Influence of Age and Gender Differences on Mental Health Literacy of Anxiety

Disorders

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Abstract

The purpose of this study was to explore the influence of age and gender on Mental Health Literacy (MHL) of various anxiety disorders. In all 162 individuals aged 18-71, both students and non-students completed one of two questionnaires, which differed only on the gender of the vignettes character. Participants had to label six vignettes and state their opinion on how well adjusted the characters were, and if treatment was necessary. 'Correct' labelling of the different disorders varied, from 3% - 29.0 % of all participants. Gender differences of participants had a significant effect on literacy as females demonstrated higher MHL and the youngest group (18-29) showed better MHL. However a non-significant effect of vignette gender on recognition rates was found. The research points to the evidence that MHL remains relatively low for all anxiety disorders. Limitations are considered.

Introduction

The concept of "health literacy" was defined as "the ability to gain access, to understand and use information in ways which promote and maintain good health" (Nutbeam, Wise, Bauman, Harris, & Leeder, 1993). The term "mental health literacy" was introduced by Jorm et al. (1997) and defined as "knowledge and beliefs about mental disorders which aid their recognition, management or prevention" (Jorm, 2012). This paper concerns the "mental health literacy" of some of the anxiety disorders.

Research in this field found that there is a vast difference between the clinician's understanding of mental health and what the layperson understands (Leighton, 2009; Burns & Rapee, 2006). In an attempt to explore whether General Practitioner's (GPs) have significant gaps in their knowledge of Post-Traumatic Stress Disorder (PTSD), Munro, Freeman and Law (2004) compared PTSD and depression vignettes recognition rates and treatment beliefs. Findings revealed that 67.5% of GPs included PTSD in their differential diagnosis for the PTSD vignette compared to 94.4% for the depression vignette. A significant difference was also recorded for correct prescription and treatment beliefs. Only 28.3% of GPs had the necessary knowledge and prescribed appropriately for PTSD compared to 89.8% for depression. Lack of knowledge is a principal reason for less than ideal recognition and treatment of PTSD even in primary care with trained professionals, suggesting that lay people's knowledge and treatment beliefs of PTSD would be even worse (Munro et al. 2004). Research by Leighton (2009) highlighted the importance of these findings as they show differences in understanding between lay people and professionals and how these understandings affect pathways to effective help seeking.

Anxiety Disorders

While Mental Health Literacy (MHL) has received considerable attention, research into the MHL of Anxiety Disorders (ADs) in particular remains relatively scarce. Anxiety disorders are one of the most prevalent mental disorders ranging from 13.6 % and 28.8% in Western countries (Michael, Zetsche & Margraf, 2007). Previous research presented the lifetime prevalence of six anxiety disorders classified in the DSM-IV-TR (American Psychiatric Association, 2000). Michael et al. (2007) provided an overview of this research from 14 mental health surveys. This research found Agoraphobia 1.4%, Obsessive Compulsive Disorder (OCD) 1.6%, Panic disorder 4.7%, Generalized Anxiety Disorder (GAD) 5.7 %, Post-traumatic Stress Disorder (PTSD) 6.8% and Social Phobia 12.1% (Kessler, Chiu, Demler & Walters, 2005).

In general, anxiety disorders develop earlier in life with a median age of-onset at 11 years (Kessler et al. 2005). Social phobia often starts in childhood and generally manifests before the age of 20. GAD, panic disorder and agoraphobia usually develop through late adolescence and early adulthood and the average first appearance is between 25- to 30-years old. GAD is the only anxiety disorder that shows increased prevalence in the elderly. OCD develops between 15- to 39-years, whilst PTSD depends on the age when the trauma occurs (Michael et al. 2007; Kessler et al. 2005).

Anxiety disorders represent the single largest mental health problem in the US (Greenberg et al. 1999; Rice & Miller, 1998), yet most individuals never seek treatment (Henderson et al. 2002). The ability to recognize mental disorders has been found to lead to higher levels of help seeking treatment (Wright, Jorm & Mackinnon, 2011). Coles and Coleman (2010) conducted a study assessing the MHL of multiple Anxiety disorders (Social phobia, Panic disorder, GAD and OCD) and depression on a sample of undergraduate psychology students. Using vignette methodology, participants were asked to label the vignette disorder from a given list, it's cause and whether or not they would recommend treatment. Variability in correct identification and appropriate treatment for the disorder was found. Social phobia and OCD showed relatively high rates of recognition similar to depression rates around 86%, whilst less than half of the participants labelled panic disorder (47.7%) or GAD (41.5%) correctly. 'General life stress' was mostly used (41.4%) to label GAD. A very popular assigned label used in all conditions was 'medical problem' (27.6%). Given that symptoms of OCD were generally attributed to 'mental illness' by 46.8% of participants, suggests a gap in the knowledge of the relevant causes (Coles & Coleman).

