

The role of world assumptions in the severity of Post-Traumatic Stress Disorder:

Differentiating between Gender

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### **Abstract**

Post-traumatic stress disorder (PTSD) is the development of anxiety based symptoms, which can occur after experiencing or witnessing a traumatic event. A great amount of literature has shown that women seem to be more vulnerable in developing and maintaining PTSD and suffer from more severe symptoms. The overall goal of this study was to determine the role of world assumptions such as benevolence as well as meaningfulness of the world and self-worth, when explaining why women seem to have worse PTSD symptoms than their male counterparts. Data was collected over 11 years and included 1169 participants. To measure the world assumptions, the world assumption scale by Janoff Bullmann (1989) was used. To measure the severity of symptoms, a Dutch questionnaire called zelfinventarisatielijst (self-inventory list) or short ZIL, was used. The ZIL is a questionnaire which includes questions about the reexperience of the traumatic event, numbing or increased arousal. To measure the specific traumatic events that were experienced by the participants, researchers established a questionnaire called the LIFE questionnaire. Contradictory to what was expected, this study could not yield support of women having worse PTSD symptoms than men. The planned mediation analysis, whether world assumptions can explain the relationship between gender and PTSD severity, could therefore not be tested. Furthermore, results showed a positive correlation between negative world assumptions and severity of PTSD symptoms. It suggested that men experience a higher number of traumatic events than women, while no difference was found in the specific kind of events experienced by men and women. Overall, results of the study are in contradiction to a great number of literature findings. Limitations and implications are discussed.

## **Introduction**

### **Background**

Even though, mental illnesses, such as post-traumatic stress disorder (PTSD), affect a high number of people, not everybody gets diagnosed properly, nor gets appropriate treatment. Reasons for that include lack of awareness, but also missing information regarding PTSD (PTSD Support Services, 2012). It is therefore of high importance to contribute to education and research regarding PTSD and it is the aim of this paper to contribute to identifying important factors surrounding PTSD in order for people to receive the treatment that is needed and to live a healthy life in general.

PTSD is the development of anxiety based symptoms, which occur after the witness or experience of a traumatic event (Davey & Wiley, 2015). Typical symptoms include emotional numbing, avoidance, reexperiencing the traumatic event in a repeated or unwanted manner, and hyperarousal (Ehlers & Clark, 2000). Individuals suffering from PTSD often cannot recall the traumatic event in a structured or complete manner. The memory is unorganized; details might be missing and individuals may have difficulties in recalling the temporal order of the traumatic event. Also, individuals can report unwanted and continued flashbacks of the event, in a very emotional and vivid way (Brewin & Holmes, 2003; Ehlers & Clark, 2000), as well as changes in mood such as the reduced interest in activities or feelings of disconnection. Symptoms such as aggression, inability to concentrate, difficulties to sleep or recklessness are typical symptoms experienced by individuals as well (Davey & Wiley, 2015). According to the DSM-5, for individuals to be diagnosed with PTSD, symptoms have to be experienced after the traumatic event and continue or worsen for at least a month, causing significant difficulties for the individual in functioning. Symptoms should also not be explainable by other mental or physical disorders, medication or drug abuse (Davey & Wiley, 2015).

### Prevalence and Risk

The chance of experiencing a traumatic event, which can lead to PTSD development, is quite high in an individual's lifetime. According to Davey and Wiley (2015), around 50% of the adult population experiences at least one event in their lifetime, with the probability or quality of PTSD development. However, not everyone who experiences traumatic events develops PTSD (Davey & Wiley 2015). Prevalence and risk of developing PTSD might depend on three factors, namely profession, origin and gender.

For instance, there is a 10% chance for rescue workers to develop PTSD (Berger, Coutinho, Figueira, Marques-Porttella et al., 2012), and around 13% chance for operational infantry units exposed to direct combat in the Iraq and Afghanistan conflicts (Kok, Herrell, Thomas & Hoge, 2012). Prevalence rates among these professions is quite high, demonstrating a higher risk in these areas of profession.

Regarding origin, there is a 12-33% chance for civilians living in the south Lebanon as well as civilians generally living in areas of political terror (Charlson, Steel, Degenhardt, Chey et al., 2012; Farhood & Dimassi, 2012). These percentages seem quite high, especially when compared to prevalence rates in the Netherlands. De Vries & Olff (2009) found a lifetime prevalence in the Netherlands of 7.4%. Hence, prevalence rates of PTSD in the general population across the world refer to 7-12% (Mehta & Binder, 2012), showing a wide range of prevalence across the world.

