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Lee, C. Y., Furnham, A., & Merritt, C. (2017). Effect of directness of exposure and trauma type on Mental Health Literacy of PTSD. *Journal of Mental Health*, 26(3), 257-263. doi:10.1080/09638237.2016.1276531

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## Effect of directness of exposure and trauma type on Mental Health Literacy of PTSD

Cheuk Yan Lee,<sup>1</sup> Adrian Furnham,<sup>1,2</sup> Christopher Merritt.<sup>1</sup>

(1) Research Department of Clinical, Educational and Health Psychology,

University College London, 26 Bedford Way, London, WC1H0AP

(2) Norwegian Business School (BI), Nydalveien, Oslo, Norway

Corresponding author: [a.furnham@ucl.ac.uk](mailto:a.furnham@ucl.ac.uk)

## **Abstract**

**Background:** Research has demonstrated that Post-Traumatic Stress Disorder (PTSD) is one of the most widely recognized mental disorders (Furnham & Lousley, 2012), but recognition is affected by trauma type (Merritt et al., 2014).

**Aims:** The current study investigated the effect of direct versus indirect exposure to traumatic event and trauma types on Mental Health Literacy (MHL) of PTSD.

**Methods:** 233 participants were asked to identify the mental health problem after presentation of an unlabeled vignette describing a character experiencing PTSD symptoms. The six vignettes described the same symptoms but differed in directness (direct/indirect exposure) and trauma type (rape, military combat or man-made disaster). It was hypothesized that [1] recognition rate would be higher in direct than indirect conditions, and [2] higher in military combat, followed by man-made disaster, and lowest in rape condition.

**Results:** Overall, correct recognition of PTSD was 42.5%. Recognition in direct exposure vignettes was significantly higher than indirect, supporting the first hypothesis. The second hypothesis was only partly supported. While PTSD recognition in rape vignettes was significantly lower than the other two scenarios, no difference was found between combat and man-made disaster trauma types.

**Conclusions:** Our findings implied under-recognition of PTSD, with lack of awareness of different causes of PTSD and of PTSD from indirect trauma exposure. The latter finding is important in the light of DSM-V revisions to diagnostic criteria for PTSD.

**Conflict of Interest:** There is no conflict of interest in this paper

## **Introduction**

Mental Health Literacy (MHL) is defined as “knowledge and beliefs about mental disorders which aid their recognition, management or prevention” (Jorm et al, 1997, p.182). People able to identify mental disorders correctly are more likely to seek help from professionals (Jorm, 2000). It is suggested that correct labeling of mental illness acts as a cue to activate schema about appropriate action (Wright et al, 2007). Most MHL studies employ vignette methodology. Participants are presented with a vignette describing a character with symptoms of a specific mental disorder, and are asked to identify it.

Different mental health disorders have different rates of correct recognition. Depression is the most widely recognized mental disorder among the general population, at around 75% correct (e.g. Wang et al, 2007). Schizophrenia is also accurately identified, with Furnham et al. (2009) recording a recognition rate of 61%. Research into MHL of anxiety disorders (ADs) found that type of AD affected correct identification (Furnham & Lousley, 2013), where recognition rate was high for Obsessive-Compulsive Disorder (OCD; 64.7%), but very low for Panic Disorder (1.3%) and Generalized Anxiety Disorder (GAD; 2.8%). However, MHL and subsequent help-seeking were also susceptible to cultural difference. For example, mental illness was heavily stigmatized in Chinese culture, therefore, Chinese participants were less likely to perceive a person as having mental illness, leading to low MHL and reluctance to discuss mental illness with family or friends (Wong et al., 2010).

### ***Mental Health Literacy of PTSD and military stereotyping***

PTSD was first introduced as an anxiety disorder in DSM-III<sup>1</sup> (APA, 1980), mainly in response to Vietnam War veteran trauma cases in the US. Since then, the diagnosis of PTSD has become synonymous with military conflict (Wessely, 2006). MHL of PTSD has received limited attention, perhaps due to its relatively low lifetime prevalence (estimated at 6.8% in the U.S) compared to disorders such as depression (Kessler et al, 2005).

Due to its strong association with military experience, most MHL studies of PTSD based their vignettes on military combat and had relatively high recognition rates in the general population: 41.6% in the UK (Furnham & Lousley, 2013) and 37.5% in the U.S (Reavley & Jorm, 2011). Though these figures place PTSD amongst the most widely-recognized mental health conditions, its recognition rate was still under 50%.

