


Psychologie
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# The Relationships Between Negative Life Events, PTSD Symptoms and Medically Unexplained Symptoms

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## Abstract

The aim of the present study was to study the relationship between negative life events, PTSD symptoms, and medically unexplained symptoms and to explore whether there was a possible mediating effect of PTSD symptoms on the relationship between negative life events and medically unexplained symptoms. Participants were patients from a general practitioner's practice in Utrecht (N= 232). The study used simple linear regression for the analysis of data. Results showed that both negative life events and PTSD symptoms had an influence on the medically unexplained symptoms; however, when both the variables *negative live events* and *PTSD symptoms* were taken together in the analysis only the variable *PTSD symptoms* remained significant. The results of this study showed a significant, although negligible, relationship between negative life events and medically unexplained symptoms, and a weak positive relationship between PTSD symptoms and medically unexplained symptoms. The results also suggest that the PTSD symptoms have a mediating effect, even though this is a weak positive relationship.

## Contents

# 1. Introduction

## 1.1. Life events

Going through a negative life event that is emotionally painful, shocking, or causes distress can be diagnosed as *trauma* in psychology. Traumas may have long-term psychological and physical consequences (Straussner & Calnan, 2014). When the given stress resulting from a negative event overwhelms a person's ability to cope with it, that event will produce a traumatic response (McGinley & Varchevker, 2013). While a particular event may be traumatizing for one person, the same event may have less of an impact on another person. This may depend on many factors such as age, gender, previous negative life events, and current life stressors (Straussner & Calnan, 2014). In addition to these factors, personality and one's coping self-efficacy (one's perceived capability of managing both in personal functioning and in the aftermath of a traumatic event), are also important predictors of longer-term functioning after a traumatic event (Bosmans, van der Knaap & van der Velden, 2015). In a study by Bosmans et al. (2015), it was found that the trait *emotional stability* affected the coping self-efficacy in those with high post-traumatic stress disorder symptomatology, indicating that, following a traumatic event, patients with low scores on the emotional stability trait enter a negative spiral and are more likely to experience high levels of traumatic stress. The stress produced by a traumatic event can cause complaints such as disorganization of thinking, hyper-awareness, hypervigilance, and problems with coping. Some of these complaints are temporary reactions and will pass, but some people will experience these complaints as more severe and for a longer period of time (Straussner & Calnan, 2014). Van der Kolk, Roth, Pelcovitz, Sunday, and Spinazzola (2005) found that a trauma that is prolonged, occurs at an early age, and/or is of an interpersonal nature, can have a substantial effect on psychological functioning, which goes beyond the symptomatology of post-traumatic stress disorder (PTSD) (which is characterized by three symptom clusters: intrusion, avoidance, and hyper-arousal (Fossion et al., 2014)). These additional effects include, among others, affect regulation problems, aggression both to self and others, dissociative symptoms, and somatization (Van der Kolk et al., 2005).

## 1.2. Medically unexplained symptoms

The recognition of medically unexplained symptoms as being the result of a possible negative life event could help the general practitioner in his or her choice of further treatment.

The diagnosis of medically unexplained symptoms helps to explain how physical complaints can exist in the absence of physiological disturbance, and how they can develop from psychological processes (Brown, 2006). Negative life events have been shown to be associated with the presence of more medically unexplained symptoms (Andreski, Chilcoat & Breslau, 1998). Medically unexplained symptoms are also known as somatization; however, this term is used less often (Brown, 2004; Heinrich, 2004).

Medically unexplained symptoms have been shown to be associated with exposure to traumatic events and serious life stressors. A systematic review by Roelofs and Spinhoven (2007) that focused on functional somatization (for example, chronic pelvic pain and irritable bowel syndrome), conversion disorder, and medically unexplained symptoms, showed that patients with medically unexplained symptoms reported higher trauma rates in general than did controls. Gawronski, Kim, and Miller (2014) found that exposure to traumatic or serious life events was associated with more visits to the doctor. Trauma exposure was also linked to poor health outcomes such as chronic diseases. It was found that patients with a history of PTSD were three times more likely to have a history of somatization and reported more somatic complaints than patients without a history of PTSD (Andreski et al., 1998; Escalona, Achilles, Waitzkin, & Yager, 2004).

