

Visible Markers of Traumatic Brain Injury and their Influence on Affective Reactions and  
Discriminatory Behaviour: A Comparison of Two Models

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### Abstract

Two studies examined the influence visible markers of Traumatic Brain Injury (TBI) have on two mental health models. The two models examined were The Model of Helping Behaviour (Weiner, 1980) and The Danger Appraisal Model (Corrigan, 2000). A total of 305 participants across two experiments were invited and participated in an online survey to investigate the impact visible markers of brain injury have on their emotional and behavioural responses. Participants were recruited via a link on social media or via the intranet at three New Zealand workplaces. The findings of this study found support for visible markers of TBI influencing both The Model of Helping Behaviour and The Danger Appraisal Model. This study suggested that a higher level of perceived dangerousness and social distance is associated with visible markers of TBI and that TBI markers can significantly increase the level of support participants are willing to provide to brain injured individuals within the workplace. Further findings suggested that participants who reported having familiarity of brain injury had lower negative affective reactions, reduced social distance but less willingness to support TBI individuals within the workplace. Due to the limited research relevant to this field, further studies will need to investigate these findings to ascertain whether this is a true replica of the public's emotional and behavioural response towards visible markers of brain injury.

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## Visible Markers of Traumatic Brain Injury and their Influence on Affective Reactions and Discriminatory Behaviour: A Comparison of Two Models

In 2012 it was estimated that more than 36,000 new traumatic brain injuries (TBI) occur in New Zealand each year. This is broken down to one new TBI every 15 minutes (Auckland University of Technology, 2012). Edward et al. (2007) reported that approximately 5.8 million survivors of TBI in the United States have chronic disability due to their TBI. The Auckland University of Technology (2012) define TBI as the following: “when an external force, such as a bump or blow to the head disrupts the normal function of the brain” (p. 1). Due to the often invisible nature of TBI and the cognitive impairments that follow this type of injury, marginalisation from society can occur for these individuals. To understand the impact that a TBI can have on a person depends on the brain structure that has been affected in the incident. Mukherjee, Panko Reis and Heller (2003) summarise the various areas of someone’s life that may be directly impacted upon after sustaining a TBI:

1. activities of daily living, such as problems with grooming, eating, using public transportation or managing finances;
2. cognitive functioning, such as memory, language, communication problems, and limited compensatory strategies;
3. emotional functioning, such as anger, anxiety, apathy, depression or disinhibition;
4. physical health issues, such as pain or fatigue;
5. preinjury factors, such as cultural and class barriers, substance abuse, or family dysfunction;
6. impaired sense of self, such as unawareness of deficits or inappropriate expectations for self and others; and

7. social functioning, such as lack of social support, loss of power and control, lack of access to services or funding, or social devaluations of persons with brain injury. (p. 5)

Brain injury is an invisible injury which results in changes primarily to an individual's emotional, cognitive and behavioural wellbeing. An example similar to TBI is discussed by Stone (2005) when she discusses survivors of stroke. These individuals often experience cognitive difficulties and fatigue without showing any visible disability. Stone (2005) acknowledges that these symptoms are problematic and can be more detrimental compared to those whom have primarily visible injuries only. Visible injuries may only be minor in relation to how they impact on someone's daily life but the internal brain damage can be life changing for an individual.

Professor Valery Feigin at Auckland University's National Institute for Stroke and Applied Neuroscience reports that the figures for TBI in New Zealand has been grossly underestimated in the past (Auckland University of Technology, 2012). In New Zealand 32% of New Zealanders are likely to experience a TBI that is severe enough to require medical attention (Corrigan, Selassie, & Orman, 2010). Feigin also predicted that TBI will become the third largest cause of global disease burden by 2020 (Auckland University of Technology, 2012) and Edward et al. (2007) reported that TBI is the leading cause of morbidity and mortality with the number of hospital admissions reaching over 500,000 annually in the United States alone. The prevalence of TBI in New Zealand is high and the likelihood of meeting or knowing someone who is affected by a TBI is significant.

### **Misconceptions of Brain Injury**

The public appear to lack education around the consequences of TBI and as a result, misconceptions in regards to TBI are common in the general population (Pretorius & Broodryk, 2013; Swift & Wilson, 2001). These misconceptions have continued to exist amongst people regardless of whether they have personal experience and knowledge of TBI (Gouvier, Prestholdt, & Warner, 1988). Misconceptions are generally based on inaccurate information and create false beliefs in our communities worldwide.

Gouvier et al. (1988) surveyed the public and found a range of misconceptions which to this day stay relevant. Their results showed that 13% of their participants believed that a little brain injury doesn't matter; 31% believed that most people with brain damage, 'look and act retarded' and 26% were unaware that emotional problems can follow a brain injury. More recent studies have found that the public's understanding of brain injury may have slightly improved over the years but misconceptions relating to coma, unconsciousness, memory deficits and brain injury recovery continue (Hux, Schram, & Goeken, 2006; Swift & Wilson, 2001). Research by Pretorius and Broodryk (2013) who studied misconceptions held by South African students found over 62.1% of their participants thought that a person with brain injury may have trouble recalling information or events prior to the TBI incident (retrograde amnesia) but would not have trouble learning new things after the injury. They also found that 88% of participants agreed that brain injured individuals can forget who they are and not recognise others but be normal in every other way. These re-occurring misconceptions amongst the public portray how important it is for factual information to be relayed to the community by qualified professionals. Not only would this reduce misconceptions but it would also reduce public stigmatisation (Gouvier et al, 1988).

This information is critical to ensure disabled individuals including sufferers of TBI are treated fairly within their communities.

Copeland, Chan, Bezyak and Fraser (2010) investigated the barriers to employment for people with disabilities and the likelihood of helping disabled individuals in the workplace. They reported that one of the main barriers for disabled individuals returning to the workforce was the attitudes of other people within the workplace. Copeland et al. (2010) investigated emotional reactions towards working with people with a disability. They used a 17-item subscale called the Affective Reactions Scale from the Disability Questionnaire by Popovich, Scherbaum, Scherbaum and Polinko (2003). Participants from the study were asked to rate how much they agreed with statements including: 'People with disabilities can handle the stresses of daily work life' or 'Working with a person with a disability will slow down the rate at which I complete work.' They found overall that employees who had high levels of experience working with people with disabilities were more positive in their beliefs around accommodating people with disabilities. This indicates that experience with disabled individuals impacts on beliefs and perceptions towards these individuals and how we interact with them in the workplace. A lack of knowledge or experience may contribute to misconceptions and discriminatory behaviour towards these individuals.

Stone and Colella (1996) reported that disabled employees perform, "as well if not better than non-disabled employees, do not have higher absenteeism or turnover rates than those without disabilities, and actually have better safety records than their non-disabled counterparts" (p. 353). It is also interesting to note that Stone and Colella (1996) reported that supporting disabled people within the workplace by purchasing suitable equipment to assist them in their job is relatively inexpensive, with 50% being under \$50.00. This highlights the importance of



educating the public and more specifically employers to help reduce the employment barriers disabled individuals face within the workplace. This education would not only support disabled individuals but help to reduce misconceptions associated with disabilities in the workplace.

### **Types of Stigma**

Stereotyping, prejudice and discrimination are all aspects of public stigmatisation (Foster, Leathem, & Humphries, 2016). Hamilton and Sherman (1994, as cited in Foster et al., 2016) refer to stereotypes as, “specific beliefs and attitudes held about certain social groups that are quickly and easily accessed and consensually held” (p. 1109). Allport (1958, as cited in Foster et al., 2016) refers to prejudice attitudes as a specific attitude which is created based on the stereotypes that exist towards these groups and individuals. Using stereotypes to assist with forming an attitude, can lead to aversive attitudes towards these people and therefore lead to discrimination (behavioural response). These stigmatising attitudes and responses have been researched and reviewed by the literature and two specific mental health models have been developed to link the stigma and mental health literature (Foster et al., 2016). These models are: The Model of Helping Behaviour now more commonly known as The Responsibility Model (Weiner, 1980) and The Danger Appraisal Model (Corrigan, 2000; Corrigan et al., 2002). Although these models are consistently used within the mental health literature, they have been adapted to generalise across populations and for a variety of social situations. It is well known that post TBI symptoms are associated with mental health with depression being one of the most common post-TBI symptoms (Tsaousides, Ashman, & Seter, 2008) along with post-traumatic stress disorder and mania (Edward et al., 2007). Due to the link between mental health and post TBI mental health symptoms, these two models will be explored in detail within this paper.

**Weiner's (1980) Model of Helping Behaviour (The Responsibility Model)**

Investigating the behavioural response of help giving was first conducted by Piliavin, Rodin and Piliavin in 1969. Their study utilised a field experiment where they used a subway in New York to make the situation realistic and believable. This study consisted of one person who acted as the victim, one as the model and two as observers. The victim presented him/herself as either drunk or as ill/disabled and as a train stopped at the first station the victim would stagger forward and collapse on the ground in front of people on the platform. If the victim received no assistance, then the 'model' would help the victim to his feet and they would then move to another platform to begin the next trial. This study was developed to investigate the level of assistance that would be provided to either a drunk or disabled person and whether the colour of their skin impacted on the level of assistance received. The 'disabled individual' carried a black cane and was sober, whereas the 'drunk individual' carried an alcohol bottle in a brown paper bag and smelt of alcohol. The manipulation used within this study drew bystanders to independently judge the situation and make a decision in regards to whether they would help the victim who had fallen over. This study found that the individual who was perceived to be disabled was more likely to receive helping behaviour from bystanders in comparison to the individual who was perceived to be drunk. They found that men were more likely to help when the victim was male, and there was a tendency for people to assist others of the same race – this finding was more noticeable when the individual was perceived to be drunk.

Ten years later Weiner, Russell and Lerman (1979) identified three dimensions of causality: "Locus (whether the cause is internal or external to the actor), stability (whether the cause is perceived as temporary or permanent) and controllability (whether or not the cause is subject to personal influence)" (p.188). In relation to Piliavin et al.'s (1969) study, Weiner placed

emphasis on the disabled victim being perceived as not being in control of their actions whereas the drunk victim was. He hypothesised that the lack of control gave rise to sympathy, whereas, the controllability of the drunk victim's behaviour, induced disgust or anger.

