Bachelor thesis

The role of World Assumptions in the development of PTSD: Differences between western and non-western respondents

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Abstract

In the last couple of years, many people had to flee from their country due to war or other serious circumstances. Refugees often have to deal with negative effects of experiencing traumas and may develop symptoms of the Posttraumatic Stress Disorder (PTSD). Prevalence rates of PTSD among refugees tend to be higher than among the general population. Studies have found that culture has an influence on how individuals deal with consequences of traumatic events. However, less research is conducted on what these differences are and how they have an influence on PTSD. The overall goal of this study was to find out whether world assumptions play a mediating role when looking at cultural differences for symptoms of PTSD. From literature it could be predicted that western cultures would have more positive world assumptions than non-western cultures. Therefore, 837 patients of the Foundation Centrum '45 in the Netherlands filled in questionnaires. In order to measure world assumptions, the 'World Assumptions Scale' by Janoff-Bulman (1989) was used. Severity of PTSD symptoms was measured with the Dutch 'Zelfinventarisatielijst' (ZIL) by Hovens et al (2009). Lastly, to measure the traumatic events respondents had experienced, the LIFE questionnaire was used. In contrast to the predictions, respondents from non-western cultures showed to have more positive world assumptions than respondents from western cultures. A difference between respondents from western and non-western cultures was found only for the PTSD symptom 'arousal'. Unexpectedly, western respondents experienced this more than non-western respondents. As expected, it was found that viewing the world as less benevolent and oneself as less worthy is related to more severe PTSD symptom 'arousal', whereas perceiving the world as more meaningful was also unexpectedly related to more severe symptom 'arousal'. A mediation effect of the world assumptions was found, indicating that the relationship between culture and severity of symptom 'arousal' was mediated by world assumptions. Most of the results were not in line with already conducted literature. The study has several limitations, which are discussed, followed by the implications of this study and suggestions for future research. Lastly, important implications of the study will be presented.

Introduction

In our society, a great amount of people needs to deal with traumatic experiences. Those traumas can occur due to being the victim of a life-threatening event or having to witness somebody else experiencing a life-threatening event (Fedoroff, Taylor, Asmundson, & Koch, 2000). There are a number of people who will recover from a traumatic event without external help, but other victims need help or even treatment to recover from the trauma (Dunmore, Clark, & Ehlers, 2001). Not being able to recover from a traumatic event can lead to the development of a Posttraumatic Stress Disorder (PTSD). PTSD is „a set of persistent anxiety-based symptoms that occurs after experiencing or witnessing an extremely fear-evoking or life-threatening event"(Davey, 2008, p.186). Even with treatment, PTSD often becomes a chronic disorder that can last for several years. The lifetime prevalence of this illness is 7,4% in the general population of the Netherlands. The prevalence in the Netherlands is higher than in most other European countries (de Vries, & Olff, 2009).

To get more insights in this disorder, the following paragraphs will work out what PTSD is and how it is diagnosed. Then, a description of cognitive factors related to PTSD will be given. After that, a deeper outlook will be given on world assumptions following traumatic events and to what extent cultural differences play a role in world assumptions and PTSD severity.

PTSD symptoms can be categorized into four groups. The first group is *intrusive symptoms,* which stands for flashbacks, intrusive thoughts and physical reactions. The second group is *avoidance responding.* Symptoms in this group include the active avoidance of thoughts or memories of the trauma. A third group of symptoms is *negative changes in cognition and mood.* Symptoms related to this group are persistent fear, horror, guilt or shame, having negative beliefs about oneself or others or even about the world. Dissociative feelings of detachment or estrangement from others are also possible symptoms. The last group of symptoms is *increased arousal and reactivity*, which includes hypervigilance and exaggerated startle responses (Davey, 2014). PTSD will be diagnosed when the symptoms began or worsened after a traumatic experience and continued for at least 1 month, causing significant difficulties in everyday life. However, PTSD not only is associated with the symptoms described above, but is also associated with for example depression, guilt or shame, marital problems, physical illness, substance abuse, suicidal thoughts, stress-related violence and self-harm (Davey, 2014).

As already stated above, not everyone experiencing a traumatic event will develop a Posttraumatic Stress Disorder. There are several vulnerability factors that can influence the likelihood to develop the illness. Those factors are for example taking personal responsibility for the trauma and misfortunes of other people involved in the event. A couple of developmental factors such as early separation from parents or an unstable family structure during the early childhood can influence the development of PTSD. Also a family history of PTSD is a significant factor as well as having high anxiety levels or pre-existing psychological disorders (Davey, 2014).

In order to understand which factors influence the development of Posttraumatic Stress Disorder, research also investigated the influence that cognitive factors may have on PTSD. This research showed that there are several cognitions that are related to PTSD. The cognitive processing of the trauma plays an important role. The factor „mental defeat" hereby is important which leads to individuals being stuck in their role as a victim, and therefore processing everything related to the trauma in a negative way. Maintaining this negative view causes even more distress, and can lead to maladaptive behaviour as well as cognitive strategies that will maintain the symptoms of PTSD (Davey, 2014). Furthermore, appraisals of trauma consequences are related to PTSD, for example negative appraisals of posttraumatic symptoms, negative perceptions of other's responses and the belief that the individual will permanently change as a consequence of the trauma (Dunmore et al., 2001).