Psychiatric disorders were also associated with somatization complaints; however, PTSD was significantly associated with all the somatization complaints, with the exception of pain complaints. Gastrointestinal symptoms, sexual symptoms, cardiopulmonary, and pseudo-neurological symptoms were reported by patients with PTSD significantly more often overall than by patients without PTSD (Andreski et al., 1998). It also appeared that patients with somatization had more primary care visits, specialist visits, emergency department visits, hospital admissions and higher inpatient and outpatient costs than non-somaticized patients (Barsky, Orav & Bates, 2005).

### 1.3. Post-traumatic stress

It has been found that cardiac patients who had experienced a negative life event and scored high on the intrusion, avoidance, and hyper-arousal scale, reported poorer mental health and were preoccupied with somatic complaints (Ladwig et al., 1999). A similar result was obtained in a study by Sareen et al. (2007), who found that chronically ill patients who were also diagnosed with PTSD by a medical professional, had lower quality of life, high feelings of distress, experienced more disability days due to mental health, and reported more

suicide attempts. It appeared that the three symptom clusters of PTSD did not equally predict the somatization symptoms (Elklit & Christiansen, 2009; Ginzberg & Solomon, 2011; McFarlane, Atchinson, Rafalowitcz & Papay, 1994). In the study by Elklit et al. (2009) the arousal PTSD symptom cluster was the only one that significantly explained the somatization symptoms, and in the study by McFarlane et al. (1994) only the intrusion PTSD symptom cluster significantly predicted somatization. The study by Ginzberg et al. (2011) found that people with stress reactions due to trauma had both high levels of intrusion and avoidance.

### 1.4. Present study

The studies discussed earlier suggest that there is a direct relationship between negative life events and medically unexplained symptoms (e.g., Andreski et al., 1998). It has also been shown that there is a direct relationship between PTSD symptoms and medically unexplained symptoms (e.g., Ladwig et al., 1999). A question that has not yet been answered with regard to the relationship between medically unexplained symptoms and negative life events is whether this relationship is mediated by PTSD symptoms (intrusion, avoidance, and hyper-arousal). In other words, to what extent do the PTSD symptoms account for the relationship between negative life events and medically unexplained symptoms? This study aimed to produce findings that can assist professionals in recognizing and treating somatization symptoms.

The aim of this study was to answer the following research questions:

1. To what extent is there a direct relationship between the number of negative life events and the number of medically unexplained symptoms?
2. To what extent is there a direct relationship between PTSD symptoms (intrusion, avoidance, and hyper-arousal) and medically unexplained symptoms?
3. To what extent is there a mediating effect of PTSD symptoms in the relationship between negative life events and medically unexplained symptoms?

### 1.5. Hypotheses

On basis of research showing that traumatic events were associated with poor health outcomes and more somatic symptoms, it is expected that people who experience more negative life events will also report more medically unexplained symptoms (Hypothesis 1).

Also, high scores on the PTSD symptom clusters scale were associated with having more somatic complaints. It is therefore expected that people with high scores on the PTSD symptom clusters scale will report more medically unexplained symptoms (Hypothesis 2).

### 1.6. Explorative

Because less is known about PTSD symptoms as a mediator, the question of whether PTSD symptoms can function as a mediator in the relationship between the negative life events and medically unexplained symptoms will also be researched in this study.

# 2. Methods

## 2.1. Participants

In this study 232 patients from a general practitioner's practice in Utrecht participated. A total of 516 volunteers started the questionnaire, but only 465 of them actually submitted the questionnaire. The 51 participants who did not complete the questionnaire were excluded from the study. Ultimately, only 232 participants were included in the study; 224 participants were excluded due to the fact that they did not complete the needed instruments for this study.