Reavley and Jorm (2011a) investigated recognition and treatment beliefs for affective disorders, schizophrenia/psychosis and two anxiety disorders (Social phobia and PTSD). Participants were asked about what was wrong with the person in the case vignette, whether a broad range of interventions would be helpful and the outcomes with/without appropriate treatment. One third of participants used the correct labels for recognising PTSD, which was found similar to schizophrenia ratings (Reavley & Jorm, 2011a). In contrast to Coles and Coleman (2010) only 9.2% of participants correctly recognized social phobia. In general participants gave labels such as 'shy' or 'low self-confidence' for social phobia leading to the assumption that they were less likely to consider it a mental illness (Reavley & Jorm, 2011a). This controversy along with the inadequate research on MHL for anxiety disorders, highlight the importance of this study on the current topic of MHL specifically for a more broad

Gender of vignette character

One critical question regarding mental health literacy, which has not yet been empirically investigated, is whether the gender of the vignette character affects literacy levels based on prevalence. In a previous review of psychotherapy research Roth and Fonagy (2005) found significantly higher rates in females than males, 30% higher rates of Agoraphobia, 50% higher for OCD and GAD and 60% higher for Panic disorder. In support to that more recently, McLean, Asnaani, Litz and Hofmann (2011), found a higher prevalence amongst women who met the criteria for an anxiety disorder than men with one in three women compared to 22% of men. More specifically given that Social phobia is highly prevalent, Xu et al. (2012) investigated this and found a significantly lower rate in males (4.20%) than females (5.60%). Similarly 10 months after an earthquake 51.7% of females suffered from PTSD compared to 25.7% of males from a sample of high-school students (Dell'Osso et al. 2011). Given the higher prevalence in females it was assumed that there would be a significant difference in correct labeling and treatment recommendations between the female and male versions of vignettes. Females were expected to correctly identify the female vignettes greater than males. It was also predicted that participants are more likely to identify disorders in vignettes of the same gender as them when the disorder is more common in their own gender, an issue that has not yet been tested empirically.

Gender of participants

Previous research by Cotton et al. (2006) investigated what factors predict levels of mental health literacy and found that females identified the depression vignette more accurately than males, whereas no gender differences where found in the recognition of psychosis. Likewise, Wong, Lam, Poon & Chow (2011) also found that more females successfully identified the depression and schizophrenia vignettes in Chinese-speaking Australians. On the contrary, there are populations in which men are found to have higher levels of mental health literacy, particularly in communities where they have better access to education and media, whereas their less educated female counterparts focus mainly on cultural explanations of mental illness (Bener & Ghuloum, 2010). These findings though could be considered as culture specific given gender stereotypes in different societies, and thus may not be replicable to the world population (Bener & Ghuloum, 2010). Consequently, given their higher prevalence of anxiety disorders and social empathy rates, in the present research, females were expected to show higher MHL than males (Furnham et al. 2011a).

Age of participants

Despite the excessive amount of research attention given to mental health literacy, the topic of age in this area remains inconclusive. Research on this matter though could contribute considerably in the development of mental health literacy campaigns aiming at different age groups (Farrer, Leach, Griffiths, Christensen and Jorm 2008). Given that 20-27% of 12- to 24-year-olds suffer from a mental disorder, they could be an appealing age target for raising knowledge and awareness of mental disorders (Burns & Rapee, 2006). In spite of this, previous research found that MHL is relatively low, as less than 50% of young people were able to identify depression correctly (Wright et al. 2005). Conversely, Fisher and Goldney (2003) illustrated that MHL appears higher for young people compared to the elderly. They found that young people (15-24 years) were more likely to correctly identify a disorder and suggest professional help treatment compared to older people (65-74 years).

Farrer et al. (2008) aimed to further investigate this by examining differences in the recognition of depression and schizophrenia and the associated treatments and sources of help in adults aged 18 years and older. The oldest (70+) and youngest (18-24) participants were expected to report lower levels of recognition, compared to the other age groups (Farrer et al. 2008). Indeed the oldest age group were less likely to correctly identify the disorder and chose fewer sources as helpful, whereas the youngest age group had the most correct responses, revealing that age is a predictor of literacy, given that education programs are a primary source of MHL. In contrast to this, Furnham et al. (2011) found that older age group was a better predictor of literacy but a weak one, and not a predictor when individual regressions on different personality disorders were run. Previous research has focused on the recognition of depression, whilst age comparisons of mental health literacy for anxiety disorders still lack investigation. The current study therefore investigated this and hypothesized that younger adults would show higher MHL for anxiety disorders.

This study not only investigated gender and age differences, but also looked at an exploratory aspect in terms of the effect of vignette gender, a previously unexplored area in mental health literacy using vignette methodology across six anxiety disorders.

Based on previous research the first hypothesis (H1) predicted that more common mental health problems are recognised more often (Furnham et al. 2009;). According to the prevalence of anxiety disorders highest recognition rates are expected for Social phobia compared to lowest rates for Agoraphobia (Kessler et al. 2005). The second hypothesis (H2) stated that individuals are more likely to identify disorders in vignettes of the same gender as them when the disorder is more common in their

own gender. The third hypothesis (H3) was that females would demonstrate significantly higher MHL than males given their higher prevalence of anxiety disorders and social empathy rates (Furnham et al. 2011a). Finally (H4) based on Farrer et al. (2007) study who found higher literacy levels for the young people compared to the elderly, the fourth hypothesis expects the younger age group (18-29 years) to show higher MHL.

Method

Participants

One hundred sixty-two European participants took part in this study; from which 62.3 % were females and 37.7 % were males. 105 non-students and 57 students were recruited from the general population using opportunity sampling. Their ages ranged from 18 to 71 years old, with a mean age of 33.9 years (SD=12.9). Participants were divided into three groups, 18- to 29-year-olds (n=73) fell in the young age group, 30- to 44-year-olds (n=44) fell in the middle-age group and 45- to 71-year-olds (n=45) fell into the older age group. Overall a mean of   5.38 (SD=2.14) was found for religious beliefs (on a scale of 0=not religious to 8=very religious). When reporting religion, 93.8 % chose Christianity, 1.2 % Islam, 4.3% had no religion or were atheist and 0.6% chose 'other'.