Moreover, the cognitive model of posttraumatic stress disorder by Ehlers & Clark (1999) shows that persistence of PTSD occurs when the individual processes a traumatic event and/or its consequences in such a way that a sense of serious current threat develops. They propose two key processes that lead to this sense of current threat.

The first process is the individual differences in the appraisal of trauma and the second includes individual differences in the nature of the memory for the event and its link to other autobiographical memories. The former includes that people might not see the traumatic event as time-limited. Thus, they develop a current threat. This threat is either perceived as external (the world as a dangerous place) or internal (view of oneself as capable/acceptable person is threatened). Furthermore, individuals often tend to over-generalise the event and their fear and experience it as more dangerous than it actually is. Additionally, people might think that they will permanently change for the worse after traumatic events and thus produce negative emotions and dysfunctional coping strategies. Another important aspect is how victims

perceive to what extent important others care about the victim's fate. As a consequence of negative appraisals, most people develop a range of negative emotions such as anger, guilt or fear (Ehlers & Clark, 1999).

The second process includes individual differences in the nature of memory for the event and its link to other autobiographical memories. This means that individuals differently recall their memories. Individuals suffering from PTSD often have difficulties in consciously retrieving complete memories of the traumatic event. Instead, their memories are fragmented, poorly organized and details may miss. Also, they often have problems to remember the exact temporal order of events. However, at the same time individuals often suffer from unwanted memories that are triggered by certain stimuli. These stimuli are oftentimes temporally associated with traumatic event (physical cues, similar emotional states or other similar internal cues). Those re-experiences occur because „trauma memory is poorly elaborated and inadequately integrated into its context in time, place, subsequent and previous information and other autobiographical memories"(Ehlers & Clark, 1999, p.325).

There is a reciprocal relationship between these two processes. The recall of a traumatic event is biased by individual's appraisal of the event, and at the same time, appraisals are strengthened by distorted memories. (Ehlers & Clark, 1999).

Former research showed that people develop assumptions or concepts of the world (also named conceptual systems) that will provide individuals with expectations about the world as well as about oneself. Making assumptions helps individuals in order to function effectively.

According to Janoff Bulman (1989), there are three primary categories of assumptions. The first category is *Perceived benevolence of the world* which includes the extent to which individuals see the world and the people in it in a positive or negative manner. The second category *Meaningfulness of the world* describes the beliefs individuals have about the distribution of positive and negative outcomes. Outcomes are either distributed with the principle of justice or with people's assumption about the controllability of outcomes. The former distribution includes beliefs about the deservingness of oneself with regard to their character. The latter includes beliefs not about the character of oneself, but rather about the behaviour of oneself. A third distribution can take place through the principle of chance. Chance means outcomes happen randomly, there is thus no making sense of why things happen to particular people. The third category is based on *Worthiness of self.* This category

also consists of three sub categories. The first one is the belief in one's self-worth, thus is one good, worthy, decent, good etc? Individuals believe that in a 'just world', their goodness determines their personal outcomes. The second category is self-controllability, which includes the extent to which individuals perceive themselves as engaging in appropriate, precautionary behaviours. The question an individual faces in this category is whether the individual does what is necessary in order to control their outcomes in life. The third category is chance. In this category, individuals either perceive themselves as lucky or as unlucky which will determine the outcomes in their lives (Janoff-Bulman, 1989).

World assumptions play a significant role when trying to deal with consequences of traumatic events. Traumatic experiences need to be integrated into the prior set of assumptions in order to function effectively. Either, the traumatic experiences need to be processed in a way that they fit with the basic assumptions, or the already existing assumptions will change. Often, the latter will occur because people cannot make sense of why something bad happened to them, so their assumptions will become more nuanced (Janoff-Bulman, 1989). Not being able to integrate traumatic events into prior set of world assumptions will likely result in the development of PTSD symptoms (Edmondson, Chaudoir, Mills, Park, Holub, & Bartkowiak, 2011).

As it is a very recent theme in the Netherlands (and also more generally in Europe), the focus in this paper will be on the differences between western and non-western individuals regarding their world assumptions and their severity of PTSD symptoms. More specifically, it will differentiate between individuals from the Netherlands and individuals who had to flee to the Netherlands because of war and / or other difficult circumstances in their home countries. It is already known that culture has an impact on how individuals will deal with the consequences of experiencing a traumatic event (Engelbrecht & Jobson, 2016). However, less research is done on the differences in the severity of symptoms between western and non-western countries, also regarding the differences between world assumptions.

A study from 2015 showed that 50 % of victims of war, or who were forced to migrate meet the diagnostic criteria for PTSD (Ullmann, Barthel, Taché, Licinio, & Bornstein, 2015). Refugees are especially likely to develop symptoms because there are many factors that contribute to their trauma. Examples include losing their homes and possibly loved ones, they suffer great stress due to forced migration, and they might experience pre-migration physical and psychological violence in their home country. Furthermore, post-migration conditions

such as financial and legal insecurities or poor socioeconomic status contribute to the development of PTSD symptoms (Haagen, ter Heide, Mooren, Knipscheer, & Kleber, 2017). Prevalence rates of PTSD among refugees (3-31%) are found to be higher than the prevalence rates for the general population in Europe which ranges from 0-7% (Haagen, et al., 2017). Additionally, former research found that victims of being raped, experiencing combat and captivity and also experiences like genocide and internment that are motivated ethnically or politically, have the highest likelihood of developing severe PTSD (Shannon, Wieling, McCleary & Becher, 2014).

