopathology. Sessions lasted approximately 1 to 1.5 hours. Participants read and signed an informed consent form. Researchers instructed participants to complete the questionnaire packet while keeping in mind the same stressful event. When they completed the study, participants were provided a copy of the consent form (including a list of community mental health resources) and a debriefing form, and were reminded of their eligibility to participate in part 2 of the study.

Questionnaire packets were ordered such that participants first completed a demographic information form, followed by a measure of trauma exposure, followed by a measure of life threat and betrayal experienced during the trauma. After these measures, the order of the remaining questionnaires was randomly determined to counterbalance for order effects. Lastly, participants completed a Study Feedback Form, on which they are asked to endorse items identifying any inaccuracies they were aware of in their self-report (e.g., responded randomly due to boredom, did not identify worst event because they did not want to discuss it). Participants responded to questionnaires either on corresponding scantrons or by providing responses directly on the questionnaires. Measures that were administered in the self-report measure battery that were not included in the current study include the Life Threat and Betrayal Inventory, the Detailed

Assessment of Posttraumatic Stress, the Ways of Coping Questionnaire, and the Student Adaptation to College Questionnaire.

Measures

Trauma exposure. Trauma history was assessed using the Life Events Checklist (LEC; taken from the Clinician-Administered PTSD Scale; Blake, Weathers, Nagy, Kaloupek, Gusman, Charney, & Keane, 1995). The LEC is a 17-item measure of stressful events (e.g., transportation accident, physical assault, sexual assault, sudden loss of a loved one) on which participants report whether in their lifetimes they have experienced, witnessed, or learned of any of these events happening to someone close to them. Next, participants identify the worst event (the one that has caused the most problems), and respond to questions about the event, including items assessing whether that event meets DSM-IV Criterion A1 (actual or threatened death or serious injury, or threat to the physical integrity of self or others) and Criterion A2 (response of intense fear, helplessness, or horror). Finally, participants provide a brief narrative of their worst event.

A research team composed of a doctoral level supervisor and two graduate students used a coding system to determine whether a participant's narrative of their index event (1) provided enough information to code for Criterion A1, and if so (2) whether their event was "definitely A1," "subthreshold A1," or "definitely not A1." Ratings of whether there was enough narrative information to code A1 were made for 349 participants (removing the three participants who did not follow directions or answer to item content from the full sample of 352). Both graduate student raters made a consistent code regarding the amount of information provided for 294 of the 349 cases (84% agreement). Post-coding discussion indicated a difference in decisions about how to code the presence of sufficient information in cases in which the person was reported learning of an event that occurred to someone else. One coder rated ambiguity in closeness as indicative of not enough information, whereas the other coder rated this ambiguity as indicative

of the definite absence of a criterion A1 event due to lack of closeness to the person who experienced the event. For discrepancies regarding whether enough information was provided, a consensus decision was reached among the graduate students and doctoral supervisor. Three hundred and six participants were judged to have provided enough information to code A1.

The graduate student coders rated this subset of narratives and coded each as either "definite A1," "debatable A1," or "definitely not A1." Of the 306 narratives coded, 62% (n = 190) were rated by both as "definitely criterion A1," 22% (n = 66) were rated by both as "definitely not A1," and 1% (n = 4) were rated by both as "debatable A1." Overall percentage agreement was 85%. Of the inconsistencies in coder ratings, 9% (n = 28) were a one-point discrepancy (e.g., "definitely A1 vs. "debatable A1"), and 6% (n = 18) were a two-point discrepancy in which one rating was "definitely A1" and the other rating was "definitely not A1." Rater codes were then collapsed into either (1) definite criterion A1 or (2) other. Kappa coefficients for inter-rater reliability with these codes (kappa = .72) indicated acceptable agreement. Graduate student coders and doctoral supervisor then discussed any discrepancies in which one coder rated definite A1 and the other rater coded any other code (*n* = 37). Consensus A1 codes were reached for each of these cases.

Only participants with events meeting Criterion A1 by both raters (*n* = 190) or by subsequent consensus rating (*n* = 28), were included in the analyses; those identified as "debatable criterion A1," and "definitely not criterion A1" were excluded. Additional exclusion criteria were then applied as previously described, resulting in the final sample size of 200.

Participants had predominantly experienced the traumatic event directly (63%; *n* = 125), while the remainder had either witnessed the event (22%; *n* = 44) or learned of it (15%; *n* = 30). Participants reported that the index event occurred or began between the ages of 5 and 35 (*M* =

16; *SD* = 4). Participants who reported having experienced more than one event in their lifetimes (38%, *n* = 75) endorsed having experienced an average of 5 events (*SD* = 12).

Posttraumatic stress disorder. PTSD symptom severity was measured using the PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993). The PCL is a 17-item, *DSM* correspondent self-report measure of PTSD. Participants indicated how much they were bothered by each PTSD symptom in the past month, using a five-point scale (1 = not at all to 5 = extremely). For estimation of probable PTSD diagnosis, any item rated as a 3 (moderately) or higher was treated as an endorsed symptom, and DSM-IV diagnostic rules were then followed to categorize participants.

Because the four PTSD symptom factors were hypothesized to be separate, intercorrelated constructs, subscales for each symptom factor were created to allow for descriptive statistics and zero-order correlations to be run with measures of the different factors of PTSD used in this study. Because the CFA literature on the factor structure of PTSD has not converged upon a consistent factor structure, this study examined PTSD symptom factors for the two models that have received the most support. These are labeled the "DSM model" (King, Leskin, King, & Weathers, 1998) and the "Dysphoria model" (Simms, Watson, & Doebbeling, 2002). Subscale scores for the DSM model were created by averaging the reexperiencing symptoms (items 1-5), avoidance symptoms (items 6 and 7), numbing symptoms (items 8-12), and hyperarousal symptoms (items 13-17). Dysphoria model scores used the same reexperiencing and avoidance items, and then created an average for the dysphoria factor (items 8-15) and the dysphoria based hyperarousal factor (items 16-17).

The PCL has strong criterion-related validity with the Clinician-Administered PTSD Scale (*r* = .929) in a sample of people who experienced sexual assault or motor vehicle accident

(Blanchard, Jones-Alexander, Buckley, & Forneris, 1996). In a college student sample similar to

this study, PCL items had item-test correlations between .60 to .74 for cluster B symptoms, .39

to .74 for cluster C symptoms, and .63 to .76 for cluster D symptoms (Ruggiero, Ben, Scotti, &

Rabalais, 2003). Correlations between subscales ranged from .73 to .76. Internal consistency was

high, with Cronbach alphas of .94 (total), .85 (cluster B), .85 (cluster C), and .87 (cluster D).

Test-retest reliability was also high, with correlations of .92 at immediate re-test, .88 at one-week

re-test, and .68 at two-week re-test.

Attachment. Adult attachment was measured dimensionally using the Experiences in

Close Relationships– Revised (ECR-R). The ECR-R is a 36-item scale which is comprised of

two subscales measuring attachment anxiety and attachment avoidance, two distinct dimensions

that underlie a wide range of self-report measures of attachment (Roisman et al., 2007). Subscale

scores were calculated by averaging participant responses to the 18 items on each scale, after

reversing items that are reverse-scored. The attachment anxiety subscale measures the degree of

attachment related concerns about rejection and abandonment (e.g., "I'm afraid that I will lose

his/her love"). The attachment avoidance subscale measures the degree of attachment related

concerns about intimacy and closeness with others (e.g., "I find it difficult to allow myself to

depend on him/her"). The original ECR was developed in a line of research that applies the

infant attachment framework of Mary Ainsworth (i.e., the strange situation test) to the study of

romantic relationships and other adult attachment relationships (Fraley, Waller, & Brennan,

2000; Crowell, Fraley, & Shaver, 2008). The revisions that resulted in the ECR-R involved item-

response analyses in which they selected items to best discriminate between the attachment

anxiety factor and the attachment avoidance factor (Brennan, Clark, & Shaver, 1998). In a study

examining the internal consistency and factor structure of the ECR-R in a college student

sample, the attachment anxiety subscale had a coefficient alpha of .917 and the attachment

avoidance subscale had a coefficient alpha of .927 (Fairchild & Finney, 2006).