## 2.2. Procedure

A number of general practitioner practices were contacted by telephone about this study. They were asked whether they were interested in participating in the study, in which the relationship between somatization and traumas of the past would be investigated. When a general practitioner was interested in participating, a follow-up email was sent, with more detailed information about the goal and realization of the study. In a later conversation with the general practitioner, the method of approaching patients was discussed. After the general practitioner's consent was obtained, patients were approached by sending an email with information about the study and a link to the questionnaire. In this email, the patient was asked whether he or she was willing to participate in this study. To participate, the participant had to be between the ages of 18 and 67 years. They also had to understand the Dutch language so that they would be able to fill in the questionnaire. Before the participant began answering the online questionnaire, information about the questionnaire and the purpose of the study was given. If the subject still wanted to participate, he or she was asked to read and sign an informed consent form. The informed consent form is a legal form that ensures that the participant is informed about the nature of the study and understands that they may stop participating at any time. The participant could then begin with the questionnaire. An email was sent to 2,009 patients, in order to invite them to participate in the study. Two weeks later a reminder was sent. The reminder was sent to 1,851 patients. Of the original 2,009 participants, the email addresses for 156 were incorrect, and they were therefore excluded. The questionnaire consisted of several sections, each focusing on a different topic, such as explained and unexplained physical symptoms, negative and traumatic life events, coping strategies, and psychological symptoms. During and after the study, the privacy of the participants was respected and guaranteed.

### 2.3. Materials

This study used an online questionnaire. The questionnaire that was used in the study consisted of several sections, each focused on a different topic. Each section contained statements or questions in which the participant was asked to indicate to what extent a given statement or answer was applicable to his/her own situation. The statement or questions were in Dutch. Three of the sections were based on the following instruments:

- The Life Events Questionnaire;
- The Impact of Event Scale and;
- The Symptom Checklist 90 scale.

In addition, the questionnaire started with questions concerning general personal information such as age, gender, nationality, education, occupation, number of children, and the living situation of the participant.

The Dutch Life Events Questionnaire (also known as: *de Levensgebeurtenissen vragenlijst*) developed by Garnefski and Kraaij (2001), measures whether the participant has experienced certain negative life events and specifies the period in which these took place. In total eighteen questions are asked. Questions are asked about life events such as divorce, physical abuse, sexual abuse, prolonged and/or severe physical illness, mental health problems, suicide attempts, unwanted pregnancy, violence within the family or relationship, alcohol abuse or addiction, being the victim of a crime or a serious accident, being bullied, and the death of loved ones. Some questions are asked twice but differ in whether the person himself or herself or a relative has experienced the life event. Examples of the given life events are: divorce of parents, divorce of self, or the death of loved ones. With checkboxes, participants indicate if and when the life event took place, with 1 = *no, has not experienced the given life event*; 2 = *yes, experienced the given life event, before the age of 16*; 3 = *yes, experienced the given life event, between the age of 16 and a year ago*, and 4 = *yes, experienced the given life event, in the past year*. If a life event occurred during several periods, multiple periods can be selected.

The Dutch Impact of Event Scale (IES) (Brom & Kleber, 1985) measures the subjective level of distress, during the past week, of the participant who has experienced a traumatic event. In the IES the three symptom clusters of PTSD (intrusion, avoidance, and hyper-arousal) are distinguished as separate subscales. An example of one of the given statements is “I felt irritable and angry”. On a 5-point Likert scale, participants indicate the

degree to which the statement applies to himself or herself. Item response scale points are 0 = *not at all*; 1 = *a little bit*; 2 = *moderately*; 3 = *quite a bit*; 4 = *extremely*. Questions are asked about memories, problems with sleeping, and the PTSD symptoms (avoidance, intrusion and hyper-arousal). In total twenty-two questions are asked. The IES measures the subjective response to a specific traumatic event as well as a total subjective stress score, which is calculated by adding the totals for each subscale. The total score indicates the subjective distress of the participant. There is no specific cut-off score (Christianson & Marren, 2008). The reliability coefficient for the total score ranges from .87 to .96. The reliability of the subscales and the total of the IES are good, according to Van der Ploeg et al. (2004).