The third factor that is important when considering prevalence and risk of PTSD is the difference between men and women. PTSD prevalence concerning the adult population in Western, developed societies differs among gender, with women having about a two times higher chance of developing PTSD than men (Kimmerling, Ouimette & Wolfe, 2002).

Gender differences

That women have a significantly higher chance of developing PTSD than men, has been suggested by a great variety of literature (e.g. Pineles, Arditte Hall & Rasmusson, 2017; Kimerling, Ouimette & Wolfe, 2002; Tolin & Foa, 2006). Yet, numerous studies show that more men are actually exposed to traumatic events compared to women (Tolin & Foa, 2006; Holbrook, Hoyt, Stein & Sieber, 2002; Kimerling, Ouimette & Wolfe, 2002; Fullerton et al., 2001).

Generally, men experience more traumatic events with regard to fire, accidents or physical assaults, while women experience more traumatic events regarding childhood abuse, rape, sexual assault or sexual molestation (Tolin & Foa, 2006; Kimerling, Ouimette, Wolfe, 2002). Tolin and Foa (2006), suggested that sexual trauma might be related to higher chances of developing PTSD and therefore might explain the higher prevalence and worse severity of PTSD in women. (Tolin & Foa, 2006). However, according to Kimerling, Ouimette & Wolfe (2002), the differences of the prevalence of PTSD in gender was still present after controlling for sociodemographic factors as well as the type of trauma, meaning that women were still at higher risk of developing PTSD even when the factor of sexual trauma was excluded (Kimerling, Ouimette & Wolfe, 2002). The same result was later confirmed by Tolin and Foa (2006), suggesting that women still show more PTSD symptoms compared to men when a similar traumatic event was experienced. These literature findings suggest that women are more vulnerable to develop PTSD and are suffering from more symptoms than men (Carmassi et al., 2014).

An explanation of sex differences proposed by Tolin and Foa (2006) includes the use of different coping strategies of men and women. According to Tolin and Foa (2006), women use more wishful thinking, mental disengagement or memory suppression as coping strategies after trauma, which have shown to be positively correlated with severity of PTSD. Women are also

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more likely to blame themselves for the event, describe themselves as more incompetent, have more distressing dreams, flashbacks, feel distant or damaged and believe the world to be a more dangerous place in general when compared to men (Pineles, Arditte Hall & Rasmusson, 2017; Carragher et al., 2016; Tolin & Foa, 2006).

In a study in the United States, it was shown that significantly more women experienced terror and helplessness during a traumatic event compared to men. When contemplating sexual traumas only, significantly more women than men described their sexual trauma as *their worst ever experience* (Tolin & Foa, 2006). Results therefore suggest a difference in the subjective experience between gender (Kimerling, Ouimette & Wolfe, 2002). It can thus be argued that the subjective experience about the world, oneself and the distribution of outcomes might be dependent on gender, which can influence how the trauma is experienced and might consequentially explain the difference in PTSD symptoms between men and women.

### Importance of Studying Differences Between Gender

Explaining the sex differences in PTSD symptomatology is still in its infancy but may be relevant for improving PTSD treatment response. Because of the difference in prevalence, symptom severity and maintenance, one might argue that there should also be a difference in treatment as well. However, gender differences and treatment outcomes have not been studied systematically and no information is yet available over gender differences in PTSD treatment and treatment outcome (Foa & Keane, 2008). The usage of different coping mechanisms among men and women suggest that a different focus along these coping mechanisms might lead to better treatment outcomes in therapy. However, to adjust treatment, it first should be given an answer to the question of why women have worse PTSD symptoms than men. It is the purpose of this paper to shed light on this quite unknown territory, so one day it might help to improve PTSD treatment. One explanation that can give rise to the question regarding the gender differences is the role of world assumptions.



The role of World Assumptions

World assumptions include basic assumptions about how good or bad, positive or negative individuals think about the world and themselves. According to Janoff-Bulman (1989), traumatic events affect these basic assumptions, even years after the traumatic event. Individuals might perceive threats as external, meaning the appraisal of the world in general as a more dangerous place, or internal, meaning the appraisal that *bad things only happen to them* or that *they deserved the event happening to them* (Ehlers & Clark, 2000). External appraisals refer to a concept which is also been called the *benevolence of the world*, meaning to which extent the world is perceived as a good or bad, negative or positive place (Janoff-Bulman, 1989). Internal appraisal can be integrated into the concept of *worthiness of oneself*, because this concept describes processes that involve beliefs of oneself and to what extent people deserve the exposure to traumatic events (Janoff-Bulman, 1989). The third major category described by Janoff-Bulman (1989), is called the *meaningfulness of the world* and refers to the justification or distribution of outcomes.