Each participant completed two ECR-R questionnaires, reporting on their general

experience of a relationship with a self-identified caregiver (ECR-R Caregiver) and with a self-

identified closest friend (ECR-R Peer). Participants were directed by written instruction to

identify a caregiver and a peer using the following prompts. On the ECR-R Caregiver,

participants were asked to identify and label "your primary caregiver from childhood (for

example, your mother, your father, another other adult who took care of you)." They were

further instructed to "pick one caregiver to whom you were the closest as a child and with whom

you still have a relationship today." On the ECR-R Peer, participants were asked to identify and

label their "closest friend." They were further instructed to "select the one person you would be

most likely to turn to for support (for example, your best friend, your boyfriend or girlfriend,

etc)."

General support. General support was measured using the general population version of

the Interpersonal Support Evaluation List (Cohen & Hoberman, 1983; Cohen, Mermelstein,

Karmack, & Hoberman, 1985). The ISEL is a 40-item self-report measure of the perceived

availability of four types of social support (4-point scale ranging from 0 to 3). After reversing the

20 reverse-scored items, four 10-item subscales were calculated for tangible support,

belongingness, self-esteem, and appraisal. The tangible support subscale measures the perceived

availability of material aid (e.g., "If I were sick and needed someone (friend, family member, or

acquaintance) to take me to the doctor, I would have trouble finding someone"). The

belongingness subscale measures the perceived availability of people to do things with (e.g., "If I

wanted to have lunch with someone, I could easily find someone to join me"). The self-esteem

subscale measures the perceived availability of positive interpersonal comparisons (e.g., "I am as good at doing things as most other people are"). Finally, the appraisal subscale measures the perceived availability of someone to talk to about problems (e.g., "There really is no one who can give me an objective view of how I'm handling my problems"). Cohen et al. (1985) reported the internal consistency of the ISEL subscales in two general population samples as .70-.82 for appraisal, .62-.73 for self-esteem, .73-.78 for belonging, and .73-.81 for tangible support.

Trauma support. Trauma support was measured with the Crisis Support Scale (CSS, Joseph, Andrews, Williams, & Yule, 1992). The CSS is a 14-item self-report measure on which participants respond to two sets of 7 items, for each of to two different periods of time: the three months immediately following their traumatic event, and the three months immediately preceding their study participation. Participants indicated their perception of the trauma support they received during each time period using a 7-point scale (1 = never to 7 = always). Six of these items related to specific forms of trauma support (e.g., receiving emotional support, practical support, others being willing to listen, etc). Traditional scoring rules involve summing the first six items for both time periods to create a total support score for each period, and using the seventh item as a measure of the participant's overall satisfaction with the support received during each time period. However, in the current study the 14 items were combined by time period into two scales (past trauma support, sum of items 1-7; current trauma support, sum of items 8-14), for reasons described in the description of measurement model testing in the results. Higher scores indicate perceptions of better trauma support. In a study with a sample of 23 people who experienced a ship crash with fatalities, the Cronbach's alpha for past and present were 0.67 and 0.69, respectively (Joseph, Andrews, Williams, & Yule, 1992).

Results

Descriptive Statistics

Using a scoring rule in which PCL items rated 3 or higher are considered endorsed symptoms, 15% of the sample was estimated to meet criteria for PTSD ($n = 30$ of 197 people for whom complete PCL data exists). The means and standard deviations of all measures are presented in Table 1. The PCL scores were comparable to results reported in other studies using samples of trauma-exposed college students (e.g., Ruggiero, Ben, Scotti, & Rabalais, 2003; Flack, Milanak, & Kimble, 2005; Frazier et al., 2009). CSS scores were slightly higher than results from a study combining several trauma samples to assess psychometric properties of the CSS (Elklit, Pedersen, & Jind, 2001).

Measurement Models

Attachment. Support was found for using the published subscales as indices of the latent factors of attachment anxiety and attachment avoidance. Cronbach alphas for each scale were as follows: caregiver attachment anxiety ($\alpha = 0.91$), caregiver attachment avoidance ($\alpha = 0.96$), peer attachment anxiety ($\alpha = 0.94$), peer attachment avoidance ($\alpha = 0.92$). All 72 ECR-R items (collapsing across peer and caregiver scales) were submit to a principal components factor analysis with varimax rotation limiting possible factors to 4. The division of items loading onto the four identified factors were consistent with the subscales to which items are traditionally loaded (i.e., ECR-R Caregiver attachment anxiety items loaded together onto the same factor, and not onto other factors). This was true for all four factors; therefore, the proposed

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measurement model for attachment in the current study was used in the SEM. A CFA was not run on the attachment measurement model, as entering 72 items into four factors (attachment anxiety and attachment avoidance for each caregiver) appeared to overwhelm the statistical analysis software. However, other studies have reliably found support for the distinctiveness of attachment avoidance and attachment anxiety using the ECR-R, and indeed the items were selected for the revised scale because they clearly loaded onto one factor and not the other (Brennan, Clark, & Shaver, 1998).

General support. Internal consistency statistics of the four ISEL subscales were examined. Cronbach alphas were within the acceptable range, as follows: appraisal ($\alpha = 0.81$), self-esteem ($\alpha = 0.78$), belongingness ($\alpha = 0.83$), tangible support ($\alpha = 0.82$). The fit of the general support measurement model was examined in a CFA by loading the 10 ISEL items in each of the four subscales onto four correlated general support factors. Fit statistics for this model (RMSEA = .068; CFI = .755; Chi squared / df = 1.93) indicated less than good fit (Byrne, 2001), though within the range of reasonable errors of approximation in the population and better than mediocre fit. Given these findings, the four-factor ISEL structure was used in the SEM.

Trauma support. Consistent with the psychometric data presented by Elklit, Pedersen, & Jind (2001) in their initial validation of the CSS, EFA findings did not support a four-factor structure of the CSS that separates satisfaction with past and current support from perceptions of trauma support at those times. Therefore, a CFA was run to examine a two factor model of the CSS, loading the first 7 items onto a "past support" factor and the second 7 items onto a "current trauma support" factor. Fit statistics (RMSEA = .122; CFI = .887; Chi squared / df = 3.94) indicated that the two factor measurement model was below the level of good fit. However,

internal consistency was within the acceptable range: past support (α = .88), current support (α = .83), therefore this measurement model was used.