PTSD was also found to be under-recognized among clinicians, implying sub-optimal intervention recommendations. Magruder et al. (2005) found that among 86 US veterans meeting PTSD criteria in a research survey, only 34.4% were diagnosed with PTSD by their treating clinicians. Similar under-recognition of PTSD by UK health professionals was observed by Ehlers et al. (2009), and among clinicians treating patients with psychosis where PTSD rates are higher than community norms (Mueser et al., 1998).

One possible explanation for why recognition rates are not higher among general population or clinician samples could be the common association of PTSD with military personnel. The stereotype of veterans experiencing PTSD-like symptoms has persisted since the early twentieth century ‘Shell Shock’ diagnosis (Wessely, 2006). In fact, PTSD prevalence in the military is low

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<sup>1</sup> PTSD has been re-classified as a ‘trauma-and-stress-related disorder’ in DSM-V (APA, 2013), comprising four symptom clusters: intrusion, arousal, avoidance, and negative cognition and mood.

relative to trauma exposure; Iverson et al. (2009) found only 4.7% of a UK military sample had PTSD, comparable to community norms. However, PTSD can arise from a range of traumas, such as sexual or physical abuse, natural disaster, man-made disaster and road traffic accidents (Brewin, 2003).

PTSD prevalence from other trauma sources is much higher. For example, the lifetime prevalence of PTSD among women with history of rape was 32% (Resnick et al, 1993). A meta-analysis by Galea et al. (2005) found PTSD prevalence rates of 30-60% following man-made/technological disaster, and 5-60% following natural disaster. Merritt et al. (2014) found a significant difference in recognition rate for PTSD by trauma type among a general population sample in UK and Ireland, with 82.4% of participants correctly identifying PTSD from a vignette about a soldier, versus just 68.6% and 49.4% of participants shown vignettes describing identical PTSD symptoms from industrial accident and rape, respectively. These findings supported the common popular association of PTSD with military combat.

### ***DSM-V revisions to PTSD and directness of trauma exposure***

DSM-V (APA, 2013) acknowledged that PTSD could be the result of either direct or indirect exposure towards traumatic events. Direct exposure is experience of the event in person and carries a greater risk of developing PTSD (May & Wisco, 2016). However, indirect exposure could also cause PTSD through “repeated or extreme exposure to aversive details of event(s), usually in the course of professional duties” (APA, 2013, p.272). There is increasing evidence that professionals involved in helping those who experienced trauma are vulnerable to developing PTSD through indirect exposure. For example, Zimering et al. (2006) found that 4.6% of relief workers (e.g. social workers, psychologists) developed PTSD from exposure to survivors’ accounts of the 9-11 terrorist attacks in the US. Similarly, Bride (2007) found 15% of a US sample

of social workers exposed indirectly to trauma through their work developed PTSD; more than twice the lifetime prevalence rate of general population (6.8%). These social workers were not aware of the risk of indirect exposure causing PTSD.

With the increasing evidence to suggest that PTSD could also result from indirect exposure to traumatic events, it is important for the general population and professionals to develop a wider understanding of PTSD. Improving MHL of PTSD would benefit public wellbeing and facilitate help-seeking behaviours. Although Bride (2007) found that most social workers were not aware of indirect-exposure PTSD, this phenomenon was not formally tested.

### ***Study aims and hypotheses***

This study aimed to investigate how directness of trauma exposure affected recognition of PTSD. In addition, given the “military combat” stereotype and difference in prevalence rate among various PTSD causes, this study aimed to investigate how MHL of PTSD varied by three trauma types: military, man-made accident and rape.

Given the higher prevalence rate of PTSD among direct than indirect exposure, we hypothesized that [1] recognition rate would be higher in direct than indirect conditions. Second, we hypothesized that trauma type would affect recognition rate, specifically that [2] recognition would be the highest in a military combat condition due to stereotyping, followed by man-made disaster, and lowest in rape condition.

We also examined demographic differences in recognition rate and beliefs about help seeking, though this was exploratory and did not therefore have specific hypotheses. Additionally, we

looked at participants' experience of mental illnesses to determine how this impacted on recognition.