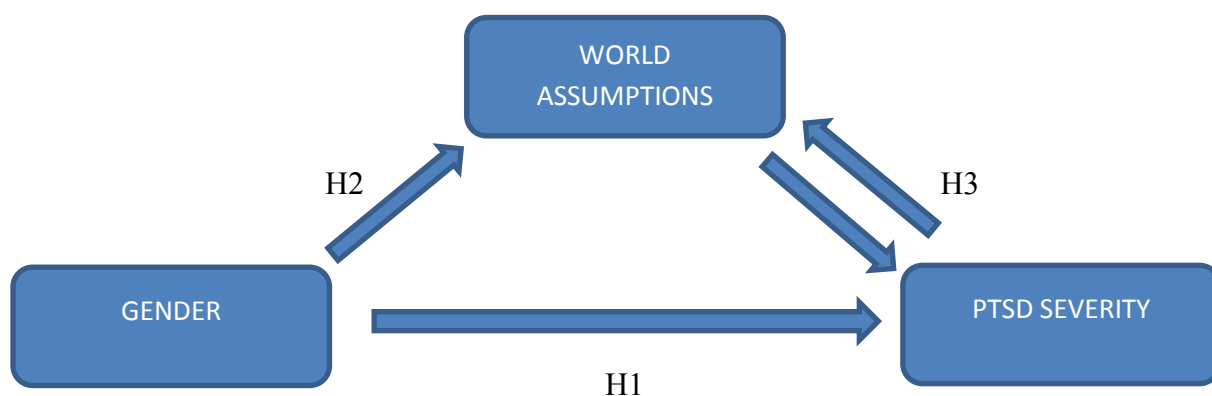
Having negative appraisals towards the world, themselves and others can lead to fear, anger, shame, guilt or sadness (Ehlers & Clark, 2000). According to Lilly and Pierce (2013), PTSD as well as depression were significantly related to less self-worth as well as benevolence of the world. The study showed, that PTSD was significantly stronger in individuals who had a more negative attitude towards themselves (self-worth) and towards the benevolence of the world (Lilly & Pierce, 2013). Mikkelsen and Einarsen (2002) support this statement by finding increased negative assumptions on self, other people, and the world, among bully victims showing PTSD symptomatology. Studies show that even 10-15-years after the trauma of being bullied, individuals perceived the world as less meaningful and benevolent than control groups (Mikkelsen & Einarsen, 2002). Because different studies showed that women are more likely to have more negative beliefs about the benevolence of the world, meaningfulness of the world

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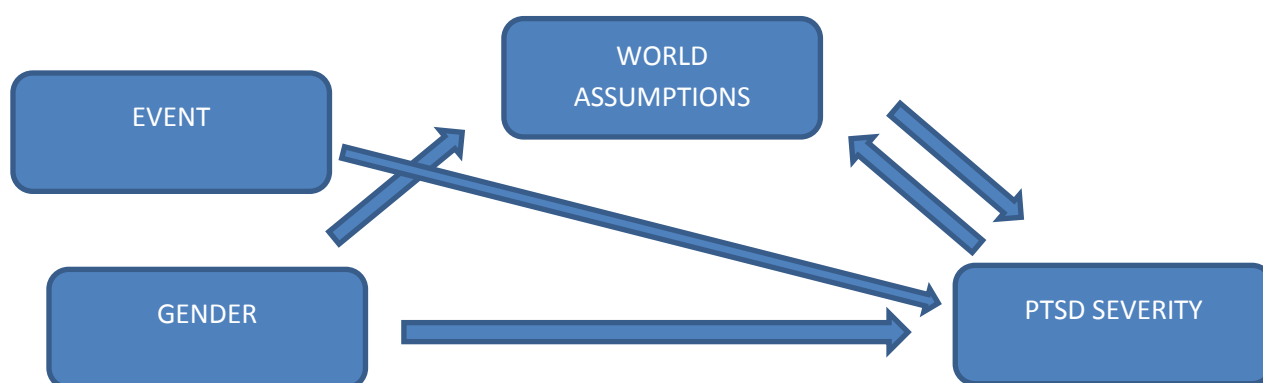
and self-worth (Pineles, Arditte Hall & Rasmussen 2017; Tolin & Foa, 2006; Carragher et al. 2016), the world assumptions proposed by Janoff-Bulmann (1989) might give a first insight into the higher prevalence of PTSD and maintenance of PTSD in women.