The majority of students were University undergraduate/postgraduate students (39.5%) and the rest were secondary school students (1.9%). In the non-students group, who were no longer in full time education, 2.5% held a secondary school certificate as their highest qualification, 20.4% held a BSc or a BA and 35.8% held an MA, MSc or PhD.

Overall 39 participants (24.1%) had formally studied either Psychology or Psychiatry. 13.6 % of participants had been treated for a Psychiatric illness and 64.8 % reported having personal experience of knowing someone with a mental illness. 6.8% reported having an experience of Panic disorder personally or through someone they know, 4.3% reported GAD, 1.9% Social phobia 1.2% OCD, 1.2% Agoraphobia and 0.6% PTSD.

Materials

The questionnaire was designed for this study, which included vignette identification and a demographics section, using Qualtrics an online survey tool.

Vignette identification. The vignette identification section involved 6 vignettes describing the Anxiety disorders; Obsessive Compulsive Disorder, Post-traumatic Stress Disorder, Generalised Anxiety Disorder, Panic disorder, Agoraphobia and Social phobia. The vignettes for Panic disorder, Social phobia, GAD and OCD were taken from Coles and Coleman (2010) paper. PTSD vignette was taken from Friedman, (2006) and APA (2000) developed using the psychiatric diagnostic criterion for the disorder and consistent with previous research studies. Finally the Agoraphobia vignette was taken from Seligman, Walker and Rosenhan's (2001) book.

There were two different questionnaires that only varied in the gender of the vignettes. Each had a mixture of male and female characters. They were around 90-150 words long and written in English. An example for the male version of panic disorder is given:

"Derek is 27 years old and he was driving with his wife to a computer store when he felt dizzy. As soon as he noticed this sensation, he experienced a rapid and intense surge of sweating, accelerated heart rate, hot flashes, trembling, and a feeling of detachment from his body. Fearing he was going to crash his car, he pulled off the road. After 10 min the feelings passed and Derek began to feel better, but now he worries extensively that it will happen again and he is reluctant to drive long distances."

After each vignette the participants were asked five questions about the character described in order to measure the aspects of mental health literacy. The first being an open-ended question asking "Do you think that, in any sense they have a psychological problem? If so what is it?" This was then followed with a question aiming to determine whether they would suggest seeking professional help for this problem. The following three questions used a 9-point Likert type scale consisting of 0=not at all to 8=extremely. They were asked to rate the person's happiness, personal relationships and success at work. The higher the rating the better adjusted the participant thought the persona was. A total adjustment score was calculated by taking the average of the three questions.

Procedure

Ethical approval for the study was sought and received. Participants were recruited opportunistically through personal contacts, by the author. The two questionnaires were randomly allocated online and took around 15 minutes to complete. Participants did not know that there are two different versions. Instructions were given online along with informed consent forms. Participants were assured of their anonymity and confidentiality (See Appendix A). Participants took part on a voluntary basis and were not remunerated for their participation, and were allowed to withdraw at any time.

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Results

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Scoring

Participant's responses to what each vignette's problem was were coded as either "correct", "partially correct" or "incorrect". A "correct" response mentioned the currently accepted psychiatric terminology or classification for that vignette. For instance for the social phobia vignette, responses like "social phobia" or "social anxiety disorder" were perceived as correct. When similar labels were given implying the meaning of the vignette disorder the responses were considered as "partially correct". For instance for the "panic disorder" vignette "panic attack" was considered as partially correct. When more than one response was given and the correct label was mentioned the response was coded as correct. For every "correct" label they were given 2 points, for every "partially correct" 1 point and for "incorrect" they scored 0 points, therefore the higher the result the better the mental health literacy value.

Analysis

Table 1, demonstrates the comparisons between the disorders based on prevalence and recognition rates for all participants. There was no correlation between prevalence and recognition ranks and this was supported by Pearson's ranking ($r=. 26$) proving no support for the first hypothesis. Indeed the most common disorder Social phobia was the third most recognised along with Agoraphobia, which is the least common one.

Table 1. *Rates of correct identification for each vignette, ranked from high to low.*

	Rank by prevalence (high to low)	Rank by recognition (high to low)
Social Phobia	1	3=
GAD	2	5
PTSD	3	1
OCD	4	2
Panic Disorder	5	6
Agoraphobia	6	3=

Figure 1, illustrates males and females rates of correct identification for each vignette ordered from high to low. It is evident that the ability to correctly recognize a disorder varies, with high percentage levels for PTSD compared to very poor recognition of Panic Disorder. After comparing male and female responses, females had higher rates of correct identification in general with the exception of social