PTSD. Internal consistency statistics of the four PTSD factors for both separate measurement models of PTSD (the "DSM model" and the "Dysphoria model"). Cronbach alphas were within the acceptable range on all factors. DSM alphas were: reexperiencing (α = 0.87), avoidance (α = 0.79), emotional numbing (α = 0.75), hyperarousal (α = 0.80). Dysphoria alphas were: reexperiencing (α = 0.87), avoidance (α = 0.79), dysphoria (α = 0.87), 2-item hyperarousal (α = 0.81). CFA results indicated acceptable fit for the dysphoria model (RMSEA = .075; CFI = .929; Chi squared / df = 2.107) and mediocre fit for the DSM-based model (RMSEA = .097; CFI = .879; Chi squared / df = 2.889). Both models met the standards or better than poor fit (Byrne, 2001). This is consistent with the finding that self-reported measures of PTSD may be a better fit to the dysphoria model, whereas interview measures of PTSD may be a better fit to the DSM-based model (Palmieri, Weathers, Difede, and King, 2007). Given support for both models, it was determined that two separate series of SEM analyses would be conducted, one set using the "DSM" four-factor measurement model of PTSD, and the other using the "Dysphoria" four-factor measurement model of PTSD.

Item parcels were created for each of the four PTSD factors in both four-factor measurement models of PTSD (see any of Figures 2-7). This simplified the PTSD four—factor measurement model from using all 17 PCL items as indices to using two indices for each factor (for a total of 8 indices of PTSD per model). This was done to improve power by increasing degrees of freedom and reducing model complexity, while preserving the variance provided by all PCL items (see Little, Cunningham, Shahar, & Widaman, 2002, for the rationale and pros and cons of parceling). Item assignment into the two parcels was determined by distributing items

based upon their relative factor loadings. For example, on the reexperiencing factor, items with the 1st, 4th, and 5th strongest item loadings (PCL items 1, 5, and 3) were put into a parcel summing their scores, while items with the 2nd and 3rd strongest items loadings (PCL items 2 and 4) were put into a second parcel summing their scores. Then these two item parcels were used as the two indices for the reexperiencing symptoms latent factor.

Correlations

Table 2 presents the zero-order correlations between the ECR-R Peer and Caregiver subscales, the ISEL subscales, the CSS subscales, and the PCL and scores representing its factors. Consistent with hypotheses, significant moderately sized correlations were found between subscales measuring attachment and general support, as well as between general support and trauma support. Correlations in the small to moderate range were also found between attachment and trauma support (particularly for caregiver attachment) and between trauma support and PTSD. Also consistent with the literature, though with weaker associations and fewer significant correlations than anticipated, were some small but significant correlations between attachment and PTSD and between general support and PTSD. Notably, the significant correlations that emerged in the associations of these variables with PTSD were with the numbing/dysphoria and hyperarousal factors of PTSD. In many cases, there were weak to non-significant correlations between these variables and the reexperiencing and avoidance factors, which are the symptoms that are thematically related to the trauma.

Structural Equation Models

DSM based SEMs. The first SEM ("proposed model," depicted in Figure 2), examined study hypotheses in which (1) the four PTSD factors were regressed on the latent factor of trauma support, (2) trauma support was regressed on the latent factors of general support,

attachment anxiety, and attachment avoidance, and (3) general support was regressed on the latent factors of attachment anxiety and attachment avoidance. Correlated disturbances were specified among the PTSD factors in all models, because the four PTSD factors were expected to correlate with one another even after common variance attributed to the other variables was removed.

The second SEM ("fully saturated model," Figure 3) examined all possible direct and indirect paths. All four PTSD factors were regressed on trauma support, general support, attachment anxiety, and attachment avoidance. Trauma support was regressed on general support, attachment anxiety, and attachment avoidance. And general support was regressed on attachment anxiety and attachment avoidance.

The third SEM ("trimmed model," Figure 4) examined the fit of a model representing only the paths that were found to be significant in the fully saturated model. These included (1) regressing the four PTSD factors on trauma support, (2) regressing numbing on attachment anxiety, (3) regressing trauma support on general support, and (4) regressing general support on both attachment anxiety and attachment avoidance.

Structural model of attachment, general support, trauma support, and PTSD. Model fit was evaluated with fit statics following recommended cutoff guidelines (Hu & Bentler, 1999; Kline, 2004). The goodness-of-fit statistics are presented in Table 4. Unexpectedly, although the dysphoria measurement model had more support in a CFA of the PCL in the current sample, the DSM-based models of PTSD had better fit indices in the SEMs. For this reason, the DSM-based models are presented first, followed by a comparison with the dysphoria models' corresponding findings. Full dysphoria model fit statistics are presented in Table 4, and standardized path coefficients are presented in Figures 5, 6, and 7.

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The significant paths in the trimmed DSM model are identified here, with parenthetical notation of the standardized path coefficients. Attachment anxiety was a significant predictor of general support (standardized path coefficient = -0.23). Attachment avoidance was a significant predictor of general support (standardized path coefficient = -0.39). Attachment anxiety was a significant predictor of numbing (standardized path coefficient = 0.27). General support was a significant predictor of trauma support (standardized path coefficient = 0.57). Trauma support was a significant predictor of all four PTSD factors: reexperiencing (standardized path coefficient = -0.29), avoidance (standardized path coefficient = -0.41), numbing (standardized path coefficient = -0.28), and hyperarousal (standardized path coefficient = -0.39).

Using the trimmed DSM model as the final model, several correlational relationships between the predictor variables and PTSD appear to be better accounted for as indirect paths through mediating mechanisms. In the current sample, the relationship between general support and PTSD symptom factors did not emerge as a significant path, and therefore is presumed to be mediated through trauma support, where the direct path was significant. Similarly, the relationship between the attachment variables and both trauma support and PTSD symptoms are mediated through general support. In fact, the only direct effect that remained between a distal predictor variable with a PTSD factor was a direct path between attachment anxiety and emotional numbing.

Dysphoria based SEMs. These three models (proposed, fully saturated, trimmed) were re-run with the dysphoria-based four-factor model of PTSD. The paths identified during analysis of the proposed (Figure 5) model were identical to DSM findings. The paths in the fully saturated (Figure 6) and trimmed models (Figure 7) were identical with one exception – there was no indicated path from the dysphoria-based hyperarousal factor to trauma support.

Adjusted measurement model of attachment. Intra-measure correlations indicated a stronger relationship between attachment anxiety and attachment avoidance within, rather than across, attachment figure. There was a large correlation between caregiver attachment anxiety and caregiver attachment avoidance (.73), as well as between peer attachment anxiety and peer attachment avoidance (.56). There was only a moderate correlation when comparing the attachment avoidance and attachment anxiety subscales across attachment figure (e.g., peer attachment avoidance and caregiver attachment avoidance were correlated at .3). Given that the SEM combined these moderately correlated indices as measures of the latent construct of attachment avoidance, an alternative model was run to examine whether a different measurement model of attachment would influence model fit. The alternative model identified caregiver attachment anxiety and caregiver attachment avoidance as two indices loading onto a caregiver attachment construct, and peer attachment anxiety and peer attachment avoidance as two indices loading onto a peer attachment construct. Model fit did improve (RMSEA = .061; CFI = .956; Chi squared / df = 1.74). The pattern of significant paths remained largely consistent, with a direct path from: peer attachment to general support, caregiver attachment to general support, general support to trauma support, and trauma support to all four PTSD factors.

The only additional significant path in this model was different from previous SEMs: caregiver attachment did have a direct link to trauma support, although peer attachment did not. In contrast to the greater role of parental attachment for trauma support reported in this sample was the size of the path coefficient between attachment and general support. The path from peer attachment to general support (r = -0.52) was much stronger than the path from caregiver attachment to general support (r = -0.26).

Discussion

This study examined the relationships between attachment, social support, trauma support, and PTSD symptom factors in a sample of trauma-exposed college students. Given the established relationships between each of these variables in distinct research literatures, as well as theoretical arguments for the mechanisms for the relationships between these variables and PTSD, it was hypothesized that (1) general support and trauma support would fully mediate the relationship between attachment and PTSD, and that (2) trauma support would fully mediate the relationship between general support and PTSD.