### Propositions and Hypotheses

Based on all the literature findings, the following models are proposed:



*Figure 1.* Model with the world assumptions as mediating factors for gender and PTSD (H4).



*Figure 2.* The world assumptions as mediating factor for gender and PTSD. The factor event serves as covariate.

Figure 1 proposes a direct relationship from gender to PTSD severity, as well as an indirect relationship from gender to PTSD severity through the world assumptions as mediator. The relationship of the world assumptions and PTSD is based on reciprocity, because world assumptions seem to be rated as more negative when individuals are suffering from PTSD (Lilly & Pierce, 2013) and world assumptions themselves seem to influence severity of PTSD symptoms. Figure 2 underlies the same principles, but includes the relationship of number/specific kind of event experienced and severity of PTSD.

Based on all the literature findings, it is expected to find a significant effect between the severity of PTSD symptoms and gender. Because of the differences among gender, which were proposed by literature, the first hypothesis is as following:

*H1: Compared to men, women have significantly stronger PTSD symptoms.*

It is also expected that women have a more negative world view than men, because literature implied that women use more negative coping strategies and have a more negative view on the world and their self-worth. The second hypothesis is therefore as following:

*H2: Compared to men, women who are suffering from PTSD have more negative world assumptions, including assumptions about the world in general as well as assumptions about themselves.*

Moreover, it is expected that world assumptions correlate with severity of PTSD symptoms. It will therefore be tested if a more negative world and self-view stands in relationship to PTSD severity. The third hypothesis is therefore as following:

*H3: Negative world assumptions positively correlate with severity of PTSD symptoms.*

Finally, it is expected that the relationship between gender and severity of PTSD symptoms can be explained through negative world assumptions that are hold more often by women than by men. Hypothesis four is therefore stated as following:

*H4: The relationship of gender and PTSD severity is mediated by the world assumptions.*

## **Method**

### Participants

In total, 1791 out-patients of *Foundation Centrum '45* participated in this study. *Foundation Centrum '45* is a Dutch center, which is specialized in diagnostics and treatment of the psychosocial consequences of war, persecution, profession-related events and other complex traumatic events. Most patients that requested help at Centrum '45 were diagnosed with PTSD and/ or depressive disorder.

The decision whether to exclude participants or not was based on the completion of the questionnaires. Because not every participant answered every questionnaire, from the original 1791 participants 1168 remained. Participants were mainly Dutch police officers or military veterans, including World-War-II survivors and their children. Remaining participants consisted predominantly of refugees, who had temporary or permanent refugee status or Dutch nationality. Refugees mainly came from the Middle-East, Sub-Saharan Africa and Balkan Europe. Respondents were aged between 21 and 88 ( $M = 53.37$ ) and a major part of participants was male (57.6%). Because the applied tests were in Dutch, patients needed a sufficient language proficiency to complete the diagnostic assessment. Moreover, patients were asked for an informed consent. Further information about participants can be found in table 1.

Table 1

*Characteristics of male and female participants in the study (N = 1168)*

	Male	Female	Total
	n = 673	n = 495	n = 1168
	(57.6%)	(42.4%)	(100%)
Age on date of research (M; Min. Max.)	52.9	54.02	53.37
	21.71 – 84.54	22.49 – 88.38	21.71 – 88.38
<b>Origin</b>			
Netherlands	355 (52.7)	247 (49.9)	602 (51.5)
Other Western countries	9 (1.3)	4 (.8)	13 (1.1)
Colonial areas	120 (17.8)	87 (17.6)	207 (17.7)
Other non-western countries	10 (1.5)	5 (1)	15 (1.3)
Unknown	179 (26.6)	152 (30.7)	331 (28.3)

## Materials

### World assumptions

To measure basic world assumptions, the *World Assumption Scale (WAS)* was used (Janoff-Bulman, 1989). The WAS is a self-report questionnaire consisting of 32 items regarding assumptions about the world and one-self. The items form three subscales with eight items indicating the *Benevolence of the World* ( $\alpha = .86$ ), 12 items indicating the *Meaningfulness of the World* ( $\alpha = .70$ ) and 12 items indicating *Self-Worth* ( $\alpha = .82$ ). An example for the subscale benevolence of the world is as following: “Er is meer goed dan kwaad in de wereld”, (“There is more good then evil in the world”). An example of the subscale Meaningfulness of the world is as following: “Over het algemeen hebben mensen aan zich zelf te danken wat ze krijgen in

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deze wereld”, (“Generally, people deserve what they get in this world”). An example of the subscale self-worth is as following: “In wezen ben ik iemand die geluk heeft”, (I am basically a lucky person”).