phobia. This therefore supports the hypothesis that females would show higher MHL given their prevalence of anxiety disorders.
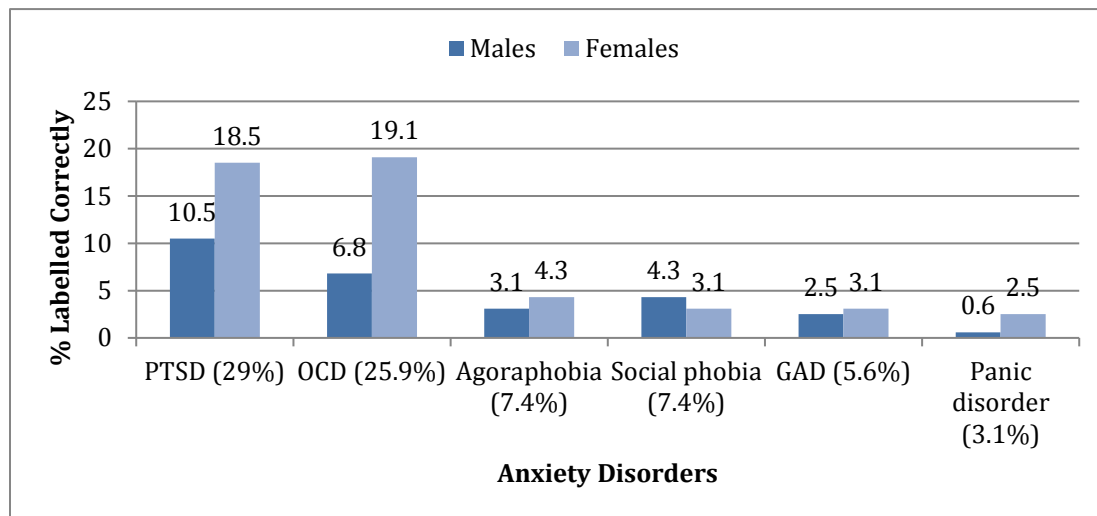

Figure 1. Rates of correct identification for each vignette, ranked from high to low.

In order to test the significance of the differences between rates of correct responses within the two genders, Chi-squared tests were used. Findings revealed that the only vignette for which there was a significant difference at the 0.05 levels in correctly or incorrectly identifying a disorder was the Social Phobia vignette. 4.3% of males correctly identified the disorder compared to 3.1% of females; χ^2 (2, N=162) =7.56, $p<0.02$. This therefore contradicts the hypothesis that participants would be more likely to recognize disorders that are more prevalent for their own gender, as social phobia is estimated to be twice as common in females than males (Kessler et al. 2005).

Figure 2, illustrates the rates of correct identification for each vignette ordered from high to low, along three different age groups (young, middle and old age groups). Overall, the highest percentage rate of correct identification appeared for PTSD and the lowest appeared for Panic disorder. After comparing the three different age group responses, the younger age group (18-29) had higher rates of correct identification in general with the exception of Agoraphobia.
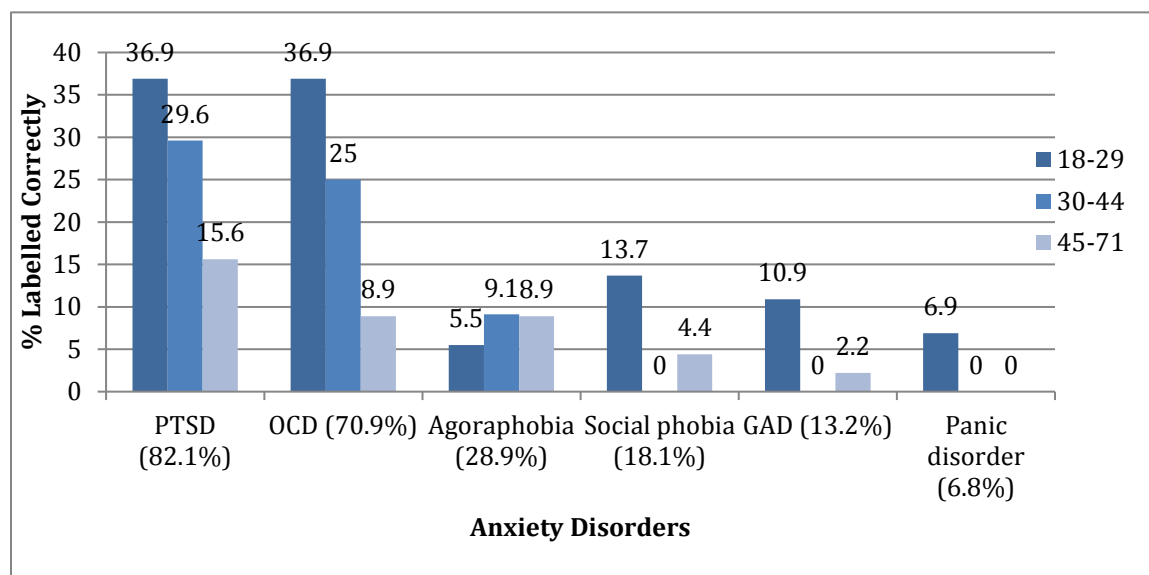
Figure 2. Rates of correct identification for each vignette, ranked from high to low.

In order to test the significance of the differences between rates of correct responses within the three age groups Chi-squared tests were used. The results revealed a significant difference at the 0.05 levels in correctly or incorrectly identifying a disorder, across three conditions. Across all three conditions, Social phobia (χ^2 (4, N=162) =9.92, p=0.04) , GAD (χ^2 (4, N=162) =10.47, p=0.03) and OCD, (χ^2 (4, N=162) =12.16, p=0.02) , the younger age group gave the most correct identifications. This therefore supports the hypothesis that younger participants would be more likely to recognize the disorders correctly.

Factors affecting 'Mental Health Literacy' score

A standard linear regression was used to compare the effects of possible predictor variables (age, gender, experience of mental health problems, education and ethnicity) on MHL. The mental health literacy score was calculated as the total correct identifications each participant made. Sex and Age of the participant were not significant predictors of mental health literacy score, whilst previous experience of Psychology or Psychiatry and psychological illness were significant. A significant model emerged as F (6, 162) =6.33, p<0.001. The model explains 44.4% of variance (Adjusted R^2=0.17).