In general, it can be stated that the context in which an individual lives will influence how the individual deals with the consequences of a traumatic event. Culture determines how individuals draw meaning from a traumatic event and also determines which explanations and appraisals make sense. Moreover, culture can also influence how others within the same culture will perceive the traumatic event and how the victim responds to it. This can have an impact on the support a victim gets, either enabling or disabling him/her (Engelbrecht & Jobson, 2016). Although there are several studies that indicate that culture has an influence on how individuals respond to a traumatic event, there is less research conducted specifically on how these differences in culture will influence the severity of symptoms, or what these differences are. A possible difference might exist in assumptions of the world after experiencing a traumatic event. Changes in world assumptions play a role in dealing with traumatic events and in the development of PTSD symptoms and research already found that there are cultural differences in those assumptions. Less research is conducted on how culture influences the appraisals/assumptions of the world and oneself one has after a trauma. Moreover, not much is known about whether or not the world assumptions mediate the relation between culture and severity of PTSD symptoms. However, based on the already conducted research, several predictions can be formulated that help to investigate the differences between western and non-western cultures regarding their assumptions of the world after experiencing a traumatic event.

Former research found that there are several cultural differences between western and non-western countries. There are for example cultural differences in the assumptions of ‘just world’ (everyone gets what he/she deserves) between majority and minority groups. People from minority groups see the world (either personal or general) as less benevolent and less lucky (Calhoun & Cann, 1992, 2010). Nevertheless, there is a new stream of research

indicating that victims of trauma change in a positive way after the experience. This is called posttraumatic growth, indicating that the positive change occurs from struggling with the consequences of the trauma. Intrinsic motivation for self-actualization and growth are important factors for posttraumatic growth (Ssenyonga, Owens, & Olema, 2013). However, there is also research that found that even when experiencing posttraumatic growth, there is still a considerable likelihood that in the long term, symptoms of PTSD will occur and worsen into PTSD. This might happen because refugees often experience disruptions in their lives after the traumatic events (e.g. due to arriving in new countries, new life circumstances, etc.) (Hussain & Bhushan, 2011). Therefore, and because prevalence rates of PTSD are very high among refugees, it will be predicted that people from non-western cultures that migrated into a western country might be more likely to develop negative appraisals about the benevolence and meaningfulness of the world than peoplefrom western cultures.

According to Janoff-Bulman (1989), the traumatic event that was experienced needs to be integrated into the basic assumptions one has, or basic assumptions need to be adapted in order to integrate the new information of the traumatic event. If the new information cannot be integrated, the basic assumptions might become more nuanced. Based on this process, another prediction can be made, namely that people that were forced to migrate into another country due to danger in their home country will likely have to experience not only one traumatic event, but several. For these it might thus be even harder to integrate those experiences into their assumptions as not only the traumatic event itself has to fit with the assumptions, but also a great amount of negative experiences. This adds to the prediction above, namely that individuals from non-western cultures might have more negative assumptions about the benevolence and meaningfulness of the world than western individuals.

With regard to assumptions about oneself, a possible explanation for cultural differences might be the distinction between individualistic and collectivistic cultures. This distinction is made when looking at self-worth. In individualistic cultures (mostly western), the self is seen as distinct from others, one is independent. In collectivistic cultures (mostly non-western), the self is seen as interconnected and interdependent with others (Cheng & Kwan, 2008). Individuals from collectivistic cultures are highly concerned about fitting in their social group and about what other people think of them. Their self-worth is dependent on others. As opposed to individuals from individualistic cultures, individuals from collectivistic cultures are also generally more concerned about acting and thinking in a way society expects

them to. Their self-worth can be threatened due to not only having to think about how the traumatic event affects themselves, but also about how others will perceive this event. It can thus be predicted that the likelihood of collectivistic individuals to have decreasing self-worth is higher than of individualistic individuals.

In order to investigate those predictions, the research question in this paper is: To what extent do non-western individuals have more severe PTSD symptoms than western individuals? A second question that will be studied is: Do non-western individuals have more negative world assumptions than western individuals? Moreover, it will be researched if the relation between culture and PTSD symptoms is mediated by the world assumptions. Figure 1 gives a representation of the tested model.

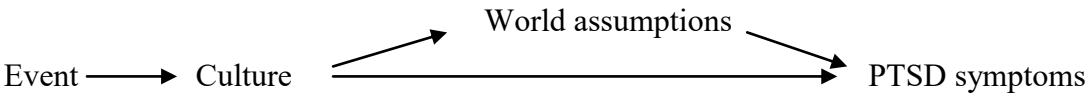

Figure 1. Model of the mediation effect of world assumptions on the relationship between culture and PTSD symptoms.

Hypotheses

Hypothesis 1: Non-western cultures have more negative world assumptions than western cultures.

Hypothesis 2: People from non-western cultures have worse PTSD symptoms than people from western cultures.