The Dutch translation of the Symptom Checklist-90 (Ettema & Arrindell, 2003) measures to what extent the participant has suffered, during the last week, from anxiety, agoraphobia, depression, somatization, cognitive performance deficits, interpersonal sensitivity, hostility, sleep difficulties and physical complaints. In the present study only the somatization scale was utilized and was expanded with items that were assumed to represent possible somatization complaints. The questions were posed in the following form: *To what extent do you suffer from headaches?*[or *dizziness, fatigue,* etc.]. On a 5-point Likert scale, participants indicate the degree to which he or she suffers from the given complaint. The participant is asked if and to what degree the statement applies to him or herself. Item response scale points are 0 = *not at all*; 1 = *a little bit*; 2 = *moderately*; 3 = *quite a bit*; 4 = *extremely* (Ettema & Arrindell, 2003).

Due to the fact that the somatization scale measures all physical complaints and not only unexplained physical complaints, this study used two versions of the scale. One version asked about general physical complaints the second version asked about the same general physical complaints, but then asked whether they are medically explained or not. In this study only the second version of the scale was ultimately used in the analysis.

In total forty-two questions were asked: twenty-one for the general physical complaints and twenty-one for the unexplained physical complaints. For the analysis the scores for all the questions for each subscale was summed. The reliability coefficient was .86 (Derogatis, Rickels, & Rock, 1976). According to Connelly (2011), this is a high level of reliability.

### 2.4. Statistical analysis

The statistical analysis was performed with the SPSS program, version 22.0. First, a descriptive analysis was performed. In this analysis the mean, standard deviation, and the

level of reliability were determined. To determine the reliability of the results the data was also analyzed for outliers, missing values, and the normality of the distributions. Finally, the correlation between all the study variables was determined with a chi-square analysis.

Prior to simple linear regression analysis, the data were tested to see whether they met the assumptions of the regression analysis. First, the linearity and homoscedasticity of the data were checked with a scatterplot. Second, the data were checked for significant outliers with case wise diagnostics. Third, for the independence of the observations a Durbin-Watson test was used.

The first research question: *Is there a direct relationship between the number of negative life events and the number of medically unexplained symptoms?* was answered with a multiple linear regression analysis, using the Enter method. To be sure that the observed effect was not caused by the variables *age* and *gender*, these variables were also included in the analysis. The variables *age* and *gender* were placed in the first block, and the variable *negative life events* was placed in the second block. Both blocks were analyzed in order to determine the relationship with the dependent variable *medically unexplained symptoms*.

The second research question: *Is there a direct relationship between PTSD symptoms and medically unexplained symptoms?* was answered with a multiple linear regression analysis, using the Enter method. To be sure that the observed effect was not caused by the variables *age* and *gender*, these variables were also included in the analysis. The analysis was intended to determine the relationship between the variable *PTSD symptoms* and the dependent variable *medically unexplained symptoms*.

The last research question: *Is there a mediating effect of PTSD symptoms in the relationship between negative life events and medically unexplained symptoms?* was answered with a multiple regression analysis, using the Enter method.

To be able to conclude whether there is a mediation effect, the following regression equations developed by Baron and Kenny (1986) must be evaluated:

1. The variations of the independent variable *negative life events* significantly accounts for the variations in the dependent variable *medically unexplained symptoms*;
2. The variations of the independent variable *negative life events*, significantly accounts for the variations in the possible mediator *PTSD symptoms;*
3. The variations in the possible mediator *PTSD symptoms*, significantly accounts for the variations in the dependent variable *medically unexplained symptoms*;

4. Assuming that these three criteria are met, when *PTSD symptoms* are added as predictors, the previously found relationship between *negative life events* and *medically unexplained symptoms* is no longer significant or decreases substantially (partial mediation).