The study by Piliavin et al. (1969) led Weiner to further explore the motivation towards help giving and he developed a Model of Helping Behaviour. In 1980, Weiner conducted six experiments to examine causal attributions to judgements of help-giving. His first experiment utilised his own three dimensions of causality (locus, stability and control) and the effect it had on judgements concerning the lending of class notes. This study found that people were less willing to lend notes to a class mate when the underlying reason for needing these notes were internal to the actor and controllable e.g. lack of effort. He also found that internal reasons that were controllable also led to anger and disgust which resulted in avoidance behaviour. On the other hand, he found that when the behaviour was due to uncontrollable reasons (e.g. a person's ability or a teacher's shortcomings), the outcome resulted in higher levels of sympathy and a rise in helping behaviour. This study therefore placed emphasis on the power of perceived controllability and the impact it had on help giving over locus and stability (Reisenzein, 1986). This was later supported in further studies by Weiner, Graham and Chandler (1982). In a further study by Weiner (1980) he asked participants to read a vignette which explained in detail the original field experiment of Piliavin's (1969) work. Weiner then asked participants to assume that they were actually on the subway and describe what their feelings would be. Weiner asked participants to rate the causes of falling based on the three dimensions; locus, stability and controllability. Weiner classified the affects listed by the participants into 13 categories which included; sympathy, concern, negative affect toward the person, general discomfort, fear, caution, surprise, positive action, apathy, personal shortcomings, information seeking,

description and unclassified. He found that 27% of the participants had negative affects directed towards the drunken individual but in the disabled condition only 3% were negative. Weiner continued with a further three experiments which all drew to the same conclusion and signified a clear link between drunkenness eliciting perceived personal control, negative affective reactions and a lack of willingness to help from participants. Weiner's (1980) experiments were consistent with Piliavin et al.'s (1969) studies.

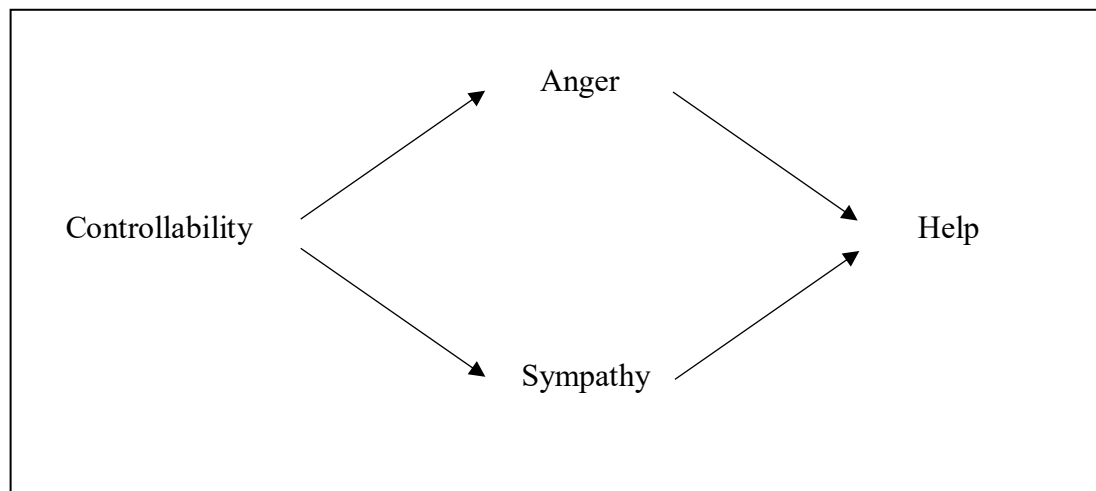
A gap in the literature that had not been considered at this time, was how physical abnormalities in comparison to mental health stigmas impact differently on people's willingness to help. Weiner, Perry and Magnusson (1988) outlined the importance of understanding stigmas which may be attached to those who deviate from the social norm and whether these stigmas influence differing levels of helping behaviour. Weiner et al. (1988) investigated perceptions towards stigmas and anticipated that mental-behavioural stigmas would be perceived as onset-controllable, whereas, physical stigmas would be perceived as uncontrollable. Based on Weiner's previous literature where perceived controllability is linked with higher levels of dislike and anger, they predicted that higher levels of neglect would be associated with mental-behavioural stigmas in comparison to those with physical stigmas. Weiner et al. (1988) had 59 male and female students respond to 13 questions in total, three questions were in relation to the responsibility and blame for a stigma, five questions were in regards to liking, pity, charitable donations, anger and personal assistance (reflecting affective reactions and behavioural consequences) and the five remaining questions were in regards to the likelihood of improved life satisfaction given job training, professional-educational training, welfare, medical treatment, and psychotherapy. These variables were all then rated on a nine-point Likert scale ranging from not angry to extremely angry. An example of one of the questions is: 'how much pity do you feel

towards someone with Alzheimer's disease?' They investigated 10 stigmas including: AIDS, Alzheimer's disease, cancer, blindness, drug addiction, child abuse, obesity, paraplegia, heart disease, and Vietnam War Syndrome. Therefore, in total they used 10 stigmas and 13 dependent variables. Based on their findings, they found that the mental-behavioural stigmas (obesity, child abuse, Aids, drug addiction) were perceived as the individual's responsibility which therefore resulted in lower levels of pity and higher levels of anger, and furthermore, lower levels of charity and personal assistance. In contrast to this, the physical stigma blindness resulted in a greater level of pity whilst eliciting very little anger and confirmation of charitable donations and assistance being given to this individual. It was summarised in detail by Weiner's (1995) literature review that there was a significant difference between people's reactions and perceptions toward physically based and behaviourally based issues. People appear to perceive behaviourally based issues as the individual's responsibility, but perceive physical problems as less responsible to that individual.

Weiner's work between 1980-1988 is well summarised in his literature review (1995) which clarifies that when a person perceives someone as unable to control their own actions, leading to a negative event, it can lead the observer to judge them as not responsible for the event. Furthermore, if a negative outcome is regarded as being under deliberate control this leads to feelings of anger or annoyance, but if it is thought not to be deliberate and out of the person's control, we experience sympathy and understanding. Weiner's (1995) theoretical review suggests, "that people appraise the controllability of a person's stigmatising condition to determine whether they are responsible or not for doing it" (as cited in Foster et al., 2016, p. 1109). "Attributing responsibility for a condition increases anger and subsequently reduces the likelihood of helping behaviour" (Foster et al., 2016, p. 1110). Whereas, "attributing no

responsibility for a condition increases pity and subsequently increases the likelihood of helping behaviour” (Foster et al., 2016, p. 1109).

Schmidt and Weiner (1988) broke The Model of Helping Behaviour down to a simplified version as seen below:



*Figure 1. The Model of Helping Behaviour (Schmidt & Weiner, 1988)*

Extensive research has been completed investigating the application of the above model in mental health literature and cognitive emotional processes (Angermeyer & Matschinger, 2003a, 2003b; Reizenstein, 1986; Schmidt & Weiner, 1988; Weiner et al., 1982; Weiner et al., 1988 & Weiner et al., 1979). It is well documented that conditions that are psychological in nature such as schizophrenia and bipolar disorder are more negatively viewed than physical conditions which are more visible such as paraplegia or blindness (Goldstein & Blackman, 1975; Harasymiw, Horne, & Lewis, 1976; Jones, 1974; Tringo, 1970 as cited in Stone & Colella, 1996). Investigating these models within the disability sector appears to be limited, however, more recently studies have begun to investigate how the visible versus non-visible nature of physical disabilities can influence people’s perceptions and affective reactions.

Stone (2005) acknowledged that visible disabilities prompt people to believe that less is expected of these individual's compared to those who have no physical disability. Stone (2005) noted from her research using participants who had experienced a stroke that many of them had different experiences which were mediated by beliefs from others that the only disabilities worth taking seriously were readily visible. Many of the women interviewed during the study mentioned that their disability was discounted as there were no visible signs of injury. They reported avoidance of social situations or other gatherings due to a feeling of being judged differently to those who have visible disabilities. It is interesting to note, however, that Stone and Colella (1996) mentioned that a plausible explanation for people having a negative reaction towards non-visible neurological conditions is due to people thinking that the, "... disabled persons behaviour is less predictable and, therefore, more threatening than other types of conditions." When taking this into consideration it could be implied that having a visible marker of injury confirms and informs others of the injury and takes away the ambiguity of invisible injuries. This study suggests that many people with non-visible disabilities report a difference in the level of support and assistance provided to them compared to others who have visible disabilities, however, understanding why people judge these individuals differently appears to remain unknown and could be applicable to TBI individual's experiences.

Another study which raises questions in regards to the various factors that may influence people's willingness to support others based on the visible nature of disabilities is the study of Rosen, Cowan and Grandison (1982, as cited in Link, Cullen, Frank, & Wozniak, 1987). They refer to 'the extra break effect' whereby categorising individuals into specific groups may result in either a positive or negative impact on them. For example, being grouped into the category 'TBI sufferer' when a visible scar is present, may allow that person access to medical assistance

when compared to someone without a visible marker of TBI. Rosen et al. (1982, as cited in Link et al., 1987) explains that this can also have the reverse effect where people who are categorised into a certain group may be stigmatised and therefore discriminated against based on group category and the stereotypical views assigned to this group. Therefore, the extra break effect can result in one of two ways, one results in positive assistance, the other results in negative assistance.

A study which supports the 'extra break effect' is the study by Swift and Wilson (2001) who completed 19 semi-structured interviews with brain injured individuals, caregivers and professionals. They found one common theme specifically in regards to the invisible nature of brain injury. Their findings suggested that people with a brain injury who had no visible marker of their injury were at a disadvantage in comparison to brain injured people with a visible marker because their problems were not immediately recognised. McClure and Abbott (2009) suggested that this can occur due to people without a visible marker of injury being judged based on their premorbid behaviour by those peers who knew them prior to their injury. This suggests that the invisible nature of brain injury leads to friends and family and other support networks to neglect the impact of brain injury when visible markers are not present because people continue to expect these individuals to behave and respond as they did prior to their injury. Therefore, without a visible marker being present, people's judgements of a brain injured person's behaviour are perceived as the individual's responsibility rather than accurately attributing it to their brain injury. This misattribution unfortunately results in less assistance being provided to individuals without visible markers of brain injury.



Corrigan (2000) adapted The Model of Helping Behaviour based on Weiner's previous research (1985, 1988, 1995, as cited in Corrigan, 2000) and incorporated a direct relationship between controllability and responsibility.