## **Method**

### ***Participants***

Opportunistic sampling was used for participant selection. The first two authors contacted various individuals and groups with which they had worked in the past to complete the questionnaire. 233 participants took part, 60 males and 173 females. Mean age was 23.2 years (SD=9.1; range 18-57). 46.8% gave their ethnicity as Chinese, 25.8% White British, 12.9% Other European. Because of the demography of the authors a large group of British Chinese people were contacted and agreed to take part. The remaining 14.5% comprised American, Australian, Canadian and other ethnicities. Over half reported their highest education as university-level (39.1% Bachelor's; 17.6% Master's), 42.9% A-levels or equivalent, and 0.4% GCSE only (or equivalent)<sup>2</sup>. 54.1% of participants indicated they had studied psychology, of which 11.6% were university psychology students.

### ***Design and procedure***

The study was run online using Qualtrics. A 2x3 between-subject factorial design was employed. Participants were randomly allocated one of six vignettes, differing only in directness (direct or

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<sup>2</sup> For subsequent analyses, a binary variable was created indicating university level education or not. Participants' age was divided into three categories, 18-29, 30-39 and 40+, and participants nationality was divided into three categories, Chinese (n=109), Europeans including British (n= 83) and Other nationalities (n=41).

indirect exposure to traumatic event) and trauma type (rape, military combat or man-made disaster).

Each vignette described a character, Alex, who was experiencing symptoms of PTSD. These are reproduced in the appendix. Participants were asked to identify the mental disorder described. They were asked whether or not they think “Alex” has a mental health problem (Yes/No), followed by “If so, what do you think it is?” where participants could enter their response into the text box. They were also asked to rate distress, happiness, and their sympathy level regarding “Alex’s” situation on a 7–point Likert scale. Lastly, they were asked what help they would suggest for “Alex” (12 choices were given with multiple responses permitted). These questions were chosen as they have been used in previous research on MHL. Independent variables were trauma directness (direct/indirect) and type (combat, man-made disaster or rape). The dependent variable was correct PTSD recognition.

Participants were also asked if they had experience of mental health difficulties, either personal or someone they knew, to assess the impact of this on recognition.

## **Results**

In all, 8.6% of participants reported having been diagnosed with mental disorder and 71.7% indicated they knew someone diagnosed with mental disorder. Table 1 shows participants’ allocation into different conditions.

Insert Table 1 here

### ***Classification as having a mental health problem***

Overall, 82.8% (n=193) responded “Yes” to “Do you think Alex has a mental disorder?”, while 17.2% (N=40) responded “No” (Table 2). Two-way ANOVA was conducted to test the effect of directness and type on classification rate. No significant main effect of directness ( $F(1, 227)=3.73, p>.05, \eta^2=1.6\%$ ) and type ( $F(2, 227)=2.40, p>.05, \eta^2=2.1\%$ ) on classification rate was found. No significant interaction between directness and type was found,  $F(2, 227)=.33, p>.05, \eta^2=0.3\%$ .

Insert Table 2

### ***Recognition of PTSD***

Participants’ responses towards what mental health problem “Alex” had were coded as either “correct” (PTSD) or “incorrect” (other responses). Responses such as “traumatized”, “war trauma”, “shell shock” were considered “incorrect”. A second researcher external to the study independently coded all responses to check reliability. There was high inter-rater reliability, with disagreement in only 2 of 233 responses (Cohen’s Kappa=.98,  $p<.01$ ).

Overall, 42.5% of participants correctly identified the mental health problem as PTSD. Table 3 shows recognition rates across all conditions. Two-way ANOVA found a significant main effect of directness on recognition rate,  $F(1, 227)=33.07, p<.01, \eta^2=12.7\%$ . There was also a significant main effect of type on recognition rate,  $F(2, 227)=8.71, p<.01, \eta^2=7.1\%$ . No significant interaction was found between directness and type,  $F(2, 227)=1.08, p>.05, \eta^2=0.9\%$ .

Insert Table 3 and Figure 1 here

Recognition rate was significantly higher in direct (58.8%) than indirect (25.4%) conditions,  $t(231)=5.45, p<.01$  (Figure 1).

Recognition rate was significantly higher in the military combat than the rape condition,  $t(230)=2.67, p<.01$ , and for man-made disaster versus rape conditions,  $t(230)=3.68, p<.01$ . No significant difference was found between military and man-made disaster conditions,  $t(230)=.993, p>.05$  (Figure 2). Due to the low recognition rate in indirect exposure to rape condition, participants' free-text responses were examined. 15 participants gave "anxiety" as the mental health problem; one responded "depression"; the remainder used everyday language (e.g. "not functioning well", "fearful" and "sexual fear").