Results partially supported the first hypothesis. A direct path was not identified between attachment and three of the four PTSD factors. Instead, attachment was indirectly related to PTSD, through a direct path to general support. Unexpectedly, one direct path did emerge, in which attachment anxiety was directly related to emotional numbing.

Results supported the second hypothesis. A direct path was not identified between general support and PTSD when trauma support was modeled between those variables, though a strong direct path was identified between general support and trauma support, and between trauma support and each of the PTSD factors, especially avoidance and hyperarousal. These findings support the argument that trauma support could be part of the mechanism that accounts for the robust relationship between social support and PTSD in the literature.

In general, the fit of the model did not differ significantly whether PTSD was represented in a DSM-based or Dysphoria-based four-factor model. However, differential relationships did emerge from these differences in modeling, in that there was no direct path between the study

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variables and the dysphoria-based hyperarousal factor. This seems to indicate that there is a link between trauma support and sleep problems / irritability / concentration problems, but not to exaggerated startle response and hypervigilance (which is the difference in the composition of hypervigilance factor across the two models). However, this is a tentative conclusion, as variance in dysphoria-based hypervigilance may not have been adequately assessed by two items in a low-risk sample.

When using an alternative measurement model of attachment, parental attachment was related to both general support and trauma support; whereas peer attachment was related to general support but not trauma support. In both cases, the relationship between attachment and PTSD remained mediated through the social support variables. These findings may be a function of young adult development and the timing of the trauma in relation to the timing of the study. The college student participants were often reporting on traumas that had occurred before they came to college; hence, the trauma support they received may have been more likely to come from their parents, rather than peers with whom relationships may have developed after the trauma. On the other hand, many of them were likely to be living away from home, and therefore their accessible general social support network was likely to be comprised of some fellow college students, and may be less likely to involve as much reliance on parents, in some cases.

The model presented in this study has implications for clinical intervention, and presumptive implications for opportunities to prevent the development of PTSD. Although it is generally a good idea for patients to activate positive social support networks after trauma, these findings suggest that the outcome may depend upon whether or not they perceive support about the trauma itself. Additionally, the trauma victim's attachment security may be an obstacle to obtaining the presumed protective benefits of social support. On the flip side, insecure

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attachment may implicate poor perceptions of social support that will influence the access to trauma support, perhaps through a pre-trauma tendency to have lower expectations of support, through a deteriorated social network, or through a history of receiving more stress than support from their social environment, which could shape their attachment orientation. Further longitudinal evidence of the multidirectionality of the influence of these variables is needed to examine these possible pathways. Regardless of the etiology, being aware of a trauma victim's attachment orientation may help to identify cognitions that are preventing them from processing their emotions with close others in their lives, which may play a role in having more exposure, decreasing avoidance, and encouraging recovery from hyperarousal to memories of the trauma, which may in turn prevent the development of firmly entrenched avoidance symptoms and therefore prevent the development of PTSD. Awareness of their attachment orientation may help in efforts to identify people who are at greatest risk of not receiving the protective effects of social support, or of receiving a blaming or rejecting response that will particularly put them at increased risk. Those who, due to their attachment security, are naturally prone to seek and utilize social support may recover naturally from the distress that follows trauma through mechanisms by which social support is helpful (e.g., thought to be processes such as processing their emotions with close others in their lives). By contrast, those who are already prone to withdraw during distress (high avoidance) or to receive of perceive negative effects from the social environment may be more likely to experience adverse outcomes.

The particular importance of trauma support on PTSD symptoms was suggested by these findings. This has implications for people's decisions about trauma disclosure. Poor trauma support was predictive of avoidance symptoms, and behavioral and cognitive-behavioral models of PTSD attribute the maintenance and chronicity of the disorder to the avoidance symptoms.

Therefore, efforts to ensure that trauma victims receive trauma support, and that they not receive

blame or rejection regarding the trauma, may be particularly important. Clinicians assisting

trauma victims with decisions about disclosure should be mindful of the potential harm of a

negative experience in this area. Clinicians may want to encourage clients to consider what

response they would find helpful, to identify people who they would expect to be able to provide

that support, and to role play assertive communication of these needs to the potential disclosee.

Additionally, after a large scale event, it may be beneficial for public service organizations to

make public announcements about how to provide support to people who have experienced

trauma, so people will be better equipped to provide support and not have a negative impact.

Some strengths of this study included combining these constructs relevant to the

interpersonal environment in a way that allowed for testing of mediating relationships that can

inform models about post-trauma trajectories. It also contributed to the literature attempting to

identify mechanisms by which social support may be influential after trauma. To this author's

knowledge, only one other study to date has examined the incremental utility of measuring

trauma support in addition to general support. This study replicated in a mixed-trauma sample

the findings of the study with German political prisoners, finding that trauma support has a

greater impact on PTSD than does general support. Further research on trauma support is

indicated, and researchers selecting constructs may find trauma support a more useful measure

than general support. This study also contributed to the literature on the differential relationships

of PTSD symptom factors, given that the magnitude of correlations differed between trauma

support and PTSD symptom factors, as well as the finding that attachment anxiety was directly

related to numbing, but none of the other PTSD symptom factors. Emotional numbing

symptoms, whether measured in a DSM-based manner, or combining irritability/sleep

problems/concentration problems into a dysphoria-based manner, do not include symptoms with a thematic relationship to the trauma. These symptoms tend to be markers for more severe PTSD that can be expected to have a more prolonged and treatment-resistant course. In longitudinal studies, numbing appears to be a byproduct of chronic reexpeirencing, hyperarousal, and avoidance symptoms. Therefore, the association between the personality variable of attachment anxiety and the general distress factor of PTSD, but no others, may suggest that the past relationships between insecure attachment and PTSD were actually a relationship between insecure attachment and general distress. Informative to this idea may be a study that would examine these variables, with the addition of a measure of neuroticism, a well-established personality variable which is predictive of future PTSD in people who were assessed as high on neuroticism/negative affectivity before the experience of trauma.

One significant limitation of this study is that the measurement was cross-sectional. Given that the theoretical justification for the model is based on a presumed developmental trajectory from trauma to psychopathology, this model would be best tested in a longitudinal study to enable the testing of causal inferences inherent in the model. Another key limitation was that, though statistically significant, the correlations between attachment and PTSD and between general support and PTSD were not as large as they typically have been in the literature. Therefore, there may be limits to the generalizability of the finding that no direct path emerged between attachment and PTSD or general support and PTSD. Though in this sample these were indirectly linked to PTSD through mediating variables, the finding would need to be replicated in studies with stronger relationships between the distal constructs before there can be confidence in the inference that there is a mediation occurring. These results are also restricted by the limitations of self-report measurement. It would be desirable for studies to examine these

variables with diverse measurement methods, such as clinical interview, ratings of friends and family members, and behavioral observation. Finally, these findings were collected within a nonclinical sample, in which participants may be expected to be relatively well-functioning compared to clinical samples. However, in a study examining predictors of PTSD, it may be beneficial to have a wide range of PTSD symptoms in a sample that has been unequivocally exposed to trauma. This prevents a restriction of range of high number of symptoms in a treatment seeking group, or lack of measurement of subthreshold level of symptoms in a study that would compare groups with and without PTSD.