Hypothesis 3: Negative world assumptions are related to more severe PTSD symptoms

Hypothesis 4: The relation between culture and severity of PTSD symptoms is mediated by world assumptions.

Methods

Respondents

For this research, 837 patients of the Foundation Centrum ’45 in the Netherlands with diagnosis of PTSD and / or depression completed several questionnaires. Completion of the questionnaires was done as a routine diagnostic assessment of all patients. 71,9 % of the respondents were Dutch patients, 24,7 % were respondents from colonial areas and only 1,8% of the respondents were either refugees or asylum seekers. Dutch patients were mainly police officers, World War II survivors and their children and military veterans. Refugees’ knowledge of the Dutch language was sufficient to fill in the questionnaires and to take part in the assessment. Refugees were mainly from the Middle East, Sub-Saharan Africa and Balkan Europe. The age of the respondents was between 23 and 85 years with a mean of 52.8 years. Most of the respondents were male (59%).

The respondents were asked to fill in an informed consent before starting with the completion of questionnaires. The informed consent described the content of the study, its goals, that the data will be treated anonymously and that participation in the study is voluntary. After that, they filled in the questionnaires using the paper-and-pencil method. The questions were in Dutch.

Measures

In order to get answers to the research questions, the respondents filled in three questionnaires. The questionnaires measured symptoms of PTSD, the specific traumatic events the respondents experienced and respondents’ world assumptions.

Life

The first questionnaire was the LIFE, which is a self-report measure of 22 life events. There are two answer options: 0 ‘No’ and 1 ‘Yes’. The questionnaire indicates whether the respondents have experienced traumatic events such as serious injury, illness of a relative or loss of valuable belongings. The total score was used in order to measure trauma severity.

Self-Report Inventory PTSD (ZIL)

The second questionnaire is the Dutch Zelfinventarisatielijst (Self-Report Inventory PTSD) (ZIL) (Hovens, Bramsen, & Van der Plieg, 2009), which measures PTSD symptoms as

defined by DSM IV. The ZIL contains 22 items that describe PTSD symptoms that are grouped into three domains: re-experiencing of traumatic event, avoidance and numbing of responsiveness and increased arousal. Answers were given on a four-point scale ranging from 1 'Not at all' to 4 'very much'. They indicate to which extent symptoms applied to them in the past four weeks. All item scores were summed up, so that the total score could be calculated in order to measure the total severity of PTSD symptoms. In addition, the sum scores of the three subscales were calculated. The subscale 're-experiencing of traumatic event' consists of 6 items. The 'avoidance and numbing of responsiveness' scale consists of 9 items and the 'increased arousal' subscale consists of 7 items. One item example of the re-experiencing of traumatic event group is: *Ik had het gevoel alsof gebeurtenissen uit het verleden weer opnieuw plaatsvonden (*English*: I felt like past events would take place once again).* An item example of the avoidance and numbing of responsiveness group is: *Ik probeerde gedachten aan vroegere gebeurtenissen te vermijden (*English*: I tried to avoid thinking about past events).* Lastly, an item example of the increased arousal group is: *Ik was prikkelbaar (*English*: I was irritable)* (van Zelst, & de Beurs, 2004). Already conducted studies showed that the reliability of this scale was sufficient. The present study also proved that the overall scale is reliable, with a Cronbach's α=.93. Also the three subscales were reliable. The subscale 're-experiencing of traumatic events' had a reliability of α=.88, the subscale 'avoidance and numbing of responsiveness' had a reliability of α=.85 and the subscale 'increased arousal' had a reliability of α= .82.

World Assumptions Scale

The third, and last, questionnaire is the 'World Assumptions Scale' (Janoff-Bulman, 1989). This scale includes 32 items that indicate assumptions about the world. Overall, there are three domains: Benevolence of the World, Meaningfulness of the World and Self-Worth. However, items of the three domains are again grouped in eight subscales, each of them consisting of four items. Answers can be given on a six-point scale ranging from 1: 'strongly agree' to 6: 'strongly disagree'. The eight subscales are: benevolence of the world (BW), the benevolence of people (BP), justice (J), controllability (C), randomness (R), self-worth (SW), self-controllability (SC), and luck (L). One item example of the subscale 'benevolence of the world' is *Er is meer goed dan kwaad in the wereld* (English: *There is more good than evil in the world*). The 'benevolence of people' subscale consists of items such as *Mensen zijn van*