Lay labels of Anxiety Disorders

The majority of participants suggested that all characters were suffering from a disorder with the exception of "Panic Disorder" and very few of them responded with 'don't know'. Many participants who did not answer correctly associated the vignette's problem with "anxiety", "fear" or "low self-esteem". Likewise for some of the disorders in which the correct terminology was not given participants listed some of their major symptoms instead. For instance for Panic disorder 22.8% (n=37) suggested the

person had a "panic attack" which is a major symptom of the disorder and 24.1% (n=39) suggested that there was no mental problem

Vignette Gender

Table 2, illustrates the comparison between participants' genders and percentages of correct identification of disorders for male and female vignettes.

Table 2. *A comparison between participants' genders and percentages of correct identification of disorders for male and female vignettes.*

	Male participants		Female participants	
Sex of vignette	Male	Female	Male	Female
Panic disorder	1.49	0.0	5.97	0.0
Agoraphobia	3.16	2.99	3.16	5.97
Social Phobia	7.46	3.16	5.97	0.0
GAD	2.11	2.99	0.0	7.46
OCD	14.93	7.37	23.88	9.47
PTSD	11.90	11.58	26.87	10.53

Some correlation was found between the gender of the vignettes and rates of recognition, while attempting to define according to prevalence each disorder as mainly female (i.e. PTSD) or male (i.e. OCD). Hence, the data was analysed to investigate whether there were any statistical differences between recognition in each vignette gender, by splitting male and female participants. In male participants the recognition of social phobia was significantly greater in male vignettes ($\chi^2 (2) = 7.65$, $p < 0.05$). Given that only one vignette showed a significant difference this result could be due to chance.

Additionally, a 2X2 ANOVA was performed, a significant interaction was found between participant gender and vignette gender for OCD ($F (1,162) = 5.09$, $p = 0.03$) and PTSD ($F (1,162) = 5.67$, $p = 0.02$). For OCD a significant main effect of gender
($F (1,162) = 3.91$, $p < 0.05$) and a significant main effect of vignette gender ($F (1,162) = 4.78$, $p < 0.03$) were also found. For OCD males gave higher ratings for male vignettes. Given that the results were only found twice these could be due to chance and thus are not supportive of the main hypothesis suggesting that the gender of the vignette would affect recognition of disorders.

Lay Ratings of Character Happiness

Females generally rated characters in the 'Panic disorder', 'Agoraphobia' and 'Social Phobia' as more happy. Conversely, males rated 'GAD', 'OCD' and 'PTSD' vignette characters as more happy but

there were no significant gender differences were found for the overall happiness ratings for any of the vignettes.

2 x 2 ANOVA was performed for each disorder to examine any interaction between the gender of the participant and the gender of the vignette character for overall happiness of the vignette character. None of the vignettes showed any significant interactions between the factor of gender of the participant and the factor of gender of the vignette. The majority of the vignettes showed an insignificant main effect of gender of vignette with the exception of OCD (F (1,162)=4.09, p=. 05). As this effect was only found once, it is unlikely that the gender of the vignette and participant would affect participant's responses.

Lay ratings of Character Successfulness at work

Males generally rated vignette characters as more successful at work compared to females. Males rated GAD characters as the most successful, whilst females rated the Panic disorder character as the most successful. Both sexes Agoraphobias as the least successful. The GAD vignette showed a significant gender effect as males rated vignette characters as being more successful at work than female participant's did, χ^2 (1, N=162)=6.01, p=0.01

Furthermore a 2 x 2 ANOVA was also performed to examine any interaction between the gender of the participant and the gender of the vignette for rates of successfulness at work. No significant interaction was found for any of the vignettes. GAD vignette showed a significant main effect of gender of participant (F (1,162)=4.10, p=0.05) and a significant main effect of gender of the vignette (F (1,62)=7.77, p=0.06). PTSD vignette also revealed a significant main effect of participant gender on success ratings (F (1,162)=7.30, p=0.08) and a significant main effect of gender of the vignette (F (1,162)=4.86, p=0.03). Additionally for OCD, a main effect was found for the gender of the vignette (F (1,162)=5.71, p=0.02). Given that no significant interaction was found it is highly unlikely that gender played a role on participant's ratings.

Lay ratings of Character's Personal relationship satisfaction

Both genders rated the Panic disorder vignette as having the highest relationship satisfaction. Males rated Social phobia vignette with the lowest relationship satisfaction, while females rated PTSD vignette with the lowest one. No significant gender effect for any of the vignette was found.

2X2 ANOVA was further performed for each disorder in order to examine any interaction between the gender of the participant and the gender of the vignette character for the character's personal relationship satisfaction. Two disorders showed significant interaction, the Panic disorder (F

(1,162)=5.21, p=0.02) and PTSD (F (1,162)=4.00, p=0.05). For both participants tended to rate characters of the opposite sex as having better relationship satisfaction. In the case of Panic disorder a significant main effect of vignette gender was also found (F (1,162)=5.76, p=0.02). For PTSD a significant main effect of participant's gender was found (F(1,162)=6.39, p=0.01) along with a significant main effect of vignette gender (F(1,162)=6.04, p=0.02). A significant main effect of vignette gender was also shown for OCD (F(1,162)=5.37, p=0.02). Overall these results could suggest a gender effect with participants tending to be more in favour towards their opposite sex when considering relationship satisfaction. Given thought that only two of the disorders showed a significant interaction it could be assumed that results are due to chance.