Future research in this area may consider other variables that could not be included in the current study for the sake of minimizing model complexity. Other known predictors of PTSD could have an impact on model strength. For example, trauma severity, sense of betrayal during or after the trauma, posttraumatic cognitions, pretraumatic psychopathology, pretraumatic trauma exposure, and posttrauma stress are all known predictors. Additionally, trauma type, gender, time elapsed since onset, and bidirectionality in variable relationships may be particularly relevant to this model, as they could be expected to interact in meaningful ways with many of the variables. Finally, further exploration into the mechanisms of the development and recovery from PTSD is recommended, as understanding the mechanisms could provide great opportunity to improve the effectiveness of PTSD treatments and decrease the prevalence of PTSD after trauma.

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APPENDIX 1: TABLES

Table 1

Descriptive Statistics of PCL, ECR-R, ISEL, and CSS

Scale	Items (*n*)	α	Possible range	Observed range	*M*	*SD*
PCL total (Model 4a)	17	.92	17-85	17-72	30.0	12.4
Reexperiencing	5	.87	5-25	5-24	9.5	4.3
Avoidance	2	.79	2-10	2-10	4.0	2.3
Numbing	5	.75	5-25	5-22	7.7	3.5
Hyperarousal	5	.80	5-25	5-23	8.7	4.2
PCL total (Model 4b)	17	.92	17-85	17-72	30.0	12.4
Reexperiencing	5	.87	5-25	5-24	9.5	4.3
Avoidance	2	.79	2-10	2-10	4.0	2.3
Dysphoria	8	.87	8-40	8-35	12.9	5.9
Hyperarousal	2	.81	2-10	2-10	3.5	2.1
ECR-R Caregiver						
Attachment anxiety	18	.91	1-7	1-6	1.7	0.9
Attachment Avoidance	18	.96	1-7	1-6.8	2.4	1.3
ECR-R Peer						
Attachment anxiety	18	.94	1-7	1-6.8	2.3	1.2
Attachment Avoidance	18	.92	1-7	1-6.2	2.1	1.0
ISEL						
Appraisal	10	.81	10-40	16-40	34.7	4.8
Self-Esteem	10	.78	10-40	20-40	31.8	4.3
Belongingness	10	.83	10-40	13-40	34.3	5.0
Tangible support	10	.82	10-40	10-40	34.8	4.8
CSS						
Past	7	.88	7-49	9-49	36.7	10.2
Current	7	.83	7-49	12-49	37.9	8.4

Note. *N* = 196 through 200. PCL = Posttraumatic Stress Disorder Checklist; ECR-R = Experiences in Close Relationships – Revised; ISEL = Interpersonal Support Evaluation List; CSS = Crisis Support Scale.

Table 2

Zero-Order Correlations of PCL, ECR-R, ISEL, and CSS

Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. PCL total	--														
2. Reexperiencing	.89**	--													
3. Avoidance	.79**	.70**	--												
4. Numbing	.86**	.65**	.60**	--											
5. Hyperarousal	.89**	.69**	.58**	.73**	--										
6. ECR-R C Anx	.23**	.19**	.10	.24**	.24**	--									
7. ECR-R C Av	.23**	.15*	.09	.33**	.22**	.73**	--								
8. ECR-R P Anx	.13*	.07	.02	.16*	.15*	.37**	.25**	--							
9. ECR-R P Av	.13*	.01	-.01	.26**	.17**	.31**	.30**	.56**	--						
10. ISEL Ap	-.21**	-.10	-.10	-.27**	-.25**	-.33**	-.36**	-.41**	-.54**	--					
11. ISEL SE	-.11	.02	-.04	-.18**	-.14**	-.30**	-.29**	-.38**	-.26**	.54**	--				
12. ISEL Be	-.24**	-.14*	-.12*	-.27**	-.28**	-.45**	-.32**	-.47**	-.38**	.68**	.68**	--			
13. ISEL TS	-.17**	-.08	-.06	-.22**	-.22**	-.44**	-.35**	-.39**	-.35**	.66**	.59**	.76**	--		
14. CSS Past	-.33**	-.22**	-.31**	-.33**	-.31**	-.35**	-.32**	-.17**	-.21**	.36**	.26**	.35**	.28**	--	
15. CSS Current	-.29**	-.21**	-.31**	-.28**	-.24**	-.31**	-.25**	-.22**	-.24**	.46**	.29**	.43**	.35**	.60**	--

Note. *N* = 200. PCL = Posttraumatic Stress Disorder Checklist; ECR-R = Experiences in Close Relationships – Revised; C Anx = Caregiver Attachment Anxiety; C Av = Caregiver Attachment Avoidance; P Anx = Peer Attachment Anxiety; P Av = Peer Attachment Avoidance; ISEL = Interpersonal Support Evaluation List; Ap = Appraisal subscale; SE = Self Esteem subscale; Be = Belongingness subscale; TS = Tangible Support subscale; CSS = Crisis Support Scale. * *p* < .05. ** *p* < .01.

Table 3

Zero-Order Correlations of Dysphoria and Hyperarousal Factors with PCL, ECR-R, ISEL, and CSS

Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Dysphoria	.91**	.69**	.62**	--	--	.24**	.30**	.14*	.24**	-.27**	-.19**	-.29**	-.22**	-.32**	-.30**
Hyperarousal	.62**	.48**	.40**	.45**	--	.18**	.15**	.17**	.09	.18**	-.02	-.18**	-.17*	-.25**	-.105

Note. $N = 200$. Numbers in table indicate same measures as previous table. $* p < .05$. $** p < .01$.

Table 4
Model Fit Statistics

Model	χ^2	df	χ^2/df	RMSEA	CFI
Proposed					
DSM	280.40	119	2.35	.083	.921
Dysphoria	303.78	119	2.55	.088	.905
Fully saturated					
DSM	230.90	107	2.16	.076	.939
Dysphoria	262.87	107	2.46	.086	.920
Final					
DSM	262.83	120	2.19	.077	.93
Dysphoria	289.62	121	2.39	.084	.914