nature vriendelijk en aardig (English (reverse scored): *People are naturally unfriendly and unkind*). An item example for the justice subscale is *Meestal krijgen goede mensen wat zij verdienen in deze wereld* (English: *Generally people deserve what they get in this world*). For the controllability scale, items are formulated as in this example: *Ongeluk van mensen is het gevolg van fouten die ze hebben gemaakt* (English: *People's misfortunes result from mistakes they have made*). The subscale 'randomness' consists of items such as *Ongeluk kan mensen zomaar treffen* (English: *Bad events are distributed to people at random*). The self-worth subscale contains items like *Ik denk vaak dat ik nergens voor deug* (English: *I often think I am no good at all*). An example of items of the self-controllability scale is *Ik gedraag me gewoonlijk zo dat ik er het beste uithaal* (English: *I usually behave in ways that are likely to maximize good results for me*). Lastly, an example of an item from the luck scale is: *Als ik erover nadenk, beschouw ik mezelf als een gelukkig iemand* (English: *When I think about it, I consider myself very lucky*). A number of items are reverse scored (Janoff-Bulman, 1989). In order to calculate the scale scores, the responses for each of the three domains will be summed. Already conducted reliability tests show that the Cronbach's alpha ranges from .67 to .78 (Janoff-Bulman, 1989). The overall validity is sufficient. In order to translate the questionnaire in Dutch, a language professional carried out a forward-backward translation procedure (van Bruggen, et al., (submitted)). The overall reliability analysis in the present study was higher with α=.84. The reliability of the subscale 'Benevolence of the World' was also good with α=.86, and also the reliability of the scale 'Self-Worth' was sufficient with α=.82. The reliability of the subscale 'Meaningfulness of the World' was moderately good with α=.68. Although there are debates on the different constructs of the WAS and how they can be taken together, this study will stick to the original three domains of the WAS (benevolence of the world, self-worth and meaningfulness of world). Reliability analyses proved that all three subscales are reliable. Moreover, there are no clear solutions available for this debate and there is research indicating that the three domains are sufficient (Kaler et al., 2008).

Statistical analyses

In order to give a sufficient answer to the research questions, several statistical analyses were executed with the programme 'SPSS'. Before starting with the analyses, respondents that did not fill in the whole questionnaires were excluded from the data set. Also, respondents that

did not fill in their origin were excluded. After that, the remaining number of respondents was N= 837. Also, some items of the 'World Assumptions Scale' (WAS) had to be recoded (item 13, 14 and 15). After that, descriptive statistics and frequencies were carried out. For this study, it was also important to decide how the colonial areas and non-western groups should be differentiated. Therefore, a t-test was executed to see whether there were differences between the groups 'non-western countries' and 'colonial areas' regarding the three different questionnaires. The analysis showed that there were no significant differences between the two groups, and that they could thus be taken together to form the group 'non-western countries'.

After everything was prepared, the main statistical analyses were carried out. First off, t-tests were done to find out whether there were differences between the two cultural groups (western and non-western countries) regarding world assumptions, PTSD symptoms and the traumatic events they experienced. As there was only a significant difference between cultures for the symptom 'arousal', further analyses were only performed for 'arousal' and not for the other aspects of PTSD symptoms. Then, a mediation analysis followed, which consisted of multiple regression analyses and the Sobel-Test. The mediation analysis was executed in order to test whether world assumptions mediated the relation between culture and the severity of PTSD symptom 'arousal'. First, the regression analyses were carried out to see whether differences in culture were related to world assumptions, and whether culture and world assumptions were related to the severity of PTSD symptom 'arousal'. Therefore, a hierarchic regression analysis was conducted with depended variable PTSD symptom 'arousal'. In the first model, it was only tested whether culture is related to severity of PTSD symptom 'arousal'. In the second model, it was tested whether culture and all three main domains of the world assumptions (benevolence of the world, self-worth and meaningfulness of the world) are related to the symptom 'arousal'. In this step, it was also tested if the traumatic events had greater effect on the symptom 'arousal' then culture or world assumptions. Then, the Sobel-Test was used to examine if world assumptions really mediated the relation between the two other variables. Lastly, it was checked whether the amount of traumatic events had a relation with PTSD symptom 'arousal' using a regression analysis. For all statistical tests, the critical p-value that indicates whether or not the results are significant is $p < .05$.

Results

Descriptive statistics

In total, 837 respondents filled in the World Assumptions Scale (WAS). For every subscale, a different amount of respondents completed them. Table 1 shows the mean scores of the different subscales of the ZIL, WAS and LIFE questionnaire. The minimal scores, maximal scores and the possible total scores are also illustrated (see Table 1).

Table 1. Descriptive statistics for world assumptions, PTSD symptoms and traumatic events

	N	M (SD)	Min	Max	Possible total score
World Assumptions					
1. Benevolence of World	824	28.20 (7.72)	8	48	48
2. Self-Worth	783	45.69 (9.86)	19	72	72
3. Meaningfulness of World	771	40.31 (7.90)	19	67	72
PTSD Symptoms	781	51.58 (17.88)	22	86	88
1. Reexperiencing	818	13.48 (4.69)	6	24	24
2. Avoidance and numbing	806	20.81 (6.15)	9	36	36
3. Increased arousal	823	17.32 (4.96)	7	28	28
Traumatic events	837	10.81 (3.97)	1	21	22

Cultural differences in world assumptions, severity of PTSD symptoms and traumatic events

At first, t-tests with the three different main subscales of the WAS (benevolence of the world, self-worth and meaningfulness of the world) showed that non-western respondents scored higher on every of those subscales than western respondents (see table 2). Based on these findings, the first hypothesis: 'Non-western cultures have more negative world assumptions than western cultures' will be rejected. Effect sizes (Cohen's d) however indicate that the differences between the two groups are not very large (see table 2).

A t-test with the total score of the ZIL as dependent variable and origin as independent

variable showed that there was no overall significant difference between groups regarding their PTSD symptoms (see table 2). Additional t-tests with the three subscales (Reexperiencing, Numbing and Arousal) showed that there was a significant difference only in the third subscale 'Arousal' (see table 2). Western respondents had a higher mean score on this scale, indicating that they are more likely to have increased arousal than non-western respondents. Nevertheless, effect sizes showed that this difference is very small (see table 2). Therefore, the second hypothesis: 'People from non-western cultures have worse PTSD symptoms than people from western cultures.' will be rejected.