Tendency to suggest seeking help

Males were more likely to suggest help for the Panic disorder, OCD and PTSD, whilst females were more likely to suggest help for Agoraphobia, Social phobia and GAD. Both genders showed highest ratings of seeking help for GAD. Males were least likely to suggest help for Agoraphobia, whilst women were least likely to suggest help for PTS A one-way repeated measures ANOVA was used to compare any difference in participant's ratings for whether the character should seek help for their problem. Mauchly's test of sphericity was significant (W=0.407, p<.001), and Greenhouse-Geisser estimates were taken to correct for degrees of freedom. Findings therefore revealed a significant difference in participant's likelihood to suggest seeking help across the different anxiety disorders (F(3.91,1.22)=10.75, p<.001).

No significant gender effect was found for any of the vignettes. Likewise no significant interaction was found between the factor of gender of the participant and the factor of gender of the vignette when a 2X2 ANOVA was used for each disorder.

The younger age group (18-29) were more likely to suggest help for all disorders compared to the other groups with the exception of Panic disorder and Social Phobia in which the middle-age group gave higher ratings. The younger and the older age group both showed highest ratings of seeking help for GAD, whilst the middle-age group showed highest ratings for Panic disorder. All three groups were least likely to suggest help for PTSD.

A one-way repeated measures ANOVA was used to compare any difference in participant's ratings for whether the character should seek help for their problem. Mauchly's test of sphericity was significant (W=0.409, p<.001), and Greenhouse-Geisser estimates were taken to correct for degrees of freedom.

Findings therefore revealed a significant difference in participant's likelihood to suggest seeking help across the different anxiety disorders (F (3.90,1.36)=11.92, $p<.001$).

No significant age effect was found for any of the vignettes. Likewise no significant interaction was found between the factor of age and the factor of gender of the vignette when a 2X2 ANOVA was used for each disorder. Thus this suggests that age has no effect on participant's ratings in regards of seeking help for any anxiety disorder.

Effect of experience of Mental Health on Recognition

Two important possible predictors of mental health literacy included in the analysis were experience of a treatment for a psychological disorder or knowing someone who had been treated. The majority of participants had an experience of other mental disorders such as depression or had no previous experience themselves or others they knew. 64.8% of participants knew someone who had been treated and only 13.6% have been or currently were treated for a psychological disorder. The Kruskal-Wallis test showed no significant effect of gender and age on participant's experience of mental health.

. In all 6 vignettes the majority of participants with or without experience gave incorrect labellings of the disorder with the exception of OCD. For OCD participants with no previous experience gave more partially correct responses. On average participants gave more partially correct rather than correct responses.

Predictors of recognition of anxiety disorders

Possible predictor variables included in the analysis were; Vignette gender, participant gender, age, formal education of Psychology or Psychiatry, ethnicity, religion, personal history of treatment for a mental health disorder (treatment) and personal experience of knowing someone with a disorder.

Bivariate correlations were carried out between recognition rates of anxiety disorders and possible predictor variables. Table 13 (See Appendix F) demonstrates which predictor variables significantly correlated to correct labelling for the different disorders. Surprisingly in all cases with the exception of Social phobia where no significant predictors were found there were negative significant correlations for formal education of Psychology and labelling. As such those who had not studied Psychology significantly correlated to correct labelling.

Multiple linear regressions were also carried out to examine what factors predicted recognition of the anxiety disorders. Findings revealed a significant overall regression for all disorders with the exception of Social phobi. For Panic disorder (B=-.24, t=-3.00, p=. 00), OCD (B=-.21, t=-2.62, p=0.01) and PTSD

(B=-.21, *t*=-2.60, *p*=0.01) formal education of Psychology was a significant predictor of labelling the disorder. For Agoraphobia, age (B=. 24, *t*=2.14, *p*=0.03), treatment (B=-.19, *t*=-2.57, *p*=0.01) and formal education of Psychology (B=-.27, *t*=-3.52, *p*=0.00) were significant predictors. For GAD, the overall regression was significant, whereas no significant predictor variables were found.

Discussion

The current research investigated the effect of gender and age differences on mental health literacy of anxiety disorders. Despite the benefits of public knowledge of anxiety disorders being widely accepted, their knowledge has been comparatively neglected (Jorm, 2000). As in the present research literacy has been found relatively low for all six conditions. Rates of recognition for the various disorders varied from 29.0% recognition of PTSD to 3.1% recognition of Panic disorder. These differences were not related to the disorders prevalence's (Kessler et al. 2005). The most common disorder Social phobia was the third most recognised along with Agoraphobia, which is the least common one. As such the first hypothesis was not supported given that the more common disorders were not recognised more often than less common disorders as initially predicted.

Recognition of Anxiety Disorders based on Prevalence

One explanation for these differences could in fact be awareness and knowledge on different conditions, as lay people are more exposed to some terms, particularly through media representations. As Ghuloum's et al. (2010) study found media as the most common source of information on mental health. Additionally the current study seems to be in accordance with Furnham's et al. (2011a) study, which also found highest rates for disorders, which have seeped into the media and where more widely covered such as OCD and PTSD as opposed to other disorders which were recognised at a lower rate such as GAD. For instance PTSD and OCD, which are seen as the most recognised disorders, are usually seen in the popular media from characters on TV documentaries. People mainly focus on the apparent, thus explaining the high recognition rates for OCD. By contrast, disorders such as GAD and Social phobia are not often covered (Furnham et al. 2011a). One reason could be that they are unlikely to make particularly interesting story lines or controversial headlines. Additionally it could be that such disorders are considered less socially acceptable to discuss in the public domain even though they are highly prevalent.