APPENDIX 2: FIGURES

Figure 1. Proposed Model
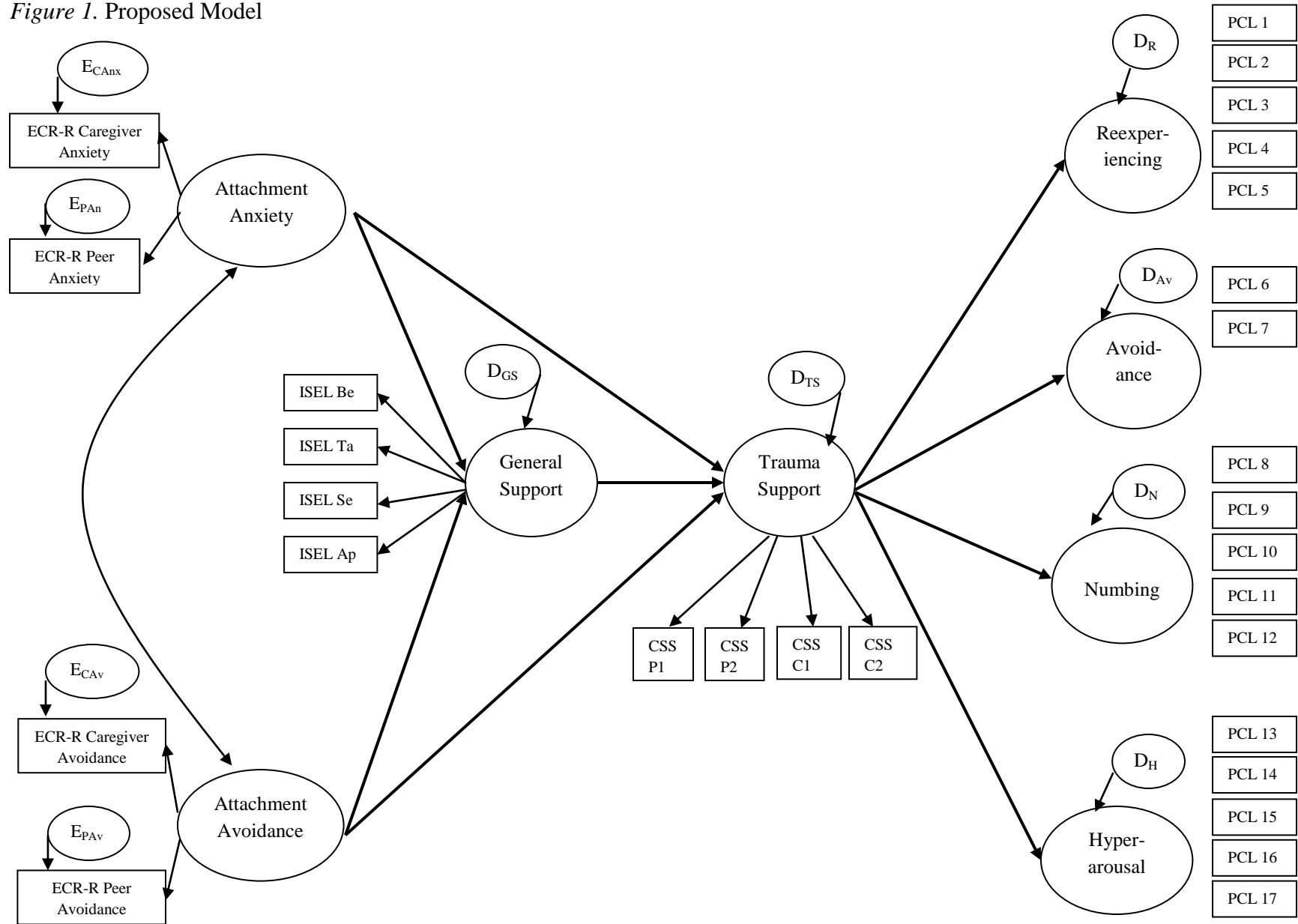
Figure 2. SEM of Proposed Model, DSM-Based 4-Factor Measurement of PTSD. All lines entered in model. Solid lines were statistically significant, whereas dashed lines were not significant.
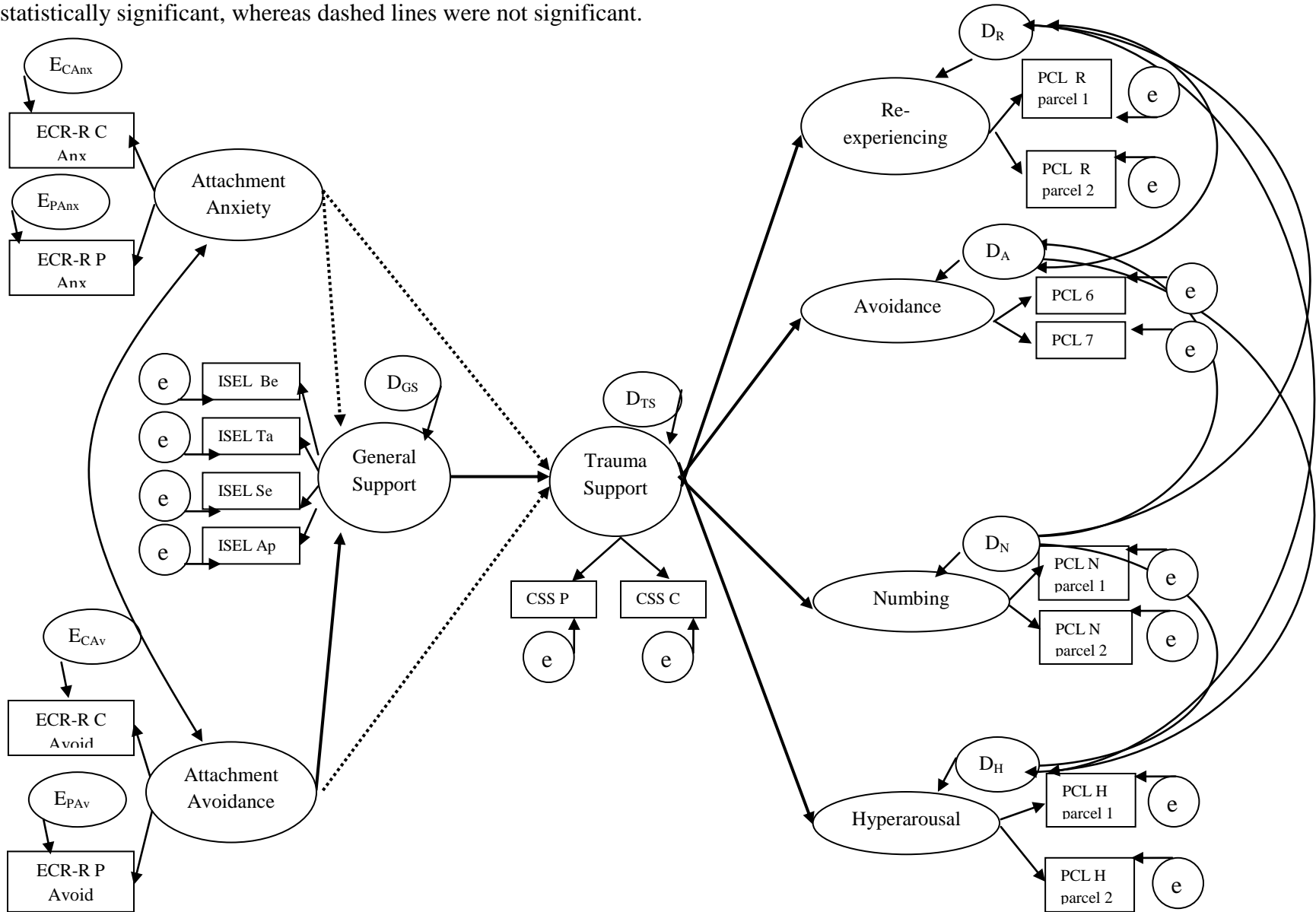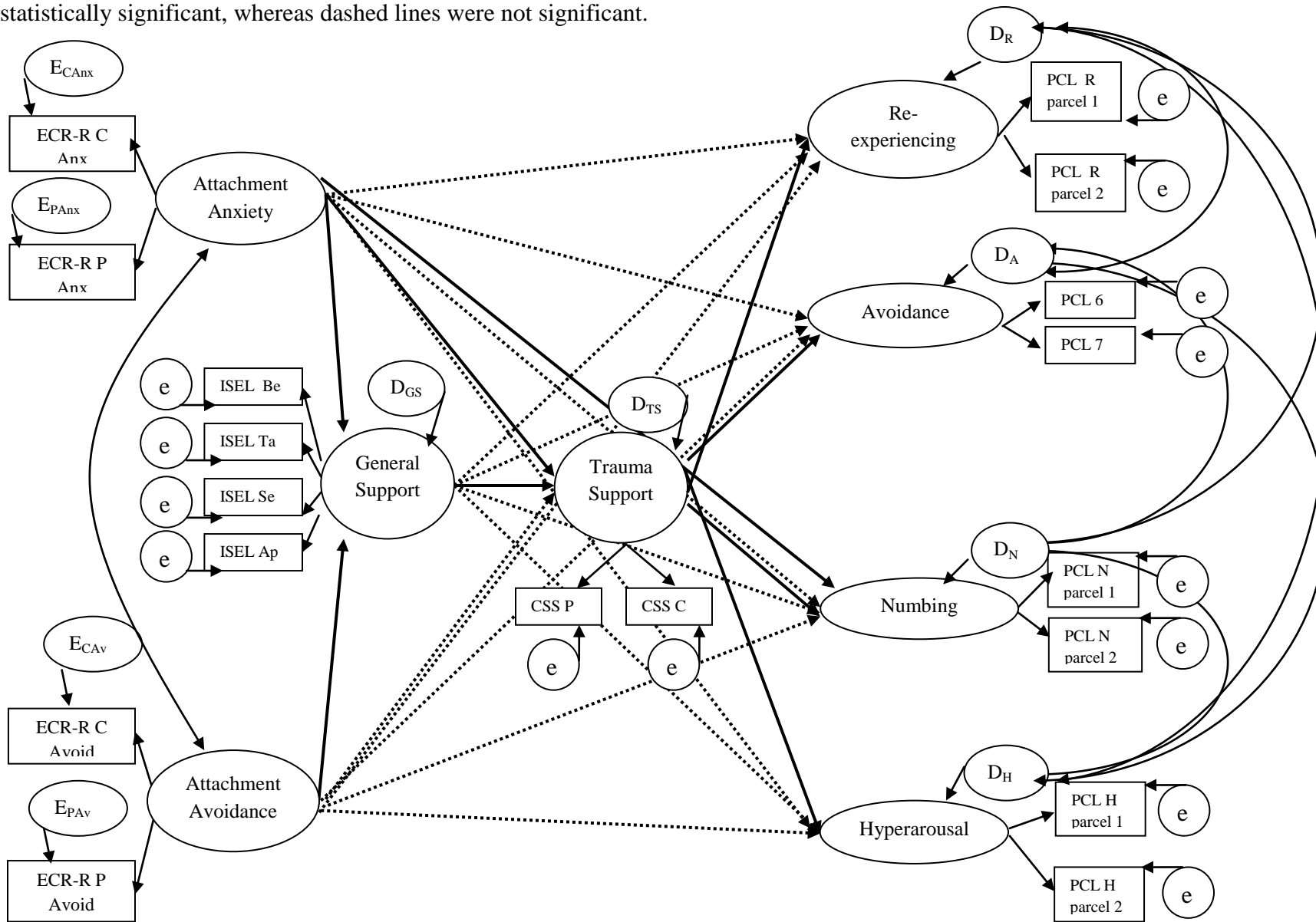
Figure 3. SEM of Fully Saturated Model, DSM-Based 4-Factor Measurement of PTSD. All lines entered in model. Solid lines were statistically significant, whereas dashed lines were not significant.