Nationality significantly affected PTSD recognition ( $F(2, 230)= 4.06, p<.05$ ). Recognition was significantly higher in Other nationalities (58.5%) than Chinese (33.9%),  $t(230)=2.75, p<.01$ . No difference in recognition rate was found between Chinese and Europeans (45.8%;  $t(230)=1.66, p>.05$ ) or Europeans and Other nationalities ( $t(230)=1.37, p>.01$ ). No other demographic factors significantly affected recognition rate.

### ***Participants' ratings***

Participants' ratings were recorded on a 7-point Likert scale (1='Not at all'; 7='Extremely'). Regarding 'Alex's' distress level, a significant main effect of directness on distress ratings was found,  $F(1, 227)=10.44, p<.01, \eta^2=4.4\%$ . No other effects were significant. Distress ratings was significantly higher in direct ( $M=6.07, SD=.97$ ) than indirect conditions ( $M=5.66, SD=.96$ ),  $t(231)=3.24, p<.01$ .

A significant main effect of directness was found on participants' sympathy ratings towards 'Alex',  $F(1, 227)=7.78, p<.01, \eta^2=3.3\%$ . No other effects were significant. Sympathy ratings were significantly higher in direct ( $M=5.97, SD=1.10$ ) than indirect exposure condition ( $M=5.55, SD=1.12$ ),  $t(231)=2.84, p<.01$ .

A significant main effect of directness on happiness ratings was found,  $F(1, 227)=7.91, p<.01, \eta^2=3.4\%$ , and of trauma type ( $F(2, 227)=.088, p>.05, \eta^2=.1\%$ ). Interaction between directness and trauma type was not significant. Happiness ratings in direct condition ( $M=2.13, SD=.093$ ) was significantly lower than indirect exposure ( $M=2.52, SD=1.16$ ),  $t(231)=2.85, p<.01$ .

### **Help-Seeking**

Participants were given 12 choices for help they think “Alex” should seek and allowed unlimited, multiple choices. Table 4 shows participants’ help-seeking responses for all conditions, and columns:  $p(\text{directness})$ , and  $p(\text{type})$ , show significance levels for conditions.

Insert Table 4 and Figure 2 here

The most popular choice of help for “Alex” was “see a psychologist/counselor”, suggested by 92.7% of participants. 63.9% suggested talking to family and/or friends, while 50.2% recommended “talk to a trusted person outside family and friends”. Far fewer respondents suggested seeing a medical professional and taking medication.

The number of participants suggesting a psychologist was significantly lower in the rape condition (85.7%) than combat (96.1%;  $t(230)=2.51, p<.05$ ) and man-made disaster condition (96.2%;  $t(230)=2.55, p<.05$ ). No significant difference was found between combat and man-made disaster ( $t(230)=.024, p>.05$ ).

Practical recommendations were chosen significantly more in direct (27.7%) than indirect conditions (3.5%),  $F(1, 231)=28.48, p<.01$ . The number of recommendations was higher in the

rape condition (36.4%) than both combat (6.5%;  $t(230)=5.48, p<.01$ ) and man-made disaster (5.1%;  $t(230)=5.78, p<.01$ ). The number of recommendations did not differ significantly between combat and man-made disaster ( $t(230)=.26, p> .05$ ).

## Discussion

This study aimed to examine the effect of directness and trauma type on MHL of PTSD. The result obtained partly supported our hypotheses. Recognition rate was higher in direct than indirect conditions, which supported our first hypothesis. When comparing trauma types, PTSD recognition rate was lowest in the rape condition; significantly lower than both military combat and man-made disaster conditions. However, no significant difference was found between military combat and man-made disaster conditions. Hence, our second hypothesis that recognition rate would be higher in military combat, followed by man-made disaster and lowest in rape condition, was only partly supported. Overall, the recognition rate of PTSD was found to be 42.5%. This implies limitations within public understanding of PTSD.

The result that recognition rate was lower in indirect than direct conditions suggested that participants were not aware that PTSD could result from indirect exposure to traumatic events. This is in line with Bride's (2007) findings that social workers were not aware of their vulnerability to acquiring PTSD. A likely explanation for this lower recognition was that evidence of the link between indirect trauma exposure and PTSD emerged only recently, with indirect exposure included as one criterion for PTSD with DSM-V in 2013. This recent acknowledgement of indirect exposure on PTSD might explain why participants were less familiar, and hence, were less able to identify PTSD in indirect conditions.