First, the regression equations were checked against the results for the first two questions. Subsequently, a stepwise multiple regression analysis was performed. To be sure that the mediating effect was not caused by the variables *age* and *gender*, these variables were also included in the analysis. The independent variables *age* and *gender* were placed in the first block, and the independent variable *negative life events* and the mediating variable *PTSD symptoms* in the last block. The dependent variable was the *medically unexplained symptoms*.

# 3. Results

## 3.1. Descriptive statistics

For all variables included in the analyses, Table 1 presents the descriptive statistics for the participant characteristics (*N*, percent, mean, and standard deviation) and Table 2 presents the descriptive statistics for the study variables. The study participants consisted of 39 men and 193 women, with a mean age of 45 years, an age range of 18-67 years, and a standard deviation of 13.42. All participants lived in Utrecht, 227 participants were of the Dutch nationality, and 5 were of another nationality. Of the participants, 142 of them indicated having no children, 32 indicated having one child, and the remaining participants had 2 or more children. The participants were asked whether they had experienced a negative life event and, if so, when it took place. Three participants reported not having experienced a negative life event, 144 participants reported having experienced a negative life event before the age of 16, 216 participants reported having experienced a negative life event between the age of 16 and one year ago, and 116 participants reported having experienced a negative life event within the past year. Of the 232 participants only 63 participants reported suffering from medically unexplained symptoms. On average, participants going through a negative life event experienced having more PTSD symptoms.

Table 1. *Descriptive analysis for gender, age, having children, life events, medically unexplained symptoms, and the impact of event scale.*

| | *N*=232 | *M* | SD |
|---|---|---|---|
| *Gender* | | | |
| Men % | 16.8 | | |
| Woman % | 83.2 | | |
| Age | | 45.5 | 13.42 |
| *Having children* | | | |
| No % | 61.2 | | |
| Yes, one child % | 13.8 | | |
| Yes, two or more % | 25 | | |
| *Current life situation* | | | |
| Living alone % | 40.1 | | |
| Living alone with children % | 4.3 | | |
| Married / living together % | 25.9 | | |
| Married / living together with children % | 22 | | |
| Resident with parents % | 0.9 | | |
| Other % | 6.9 | | |
| *Number of life events* | | 5.65 | 3.35 |
| None % | 1.3 | | |
| More than five % | 53.4 | | |
| More than ten % | 35 | | |
| More than fifteen % | 10.3 | | |
| *Number of life event before the age of 16* | | 1.58 | 1.95 |
| None % | 37.0 | | |
| More than three % | 45.2 | | |
| More than six % | 13.9 | | |
| More than nine % | 3 | | |
| *Number of life events between 16 and a year ago* | | 3.15 | 2.20 |
| None % | 11.2 | | |
| More than three % | 56.5 | | |
| More than six % | 34 | | |
| More than nine % | 8.3 | | |
| *Number of life events in the past year* | | 0.82 | 1.01 |
| None % | 50 | | |
| More than two % | 43.1 | | |
| More than four % | 6.9 | | |

Table 2. *Descriptive analysis for total score of IES, number of life events, and number of MUS.*

| | *N* | *Missing* | *M* | *SD* |
|---|---|---|---|---|
| Total score of IES | 206 | 26 | 46.47 | 17.60 |
| Number of negative life events | 232 | 0 | 5.65 | 3.34 |
| Number of medically unexplained symptoms | 232 | 0 | 1.05 | 2.79 |