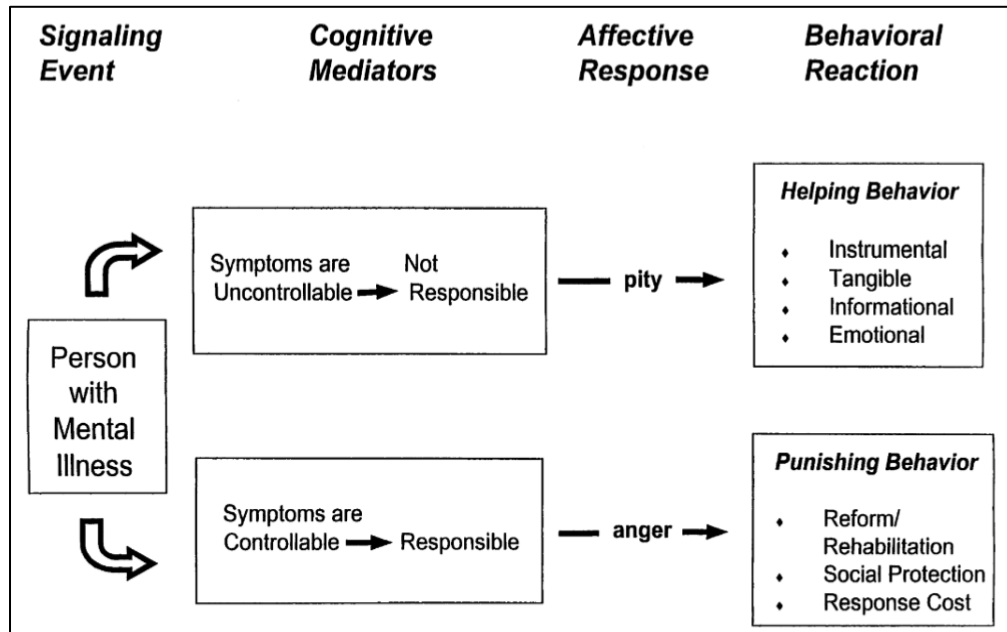


Figure 2. Corrigan's Adapted Version of The Model of Helping Behaviour

This model indicates that the perception of uncontrollable symptoms is associated with a lack of responsibility, whereas, controllability of symptoms is associated with a perception of responsibility. Corrigan, Markowitz, Watson, Rowan and Kubiak (2003) differentiate between the two as, "controllability relates to characteristics of the causes, whereas assignment of responsibility is a judgement of a person" (p. 165). Understanding controllability of symptoms may be crucial to help people understand how responsibility is placed because based on this model there is a direct impact on affections and helping behaviour.

McClure, Devlin, McDowall and Wade (2006) investigated whether perceptions of 'responsibility' for a brain injured person's behaviour could be influenced by visible markers of injury. Participants were presented with a photograph of an adolescent boy (Chris) who either

wore a head bandage or did not. The participants were provided with a short descriptive vignette which described four changes that had occurred in the adolescent's behaviour, including: 'Chris' lack of self-confidence, Chris' tendency to anger quickly, Chris' lack of motivation and Chris sleeping a lot.' Participants were asked to rate these behaviours in regards to whether they thought they were related to the head injury or adolescence and to rate it on a seven-point Likert scale, with 1 being 'a very poor explanation' and 7 being 'a very good explanation.' The results showed that when participants were presented with the photograph of the adolescent wearing the head bandage they rated 'adolescence' and 'head injury' equally as plausible explanations for the behaviours, however, when participants were presented with the photograph without the head bandage, they attributed the behaviours to adolescence. Their study suggested that the use of a head bandage as a visible marker of brain injury influenced people's attributional response. The bandage condition resulted in a significantly greater amount of behavioural issues being attributed to the head injury over adolescence behaviour. This study provided insight into how The Model of Helping Behaviour may be partially influenced by visible markers of injury. The visible marker influenced people's perceptions of responsibility and changed how individual's inferred responsibility. A significantly higher proportion of individual's placed responsibility on the brain injury when a visible marker was present. This study signifies the importance of recognising how other factors may influence the expected results applicable to The Model of Helping Behaviour.

McClure, Buchanan, McDowall and Wade (2008) investigated the above findings by examining how severity of injury and time since injury related to people's attributions toward an injured person's actions when no visible markers of injury were present. This study used the same design as the study above, however, to be more realistic they replaced the head bandage

with a head scar. McClure et al. (2008) found that a boy with no visible marker of TBI had his behaviour attributed to adolescence, however, participants who were shown a photo of a boy with a scar, attributed behaviour more to the TBI, consistent with McClure et al.'s (2006) findings. McClure et al. (2008) had also investigated perceived severity and length of time since the incident had occurred. Their results indicated that participants attributed a higher level of severity in the condition group who were provided with the picture of the adolescent boy with the head scar. Interestingly, the participants in the same group perceived the TBI as more recent. Based on their results, they found a positive relationship between higher ratings of TBI severity and higher attributions to brain injury. McClure et al. (2008) highlighted how visible markers influence people's judgements and the potential for misattribution errors (Block, West, & Goldin, 2016; McClure & Abbott, 2009; Mukherjee et al., 2003). Weiner's Model of Helping Behaviour may therefore be influenced by visible markers of injury. If people are more likely to attribute behaviour and severity to TBI when visible markers of injury are present, then based on The Model of Helping Behaviour it may be possible this influence may impact on all variables including controllability/responsibility, anger, pity and willingness to help. Further research in this field is required to determine any causal relationship.

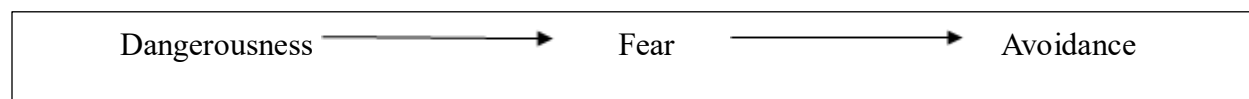
### **Corrigan's (2000) Danger Appraisal Model**

The second model to be explored which links stigma and mental health literature is The Danger Appraisal Model. A study completed by Corrigan et al. (2002) investigated Weiner's Model of Helping Behaviour and were unable to obtain any significant findings to support this model aside from one finding that found an association between anger negatively predicting helping behaviour. Corrigan (2000) recognised that studies that had investigated Weiner's Model manipulated controllability by varying information within vignettes purposefully to induce a

specific perception response. For example, in an incident about a mental health related incident, participants would be informed that the individual was experiencing psychotic symptoms due to head trauma from a car accident, creating a perception of the person not being in control (uncontrollable) and therefore not responsible. A further example would be where participants are informed that the incident occurred when an individual who had been using cocaine for many years led the individual to experience psychotic symptoms. This implied that the person had control over the incident and therefore imposes responsibility. Corrigan recognised that the manipulations were being used to impose controllability and responsibility as opposed to participant's personal perceptions leading to their own judgements. He also questioned whether the perception of someone being unable to care for themselves or the perception of dangerousness alone, would influence controllability without the need of manipulated vignettes.

Corrigan acknowledged that anger may not be the only emotion felt in response to perceptions of dangerousness and that fear is often felt as a response to danger. A common stereotype directed toward people with mental illness is where people perceive and believe that mental illness is associated with dangerousness and that these individuals are responsible for their illness (Brockington, Hall, Levings, & Murphy, 1993; Farina, 1998, as cited in Corrigan et al., 2003). Corrigan queried whether the perception of dangerousness would therefore impact on the level of helping behaviour that the individual would receive. Angermeyer and Matschinger (1996, as cited in Corrigan, 2000) reported that people were fearful of individuals with a mental illness after an assassination attempt in Germany took place and was attributed to an individual diagnosed with schizophrenia. Corrigan reflected on how this assassination led participants to attribute higher levels of dangerousness towards mental illness. Corrigan (2000) recognised that there was a lack of research investigating dangerousness and its relatedness to emotional and

behavioural reactions. He therefore created a hypothetical pathway to connect perceived dangerousness with Weiner's model and linked this specifically to mental illness. This pathway demonstrates that instead of being mediated by controllability, perceptions of dangerousness may directly lead to fear and social avoidance. Corrigan initially created three pathways, however, for the purpose of this study we will be focusing on the third pathway he proposed known as The Danger Appraisal Model.



*Figure 3. The Danger Appraisal Model (Corrigan, 2000)*

Based on Corrigan's review of Weiner's model, Corrigan (2000) developed The Danger Appraisal Model, a simple three phase model. This model posits that higher levels of perceived dangerousness lead to higher levels of fear and directly impacts on the level of social distance (behavioural response). Corrigan suggested that instead of being mediated by controllability as per Weiner's model, perceptions of dangerousness may directly lead to fear about dangerousness which in turn causes avoidant behaviours or less helping behaviour. Corrigan (2000) acknowledged that anger is not the only emotion people experience when perceiving danger but more often than not people respond with a level of fear. This has resulted in various studies investigating the relationship between the perception of dangerousness towards the mentally ill and the overall fear felt towards these individuals.

Research that has considered people's emotional reactions towards the mentally ill found three core types of emotional reactions exist towards these people: fear, pity and anger (Angermeyer & Matschinger, 1997; Corrigan, 2000). Angermeyer and Matschinger (2003b) studied 5025 German adults to investigate the effects of indirectly labelling mentally ill people

and the impact this had on public attitudes. They completed a representative survey which consisted of a vignette including information about a diagnostically unlabeled psychiatric case history. The vignette either represented a diagnosis of depression or schizophrenia but did not mention either of these two diagnoses. The participants were presented with an open-ended question asking them to note down the 'problem' described in the vignette. To assess personal attributes, Angermeyer and Matschinger (2003b) used a five-point Likert scale of eight personal attributes which covered two stereotypes of mental illness: dangerousness and dependency. Lastly, they used their own Emotional Reactions Scale from their 1997 study which specifically focused on the three core emotions fear, pity and anger to assess respondent's emotional reactions. They utilised Link et al.'s (1987) Social Distance Scale which was specifically designed to capture levels of social engagement. Overall, their results found that perceived dangerousness resulted in an increase in social distance through an inverse relationship with pity and a significant increase in the emotions fear and anger. This means that when someone is perceived as dangerous there is a decrease in people's willingness to socialise with the individuals resulting in lower levels of pity. They specifically found that when someone perceives an individual with schizophrenia as more dangerous, it results in an increase in their likelihood for social distance, meaning the person is less willing to socialise with this individual. They also found a positive relationship between fear and social distance. This suggests that when people experience fear towards a person, they are likely to be unwilling to socialise with that individual. Overall, their finding indicated support for Corrigan's (2000) Danger Appraisal Model. Interestingly, however, their results found that if the person is perceived as needing help, it appeared to evoke a mixture of feelings which included a decrease in anger, an increase in pity but also an increase in fear. They did not, however, find that the vignette that placed emphasis on

the diagnosis of depression had any impact on the level of perceived dangerousness and social distance reported.