Figure 4. SEM of Trimmed Model, DSM-Based 4-Factor Measurement of PTSD. Coefficients represent standardized regression weights for significant paths.
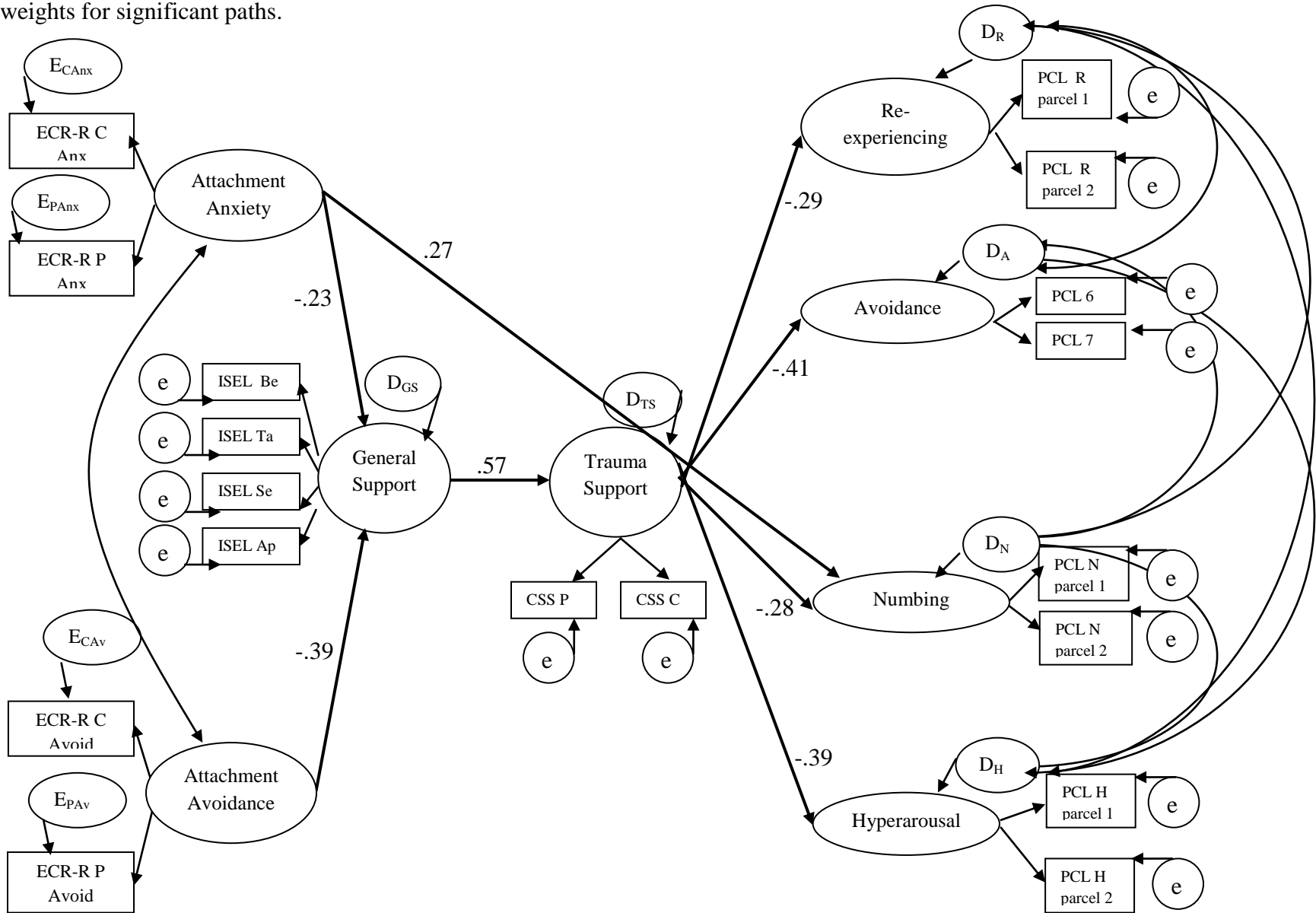
55