### 3.2. Data inspection

To determine the reliability of the results the data was analyzed for missing values, outliers, and the normality of the distributions. Of the 232 participants, 88.8% completed the IES questionnaire. The other 11.2% of the sample was 'missing', meaning they had not completed the IES questionnaire. The Test of Normality (Kolmogorov-Smirnov and Shapiro-Wilk statistic) showed that the distribution is significantly different from the expected normal distribution ($p$ = .000). However, with such a large sample size $N$, it is also recommended to look at the Q-Q plots. The Q-Q plots for the subscales intrusion, avoidance, and hyper-arousal as well as the total for the IES showed a normal distribution. There were no outliers. The Q-Q plots for the life events and medically unexplained symptoms scales show that the distribution is not normal and that there are significant outliers for the medically unexplained symptoms scale at the highest end (people with many unexplained symptoms). Overall, the Q-Q plots showed that normality is probably a good approximation. All instruments had a Cronbach's alpha of a minimum of .82 (see Table 3), which is considered reliable.

Table 3. *Chronbach's Alpha.*

| | α | *N* of Items |
|---|---|---|
| Scale Intrusion | 0.87 | 8 |
| Scale Avoidance | 0.88 | 8 |
| Scale Hyper-arousal | 0.84 | 6 |
| Impact of Event Scale | 0.95 | 22 |
| Medical unexplained symptoms | 0.82 | 21 |

### 3.3. The relationship between negative life events and MUS

To investigate the relationship between *negative life events* (independent variable) and *medically unexplained symptoms* (dependent variable), a multiple regression analysis was performed. Because both *negative life events* and *medically unexplained symptoms* may be associated with the variables *age* and *gender*, making the latter confounders, the analysis included the variables *age* and *gender* as covariates in all analyses. The analysis shows an $R^2$ of 0.01 for the first step (*age* and *gender*) and $R^2$ of 0.04 for the second step (*age, gender* and *negative life events*). When analyzing which variable has the most influence on the dependent variable, the results show that the variable *negative life events* has the most influence on the dependent variable *medically unexplained symptoms*, with a beta of 0.152 ($p$ = .022) (see Table 4).

Table 4. *SPSS Coefficients of Research Question 1.*

| | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| Model | | *B* | *SE* | *β* | *t* | *P* |
| 1 | Gender | 0.69 | 0.49 | 0.09 | 1.42 | 0.158 |
| | Age | 0.02 | 0.01 | 0.07 | 1.09 | 0.275 |
| 2 | Gender | 0.58 | 0.49 | 0.08 | 1.18 | 0.238 |
| | Age | 0.01 | 0.01 | 0.05 | 0.80 | 0.427 |
| | Negative life events | 0.13 | 0.06 | 0.15 | 2.31 | 0.022 |

*Note.* Dependent Variable = *medically unexplained symptoms*

### 3.4. The relationship between PTSD symptoms and MUS

A second multiple regression analysis using the Enter method was performed for the relationship between *PTSD symptoms* (independent variable) and *medically unexplained symptoms* (dependent variable). The analysis shows an $R^2$ of 0.01 for the first block (*age* and *gender*) and an $R^2$ of 0.06 for the second block (*age, gender* and *PTSD symptoms*). When analyzing which variable influences the dependent variable most, we find that the variable *PTSD symptoms* has the most influence on the dependent variable *medically unexplained symptoms*, with a Beta of 0.233 ($p$ = .001) (see Table 5).

Table 5. *SPSS Coefficients of Research Question 2.*

| | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| Model | | *B* | *SE* | *β* | *t* | *P* |
| 1 | Gender | 0.59 | 0.49 | 0.08 | 1.20 | 0.231 |
| | Age | 0.01 | 0.01 | 0.05 | 0.70 | 0.484 |
| 2 | Gender | 0.54 | 0.48 | 0.08 | 1.12 | 0.263 |
| | Age | 0.01 | 0.01 | 0.05 | 0.71 | 0.478 |
| | Total score of IES | 0.04 | 0.01 | 0.23 | 3.41 | 0.001 |

*Note.* Dependent Variable = *medically unexplained symptoms*

### 3.5. The mediating effect of PTSD symptoms

A third multiple regression analysis using the Enter method was performed to investigate the mediating effect of *PTSD symptoms* (mediator) in the relationship between *negative life events* (independent variable) and *medically unexplained symptoms* (dependent variable). Hereby the previous regression equations developed by Baron and Kenny (1986) were checked.