The Dutch version used in this study, was the result of a forward-backward translation procedure and the consultation of a language professional (see van Bruggen et al 2017). Seven items are reverse scored. Contrary to the original version, also item two and 12 were positively formulated and items were clustered to the different subscales. Answers are given on a six-point scale ranging from totally disagree (1) to totally agree (6). The WAS is analyzed by calculating sum scores of all three separate subscales, leaving each participant with three scores. As higher the score, as more positive participants think about the world and themselves. Reliability as well as validity was tested and satisfied upon by Janoff-Bulman (1989).

### PTSD Severity

To test for severity of PTSD symptoms, the *Self-Report Inventory PTSD [Zelf inventarisatielijst PTSS] (ZIL)* was used. The ZIL consists of 22 items ( $\alpha = .93$ ) that describe PTSD symptoms, which are belonging to three domains: reexperiencing of the traumatic event ( $\alpha = .89$ ), numbing ( $\alpha = .85$ ) and increased arousal ( $\alpha = .818$ ) (see van Bruggen et al 2017). Participants can answer on a four-point scale to rate to which extent symptoms applied to themselves in the past four weeks (see van Bruggen et al 2017). The score of participants were calculated using the sum score of all three subscales as well as the individual score of the three subscales. Past studies concluded that the ZIL is a reliable measure instrument (van Zelst & de Beurs, 2004). An example question of the ZIL is as following: “Ik had moeite met inslapen” (“I had difficulties falling asleep”).

### Traumatic Life Events

To test for the number of experienced traumatic events as well as specific kinds of events, researchers constructed the LIFE questionnaire based on other questionnaires and their items. The LIFE questionnaire is a self-report measure of 22 potentially traumatic life events. Respondents indicate whether or not they experienced a specific event. Examples of such events include the loss of valuable belongings, serious injury or illness of a relative or moving house. To measure trauma severity, the total number of events that were experienced were used. Example questions of the LIFE can be found in Appendix A.

### Analysis

Before analyzing the data, sum scores were computed and reversed scored items were rescaled. Also, new variables were transformed like the sum score of the ZIL and the subscales from the WAS. The data was then analyzed using SPSS. Because of the great size of participants in the study, there was no need to test for normal distributions. Also, the assumption of homogeneity of variances was tested and satisfied with Laveine's  $F$  test among all conducted ANOVA analyses.

To test for a difference of PTSD severity between men and women, a between groups ANOVA analysis was conducted. It was tested upon the sum score as well as all three subscales of the ZIL (reexperiencing, numbing, increased arousal).

To test whether world assumptions differ among gender, another between groups ANOVA analysis was executed. Analysis was done with all three subscales of the WAS (benevolence of the world, meaningfulness of the world, self-worth).

Moreover, Pearson correlation analyses were conducted. The first correlations were done to calculate the relationship between the world assumptions and the severity of PTSD symptoms. Correlations were done with all three subscales of the WAS as well as the ZIL. The second correlation analyses were done to test for severity of PTSD symptoms and Number of

events experienced. All three subscales as well as the sum score of the ZIL were used in the Pearson correlation analysis.

Also, mediation analysis was planned with world assumptions serving as mediator for gender and PTSD severity. Number of experienced events as well as the specific kind of event would have served as covariate. It was planned to conduct the mediation analysis by executing various regression analyses and in case of statistically significant effects it was planned to test for indirect effects using SPSS macro process. Mediation analysis could however not be performed due to earlier findings that will be discussed later in this paper.

It was then tested whether men and women differed in the number of events they gave answer to, to test whether there is a difference in the number of traumatic events that were experienced by men and women. Therefore, a between groups ANOVA was executed.