A more specific study towards perceptions of dangerousness was that by Link et al. (1987) who manipulated behaviour and labelling using vignettes presented to participants. He either presented the individual within the vignette as mildly angry or severely angry and labelled the individual as: '2 years ago, he was hospitalised in a mental hospital' (mental health patient) or 'had been hospitalized for a back problem' (back injury/illness). Link et al. (1987) developed a Social Distance Scale and also developed a Perception of Dangerousness Scale to identify the level of dangerousness reported by their participants. These two scales were specifically designed and used within this study to capture social distance and perceived dangerousness. Their participants were directed to read the vignette and then asked to complete these scales. Their results found little to no difference in regards to the labelling effect (back problem versus mental health patient) directly on social distance. To test whether there is any interaction between perceived dangerousness and labelling on social distance they completed a multiple-regression analysis. During this analysis they found a strong significant relationship between labelling (mentally ill) and perceived dangerousness. Their findings also suggested that participants who scored the individual within the vignette as highly dangerous, desired a higher level of social distance from the labeled (mentally ill) individual. These findings indicate that the 'labelling effect' can impact on peoples held beliefs about certain social groups and can directly impact on perceived dangerousness. Although fear was not directly investigated within this study, it does provide partial support for Corrigan's Danger Appraisal model by identifying labelling as one of the many contributing factors that influence levels of perceived dangerousness which results in social stigma and isolation of these individuals. This research finding has also been supported in

other research in mental health (Angermeyer & Matschinger, 2003b) and assists in our understanding of what causes perceptions of dangerousness and results in social distance.

### **Familiarity, Age and Gender**

**Familiarity.** Mental illness literature has focused on how familiarity of mental illness impacts on a person's willingness to interact with an individual with a mental health concern. Familiarity is often measured by capturing the level of personal contact participants have had with individuals with mental illness. Previous research has explored this and found that people who had more personal contact were less likely to reflect stereotyping and discriminatory behaviour (Holmes, Corrigan, Williams, Canar, & Kubiak, 1999), had lower levels of perceived dangerousness (Corrigan, Green, Lundin, Kubiak, & Penn, 2001) and positively influenced real-world helping behaviours and reduced social distance (Corrigan et al., 2002). Link and Cullen (1986) noted that when people have contact with persons with mental illness it reduces their level of fear toward them. When applying The Danger Appraisal Model to this research finding it could suggest that familiarity influenced perceptions of dangerousness and as a result reduced levels of fear. Similarly, but applying this generically to disabled individuals, Stone and Colella (1996) suggested that overall people who have had more contact with disabled individuals are more likely to react more positively towards them.

In Foster et al. (2016), they investigated familiarity and applied it to TBI. They specifically measured two components including: familiarity and knowledge about 'how to interact' with someone with a TBI. This study used a photograph of an adolescent female or male with either a head scar or no head scar which was then presented to participants (a total of 4 conditions). Participants were presented with a short vignette which briefly told the participant basic personal information in relation to the adolescent, including information advising of the



adolescent's brain injury at the time of adolescence. They used a questionnaire to measure willingness to interact to identify participants' willingness to socialise with this adolescent and a familiarity scale to measure the participants level of contact with brain injured individuals. They also used a knowledge about how to interact scale to measure whether knowing how to interact with someone with a brain injury impacted on results specifically. They found that participants' level of familiarity or contact with individuals with brain injury had no impact on their willingness to socialise with the individual, however, they did find that participants with more knowledge of 'how to interact' with a TBI individual were more willing to socialise with the adolescent. This indicates that people who have a greater level of knowledge on how to interact positively influenced their willingness to socialise. Although Foster et al. (2016) identified no significant difference between familiarity of TBI and willingness to interact they noted the importance of recognising how an individual's knowledge of how to interact with a brain injured individual impacts on social distance. Interestingly, this study also found that participants were more willing to socialise with the individual with a head scar than the adolescent with no scar. The literature on brain injury and how familiarity and knowledge impact on social distance for TBI individuals specifically is limited and needs to be further explored.

**Age.** Gouvier et al. (1988) explored how age can impact on TBI misconceptions. They found that certain misconceptions were more common amongst certain age groups. For example, they found that the 20 to 40-year-old age group were more likely to believe that post TBI someone feels normal again once their rehabilitation is complete. The age group 15-20 were more likely to report that the speed of recovery is determined by an individual's effort in their rehabilitation and the 60+ age group were more likely to report that a little brain damage does not matter. These findings could therefore suggest that information provided at different stages of

life may shape beliefs and opinions and therefore the discrepancy between age groups and the misconceptions alter for each generation. This appears to be supported through the research of Chapman and Hudson (2010) who found that participants over the age of 60 years old were more likely to accurately judge the statement, “After head injury, it is usually harder to learn new things than it is to remember things from before the injury” (p. 799). These findings indicate that age may directly impact on people’s attitudes and beliefs about TBI individuals and be a factor that needs to be taken into consideration when selecting participants. It is unclear, however, the reason behind misconceptions that exist amongst people of different age groups and further research in this field is required to examine this.

**Gender.** Popovich et al. (2003) studied 118 undergraduate students enrolled in an introductory Psychology course at a large mid-Western University. They developed a survey that incorporated three scales designed specifically for assessing affective reactions towards working with individuals with disabilities, beliefs about disabilities and reasonableness of accommodations (altering a job task or assisting with workplace equipment for people with disabilities). They used gender as a predictor within their model with affective reactions as the dependent variable, whilst in a second model used reasonable accommodations as the dependent variable. They found a significant relationship between positive affective reactions associated with females working with individuals with disabilities in comparison to men. They also found that women believed that accommodating disabled individuals within the workplace was reasonable in comparison to men. These findings imply that women may have a more positive view towards supporting disabled individuals within the workplace and therefore more willing to make reasonable accommodations in comparison to men. In contrast to this, Foster et al. (2016), discussed earlier, found their participants showed no differences in regards to female or male

participants willingness to interact with a female or male adolescent with a TBI. This highlights the importance of having equal gender split when investigating this field of research to ensure gender bias is avoided.

### **Previous Research in New Zealand**

Foster et al. (2016) completed two studies applicable to The Model of Helping Behaviour and The Danger Appraisal Model and applied these models to brain injured individuals. They hypothesised that support would be found for both mediation models where fear was expected to mediate the relationship between perceived dangerousness and willingness to socialise and pity and anger were expected to mediate the relationship between responsibility and willingness to socialise. Study two by Foster et al. (2016) was identical to that of study one (discussed earlier), however, this time they used an additional scale to measure 'fear' adapted from a scale developed by Corrigan et al. (2003). This enabled them to specifically investigate The Danger Appraisal Model. The vignette now also imposed responsibility/blame on the individual for causing their injury e.g. the individual was drinking when they fell over or experienced a brain injury as a result of a brain tumor. The vignette was also manipulated to imply a level of fear by advising that the person was aggressive or by advising that the person is no more dangerous than they were pre-injury. In total, there were eight conditions. They utilised standardised regression coefficients which found all pathways for The Danger Appraisal Model significant. They found that perceptions of dangerousness positively predicted fear and fear negatively predicted willingness to socialise and interestingly found a direct relationship between dangerousness and willingness to socialise, where perceived dangerousness negatively predicted willingness to socialise. Their study found that fear mediated the relationship between perceptions of dangerousness and willingness to socialise and therefore supportive of The Danger Appraisal

Model. They also completed moderated mediation and found that having a visible marker of injury acted as a moderator in The Danger Appraisal Model, where having a scar resulted in an increase in perceived dangerousness, increasing fear and resulting in less willingness to socialise in comparison to not having a scar.

As part of study two Foster et al. (2016) also incorporated the ‘Anger Scale’ by Corrigan et al. (2003) which included three questions rated on a seven-point Likert scale, and a Pity Scale by Corrigan et al. (2003) which included three questions on a seven-point Likert scale. These scales were added specifically to investigate levels of pity and anger to enable them to explore The Model of Helping Behaviour. They hypothesised that pity and anger would mediate the relationship between responsibility and willingness to socialise. This was predicted on the basis that responsibility would lead to anger and result in higher levels of social distance and less responsibility would lead to pity and lower levels of social distance. Their results indicated that anger and pity did not mediate the Model. There was partial support for Weiner’s model, however, as responsibility significantly predicted anger and pity. Through moderated mediation they also found that visible markers of brain injury did not moderate this model. There is no other known research available that has investigated these two models directly on TBI and further research is required for conclusions to be made.

When interpreting research in relation to The Model of Helping Behaviour and The Danger Appraisal Model, it appears that many factors need to be taken into consideration when interpreting results for or against these two models. Many factors such as age, gender, visible markers of injury, familiarity and labelling are all factors that significantly impact on disabled individuals and more specifically TBI individuals’ level of social acceptance. Whether someone is left with a visible marker of injury post TBI, supported by females or males, young or old may

all have detrimental effects on TBI individuals due to the misconceptions and perceptions each person holds. The impact that these factors have on a TBI individual's life may heavily impact on their acceptance back into society post TBI. It would appear that our own emotions and behavioural responses can be influenced by these factors and further research is required to support this theory and investigate whether the two models are applicable to TBI.