First, the variations in the independent variable *negative life events* significantly accounted for the variations in the dependent variable *medically unexplained symptoms,* with an $R^2$ of 0.04 ($p$ = 0.022) (Table 4);

Second, the variations of the independent variable *negative life events* significantly accounted for the variations in the possible mediator *PTSD symptoms*, with an $R^2$ of 0.04 ($p$ = 0.006) (Table 6);

Third, the variations in the possible mediator *PTSD symptoms* significantly accounted for the variations in the dependent variable *medically unexplained symptoms*, with an $R^2$ of 0.06 ($p = 0.001$) (Table 5);

Last, the mediator *PTSD symptoms* accounted for the variations in the dependent variable *medically unexplained symptoms,* with an $R^2$ of 0.07 ($p = 0.002$); hereby the variable *negative life events* was no longer significant and decreased substantially in the relationship with the variable *medically unexplained symptoms* ($\beta = 0.15$ to $\beta = 0.09$) (Tables 6 and 7).

Table 6. *SPSS Coefficients for Regressing the Mediator on the Independent Variable.*

| | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| Model | | *B* | *SE* | *β* | *t* | *P* |
| 1 | Gender | 1.51 | 3.31 | 0.03 | 0.46 | 0.649 |
| | Age | 0.00 | 0.09 | 0.00 | 0.03 | 0.976 |
| 2 | Gender | 0.64 | 3.28 | 0.01 | 0.20 | 0.845 |
| | Age | -0.03 | 0.09 | -0.02 | -0.29 | 0.770 |
| | Negative life events | 1.02 | 0.37 | 0.19 | 2.78 | 0.006 |

Note: Dependent variable = *Total Score of IES*

Table 7. *SPSS Coefficients for Regressing the Dependent Variable on the Independent Variable and Mediator.*

| | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| Model | | *B* | *SE* | *β* | *t* | *P* |
| 1 | Gender | 0.60 | 0.50 | 0.08 | 1.20 | 0.231 |
| | Age | 0.01 | 0.01 | 0.05 | 0.70 | 0.484 |
| 2 | Gender | 0.49 | 0.49 | 0.07 | 1.01 | 0.315 |
| | Age | 0.01 | 0.01 | 0.04 | 0.56 | 0.575 |
| | Negative life events | 0.07 | 0.06 | 0.09 | 1.23 | 0.219 |
| | Total Score of IES | 0.03 | 0.01 | 0.22 | 3.12 | 0.002 |

*Note.* Dependent Variable = *medically unexplained symptoms*

## 4. Discussion

The present study adds to the existing literature by confirming the relationships among negative life events, PTSD symptoms, and medically unexplained symptoms. The study revealed a relationship between negative life events and medically unexplained symptoms; a relationship between PTSD symptoms and medically unexplained symptoms; and a possible mediating effect of PTSD symptoms on the relationship between negative life events and medically unexplained symptoms.