## Results

Results of the ANOVA analyses for differences between men and women are stated in table 2, which includes the severity of PTSD symptoms, world assumptions and number of events experienced. As can be seen in table 2, results of the between gender groups ANOVA showed that sum scores of the ZIL for PTSD symptoms did not significantly differ between men and women. It was also tested whether the scores of the three subscales (reexperiencing, numbing, increased arousal) yield statistically significant differences between men and women. A between groups ANOVA was conducted and yielded non-significant statistical differences for all three subscales. The first hypothesis was therefore rejected.

Regarding the world assumptions, table 2 shows that there is a significant difference between men and women regarding the *Benevolence of the world*. Results suggested that men have a more negative view concerning the benevolence of the world. *Meaningfulness of the world* yielded a statistically significant effect as well. Results suggest that women have a more negative view towards the meaningfulness of the world. The last subscale tested upon was *self-*



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*worth*, with a non-significant statistical effect. Hypothesis two is therefore mainly rejected.

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Table 2

*Between gender ANOVA showing differences between the scores on the WAS, ZIL and LIFE of men and women.*

Dependent variable	Men				Women				<i>F</i>	<i>df</i>	<i>p</i>
	<i>M</i>	SD	95% CI		<i>M</i>	<i>SD</i>	95% CI				
			Lower	Upper			Lower	Upper			
			Bound	Bound			Bound	Bound			
Benevolence of the world	27.768	7.852	27.173	28.364	28.816	7.785	28.115	29.518	4.99	1142	.026
Meaningfulness of the world	41.281	8.137	40.654	41.909	38.321	7.856	37.573	39.068	35.407	1070	.000
Self-worth	46.63	10.091	45.853	47.407	45.7	9.758	44.784	46.617	2.303	1084	.129
Sum score ZIL	51.225	14.451	50.096	52.303	50.452	13.634	49.165	51.738	.771	1064	.38
Reexperiencing	13.489	4.794	13.121	13.856	13.315	4.771	12.883	13.747	.361	1124	.548
Numbing	20.693	6.279	20.217	21.170	20.298	6.084	19.729	20.867	1.094	1107	.296
Increased Arousal	17.201	5.154	16.819	17.582	16.963	4.789	16.514	17.411	.630	1141	.427
Number experienced LIFE events	11.073	4.007	10.773	11.373	10.473	3.902	10.123	10.822	6.54	1166	.011

*Note.* Difference between genders is significant if  $p < .05$ .

Table 3 represents the correlations between world assumptions, PTSD severity and number of events experienced. Table 3 shows that world assumptions and number of experienced events do not correlate. Regarding PTSD severity and world assumptions, the only non-significant correlation was found between increased arousal and meaningfulness of the world. Also, the only non-significant correlation of PTSD severity was found between increased arousal and number of events that were experienced. Even though remaining correlations were significant, results indicate those to be rather weak to moderate (see table 3).

Because of the non-significant differences in PTSD severity between men and women (hypothesis one), the mediation model was not tested (hypothesis 4). Hypothesis one was rejected and is therefore contradicting the basic underlying assumptions of the mediation model. Also, results regarding differences in world assumption in men and women (hypothesis two), did not yield expected results, impeding basic factors underlying the mediation model as well.

It was then tested whether men and women differed in the number of traumatic events that were experienced. As can be seen in table two, analysis showed a statistically significant effect of men having experienced more traumatic events than women. The specific events that were experienced by men and women are reported in Appendix A. There were generally only small differences in the experiences of specific events between men and women.

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Table 3

*Correlation between severity of PTSD as measured by the ZIL and world assumptions as measured by the WAS.*

	ZIL sum score	ZIL reexperiencing	ZIL numbing	ZIL increased arousal	Benevolence of the world	Meaningfulness of the world	Self- worth	Number experienced events
ZIL sum score	1							
ZIL reexperiencing	.863**	1						
ZIL numbing	.906**	.673**	1					
ZIL increased arousal	.869**	.636**	.668**	1				
Benevolence of the world	-.252**	-.176**	-.259**	-.222**	1			
Meaningfulness of the world	.095**	.083**	.098**	.111	.200**	1		
Self-worth	-.369**	-.225**	-.393**	-.319**	.425**	.201**	1	
Number experienced events	-.074*	-.059*	-.078**	-.052	-.004	-.037	-.016	1

*Note.* \*\* Correlation is significant at the .01 level (2 – tailed). \* Correlation is significant at the .05 level (2 – tailed).