## **Experiment One**

### **Hypotheses and Predictions**

In the current study, I investigated the influence that visible scars of TBI have on The Danger Appraisal Model and The Model of Helping Behaviour. I predicted that participants in the 'scar condition' would attribute a significantly higher level of dangerousness and a significantly higher level of fear. This in turn would result in a significantly greater level of social distance when compared to the 'no-scar condition', thus predicting the visible marker to influence all three variables of The Danger Appraisal Model - hypothesis 1. I also predicted that the 'scar condition' would cause people to attribute less personal responsibility and therefore significantly higher levels of pity and greater levels of helping behaviour compared to the 'no scar condition,' supportive of Weiner's Model of Helping Behaviour - hypothesis 2. When examining both groups, it was predicted that familiarity would reduce perceptions of dangerousness and therefore result in significantly lower levels of fear and social distance but increase levels of pity and helping behaviour - hypothesis 3. It was also predicted that females in comparison to males would report significantly less discriminatory behaviours across groups due to having less fear and higher levels of pity - hypothesis 4. No specific hypothesis was made towards age.

Overall, this study will identify whether the two models can be influenced by visible markers of injury and provide insight into the perceptions and attributions people in society make towards TBI individuals in the community and within the workplace. This study will differ to that of Foster et al. (2016) by focusing solely on the impact that visible markers of TBI have on these two models and by using a visible marker of TBI to infer responsibility/controllability without manipulating the vignette directly. The influence from the visible marker of TBI is therefore expected to increase the other variables in the expected directions of these two models based on previous research findings. This study will investigate helping behaviour associated with The Model of Helping Behaviour specifically in relation to workplace support but will also take into consideration other factors such as age, gender and familiarity.

## **Method**

### **Participants**

Three hundred and twenty-eight participants were approached via social media (Facebook). The participants ranged between the ages of 20-80 years old. Two separate links were sent out privately on Facebook to two separate groups of one hundred and sixty-two participants. In total, 87 participants completed the survey in Group One (scar photograph), and 93 participants completed the survey in Group Two (no scar photograph). This provided a total of 180 participants.

### **Materials and Procedure**

In a private message via Facebook, participants were sent a message that read: "I am completing my Master's degree and would appreciate it if you took 10 minutes out of your day to complete a survey via the link below..." Participants clicked on the link provided which took

them directly into ‘Google Forms.’ The beginning of the form included an explanation of the purpose of the study and the Victoria University of Wellington Consent form. If participants wished to continue, they scrolled down to where they would see the photograph. By continuing to engage in the study, the participant provided consent to participate as an anonymous participant. There were two links created and each individual was sent one of the links. One link included a front-on headshot of an adult male without a scar while the other link directed the participant to the identical survey but with a front-on headshot of the same young adult male with a scar (see Figure 4). The two photographs used had no other significant differences.

Figure 4 represents the two photographs used. The photograph on the left represents the visible marker (scar) and the photograph on the right reflects the photograph without the visible marker.



*Figure 4.*

The scar condition was used to elicit the perception of uncontrollability and therefore less responsibility. In contrast, the no scar condition was used to elicit the perception of controllability and responsibility. This was designed based on previous research documenting psychological factors perceived as controllable whereas physical/visible disabilities are perceived as uncontrollable. Therefore, the visible marker would be distinctive of a physical/visible injury and used to induce responses from participants associated with physical disabilities in comparison to the invisible brain injury which is more closely associated with mental health/psychological perceptions. The scar was also used to elicit an increase in the

perception of dangerousness due to previous research associating visible markers with injury severity and visual confirmation of an injury sustained.

The participants were firstly asked to disclose their gender, then progressed to confirmation of having any experience/contact with a TBI individual (familiarity) by answering YES/NO and which of the four age categories; 20-35, 36-50, 51-65, 66-80 they fell within. The participants in each group then read a short vignette which was limited in detail and the level of brain injury was not revealed. The vignette read:

*“Joe suffered a brain injury in 2014. Joe continues to experience symptoms in relation to his brain injury. These include fatigue, lack of initiation, and irritability. Joe has regained his independence and is well engaged in his community and socialises with friends and family. Joe has a dog and lives independently at home.”*

The limited information in the vignette avoided biasness or leading stereotypical views of brain injury. It also included no information in regards to how or where the accident happened. The reason for this information not being included was to ensure that causation for the TBI was not manipulated. The perception of controllability/responsibility was derived by the visible marker and by participants being advised of his brain injury. The vignette did not advise how the incident occurred or confirm if the individual was behaving responsibly at the time of injury to ensure blame was not placed on the individual. This avoided Corrigan's (2000) concern regarding the manipulation of vignettes and supported the use of the visible marker inducing perceptions of controllability/responsibility.

The vignette was then followed by the survey which participants were prompted to complete. The survey consisted of a series of measures including: The Emotional Reactions Scale used in Angermeyer and Matschinger (2003a), The Perceived Dangerousness Scale and



Social Distance Scale used in Link et al. (1987) and The Affective Reactions Subscale used in Copeland et al. (2010).

The Emotional Reactions Scale (ERQ) used in Angermeyer and Matschinger (2003a) is a nine-item scale which measures the three core emotions of: fear, pity and anger. An example question is, 'I feel the need to help people with a brain injury.' This scale was altered by specifically relating it to people with a brain injury rather than a disability. A five-point Likert scale was used where 1 was 'agree' and 5 was 'disagree.' Scoring was reversed on all three emotions to support interpretation, where high scores reflected higher levels of fear, pity or anger. Overall a higher score on the ERQ scale overall implied a greater level of prejudice.

The Social Distance Scale was originally developed by Bogardus in 1925 as a Guttman style scale and later modified by Link and colleagues (1987) to utilise a Likert-scale for each item. The original scale by Bogardus in 1925 was developed to measure the level of acceptance that is felt by Americans towards members who are of different ethnicities and religious groups. In total, there were seven questions which were modified to reflect interaction with a brain injured individual. The answers ranged from 0 = 'definitely willing' to 3 = 'definitely unwilling.' An example of one of these questions is, 'How would you feel about renting a room in your home to someone like Joe?' The higher the score, the higher the level of social distance reported. This scale was used to identify how willing participants are to socialise with a TBI individual with a visible marker of injury.

The Perceived Dangerousness Scale was developed by Link et al. (1987) to assess whether a person who is or has been mentally ill, is likely to be perceived as being a threat. This is an eight-item scale where participants rated their answers on a five-point Likert scale and answers ranged between 'strongly agree' to 'strongly disagree.' Each question was modified to

specifically refer to a brain injured individual rather than a mental health patient. An example of one of these questions is, 'there should be a law forbidding a former brain injury individual the right to obtain a hunting license.' Six of the questions had reverse scoring applied to support interpretation. A high score on this scale represented a high level of perceived dangerousness.

The last measure used was an adapted subscale from the Disability Questionnaire from Popovich et al. (2003). The original affective reactions subscale comprised 21 items, however, through the work of Copeland et al. (2010) it was reduced to a 17-item scale and broken into two separate components: negative cognitive affective reactions and positive cognitive affective reactions. Participants were asked to answer a seven-point Likert scale ranging from 'completely agree' to 'completely disagree.' An example of one of the statements included was: 'Working with an individual with a brain injury would increase my workload.' This scale was used to help identify people's positive and negative cognitive reactions towards helping brain injured individuals within the workplace and used to identify the level of helping behaviour associated with The Model of Helping Behaviour.

For a full list of all items related to each questionnaire see appendices A, B, C & D. All questions were amended to relate to brain injury specifically. Questionnaires were completed online at the convenience of the participant. Each question required an answer to enable the participant to move on to the next question. On completion of the online survey, participants were informed in writing that the young male adult in the photograph did not have a brain injury and that the vignette was fictional. The photograph was shown once at the beginning of the first questionnaire only.

## **Results**

### **Familiarity, Age and Gender Statistics Between Groups**

The age ranges for the scar condition group were as follows: 78.9% were between 20-35-years old, 8.2% were between 36-50 years old, 10.5% were between 51-65 years old and 2.4% were between 66-80 years old. The gender for this group was 69% female and 31% male. The age ranges for the no scar condition were as follows: 77.4% were between 20 -35 years old, 15.1% were between 36-50 years old, 6.5% were between 51-65 years old and 0.01% were between 66-80 years old. The gender make up of this group was female 73.1% and male 26.9%. The scar condition group resulted in 55.3% reporting familiarity and 44.7% reporting no familiarity. Similarly, the no scar condition resulted in 50.5% reporting familiarity and 49.5% reporting no familiarity.

### **Primary Analyses: Dependent and Independent Variables**

The data was collected and sorted using an excel spreadsheet. The information was analysed through the Statistical Package for the Social Sciences (SPSS). During the data collection process and data sorting two participants were removed from the data collection. These two participants had confirmed recognising the male in the photo and due to potential bias, their data was deleted. This left a total of 178 participants. This was then summarised and analysed through SPSS using a Multivariate Manova for four independent variables (Group (visible marker or no-marker), Familiarity, Age and Gender) and seven dependent variables (Social Distance, Dangerousness, Disability Negative, Disability Positive, Fear, Anger and Pity) in total.

Despite a significant Pillai's Trace for Group and Familiarity, Pillai's Trace = .123,  $F(7, 163) = 3.25$ ,  $p < .05$ , a subsequent univariate ANOVA failed to find any significant effect between these variables. No other multivariate tests were significant.

### **Discussion - Experiment One**

The current research examined whether visible markers of brain injury impact on people's perceived levels of dangerousness, social distance, helping behaviour (positive and negative reactions) and emotional reactions (fear, pity and anger). This experiment found no significant findings between individuals who saw a scar as a visible marker of injury versus those who did not see a scar. Hypothesis 1 which predicted that participants in the 'scar condition' would attribute a higher level of dangerousness with an associated higher level of fear and therefore, higher level of social distance when compared to the 'no-scar condition' was not supported. Hypothesis 2 predicted that visible markers of TBI would be perceived as uncontrollable/less responsible and therefore result in higher levels of pity and helping behaviour. As there were no significant findings between the groups associated with anger, pity or helping behaviour, this hypothesis was not supported. The visible marker of TBI did not lead to any significant increase or decrease in relation to the dependent measures used. There were also no significant findings for Gender and therefore hypothesis 3 was not supported.

This experiment would suggest that visible markers of TBI do not influence The Danger Appraisal Model and The Model of Helping Behaviour. As there were no significant differences between each of the two groups, no support is found towards visible markers being able to influence either of the two models investigated in Experiment 1. The results from Experiment 1 contrast with other research that had used a scar as a visible marker and influenced people's

perceptions of brain injury (Foster et al., 2016; McClure et al., 2008). To help clarify these results, a further experiment was designed.