Additionally, it was important to have a look at whether or not those findings are influenced by differences in the number of traumatic events that western and non-western respondents have experienced. A conducted t-test with the traumatic events as testing variable, showed that there are small, but significant differences in how many traumatic events respondents of both groups experienced (see table 2). Western respondents have experienced more traumatic events than non-western respondents. To gain more detailed insight, frequencies of separate traumatic events were calculated for each group and then compared. The greatest difference between the groups was found for having children move out of their parental home (63.3% of western respondents experienced this event, and only 43.2% of non-western respondents). For other events, only small differences were found (see Appendix A).

Table 2. Results T-Test analyses

	Western		Non-western			
	n	Mean (SD)	n	Mean (SD)	t-value	Cohen's d
World Assumptions						
Benevolence of World	608	27.70(7.88)	218	29.61(7.10)	-3.15*	0.25
Self-Worth	583	44.93(9.90)	200	47.89(9.44)	-3.69**	0.31
Meaningfulness of World	565	39.59(7.43)	206	42.28(8.81)	-4.23**	0.33
PTSD Symptoms	587	51.64(14.02)	194	51.41(13.53)	0.20	
Reexperiencing	605	13.35(4.65)	213	13.86(4.82)	-1.36	
Numbing	598	20.85(6.29)	208	20.67(5.74)	0.37	
Arousal	609	17.51(5.00)	214	16.80(4.82)	1.80*	0.14
Traumatic events	615	10.99(3.85)	222	10.29(4.26)	2.26*	0.17

Note: *$P < .05$; **$P < .01$

Relationship between culture, world assumptions and PTSD symptoms

A hierarchical regression analysis was conducted in order to indicate whether or not there is a relation between culture (Model 1) and culture and world assumptions (Model 2) with the PTSD symptom 'arousal'. The independent variable 'culture' was coded into 1= western respondents and 2= non-western respondents. In the first model, it was found that there is a significant relation between culture and the symptom arousal (see table 3). The results indicate that western respondents experienced more severe 'arousal' symptoms than non-western respondents. The R square indicated that culture only accounted for 1% of the variance in PTSD symptom arousal (see table 3).

In the second model, the three domains of the WAS (benevolence of the world, self-worth and meaningfulness of the world) were added. The results showed that when adding the three domains, the relation between culture and arousal was no longer significant (see table 3).

Instead, all three domains of the WAS had a significant relation with the symptom arousal, with benevolence of the world and self-worth having a negative relation and meaningfulness of the world having a positive relation with arousal (see table 3). This indicates that having negative assumptions about the benevolence of the world, or having lower self-worth is related to having more severe PTSD symptoms of 'arousal', which is in line with the third hypothesis. Not in line with the third hypothesis is that having more positive assumptions about the meaningfulness of the world is related to having more severe PTSD symptoms of 'arousal'. Therefore, results only partly support the third hypothesis: 'Negative world assumptions are related to more severe PTSD symptoms'. R square change of model 2 indicates that when adding the world assumptions, the model accounts for an additional 13% of the variance in the symptom arousal (see table 3).

Table 3. Hierarchical regression analyses with symptom 'arousal' as dependent variable

	B (SE)	Beta	ΔR^2
Model 1			0.01
Culture	-0.89 (0.43)	-0.08*	
Model 2			0.13
Culture	-0.44 (0.41)	-0.04	
Benevolence of World	-0.10 (0.03)	-0.15**	
Self-Worth	-0.14 (0.02)	-0.28**	
Meaningfulness of World	0.06 (0.02)	0.10*	

Note: *$P < .05$; **$P < .01$

In the hierarchical regression analysis, it was also controlled for the number of traumatic events the respondents experienced. It was found that it had no effect on the relations between cultures or WAS domains and the PTSD symptom arousal (data not shown).

The following mediation analysis with the Sobel Z-Test was also only conducted for the PTSD symptom 'arousal', not for the other symptom domains. The Sobel Z-Test showed that all domains of the WAS (benevolence of the world, self-worth and meaningfulness of the world) mediated the relation between culture and the symptom arousal (see table 4). This supports the findings of the hierarchical regression analyses that the relation between culture

and arousal is indirect, indicating that the relationship between culture and severity of the symptom 'arousal' can be explained by the respondents' world assumptions. Hypothesis 4: 'The relation between culture and severity of PTSD symptoms is mediated by world assumptions' will thus be accepted. Although the hypothesis will be accepted, results of the WAS domain 'Meaningfulness of the world' were unexpected, as they indicate that perceiving the world as more meaningful is related to more experiences of the symptom 'arousal'. However, results indicating that negative assumptions about the benevolence of the world and lower self-worth are related to more arousal symptoms were expected.