Bride (2007) also provided evidence that social workers and first responders were two of the high-risk groups in acquiring PTSD. The inability of participants to identify PTSD from the indirect vignettes might imply that such cases of PTSD could go unrecognised and untreated in ‘real world’ situations. The limitation in MHL of indirect PTSD indicates lack of awareness towards PTSD and specifically to the revision of DSM-V criteria for PTSD resulting from indirect exposure.

Our result was consistent with Merritt et al.’s (2014) findings, which showed higher MHL in military combat vignette than rape vignette. This might be because PTSD was commonly known to be a diagnosis for veterans, so more participants in the present study (46.8%) were able to identify it from the combat vignette. Conversely, the low recognition rate in rape condition (26.0%) might suggest that people were not aware that rape could result in PTSD. However, a high proportion (75.3%) of participants in the rape condition selected “yes” when asked if Alex had a mental health problem. Therefore, the low MHL in rape condition might be the result of incorrect identification of mental health problem as something other than PTSD.

Though recognition rate was higher in the man-made disaster than the military combat condition, this difference was not statistically significant. Since the study was run around the time of the Paris terrorist attacks in November 2015, this might have increased participants’ awareness and knowledge of PTSD from man-made disaster, specifically terrorist attacks. There are further indications that PTSD to terrorist attacks is increasingly recognized, for example the establishment of a new UK-government funded scheme to assist British victims of terror attacks worldwide with screening and treatment for PTSD<sup>3</sup>.

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<sup>3</sup> See, for example: <https://www.gov.uk/government/publications/terrorist-attacks-in-paris-support-for-people-affected>

The overall recognition rate for PTSD in this study was 42.5%, which was lower than the 67% reported by Merritt et al. (2014). In Merritt et al.'s study, a proportion of the sample worked in mental health, so might have been more familiar with PTSD, while in the present study a higher proportion of participants were students. This difference may also have been affected by participant nationality. 46.8% of participants in the present study were Chinese, and Chinese participants had lower recognition of PTSD than other nationalities. While the present study did not aim to examine cultural differences in MHL, future research could consider investigating this with PTSD. In China, for example, a different diagnostic system to DSM-V is commonly used, and PTSD symptoms may be represented differently in Chinese communities. Though beyond the scope of the present study, this could be an avenue of future research.

The majority of the participants (92.7%) recommended “seeing a psychologist/counselor”, which was the most popular choice of help. However, this recommendation was affected by trauma type. Significantly more participants recommended a psychologist if they read combat or man-made disaster vignettes, compared to rape. This could suggest that participants view both veterans and survivors of man-made disaster as more likely to experience mental disorders than sexual assault victims.

Nonetheless, the number of participants recommending a psychologist in rape condition remained high (85.7%). Even though not all participants were able to correctly identify PTSD from the vignette, this suggests that correct labeling of the mental condition was not necessary for subsequent help-seeking recommendations, contrary to the findings of Wright et al (2007). It is possible that merely believing there was a mental health issue for ‘Alex’, regardless of what the mental illness was, was sufficient to drive people’s help-seeking recommendation. If this was the

case, then being able to notice a possible mental health problem was the cue to activate the schema of help-seeking action, rather than correct labeling of the problem as PTSD.

Significantly more participants chose practical help options if they were in direct rather than indirect condition, and in rape condition compared to combat and man-made disaster conditions. It was likely that participants viewed 'Alex' as having suffered an attack from an offender in direct exposure to rape condition, therefore requiring legal help in order to convict the offender. Conversely, veterans and survivors of disaster had less need for legal help. Half of the sample chose "talk to a trusted person outside family and friends", which was the third most popular option. The reason for this figure not being higher might be the large number of Chinese participants in the present study. As Wong et al (2010) suggested, due to stigmatization Chinese participants were more reluctant to talk about mental illness with family and friends.

Participants' ratings of distress, sympathy and happiness level varied as a function of directness but not trauma type. Individuals' ratings might be affected by their perceived seriousness of different causes of PTSD, where they viewed direct exposure as a more serious problem than indirect exposure. This is consistent with Zimering et al.'s (2006) findings, where direct exposure resulted in a higher prevalence rate of PTSD (6.4%) than indirect exposure (4.6%). Another possible reason for this might be because all characters in indirect conditions were professional. Participants might think that professionals were better at dealing with stress and helping patients to cope as a routine part of their work. The similarity in ratings between trauma types might mean participants' perception of seriousness between them were similar, where all traumas were seen as equally serious and devastating to a person's life.