### **Limitations**

Experiment 1 had a number of limitations which needed further investigating. A possible limitation of Experiment 1 may have been that the scar was not realistic or significant as it was only presented once during the online survey. The visible marker used within this experiment was subtle and may not have been a visually salient feature to result in any differences between the measures of the two groups. Thus, this may have led to participants' perceptions being uninfluenced by the scar which resulted in no significant differences between the groups. The lack of a salient marker may have resulted in the observer's attention being distracted away from the visible marker and therefore not activating any causal beliefs about visible markers of brain injury during the completion of the surveys (McClure et al., 2008).

Another possible limitation was the lack of information provided within the vignette. Having inadequate information to ascertain their personal beliefs about this individual with a brain injury may have resulted in participants feeling similar between the two groups regardless of the visible marker. This could explain the insignificant findings obtained. More information within the vignette may have been required to support participants in attributing controllability/responsibility to assist participants in applying their personal judgements.

### **Experiment Two**

In order to further investigate these findings and prevent these possible limitations from impacting on the results, Experiment 2 was designed to ensure a clear visible marker of injury was included throughout the survey and a more descriptive vignette to support participants in making personal judgements. Therefore, Experiment 2 included: a bandage as a visible marker,

an amendment to the vignette which now included additional symptoms and a description of where the injury took place. The vignette again, however, did not infer controllability or responsibility to ensure that the visible marker of injury remained the manipulated measure used to impact on participants perceptions of controllability and responsibility. The visible marker remained the manipulated measure expected to also influence perceptions of dangerousness.

## Method

### Participants

A total of 238 participants were contacted within their workplace via the intranet or via an email and asked to complete an anonymous survey. In total 60 participants completed the survey relevant to the visible marker of brain injury (head bandage) photograph and 65 participants completed the survey without the visible marker (no head bandage). A total of 125 participants in total completed the surveys.

### Materials

The survey questionnaires used within Experiment 2 were identical to that of Experiment 1. The primary difference between Experiment 1 and 2 consisted of a different visible marker and an amended vignette. Instead of using a scar to reflect a visible marker of injury, a head bandage was used instead. This was to ensure that the visible marker of injury was clearly evident to participants. See figure 5 representing the two photographs used within Experiment 2.



*Figure 5.*

The vignette was altered by adding additional symptoms and information to inform the participants with further information in regards to the level of injury and the TBI individual's goal to return to work. The vignette also included information in regards to when the injury occurred (a New Year's Party) and leaves it to the imagination of the participant with regards to the activity that led to this injury. The vignette read as follows:

*“Joe suffered a brain injury at a New Year's party celebrating the beginning of 2018. Joe has recently been discharged from hospital and continues to experience symptoms due to his brain injury. Some of these symptoms include; fatigue, irritability, lack of initiation, anger and memory loss. Joe has regained his independence and has been discharged home. Joe lives with his dog and is interested in getting back into the workplace.”*

In contrast to Experiment 1 the photograph used in Experiment 2 was visible on each page that the participant saw whilst completing the surveys. In Experiment 1 participants only saw the photograph at the beginning of the first survey. This study also incorporated the three other independent measures used in Experiment 1 including age, gender and familiarity of brain injury. Participants were asked to confirm their gender, confirm whether they had personal experience (familiarity) of TBI and confirm which age category they fell within.

## **Procedure**

The procedure used for Experiment 2 was identical to that of Experiment 1, however, social media was not utilised and participants completed the link via an incoming email or via a link on their intranet within their business.

## **Results of Experiment 2**

The data was then collected and sorted using an excel spreadsheet. This was then summarised and analysed through SPSS using a Multivariate Manova for four independent variables (Group (Bandage or No-Bandage), Familiarity, Age and Gender) and seven dependent

variables (Social Distance, Dangerousness, Disability Negative, Disability Positive, Fear, Anger and Pity) in total.

### **Familiarity, Age and Gender Statistics Between Groups**

The ages of the participants who engaged in the experimental condition (Bandage Group) were as follows: 10% were between 20-35 years old, 25% were between 36-50 years old, 43.3% were between 51-65 years old and 21.7% were between 66-80 years old. In relation to Gender, 60% were male and 40% were female. For the control group (No-Bandage), the age ranges were summarised as the following: 26.2% were between 20-35 years old, 35.4% were between 36-50 years old, 36.9% were between 51-65 years old and 1.5% were between 66-80 years old. The Gender of this group is broken down to 53.8% female and 46.2% male. In relation to the No-Bandage group 64.6% reported Familiarity and 35.4% reported having No Familiarity. Within the Bandage group 66.7% reported Familiarity and 33.3% did not.

### **Primary Analyses: Dependent and Independent Variables**

The multivariate result was significant for Group, (Bandage, No Bandage), Pillai's Trace = .120,  $F(7,111) = 2.15$ ,  $p < .05$ , and for Familiarity, Pillai's Trace = .177,  $F(7,111) = 3.41$ ,  $p < .01$ . Multivariate analysis found no significant effects or interactions for Gender and Age.

#### **Group: bandage – no bandage.**

***Social distance.*** There was a significant difference on Social Distance between the Bandage Condition and the No-Bandage Condition,  $F(1,124) = 4.50$ ,  $p < .05$ , with participants in the Bandage Condition scoring higher (Mean = 1.18), than participants in the No-Bandage Condition (Mean = 1.02).

***Perceived dangerousness.*** There was a significant difference on Perceived Dangerousness between the Bandage Condition, and the No-Bandage Condition,  $F(1,124) =$



4.94,  $p < .05$ , with participants in the Bandage Condition scoring higher (Mean = 1.90), than those in the No-Bandage Condition, (Mean = 1.58).

**Disability negative.** There was a significant difference on Disability Negative between the Bandage Condition, and the No-Bandage Condition,  $F(1,124) = 9.02$ ,  $p < .001$ , with participants in the No-Bandage condition scoring higher (Mean = 4.47), than those in the Bandage Condition, (Mean = 3.87).

**Disability positive.** There was a significant difference on Disability Positive between the Bandage Condition and the No-Bandage Condition,  $F(1,124) = 4.56$ ,  $p < .05$ , with participants in the Bandage Condition scoring higher (Mean = 3.10), than those in the No-Bandage Condition, (Mean = 2.66).

**Fear.** There was no significant difference on Fear between the Bandage Condition, (Mean = 4.09), and the No-Bandage Condition, (Mean = 4.22), ( $F < 1$ ).

**Pity.** There was no significant difference on Pity between the Bandage Condition, (Mean = 2.15), and the No-Bandage Condition, (Mean = 2.20), ( $F < 1$ ).

**Anger.** There was no significant difference on Anger between the Bandage Condition, (Mean = 4.65), and the No-Bandage Condition, (Mean = 4.63), ( $F < 1$ ).

### **Familiarity.**

**Social distance.** There was a significant difference on Social Distance between the Familiar Condition and the Non-Familiar Condition,  $F(1,124) = 17.08$ ,  $p < .001$ , with participants in the Familiar Condition scoring lower (Mean = 0.98), than participants in the Non-Familiar Condition (Mean = 1.32).

**Danger.** There was a significant difference on Danger between the Familiar Condition and the Non-Familiar Condition  $F(1,124) = 4.50$ ,  $p < .05$ , with participants in the Familiar

Condition scoring lower (Mean = 1.58), than those in the Non-Familiar Condition, (Mean = 2.02).

***Disability Positive.*** There was a significant difference on Disability Positive between the Familiar Condition, and the Non-Familiar Condition,  $F(1,124) = 4.56, p < .05$ , with participants in the Familiar Condition scoring lower (Mean = 2.78), than those in the Non-Familiar Condition, (Mean = 3.05).

***Anger.*** There was a significant difference on Anger between the Familiar Condition and the Non-Familiar Condition,  $F(1,124) = 4.06, p < .05$ , with participants in the Familiar Condition scoring lower (Mean = 4.51), than those in the Non-Familiar Condition, (Mean = 4.71).

***Fear.*** There was a significant difference on Fear between the Familiar Condition and the Non-Familiar Condition,  $F(1,124) = 8.67, p < .01$ , with participants in the Familiar Condition scoring lower (Mean = 3.86), than those in the Non-Familiar Condition, (Mean = 4.31).

### **General Discussion**

The purpose of this study was to examine the relationship between a visible marker of TBI versus no visible marker and its potential influence on two behaviour models. In addition to this, the effects of familiarity, age and gender were also examined. In Experiment 1 there was no significant main effects for familiarity, age, or gender nor any significant differences between the visible marker and dependent measures in comparison to the non-visible marker group. There was no main effect of familiarity nor any interaction between familiarity and the visible marker. The lack of any effect for the visible marker raised questions in relation to whether the visible marker used in Experiment 1 was salient enough to influence participants' responses and whether the vignette was suitable. In Experiment 2, three points of difference were made. The photograph was made visible on each page of the survey, the visible marker was a

bandage instead of a scar and the vignette included additional information as to where the accident took place and included additional symptoms to support participants in understanding more about the level of brain injury and the individual's goals post TBI.

Experiment 2 found four significant differences between the participants who viewed the individual with the head bandage in comparison to those who did not. The participants in the group who saw the head bandage reported higher levels of perceived dangerousness, higher ratings of positive cognitive reactions (helping behaviour within the workplace) and significantly higher levels of social distance. The control group (no-bandage condition) had significantly higher ratings for negative cognitive reactions (less helping behaviour within the workplace).

Experiment 2 also produced a main effect in relation to familiarity. Familiarity resulted in people having significantly lower scores in social distance, perceived dangerousness, anger and fear. This suggests that people who had previous experience/contact with TBI individuals had fewer negative emotions, reduced discriminatory behaviour and reduced perceptions of dangerousness. The results for familiarity may not provide us with evidence signalling differences between the bandage condition and no-bandage condition, but recognises the ability for familiarity to influence dependent measures. These results suggest that personal experience/contact with TBI individuals increases people's willingness to socialise with TBI individuals. It also suggests that they are less likely to perceive TBI individuals as dangerous, less likely to experience anger towards TBI individuals and less likely to fear TBI individuals. These results are consistent with previous literature (Holmes et al, 1999; Corrigan et al., 2001 & Corrigan et al., 2002) and provides partial support for hypothesis 3. Partial support is obtained due to an interesting finding between familiarity and positive cognitive reactions. Higher levels

of familiarity were significantly related to lower levels of positive cognitive reactions which was not predicted within this study. This suggests that participants with higher levels of personal experience/contact with TBI individuals were less willing to support them within the workplace but ironically were more willing to socialise with TBI individuals. These findings obtained in Experiment 2 contrasted with Experiment 1 where no significant findings were found across all measures.