Table 4. Mediation analysis with Sobel Z-Test

	Test statistic	Std. Error	p-value
Benevolence of World	-2.44	0.08	.015
Self-Worth	-3.27	0.13	.001
Meaningfulness of World	2.22	0.08	.015

Discussion

This study examined to what extent there is a relation between culture and the severity of PTSD symptoms. Additionally, it was examined whether world assumptions would mediate this relation. Based on the results, several conclusions can be made. At first, the study found that non-western cultures have more positive world assumptions than western cultures. This is not in line with the first hypothesis stating that non-western cultures have more negative world assumptions than western cultures. Moreover, the study found that western respondents have more severe increased arousal than non-western respondents. There were no differences for other symptoms. These results are also not in line with the second hypothesis which predicts that non-western respondents would have more severe PTSD symptoms than western respondents. Moreover, the study indicated that negative assumptions about the benevolence of the world and a lower self-worth are related to more severe PTSD symptoms. Perceiving the world as more meaningful showed to be related to more severe PTSD symptoms. The third hypothesis stating that negative world assumptions are related to more severe PTSD symptoms will thus only be supported for benevolence of the world and for self-worth, but not for meaningfulness of the world. Furthermore, the three world assumptions domains mediated the relation between culture and PTSD. This is in line with the fourth hypothesis. Lastly, there are small, but significant differences in the number of traumatic events that respondents of both groups experienced. Western respondents proved to have experienced some more traumatic events than non-western respondents.

In contrast to the first hypothesis, respondents of non-western cultures proved to see the world and themselves in a more positive light than western respondents. As already stated in the introduction, earlier research found that this relation would more likely be the other way around (Calhoun & Cann, 1992, 2010; Cheng & Kwan, 2008). The unexpected findings are thus not easy to explain. However, as already stated in the introduction, there is a new, but rather unclear stream of literature stating that refugees might also experience positive feelings after traumatic events, also called ‘Posttraumatic Growth’ (PTG) (Ssenyonga et al., 2013; Hussain & Bhushan, 2011). Literature states that the type of event is an important factor for PTG. It was found that events related to death or serious illness (also called shared traumas) are more related to PTG than intentional or assaultive events (includes more personal events like sexual assault). The latter events are more related to posttraumatic stress (Gul & Karanci, 2017). Research also indicated that experiencing war related adversity is related to PTG, but

war trauma that is related to the self is not (Kılıç, Magruder & Koryürek, 2016). As the non-western sample consists of a great number of respondents that had to experience war related trauma or in general more shared traumas (death, illness/injury), they might experience posttraumatic growth and thus have not as shattered world assumptions as the western sample.

Furthermore, it was found that there is no significant difference between western and non-western cultures regarding PTSD symptoms, except for the symptom 'increased arousal'. In contrast to the prediction of Hypothesis 2, western respondents tend to have this symptom more than non-western respondents. Effect size calculated in the result section shows that this difference is however very small. As said in the introduction, research would predict that respondents from non-western cultures would have more severe symptoms than respondents from western cultures (Haagen et al., 2017; Shannon et al., 2014). These results are thus not in line with these studies. However, the literature mentioned in the paragraph above about posttraumatic growth might also serve as an explanation for this (Gul & Karanci, 2017; Kılıç, Magruder & Koryürek, 2016). Johnson et al. 2009 also found that seeing other refugees or asylum seekers deal with their (similar) situations helps them to deal with their trauma. A sense of 'shared trauma' occurs because people perceive that they are not the only victims, but that similar traumatic events happened to a lot of other people. This makes it easier for the people to distance themselves from the trauma, not perceiving it as a personal, but as a shared trauma (Johnson, Thompson, & Downs, 2009). As already mentioned above, shared trauma is related to more PTG. This can therefore offer an explanation of why non-western cultures have fewer symptoms than western cultures in this study. Additionally, engaging in active, positive religious or spiritual coping is related to less posttraumatic stress symptoms (Zukerman & Korn, 2013). A study with refugees and asylum seekers with war-related traumas found that believing that God is in control, helps the people to make sense of the events (Johnson et al., 2009).

Results from this study indicate that negative views on the benevolence of the world and self-worth are related to severe PTSD symptoms. This is in line with already conducted research (Janoff-Bulman, 1989; Edmondson et al., 2011). However, meaningfulness showed to be positively related to severe PTSD symptoms, which is not in line with former research. This might be a result of the ongoing debate about whether the properties of the WAS are good or not. Research showed that there is a correlation between justice and randomness (parts of meaningfulness of the world domain) and distress measures, but that it is very low,

whereas correlations with self-worth and benevolence of the world are higher (Kaler et al., 2008). However, there is no clear answer on how the domains can be best taken together. As it is not sure that the three domain solution is the right one, unexpected results could have arisen because of this.

Results showed that the significant relation between culture and the symptom arousal is mediated by world assumptions about the benevolence of the world, self-worth and meaningfulness of the world. This is in line with former research that showed that differences in world assumptions have an important impact on the development of PTSD symptoms (Edmondson, et al., 2011; Schuler & Boals, 2016). However, meaningfulness of the world was unexpectedly positive related to severe 'arousal' symptoms. Difficulties with the World Assumptions Scale (WAS) might have an impact on these results (as already mentioned above).