Our results overall suggest that people had limited knowledge regarding various causes of PTSD. This might imply an inability for people to recognize PTSD if a traumatic event happened to their family members, friends or even themselves. As a result, people might not seek help and access appropriate treatment. The difference in recognition rate across conditions further implied that this sample of the general population was not aware that professionals and rape victims were at risk at developing PTSD. Given the high prevalence of PTSD among rape victims (32%) and social workers (15%), the low recognition rate would potentially mean thousands of PTSD cases resulting from indirect exposure to traumas, particularly rape, would go undetected and untreated. Nevertheless, results also suggested that correct labeling was not necessary for subsequent help-seeking recommendations to see a mental health professional. Applying this result to real life situations, this could mean that so long as people noticed there was a mental health problem, even if they could not correctly identify it, they would still seek help from psychologist. Given the relatively low recognition rate revealed in the present study, there is still a need for raising awareness and increasing education around PTSD, especially among students and younger adults.

A limitation of the present study was the small sample size ( $N=233$ ) relative to other MHL studies with  $N>1000$ . Many participants were students and younger adults, meaning that results obtained might only apply to this cohort. Future research is needed to assess whether the findings generalize to a wider population, particularly older adults.

The current study investigated only three trauma types. Future research could include further trauma sources, such as natural disaster, mugging, and physical abuse. If similar results were found, this would further point towards the importance of increasing education around the occurrence of PTSD from different trauma types. Additionally, future research could also replicate this study among mental health care professionals and GPs, given their roles in diagnosis

and treatment. Higher MHL among health professionals would indicate more likelihood of appropriate treatment being offered. Lastly, the present study showed a cultural difference in MHL of PTSD. Researchers could consider comparing MHL of PTSD more systematically between different countries and/or cultural groups in the future.

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**Table 1.** Participants' allocation into different conditions

Conditions (Number of participants)	Direct	Indirect	Total
Rape	40	37	<b>77</b>
Military Combat	41	36	<b>77</b>
Man-Made disaster	38	41	<b>79</b>
Total	<b>119</b>	<b>114</b>	233

**Table 2.** Classification as having a mental health problem across all conditions.

Conditions	Direct	Indirect	Total
Rape	77.5% (N=31/40)	73% (N=27/37)	<b>75.3%</b> (N=58/77)
Military Combat	90.2% (N=37/41)	80.6% (N=29/36)	<b>85.7%</b> (N=66/77)
Man-Made disaster	94.7% (N=36/38)	80.5% (N=33/41)	<b>87.3%</b> (N=69/79)
Total	<b>87.4%</b> (N=104/119)	<b>78.1%</b> (N=89/114)	

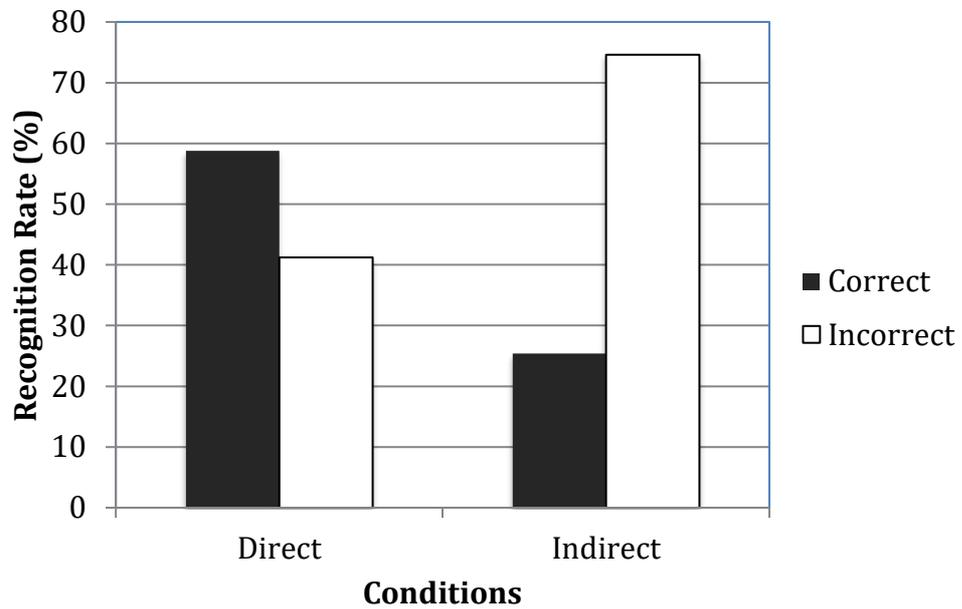
**Table 3.** Recognition rate across all conditions