The main difference between participants in Experiment 1 and Experiment 2 was the age range and gender. Experiment 1 consisted of participants aged primarily between 20-35 years old and had an average of 71% female participants across both groups. Experiment 2 consisted of 70% of participants being over the age of 35 years old with at least 25% of the participants being over 50 years old, showing a significantly older and diverse group of participants in Experiment 2. Across both groups in Experiment 2 46.9% were female which is significantly less female dominant in comparison to Experiment 1. Although age and gender had no main effect, it does raise questions in regards to how familiarity may capture the level of experience one has with TBI individuals over one's lifetime. As people age, they are more likely to meet someone who has experienced a TBI and gain more knowledge about these individuals. This may be a contributing factor towards the significant differences in the findings obtained in Experiment 1 and 2.

### **The Danger Appraisal Model**

When interpreting the findings and applying them to The Danger Appraisal Model, the findings that are applicable to this model are: perceived dangerousness, fear and social distance. In Experiment 2, the bandage group perceived the TBI individual as more dangerous than the participants in the control group (no-bandage) and also reported less willingness to

socialise with the individual in comparison to the control group. The appearance of a head bandage was able to manipulate participants' perceptions of whether someone was dangerous and whether someone wanted to socialise with them. There were no significant differences in the level of fear reported between the groups which is not what would have been predicted by The Danger Appraisal Model. Therefore, these findings suggest that the use of a visible marker appears to be able to influence the model without elevating fear and could imply that this model is not mediated by fear as suggested by Corrigan, (2000). Overall, these findings indicate partial support for The Danger Appraisal Model - hypothesis 1. Specifically, the presence of a visible marker resulted in a significantly higher level of perceived dangerousness and a significantly higher level of social distance. Full support for The Danger Appraisal Model was not found due to the level of fear not significantly increasing as predicted.

The results also appear to be inconsistent with Foster et al. (2016) who found their participants had significantly greater levels of fear associated with visible markers of TBI which resulted in higher levels of social distance. Foster et al. (2016) did, however, confirm that visible markers of TBI could influence The Danger Appraisal Model by increasing perceptions of dangerousness and social distance which is consistent with this study and found a direct relationship between perceived dangerousness and social distance.

### **The Model of Helping Behaviour**

The findings applicable to this model include: pity, anger, disability positive and disability negative. Consistent with The Model of Helping Behaviour, the results showed significantly higher levels of positive cognitive reactions (helping behaviour) in the bandage group and a significantly higher level of negative cognitive reactions associated with the non-bandage group. These results indicated that the Model can be influenced by visible markers of

TBI and that these visible markers result in significantly higher levels of helping behaviour. These findings indicate, as predicted, that a visible marker of injury would result in less perceived controllability/responsibility and ultimately result in higher levels of helping behaviour. In relation to whether these findings support this Model as a whole depends on the findings for the emotions anger and pity. The results obtained for these two emotions were not significantly different between the two groups. There were no significant differences for anger or pity and therefore, as a result, only partial support was obtained for hypothesis 2. It was expected that the bandage condition group would entail significantly greater levels of pity in comparison to the control group, which would result in higher levels of positive cognitive reactions. It appears, however, that in this case, that there is a direct relationship between controllability and help giving (positive cognitive reactions). These findings indicate partial support for hypothesis 2 due to visible markers of TBI influencing helping behaviour and insight into visible markers of TBI influencing helping behaviour without being mediated by pity. These results suggest that a visible marker of TBI can influence the level of helping behaviour imposed on TBI individuals without directly influencing pity and that visible markers may result in participants perceiving them as uncontrollable and less responsible.

### **Limitations**

There are a number of limitations within this study that would need to be considered for future research. This study utilised no direct measure to capture participants' perceptions of controllability/responsibility. A visible marker was used to manipulate this perception based on Weiner et al. (1988) findings where visible markers can alter the perception of controllability/responsibility, however, it is uncertain whether this shift in perception actually occurred based on the current findings. To reduce this uncertainty, a measure would need to be

used to capture the perceptions of controllability/responsibility between the head bandage group and no head bandage group. Two measures that could be considered are: The Causal Dimension Scale introduced by Russell in 1982 and the Attributions Questionnaire used by Corrigan et al. (2003). Russell (1982) created The Causal Dimension Scale specifically to measure the three dimensions of Weiner's 1979 study: locus of causality, stability and controllability. The other measure that should be considered is the Attribution Questionnaire which not only measures Personal Responsibility Beliefs but also incorporates the following: Familiarity with Mental Illness, Pity, Anger, Fear, Helping and Coercion-Segregation. Both of these measures would need to be tailored towards TBI and would enable other researchers to investigate controllability/responsibility as a direct result of visible markers.

Although controllability and responsibility were not directly manipulated within the vignette, it is possible that this may have left participants open to interpreting controllability and responsibility differently due to specific information that was included in the vignette. The vignette did not place responsibility on the individual for their incident occurring nor on anyone else, however, the vignette in Experiment 2 did state that the incident occurred at a New Year's Party. A concern this raises is in relation to the potential for misattributions to be made by participants. For example, participants could assume that alcohol was involved at the time of the incident due to New Year parties often being associated with alcohol. Two examples which reflect this concern include participants assuming the individual was: intoxicated and started a fight (controllable and responsible), or sober and attacked by intoxicated people (uncontrollable and not responsible). The vignette allowed for some interpretation of causality, however, locus, stability and controllability were thought to be manipulated using the visible marker. This means that the vignette may have been misleading and controllability was not derived simply from the

visible marker of injury. It is important to recognise that the vignette did not include this information in Experiment 1 and therefore, the lack of findings obtained in Experiment 1 may be due to the wording of the vignette. It is important to recognise how information in the vignette may be perceived and impact on dependent measures.

A further concern with the vignette in Experiment 2 is the inclusion of the symptom ‘anger.’ This can be perceived as a contributing association with perceptions of dangerousness and may have led participants to an increase in their own perception of dangerousness towards the individual in the vignette. Future research will need to ensure that vignettes remain neutral and include no potential misleading information.

### **Future Research**

This study builds on the work by Foster et al. (2016) based on how controllability and responsibility are inferred. Foster et al. (2016) inferred responsibility by the use of their vignettes by incorporating information within the vignette which led participants to conclude responsibility. For example, when indicating responsibility their vignette included: “as a result of falling and sustaining a significant injury to his/her head after drinking too much alcohol” (p.1113), however, when they indicated no responsibility the vignette read: “as a result of a brain tumor” (p. 1113). Arguably, this information led their participants to infer controllability/responsibility based on the information provided and persuade them to judge the individual in a specific manner, whereas, the current study utilised a scar or a head bandage to investigate whether visible markers influenced controllability/responsibility. This study also extends on the work by Foster et al. (2016) by investigating the direct impact of visible markers of injury in relation to the two models investigated and provides a different perspective on visible markers of TBI when comparing these two models and the direct impact it has on the dependent



measures. This current study also provides insight into how visible markers of TBI impact directly on helping behaviour associated with workplace support which was not addressed in Foster et al. (2016).

TBI is a complex injury which results in varying levels of damage to the brain and results in cognitive deficits. Using a visible marker within this study confirms that an injury has occurred but in reality TBI does not always result in visible markers and is more noticeable through cognitive deficits and outward behavioural issues. Further studies could use videos to capture realistic TBI symptoms in place of the vignette itself and photograph. This may also assist in reducing inaccurate subjective reporting, engage participants more emotionally and limit the ability for participants to place causality themselves.

Another issue to address is the severity of injury which was not measured within this study. This could be measured by a perceived severity scale to grasp whether participants view the level of injury similarly based on the vignette or whether the head bandage, does in fact, lead to participants believing the injury is more severe as reported by McClure et al. (2008). This could have a direct impact on these models and provide further insight into the results obtained.

An interesting finding within this study is the contrasting results for social distance and helping behaviour. Participants were more willing to provide support within the workplace when visible markers were present but, were less willing to socialise with them if they had a visible marker. It raises questions in regards to whether people feel more safe in a controlled work environment to provide assistance in comparison to supporting someone in the community. Future research investigating the perception of controllability and visible markers will help to understand whether people perceive ‘uncontrollability’ as also ‘not in control’ and therefore

considered ‘out of control’ and more dangerous to socialise with. Further investigating would extend this study and gain insight into the differences between discriminatory behaviours within the community and workplace and why these exist.

### **Implications**

The dependent measure utilised to capture the level of helping behaviour in relation to The Model of Helping Behaviour was directly associated with workplace support. The results within this study suggest that people are more willing to provide support to a TBI individual if they have a visible marker of injury and that visible markers are attributed by others as ‘not in control’ or ‘less responsible.’ A concern this raises is whether this leads to discriminatory behaviour towards TBI individuals whom have no visible markers of injury and whether this can be generalised to other similar non-visible disorders e.g. stroke. TBI is well known as the ‘invisible’ injury and these findings generate concern towards a potential lack of support within the workplace for whom have no visible markers of injury.

It is well documented that employment contributes significantly to the quality of life of a person following traumatic brain injury (Corrigan et al., 2001; Tsaousides, Ashman, & Seter, 2008). Tsaousides et al. (2008) analysed the impact that employment had on TBI individuals within the workplace and found that employment led to lower levels of depression. This raises concern due to the majority of TBI sufferers not having visible markers of injury and therefore may result in less employment opportunities and be one of the contributing factors that lead to depression. The results from my research which found the Bandage Group resulting in higher levels of positive cognitive reactions (helping behaviour) is consistent with Rosen et al.’s (1982, as cited in Link et al., 1987) ‘extra break effect.’ This ‘effect’ refers to visible disabilities enabling those individuals to access more support or treatment. Rosen et al.’s (1982 as cited in

Link et al., 1987) ‘extra break effect’ would appear to be applicable to TBI individuals when comparing visible markers of injury and the influence it has over the level of workplace support they receive. This field of research could be generalised and applicable to other health concerns such as biogenetic diseases. These include: Alzheimer’s disease, autoimmune disease and mental health conditions which do not cause visible impairment in comparison to those with visible impairments and what type of treatment they receive. Emphasis needs to be placed on all individuals being provided with equal support and treatment within the community and clinician’s being mindful of how visible and invisible disabilities may cause a bias in their own services. It is important to recognise this as it can impact on disabled individuals’ ability to be accepted back into their community. My research has indicated that visible markers of TBI can cause misattributions in regards to perceptions of controllability and dangerousness which impacts on helping behaviours and socialisation. Bringing awareness to inaccurate perceptions of TBI is important to ensure a balanced approach and support network is provided to all TBI individuals equally regardless of visible markers of injury being present.