Lastly, as people from non-western cultures mostly live in societies with difficult life circumstances, it was assumed that respondents of this culture have experienced more traumatic events than western cultures (Lun & Bond, 2013). Contrary to this prediction, the study showed that western respondents experienced slightly (but significantly) more traumatic events than non-western respondents**.** However, the number of traumatic events experienced was measured with the LIFE scale, which is a western-derived measure. Using western-derived measures with refugees or people from non-western countries is criticized, as they might not be applicable. People from western and non-western cultures are likely to experience different kind of traumas (Shannon, Wieling, McCleary & Becher, 2014). Contradictory results could have emerged because of this.

The study has several limitations that might have affected the results. One limitation is that respondents that are either refugees or asylum seekers may not have enough language skills in order to accurately fill in the questionnaires. Although it is said that they are able to understand the Dutch language, difficulties in the understanding can still arise because it is not their native language. Another limitation is the debate about how to use the WAS correctly, as the primary domains are not clearly defined. As already mentioned above, it is criticized whether or not the three domain solution (as used in this study) is the right choice (Kaler et al., 2008). A last limitation concerns the LIFE questionnaire as it is a western-derived measure that might not be applicable for respondents from non-western countries (Shannon et al., 2014). Additionally, the traumatic events in the LIFE are mostly life events in

general and might not necessarily be defined as traumatic. As the non-western sample consisted of many people dealing with major trauma, bias in the results is possible.

Nevertheless, there are also important strengths. The total number of respondents (N= 837) is very high. Although there were more western than non-western respondents, the number of non-western respondents still counts up to 222, which is a great amount. Additionally, all respondents that took part in a routine diagnostic assessment also took part in the study. There was no selection of respondents needed. Another important strength is that reliability numbers for all scales and subscales were very good, indicating that the results of the study seem to be reliable.

As there are several outcomes of this study that proved to be in contrast with already existing research, it would be helpful to do more research on the differences in world assumptions between western and non-western cultures. Hereby, it is important to get a clear answer on how to use the WAS questionnaire (regarding the ongoing debate). Additionally, it would be interesting to conduct studies that examine what exactly causes these differences, as this is a subject that is not often researched yet. Moreover, for this study, only the aspect of the origin was taken into account but there are several different aspects that have to do with culture that are important to consider. Therefore, more research should be conducted that uses measure which take into account different aspects of culture. Additionally, this study used a western-derived questionnaire to measure traumatic events. Studies should be conducted with different scales to measure traumatic events in order to see whether outcomes of this study are useful. Furthermore, it would be interesting to investigate if the result, indicating that increased arousal is the only symptom that differs between the cultures, can be replicated, or if it is just an exception due to only small differences. If results can be replicated, it could be examined why there are no differences in symptoms except for increased arousal.

With the growing number of asylum seekers and refugees coming to Europe, it gets more and more important to consider multiculturalism in the area of health care and clinical psychology. As many of the people coming from non-western cultures to Europe, need to seek treatment for PTSD (or different clinical disorders), it is necessary to know whether there are cultural differences regarding the disorder. In order to adapt treatment schedules and the handling with treatment of individuals from different cultural backgrounds, it is useful to test whether there are differences in symptoms, and in how the different cultures deal with traumatic events and stress-related symptoms (Kazarian & Evans, 2001). This study indicates

that especially the cultural differences in world assumptions are an important aspect for the symptoms and development of PTSD. However, effect sizes in this study also show that there are only small differences between cultures. Therefore, more research is needed in this area in order to improve treatments, so that everyone, no matter the cultural background, can be provided with appropriate help.

Conclusion

The overall goal of the study was to examine the effect world assumptions have on the relation between culture and the severity of PTSD symptoms. Most findings are in contrast to what was assumed based on former research. World assumptions were more negative for respondents from western cultures, than for respondents from non-western cultures. Western respondents also experienced the PTSD symptom 'arousal' more than non-western respondents did. Benevolence of the world and self-worth were negatively related to PTSD symptoms, whereas meaningfulness of the world was unexpectedly positive related to PTSD symptoms. However, the predicted mediation effect of world assumptions on the relation between culture and severity of PTSD symptoms was found. Nonetheless, differences that were found between the cultures are very small in this study. Although most results of the study are in contrast to what was expected, the study did find that world assumptions play an important role in the relationship between culture and the PTSD symptom 'arousal'.

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Appendix

Appendix A. Frequency table of traumatic events that western and non-western respondents experienced in %

	Western	Non-western
Moving	22.8	32.9
Entering sign. Financial liability or debt	37.9	38.3
Sign. Decline in financial position	45.0	41.4
Serious bodily injury or illness of your self	40.2	44.6
Serious bodily injury/illness of family member	40.2	42.8
Death of spouse or life partner	77.6	63.5
Death of near family member	36.3	37.4
Death of other important persons/friends	48.9	48.2
Divorce or breaking of intimate relationship	40.8	45.9
Becoming unemployed or resigned	47.6	51.8
Important changes in the nature of your work	48.9	49.5

Got married	46.7	41.0
Marital problems	50.2	49.1
Family expansion	48.6	42.3
Problems with the children	61.3	53.2
Child moving out of house	68.3	43.2
Quite severe tensions at home	40.2	41.9
Loss of valuable possessions	66.2	59.9
Serious problems with family member	50.4	42.3
Problems with police or justice	71.1	64.0
Victim of a crime of traffic accident	65.4	57.7
Any other major event	35.3	38.3

Note: Events were translated from Dutch to English