Conditions	Direct	Indirect	Total
Rape	45.0% (N=18/40)	5.4% (N=2/37)	<b>26.0%</b> (N=20/77)
Military Combat	65.9% (N=27/41)	25.0% (N=9/36)	<b>46.8%</b> (N=36/77)
Man-made disaster	65.8% (N=25/38)	43.9% (N=18/41)	<b>54.4%</b> (N=43/79)
Total	<b>58.8%</b> (N=70/119)	<b>25.4%</b> (N=29/114)	

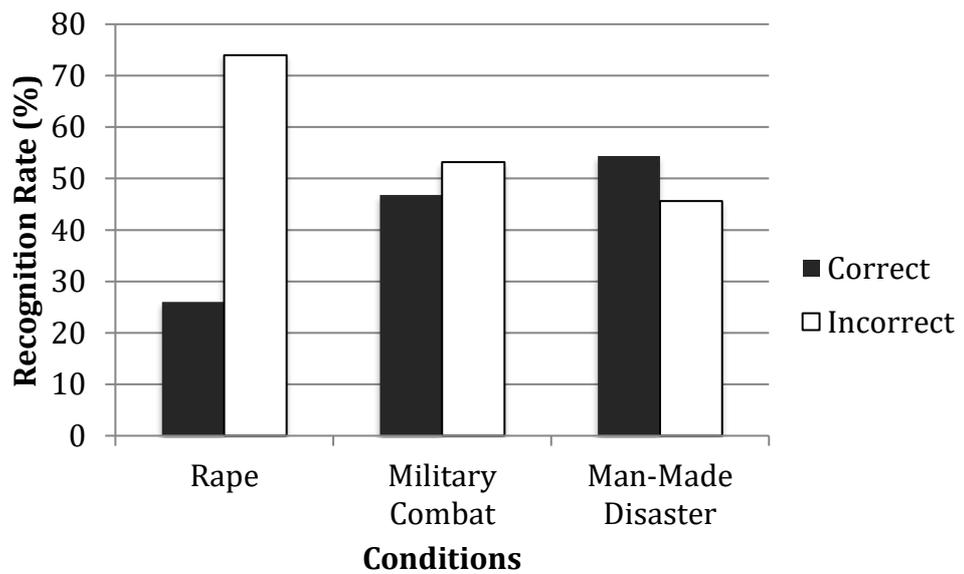
**Table 4.** Help seeking suggestions for all conditions

What help, if any, do you think Alex should seek?	Frequency	% of all participants (N=233)	<i>p</i> (directness)	<i>p</i> (type)
See a psychologist/ counselor	216	92.7	n.s	< .05
See a medical professional	56	24.0	n.s	n.s
Take medication	58	24.9	n.s	n.s
Talk to a trusted person outside of family and friends	117	50.2	n.s	n.s
Talk to family and/or friends	149	63.9	n.s	n.s
See a non-health worker (e.g. support charity)	28	12.0	n.s	n.s
Practical steps (e.g. justice, legal assistance, compensation)	37	15.9	< .01	< .01
General lay advice (e.g. “move on”, “be strong”)	20	8.6	n.s	n.s
Alternative interventions (e.g. hypnosis, holistic treatment, exercise)	63	27.0	n.s	n.s
Don’t know/ not qualified to say	17	7.3	n.s	n.s
Other	5	2.1	n.s	n.s
No suggestion for help	0	0	n.s	n.s

*Figure 1.* Recognition rate across direct and indirect conditions



*Figure 2.* Recognition rate across type of PTSD



## **Appendix A**

### **Vignette 1 – Direct exposure, rape**

Alex was attacked by a group of men on the way home from school, they took turns raping her. For months after this horrifying event, these images still haunted her. Alex was unable to keep these memories out of her mind. Alex noticed that at night, she had difficulties relaxing and falling asleep. Scenes from the attack would run repeatedly through her mind and disrupt her focus at school. This also affected Alex's day-to-day life, for example, when Alex walked back from school, which took her past the site of the attack, this immediately rekindled certain horrific memories. So Alex would have to go the long way home. She felt as though her emotions were numbed, and as though she had no real future. At home she was anxious, tense, and easily startled. She found herself avoiding social interactions, and became very fearful of being out in public.