### **Discussion**

The overall goal of this paper was to find out whether the world assumptions could explain the relationship between gender and PTSD severity. It was therefore the goal to shed light on the question why women seem to have worse PTSD symptoms than men. However, results in this study could not give support of women having worse PTSD symptoms than men. There were no differences between men and women in PTSD severity. Moreover, this study indicated that men have a more negative view on the benevolence of the world, women have a more negative view on the meaningfulness of the world and there is no difference in self-worth between men and women. Furthermore, severity of PTSD has shown to be related to world assumptions as well as number of traumatic events experienced. Results have shown a relationship between negative world assumptions and PTSD severity and indicated that men were experiencing a higher number of traumatic events than women. The specific kind of events experienced did however not show differences between men and women.

#### PTSD Severity

It was expected that women have more severe PTSD symptoms than men, because it was stated in numerous studies (e.g. Carmassi et al., 2014; Tolin & Foa, 2006; Kimerling, Ouimette & Wolfe, 2002; Stein, Walker & Forde, 2000). Instead, the current study did not find any differences between men and women. One possible explanation could be that men have worse PTSD symptoms due to the higher number of traumatic events that were experienced. Literature confirms that men are more likely to experience a higher number of traumatic events among their lifetime (Tolin & Foa, 2006; Holbrook, Hoyt, Stein & Sieber, 2002; Kimerling, Ouimette & Wolfe, 2002; Fullerton et al., 2001).

Indeed, results of this study show a strong relationship of number of traumatic events that were experienced and severity of PTSD. It might therefore be possible that expected results could not be confirmed due to the higher exposure or higher number of events that were

experienced by men. Hence, it can be argued that in this current study, women would have scored higher on PTSD severity when men would not have experienced a higher number of traumatic events. In this current study, men might have leveled up to the same PTSD severity score as women, because of the higher number of events experienced. In consequence, it is argued that if men did not experience a higher number of traumatic events, women might have scored higher on PTSD severity than men. This would explain that no difference was found between gender.

#### The role of world assumptions

It was expected that women have a more negative view towards the world and themselves. When looking at the benevolence of the world, rather contradictory results were found, emphasizing men having more negative assumptions about the benevolence of the world than women. This challenges a great variety of literature, which found that women who are suffering from PTSD, generally think more negative compared to male PTSD sufferers (Pineles, Arditte Hall & Rasmusson 2017; Carragher et al. 2016). One might argue that the results that were found in this current study, are due to the kind of event that was experienced. Solomon, Iancu & Tyano (1997) argued that the kind of trauma as well as the amount of exposure to traumatic events, can have an impact on the view of the benevolence of the world. However, the specific kinds of trauma that were experienced, did not show great differences (see Appendix A).

Next to the benevolence of the world, it was also expected that women have a more negative view concerning the meaningfulness of the world. Indeed, results did confirm these expectations, which are in line to literature findings, suggesting that women, who are suffering from PTSD, have a more negative view towards distribution of outcomes, control or justice, which all are being part of the definition of meaningfulness of the world (Magwaza, 1999).

Finally, self-worth was expected to be lower in women. Yet, results did not show a difference in self-worth between men and women, challenging past literature that suggested

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that women would score lower on self-worth than men. Lilly & Pierce (2013) gave a possible explanation to these findings. They stated that self-worth is found to play an important role in depressed patients, however it is not a required criterion for PTSD diagnosis. This could mean that self-worth is not a factor that suits research among PTSD sufferers. A study concerning firefighters and police officers, showed that self-worth was playing a key role in depression, but not in PTSD (Lilly & Pierce, 2013). Similar results were found by Solomon, Iancu & Tyano (1997), who did not find implications on self-worth among PTSD patients. Therefore, it might be possible that the role of self-worth is not applicable in PTSD studies, offering an explanation of why no difference was found in gender.

### Limitations and Strength

There are some limitations to this study that could have had an impact on results that were found. One of them could be the fact that the items of the WAS were not used in their original format. Items were not sorted randomly, but were clustered, which is known to cause response bias (McFarland, Ryan & Ellis, 2002). Also, items were translated. If translating items from one language to another, normative and conceptual equivalence must be considered. Words that are translated can in combination with other words develop a different meaning depending on the cultural background. Even with the use of a language professional, chances arise that items get interpreted differently by participants than they were meant to be (Behling & Law, 2000).