In the present study it was expected that people who experienced more negative life events would also report more medically unexplained symptoms. A significant relationship was found between negative life events and medically unexplained symptoms; however, this relationship is negligible, due to the small $R^2$. Earlier studies found a relationship between negative life events and somatization (Andreski et al., 1998); however, the observed relationship in this study was weak. A possible reason could be that the average number of negative life events a participant experienced did not have a high level of influence on the participant in terms of developing somatic complaints. However, the study by Glaesmer, Kaiser, Braehler, Freyberger, and Kuwert (2012) showed that traumatic events, even without the presence of PTSD symptomatology, were significantly related to somatoform symptoms. Another possible explanation for the negligible relationship, which needs to be further investigated, is that the experienced negative life event was too long ago (the average number of negative life events a participant experienced in the past year was less than one in this study) and did not evoke (at least consciously) medically unexplained symptoms which the participant could than indicate. This latter explanation could say something about the coping style of the participant, developed over the years in which he or she did not get a medically explained reason for having complaints. However, the study by Amir, Kaplan, Efroni, Levine, Benjamin and Kotler (1997) showed the opposite; that is, patients who tried to suppress the impact of the traumatic event suffered more from the PTSD symptoms.

A second hypothesis was that people with high scores on the PTSD symptom scale would report more medically unexplained symptoms. In earlier studies high scores on the PTSD clusters were associated with having more medically unexplained symptoms (Ladwig et al., 1999). A significant relationship was found between PTSD symptoms and medically unexplained symptoms. However, the observed relationship is a weak positive relationship. A possible explanation could be the low scores on the PTSD symptom scale of participants in

this study. Participants in this study were little to moderately bothered/distressed after stressful life events. In the study by Andreski et al. (1998) persons with PTSD symptoms were significantly more likely to report somatization symptoms; this was not found in the present study.

This study also set out to explore whether PTSD symptoms function as a mediator in the relationship between negative life events and medically unexplained symptoms. It was found that the variable *negative life events* influenced the variable *PTSD symptoms*, which in turn influenced the variable *medically unexplained symptoms*. In earlier discussed studies the relationship between negative life events, PTSD symptoms, and medically unexplained symptoms was shown (Ladwig et al., 1999; Elklit et al., 2009; Ginzberg et al., 2011; McFarlane et al., 1994). However, not much is known about the possible mediating effect of PTSD symptoms in this relationship. The results of this study suggest that there is a mediating effect of the PTSD symptoms in the relationship between negative life events and medically unexplained symptoms, even if this is a weak positive relationship. Despite the observed positive relationship, it remains difficult to draw any conclusion about the PTSD symptoms as a mediator in this relationship. The previously described statements about the observed weak relationship between the variables in this study also apply here.

### 4.1. Limitations

The study also had some limitations. When recruiting participants for the study, an attempt was made to gather them from different areas of the province of Utrecht. Unfortunately, this attempt was not successful. Only one general practitioner practice in Utrecht was interested in participating in the study. An interesting quality of this general practitioner practice was that they had their own nurse who was involved with patients having medically unexplained symptoms. This could be a reason why the general practitioner practice was interested in participating in the study. The fact that only patients from one practice were included could make the sample selective. A selective sample has a negative impact on the generalizability of the results. However, of the study participants only 98 indicated having medical complaints without a medical explanation. There were also more women (*N*= 378) than men (*N*=87), which also makes it difficult to generalize the results to the general population.

The distribution of the data could also have an influence on the observed correlation between the variables. When examined, the data wer  found to be not normally distributed.

This could have an influence on the observed correlation and explains why the observed relations are weak positive; perhaps if the data were normally distributed the results would have shown a stronger positive relationship.

As indicated earlier, of the 1,851 approached participants, 465 participants completed the questionnaire at least partially. However, in this study data from only 232 participants were used for analysis. The remaining 224 participants were excluded due to the fact they did not complete the required instruments. The loss of so many participants in the study also presents a danger to the generalizability of the results. It is not possibly to say if and how this group who did not fully complete the questionnaire might differ from the participants who did complete the required instruments.

It seemed that participants who had recently experienced a negative life event had a greater chance of developing medically unexplained symptoms; however, more research in this area is needed. A recommendation for future research would be to include more participants having medically unexplained symptoms in order to be able to draw more valid conclusions about the relationship between negative life events and medically unexplained symptoms, and to identify a stronger mediating effect of the PTSD symptoms in this relationship.

## 5. Literature

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