### **Vignette 2 – Direct exposure, military combat**

Alex saw a good deal of active combat during his time in the military. Some incidents in particular had never left his mind – like the horrifying sight of Gary, a close comrade and friend, being blown-up by a land-mine. For months after he returned to civilian life, these images still haunted him. Alex was unable to keep the memories of combat out of his mind. Alex noticed that at night, he had difficulties relaxing and falling asleep. Scenes from battle would run repeatedly through his mind and disrupt his focus on work. This also affected Alex's day-to-day life, for example, when Alex was filling up at the gas station, the smell of diesel immediately rekindled certain horrific memories. He felt as though his emotions were numbed, and as though he had no real future. At home, he was anxious, tense, and easily startled. He found himself avoiding social interactions, and became very fearful of being out in public.

### **Vignette 3 – Direct exposure, man-made disaster**

Alex is an auto mechanic who was working 3 blocks from the World Trade Center on 9/11. Alex witnessed both towers falling. For months after the 9/11 terrorist attacks, these images still haunted Alex. Alex was unable to keep the memories of the attack out of his mind. Alex noticed that at night, he had difficulties relaxing and falling asleep. Scenes from the tower falling would run repeatedly through his mind and disrupt his focus on work. This also affected Alex's day-to-day life, for example, when he crossed the Brooklyn Bridge into Manhattan, he started sweating and trembling, as this immediately rekindled certain horrific memories. He felt as though his emotions were numbed, and as though he had no real future. At home, he was anxious, tense, and easily startled. He found himself avoiding social interactions, and became very fearful of being out in public.

#### **Vignette 4 – Indirect exposure, Rape**

Alex is a sex offender therapist working at a State prison. Alex has listened to many stories from the sex offenders, and was haunted by what she heard at work. What distresses her the most is having to listen to offenders' sexual fantasies and their sadistic sexual behaviours. Alex was unable to keep these memories out of her mind. Alex noticed that at night, she had difficulties relaxing and falling asleep. Scenes of rape would run repeatedly through her mind and disrupt her focus at work. This also affected Alex's day-to-day life, for example, when Alex was being intimate with her husband, these images of sexual fantasies pop up in her mind. She felt as though her emotions were numbed, and as though she had no real future. At home she was anxious, tense, and easily startled. She found herself avoiding social interactions, and became very fearful of being out in public.

#### **Vignette 5 – Indirect exposure, military combat**

Alex is a nurse working on a palliative care unit in a US Veteran's Hospital. Alex has seen many veterans die, and was haunted by what she saw at work. What distressed her the most was that while she witnessed the actual dying process, she experienced their trauma from combat through their eyes. Alex was unable to keep these memories out of her mind. Alex noticed that at night, she had difficulties relaxing and falling asleep. Scenes from the veterans' combat would run repeatedly through her mind and disrupt her focus at work. This also affected Alex's day-to-day life, for example, whenever Alex encountered scenes of battlefield on the TV, this immediately rekindled certain horrific memories. She felt as though her emotions were numbed, and as though she had no real future. At home she was anxious, tense, and easily startled. She found herself avoiding social interactions, and became very fearful of being out in public.

#### **Vignette 6 – Indirect exposure, man-made disaster**

Alex was a social worker when the 9/11/01 terrorist attack on the World Trade Center in New York City occurred. Alex has listened to many family members and survivors, and was haunted by what he heard at work. What distressed her the most are the intense emotions that she was exposed to at work. Alex was unable to keep the memories of attack out of her mind. Alex noticed that at night, she had difficulties relaxing and falling asleep. Scenes from the tower falling would run repeatedly through her mind and disrupt her focus on work. This also affected Alex's day-to-day life, for example, when she went near the World Trade Center, she started sweating and trembling, as this immediately rekindled certain horrific memories. She felt as though her emotions were numbed, and as though she had no real future. At home, she was anxious, tense, and easily startled. She found himself avoiding social interactions, and became very fearful of being out in public.