Moreover, a further limitation of the study could be the usage of the LIFE as measurement tool for the specific kinds of events or trauma. The LIFE reports more general life events instead of traumatic events in a stricter sense. According to Magwaza (1999) this is a typical problem in PTSD studies, because participants often times get sorted into PTSD categories due to the questionnaires, even though participants are only assumed to have experienced trauma due to major life changes or stress. Because different studies suggested

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gender differences in the prevalence of trauma regarding sexual assault, it would have been interesting to take a closer look at trauma with sexual context. Unfortunately, the LIFE questionnaire did not list sexual assault as a specific traumatic event participants could have experienced, meaning that no research could have been conducted regarding this topic. Also, when taking a look at the correlations, it is striking that even though significant, correlations were moderate to weak. This supports the argument that the LIFE might not be a suitable questionnaire for this study.

However, despite the limitations of this study, there were also strengths that are worth mentioning. Firstly, The WAS was administered as part of a routine diagnostic assessment with all patients who applied for treatment at Foundation Centrum '45. This contributed to a great variety of different participants, which increased reliability. Secondly, the current study had a big sample size in general, which included participants from different origins, including not only Western countries, but also participants from non-Western and Colonial areas. Due to that, findings can be compared to studies investigating individuals from different origins. And finally, all measurement tools yielded a satisfied alpha value, which points out the reliability of the questionnaires as well.

### Implications and Future Research

Because numerous studies all over the world found different results, it is believed that the current results might be due to limitations of this study and/or the role of the number of events that were experienced. Because the current study could not provide support of women having worse PTSD symptoms than men, it could not be tested whether world assumptions could serve as an explanation for the gender differences among PTSD severity. The assumption of women having worse symptoms, was an underlying necessary factor for testing the mediation model. Hence, future research will have to focus on the role of world assumption as mediator for gender and PTSD severity, to further reveal differences in PTSD among gender.



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Investigating differences between men and women regarding PTSD severity, could give rise to further understanding of PTSD as a mental illness, as well as providing more information to use for better PTSD treatment response and treatment strategy. It is therefore of high importance to investigate the problem of gender differences among PTSD further, to improve on mental health for those suffering from PTSD. One possibility to do that can be the usage of a different questionnaire that is measuring the specific traumatic events. In this current study the LIFE was used, but correlations as well as the excluded criterion for sexual assault suggests the use of a different questionnaire. The *Harvard Trauma Questionnaire (HTQ event)* for example was administered in this current study as well, but was not analyzed due to a great number of participants not completing the questionnaire. Future research might therefore analyze responses from the HTQ event to further interpret and compare findings.

Finding out more about gender differences regarding PTSD severity in general, might give rise to strategies that can help to prevent and treat PTSD. Because a lot of knowledge still remains unknown, concerning gender differences in PTSD that give answers to questions such as “why” and “how”, it will be a future task for researchers to shed light into those questions.

### Conclusion

The overall goal of this study was to find out the role of world assumptions as explanation for why women seem to have worse PTSD symptoms than men. However, the underlying factor of women actually having worse symptoms, could not be supported in this current study. Nonetheless, the current study did find that world assumptions play an important role in PTSD patients in general. Also, as confirmed in past studies, the number of events experienced did serve as predictor for PTSD severity. To conclude, this study mainly did not find expected results and it is the task of future research to further investigate gender differences among PTSD sufferers.

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**Appendix A**

Table 4

Frequency of events by both genders

Events based on the LIFE	Men	Women
	%	%
Move (house)	36.3	31.6
Enter significant financial obligation or debt	0.6	0.3
Significant decline in financial position	0.8	1.8
Severe physical injury or illness of your own	1.0	0.8
Severe physical injury or illness of a next to family or family member	1.2	1.9
Death of spouse or life partner	2.5	2.5
Death of a next to family or family member	3.0	4.0
Death of another important person / friend of yours	3.3	3.6
Divorce or the breakup of an intimate relationship	3.7	7.4
Unemployment or resignation	6.7	5.6
Important change in nature of your work	5.8	6.3
Marriage	5.4	6.7
Marriage problems	5.2	6.2
Family extension	6.1	6.0
Problems with the children	4.5	4.5
Child moved out of the house	5.5	3.7
Serious tension at home	3.4	3.3
Loss of valuable assets	2.4	1.9

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Serious family problems	1.3	1.2
Police or justice issues	0.6	0.3
Victim of a crime or traffic accident	0.7	0.1
Any other major event	0.2	0.1
Total	100	100

*Note.* Frequency of life events in percentage split among men and women. Life events are translated from Dutch to English based on the Dutch version of the LIFE questionnaire.