These findings are in line with Coles and Coleman (2010), who also found higher recognition for OCD compared to GAD and Panic disorder. Likewise it supports Reavley and Jorm (2011) showing a poor recognition for Social phobia unlike Coles and Coleman's (2010) ratings. Given that the symptoms of OCD and PTSD are easier to spot, labelling might be easier, making this an issue that warrants further investigation. The different literacy rates for Social phobia could be the result of methodological discrepancies used by Coles and Coleman (2010) to measure MHL. High recognition rates could be partly due to the similarities between symptoms and the name chosen from a list of options provided to participants. This might have inflated literacy levels compared to the open-ended question used in this study.

Moreover, given that the most recognised disorders are considered to have more "physical" than "psychological" features compared to the less recognised disorders, this could have an impact on literacy. For instance, OCD vignette will always have physical activity the character centres on such as hand washing, which can be easily associated with the correct label. GAD on the other is less often recognised and symptoms are mainly based on emotions and interpreted as more psychological. Participants might find it harder to interpret and associate such psychological symptoms. Given that symptoms were made clear and could be easily identified in the vignettes a different approach could be used in future. For instance, interviewing participants about their knowledge of anxiety disorders to gain more reliable responses, instead of giving the symptoms written down clearly.

Gender of vignette

The second hypothesis stating that the gender of the vignette's character would have an effect on recognition was supported at a very small extent. This hypothesis stated that males would be more likely to recognise disorders in male characters and females in female characters. As it examined a previously unexplored area of MHL, this hypothesis was preliminary. Disorders that are more common in females did not show higher recognition rates in female vignettes. The only significant difference was found in male recognition of social phobia, which was significantly greater in male vignettes. Given that in general anxiety is related more to women, people may not consider it a major problem, influencing recognition rates and appropriate treatment beliefs, whereas they would not expect to see anxiety in men leading to higher ratings of recognition, explaining the current results (McLean et al. 2011). Additionally, a significant interaction was found between participant gender and vignette gender for OCD and PTSD. For OCD a significant main effect of gender and a significant main effect of vignette gender were also

found, as males gave higher ratings for male vignettes. Given that the results were only found twice these could also be due to chance and thus not fully supportive of the second hypothesis.

The lack of difference between gendered vignettes could possibly resulted, as the vignettes for each sex were exactly the same except from the name and pronouns. If they had been more 'masculine' or 'feminine' in their description of the disorders, this could facilitate differences in recognition. Certain gender specific symptoms such as obsessions and compulsions related to contamination or cleaning in OCD for females could have been included.

Moreover no significant interaction was found between gender of participant and gender of vignette on participants ratings of treatment seeking, character happiness or character's successfulness at work. A significant interaction was only found for the character's personal relationships for Panic disorder and PTSD. In both cases participants rated vignettes of the opposite gender as having better personal relationships, whilst both showed significant vignette gender effect on participants ratings. A significant effect of vignette gender was also found on character's happiness ratings of OCD and on character's successfulness at work for GAD, PTSD and OCD. Even though results are not fully significant and most of them could be simply due to chance, further investigation is necessary as this is an unexplored matter that could provide considerable information for gender-specific campaigns on the disorders and help sufferers. In some disorders females might need more help than males for example or vice versa and this deficit of information may cause detrimental effect on help-seeking patterns, thus it should be further explored.

Gender of participant

The third hypothesis that females would demonstrate significantly higher mental health literacy than males was supported to some extend. The current study supported Furnham et al. (2009; 2011a) and Cotton et al. (2006) findings. More specifically as Furnham et al. (2011a) suggested, women generally have higher social empathy rates, which might affect their awareness of disorders. Additionally females may demonstrated higher literacy rates given that they are more aware of anxiety disorders as they are more at risk of them given the higher prevalence in females (McLean et al. 2011). Overall, when comparing the percentages of correct identification females were better at correctly recognising and labelling disorders than males except from social phobia. Higher prevalence of a disorder in one group implies more experience and awareness of the disorder in that gender and thus higher recognition. Findings revealed that the only vignette for which there was a significant difference in correctly or

incorrectly identifying a disorder was the Social Phobia vignette. 4.3% of males correctly identified the disorder compared to 3.1% of females. This therefore contradicts the hypothesis that participants would be more likely to recognize disorders that are more prevalent for their own gender, as social phobia is estimated to be twice as common in females than males (Kessler et al. 2005).

Experience of mental health problems is a negative predictor of mental health literacy as shown by the regression analysis. Therefore awareness could appear not only through experience of the disorder but also through the media or social interactions with same gender individuals. As such a disorder that is more prevalent in females will be discussed more among them. Additionally, when disorders appear in the media they usually represent the "stereotypical" sufferer. Thus, focus more on females if the disorder is more prevalent for them. In this case it is likely that people will not only focus on the disorders that are more prevalent for their own gender and be interested on further information, but also both genders would be able to recognise those disorders in the relevant gender character. This may explain why males showed higher recognition of social phobia.