Figure 5. SEM of Proposed Model, Dysphoria-Based 4-Factor Measurement of PTSD. All lines entered in model. Solid lines were statistically significant, whereas dashed lines were not significant.
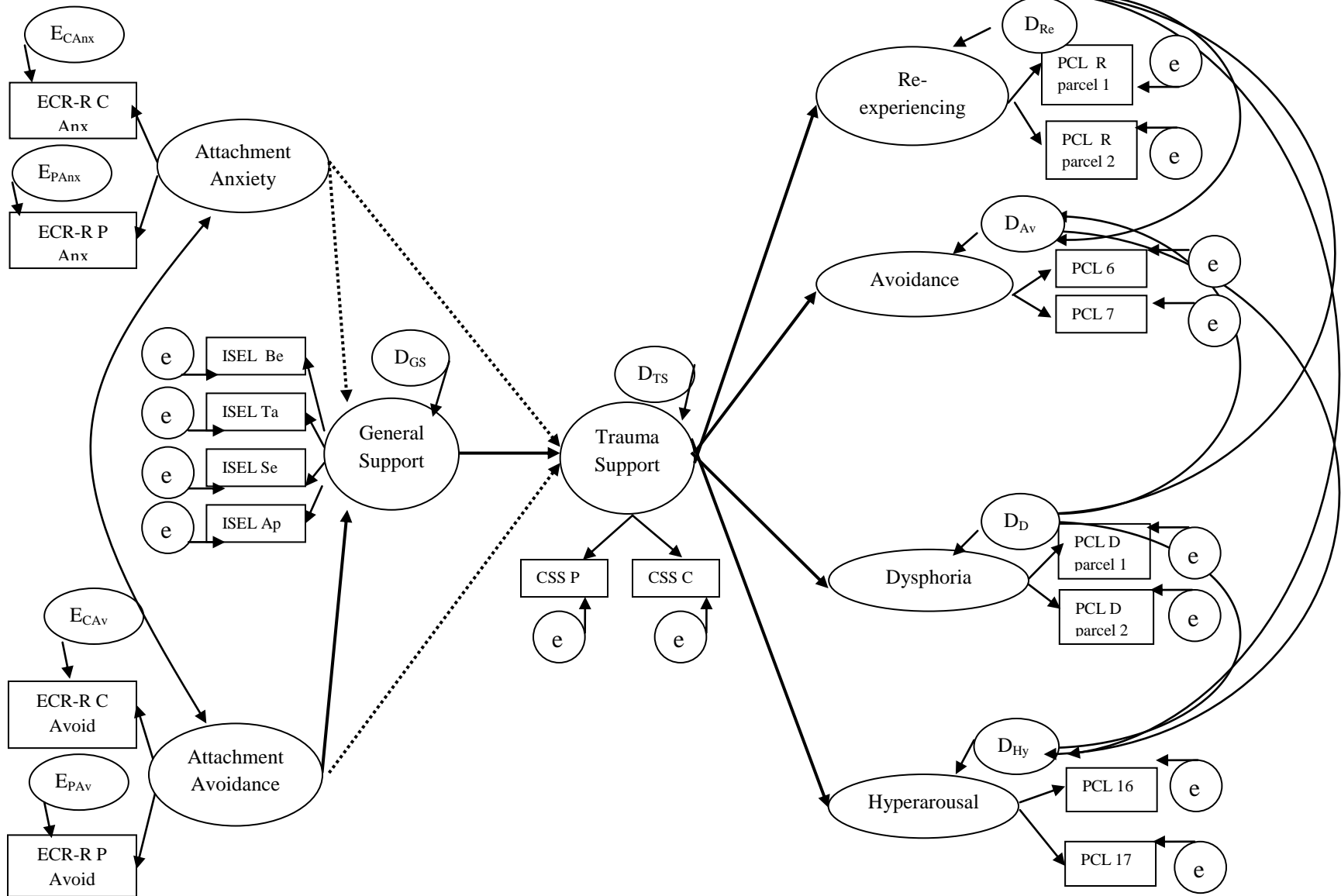
Figure 6. SEM of Fully Saturated Model, Dysphoria-Based 4-Factor Measurement of PTSD. All lines entered in model. Solid lines were statistically significant, whereas dashed lines were not significant.
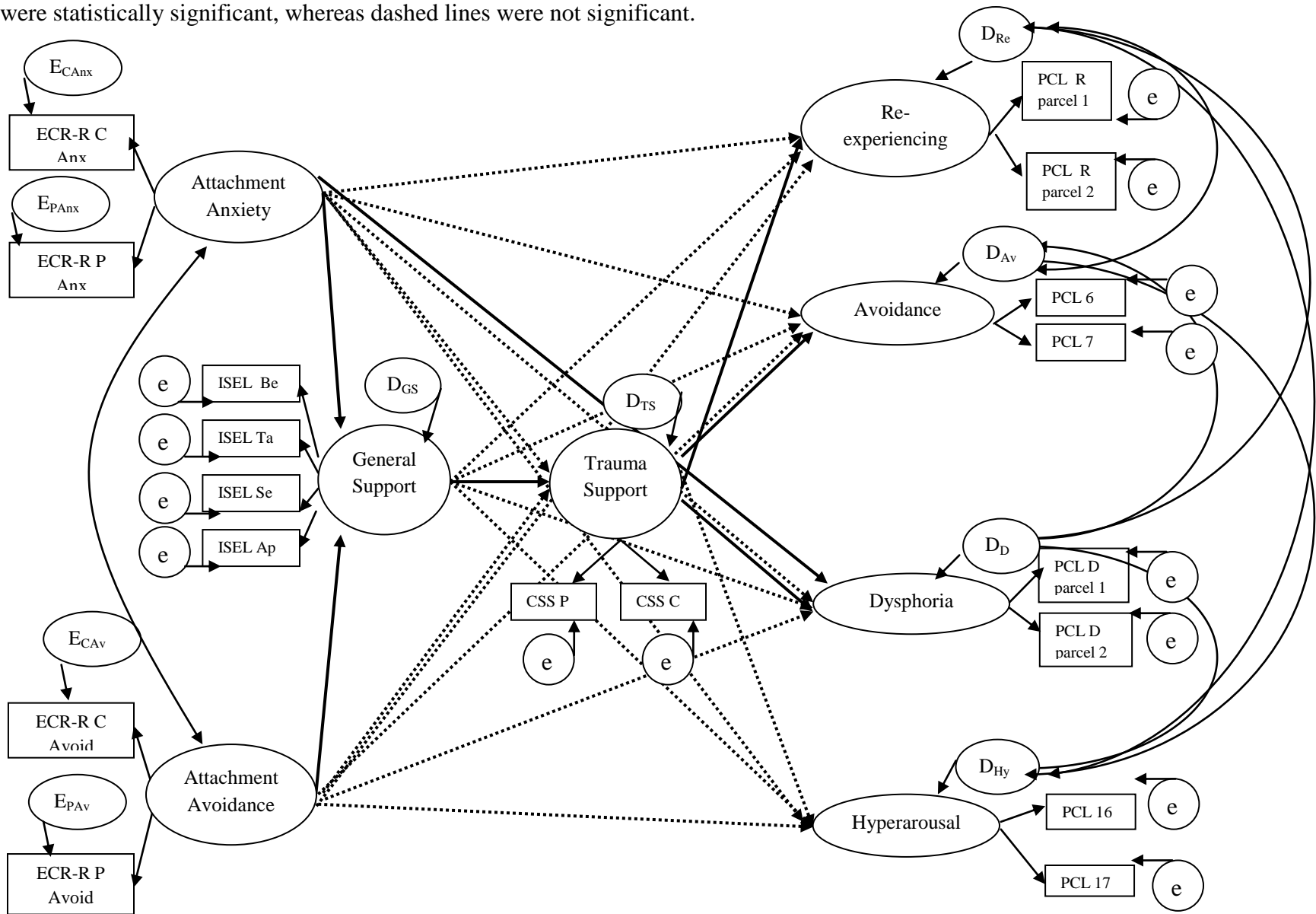
Figure 7. SEM of Trimmed Model, Dysphoria-Based 4-Factor Measurement of PTSD