Generally, a large significant effect of participant's gender on attitude or treatment beliefs for vignette character's and disorders as a whole was not shown. Females are often seen as the more emotional gender as they are more emotionally intelligent than males. This could be clearly seen from their various responses for the characters wellbeing, as in almost all cases they rated them as less happy, less successful and having bad relationships. As a whole, there was little difference between the gender's responses among the different disorders. As such it could be argued that the differences were due to emotional tendencies rather than knowledge of mental illness. Females rated OCD, GAD and PTSD as less happy. Given that women are more emotional they might find these more life threatening whilst phobias are generally seen as less severe. A significant main effect of gender was found for GAD and PTSD for participant's ratings of character's success at work. Additionally, males gave Social phobia the lowest rating for how satisfying their personal relationships were, which indeed agrees with its symptoms. PTSD had low ratings in all three matters and thus was seen as poorly adjusted and detrimental to the sufferers. Overall, adjustment beliefs seemed quite low suggesting that people consider anxiety disorders detrimental to an individual's health, preventing them from living a normal life. In general no gender effect was found on treatment seeking.

Age of participant

It is noteworthy to highlight the fact that there is a variation in literacy levels across different age groups. Generally the younger age group (18-29 years) had higher rates of correct identifications with the exception of Agoraphobia. In particular for Social phobia, GAD and OCD the younger age group gave significantly correct identifications, supporting the hypothesis that younger participants would be more likely to recognize the disorders correctly. The findings are consistent with Farrer's et al. (2008) study, which found an age difference between the youngest and oldest age groups. In particular they found as in this case, poorer literacy for the older age group. In contrast Furnham et al. (2011a) found that older people were more mental health literate. Therefore supporting that the older a person is the more likely to have encountered personality disorders, either personally or through someone else, therefore increasing familiarity and knowledge (Fisher & Goldney, 2003; Furnham et al. 2011a).

Given that educational programs are a primary source of mental health literacy for young people, but such programs were not regularly accessible in earlier decades, this could explain the high recognition ratings for young people in this study (Farrer et al. 2008). Since the media is considered the most common source of information especially through the Internet, this can explain the poor literacy level by the elderly, as they have less access to it. Stigma among older people might be greater, inhibiting openness to new information regarding aetiology and recognition of disorders (Farrer et al. 2008). Moreover current mental health awareness campaigns mostly target young people, suggesting the need for more programs aiming to increase the literacy levels of all age groups especially the elderly. Messages should include interests and needs that are age appropriate for each disorder. These could be used at schools or the workforce through the medium of occupational health to target all age groups. Improving MHL of today's youth could eventually result in generational shift in attitudes and knowledge about anxiety disorders (Farrer et al.).

Predictors of Mental Health Literacy

Formal education of psychology was found a significant negative predictor of mental health literacy, influencing recognition of all disorders with the exception of GAD and Social phobia. Experience of treatment for mental health was also found a significant negative predictor of MHL but only influenced recognition for Agoraphobia. As such, those who had not studied psychology and those with no prior personal treatment for a mental disorder correlated with correct labelling. The multiple regressions also found that younger age was associated to correct labelling for Agoraphobia. It is clear that some disorders are recognized more than others. Standard of living could be enhanced by faster recognition and

diagnosis of all disorders, by increasing awareness worldwide through campaigns or educational programs. Many challenging questions regarding the relevant predictors including vignette gender still remain unanswered. Future researchers should consider this and investigate it to determine if gender-specific characters should be addressed in awareness campaigns. It would be profitable for governments to establish educational schemas on mental health that attract both genders equally, especially to improve males MHL given the gender differences. Improving MHL might encourage communities to be more supportive of sufferers and thus reduce the stigma towards mental illness. As mental health literacy is considered vital for improving mental health it seems important to examine people's help-seeking behaviours. Increasing knowledge of disorders and available treatment options would be profitable for improving help-seeking behaviour. Understanding the extent to which they perceive the services offered to them as important is definitely a matter that warrants further investigation.

Limitations

One limitation of this study is the use of vignette methodology, as in real-world situations people would receive more information related to the disorder than the brief description available on the vignettes.

Additionally the questionnaire design itself could be considered as inappropriate, as participants cannot provide their full opinions and thus responses may not project their actual knowledge of the disorder in question. The use of Likert Type Scales within the questionnaire also has some disadvantages. Participants may be tempted to choose an option in the middle ground or to reach both ends, instead of giving their true opinions. Therefore interviews could be used as well or more open-ended questions were participants would be able to explain their reasoning fully. Nevertheless, it should be noted that questionnaire and scales could benefit research, as responses are more consistent and comparable, than those given in interviews.

Moreover another important limitation was the imbalance in the gender ratio, given that more females completed the questionnaire and this might impact results on predictions around gender. Although the sample varied across different age groups it cannot be generalized to the whole population given that the majority of them where Greek-Cypriots or white. Given that participants were working on a second language they might misunderstood some terms leading to wrong identification of the disorders. Some disorders are more well known and more similarly manifested across cultures. For instance these disorders, which are highly prevalent in Western countries, might be understood differently in other

cultures. Hence results might not be replicable for different cultures. Therefore future research should use a variety of different cultures as this research lacked cultural diversity, or consider more culturally appropriate vignettes, as Asians might understand disorders differently. It would also be fairly advisable to consider participation pool and incentives. Awards at the end increase motivation and concentration on the actual research.

It should also be noted that as in Furnham and Winceslaus (2011) participant's responses were only marked as correct if they explicitly named the disorder. This was a very strict criterion, which underestimated literacy. For instance 'panic attack' is a feature of 'panic disorder' or 'perfectionist' is a feature of OCD, but these were considered as 'partly correct' or 'incorrect' as they did not explicitly refer to the condition in question. As such the majority of participants gave 'partly correct' responses for OCD. In the future less criteria for responses to be deemed correct could lead to greater identification rates.

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