### **Conclusion**

Visible markers of injury influence both The Danger Appraisal Model and The Model of Helping Behaviour and partial support was found for both hypothesis 1 and 2. The information obtained within this study is useful to raise awareness and educate employers, human resource management, medical practitioners and the general public to help reduce false attributions made towards TBI individuals. The findings associated with familiarity emphasises the importance of people interacting and having contact with TBI individuals and people with disabilities in general to help reduce discriminatory behaviour and support an inclusive community.

## References

- Angermeyer, M.C., & Matschinger, H. (1997). Social distance towards the mentally ill: Results of representative surveys in the Federal Republic of Germany. *Psychological Medicine*, 27(1), 131-141.
- Angermeyer, M. C., & Matschinger, H. (2003a). Public beliefs about Schizophrenia and depression: Similarities and differences. *Social Psychiatry Epidemiol*, 38, 526-534.
- Angermeyer, M. C., & Matschinger, H. (2003b). The stigma of mental illness: Effects of labelling on public attitudes towards people with mental disorder. *ACTA Psychiatrica Scandivica*, 108, 304-309.
- Auckland University of Technology. (2012, November 22). 36,000 New Brain Injuries in NZ Each year, Incidence at “Epidemic Proportions”. Retrieved from the URL: <http://www.news.aut.ac.nz/news/2012/november/36,000-new-brain-injuries-in-nz-each-year,-incidence-at-epidemic-proportions>.
- Block, C. K., West, S. E., & Goldin, Y. (2016). Misconceptions and misattributions about traumatic brain injury: An integrated conceptual framework. *PM & R: The journal of injury, function and rehabilitation*, 8(1), 58-68.
- Chapman, R. C. G., & Hudson, J. M. (2010). Beliefs about brain injury in Britain. *Brain Injury*, 24(6), 797-801.
- Copeland, J., Chan, F., Bezyak, J., & Fraser, R. T. (2010). Assessing cognitive and affective reactions of employers toward people with disabilities in the workplace. *Journal of Occupational Rehabilitation*, 20, 427-434.
- Corrigan, P. (2000). Mental health stigma as social attribution: Implications for research methods and attitude change. *Clinical Psychology: Science and Practice*, 7, 48-67.

- Corrigan, P. W., Green, W., Lundin, R., Kubiak, M. A., & Penn, D. L. (2001). Familiarity with and social distance from people who have serious mental illness. *Psychiatric Services*, 52, 953-958.
- Corrigan, P. W., Markowitz, F. E., Watson, A., Rowan, D., & Kubiak, M. A. (2003). An attribution model of public discrimination towards persons with mental illness. *Journal of Health and Social Behaviour*, 44(2), 162-179.
- Corrigan, P. W., Rowan, D., Green, A., Lundin, R., River, P., Uphoff-Wasowski, K., White, K., & Kubiak, M. A. (2002). Challenging two mental illness stigmas: Personal responsibility and dangerousness. *Schizophrenia Bulletin*, 28 (2), 293-309.
- Corrigan, J. D., Selassie, A. W., & Orman, J.A. (2010). The epidemiology of traumatic brain injury. *The Journal of Head Trauma Rehabilitation*, 24, 72-80.
- Edward, K., Lauterbach, E. C., Reeve, A., Arciniegas, D. B., Coburn, K., Mendez, M. F., Rummans, T. A., & Coffey, E. C. (2007). Neuropsychiatric complications of traumatic brain injury: A critical review of the literature (A report by the ANPA committee on research). *The Journal of Neuropsychiatry and Clinical Neurosciences*, 19(2), 106-127.
- Foster, L. A., Leathem, J. M., & Humphries, S. (2016). Brain injury and discrimination: Two competing models – Perceptions of responsibility and dangerousness. *Brain Injury*, 30(9), 1109-1120.
- Gouvier, W. D., Prestholdt, P. H., & Warner, M. S. (1988). A survey of common misconceptions about head injury and recovery. *Archives of Clinical Neuropsychology*, 3, 331-343.
- Holmes, E., Corrigan, P. W., Williams, P., Canar, J., & Kubiak, M. A. (1999). Changing attitudes about Schizophrenia. *Schizophrenia Bulletin*, 24, 447-456.

- Hux, K., Schram, C. D., & Goeken, T. (2006). Misconceptions about brain injury: A survey replication study. *Brain Injury*, 20 (5), 547-553.
- Link, B. H., & Cullen, F. T. (1986). Contact with the mentally ill and perceptions of how dangerous they are. *Journal of Health and Social Behaviour*, 27, 275-292.
- Link, B. G., Cullen, F. T., Frank, J., & Wozniak, J. F. (1987) The social rejection of former mental patients: Understanding why labels matter. *American Journal of Sociology*, 92(6), 1461-1500.
- McClure, J., & Abbott, J. (2009). How normative information shapes attributions for the actions of persons with traumatic brain injury. *Brain Impairment*, 10(2), 180-187.
- McClure, J., Buchanan, S., McDowall, J., & Wade, K. (2008). Attributions for behaviours of persons with brain injury: The role of perceived severity and time since injury. *Brain Injury*, 22(9), 639-648.
- McClure, J., Devlin, M. E., McDowall, J., & Wade, K. (2006). Visible markers of brain injury influence attributions for adolescents' Behaviour. *Brain Injury*, 20(10), 1029-1035.
- Mukherjee, D., Panko Reis, J., & Heller, W. (2003). Women living with traumatic brain injury: Social isolation, emotional functioning and implications for psychotherapy. *Women & Therapy*, 26(1/2), 3-26.
- Piliavin, I. M., Rodin, J., & Piliavin, J. A. (1969). Good samaritanism: An underground phenomenon? *Journal of Personality and Social Psychology*, 13(4), 289-299.
- Popovich, P. M., Scherbaum, C. A., Scherbaum, K. L., & Polinko, N. (2003). The assessment of attitudes toward individuals with disabilities in the workplace. *The Journal of Psychology*, 137(2), 163-177.

- Pretorius, C., & Broodryk, M. (2013). Misconceptions about traumatic brain injuries among South African university students. *South African Journal of Psychiatry*, 19(3), 75-79.
- Reisenzein, R. (1986). A structural equation analysis of Weiner's attribution-affect model of helping behaviour. *Journal of Personality and Social Psychology*, 50(6), 1123-1133.
- Russell, D. (1982). The causal dimension scale: A measure of how individuals perceive cause. *Journal of Personality and Social Psychology*, 42(6), 1137-1145.
- Schmidt, G., & Weiner, B. (1988). An affect-action theory of behavior: Replications of judgments of help-giving. *Personality and Social Psychology*, 14(3), 610-621.
- Stone, D. L., & Colella, A. (1996). A model of factors affecting the treatment of disabled individuals in organisations. *Academy of Management Review*, 21(2), 352-401.
- Stone, D. (2005). Reactions to invisible disability: The experiences of young women survivors of hemorrhagic stroke. *Disability and Rehabilitation*, 27(6), 293-304.
- Swift, T. L., & Wilson, S. L. (2001). Misconceptions about brain injury among the general public and non-expert health professionals: An exploratory study. *Brain Injury*, 15(2), 149-165.
- Tsaousides, T., Ashman, T., & Seter, C. (2008). The psychological effects of employment after traumatic brain injury: Objective and Subjective Indicators. *Rehabilitation Psychology*, 53(4), 456-463.
- Weiner, B. (1980). A cognitive (attribution) – emotion – action model of motivated behaviour: An analysis of judgments of Help-Giving. *Journal of Personality and Social Psychology*, 39(2), 186-200.
- Weiner, B. (1995). Inferences of responsibility and social motivation. *Advances in Experimental Psychology*, 27, 1-47.

Weiner, B., Graham, S., & Chandler, C. (1982). Pity, anger, and guilt: An attributional analysis.

*Personality and Social Psychology Bulletin*, 8(20), 226-232.

Weiner, B., Perry, R. P., & Magnusson, J. (1988). An attributional analysis of reactions to

stigmas. *Journal of Personality and Social Psychology*, 55(5), 738-748.

Weiner, B., Russell, D., & Lerman, D. (1979). The cognition-emotion process in achievement-

related contexts. *Journal of Personality and Social Psychology*, 37(7), 1211-1220.



## Appendix A

The Emotional Reactions Questionnaire (Angermeyer and Matschinger, 2003a)

1. I feel the need to help people with a brain injury.
2. When I think about people with a brain injury, I feel uncomfortable/uneasy.
3. When I think about people with a brain injury, I feel angry.
4. I feel pity toward people with a brain injury.
5. I feel annoyed/irritated by people with a brain injury.
6. People with a brain injury scare me.
7. I feel like laughing at people with a brain injury and I sometimes would like to make fun of them.
8. I feel sympathy/empathy for people with a brain injury.
9. People with a brain injury make me feel insecure.

A higher score on the ERQ is indicative of a higher level of prejudice.

Response format: 5-point Likert scale, 1 = Agree, 5 = Disagree

## Appendix B

## Social Distance Scale by Link et al. (1987)

1. How would you feel about renting a room in your home to someone like Jim Johnson?
2. How about as a worker on the same job as someone like Jim Johnson?
3. How would you feel having someone like Jim Johnson as a neighbor?
4. How about as the caretaker of your children for a couple of hours?
5. How about having your children marry someone like Jim Johnson?
6. How would you feel about introducing Jim Johnson to a young woman you are friendly with?
7. How would you feel about recommending someone like Jim Johnson for a job working for a friend of yours?

Response format was 0 = definitely willing, 1 = probably willing, 2 = probably unwilling, 3 = definitely unwilling.

## Appendix C

## Perceived Dangerousness Scale (Link et al., 1987)

1. If a group of clients who had suffered moderate brain injuries lived nearby, I would not allow my children to go to the movie theatre alone. (Reversed Scoring)
2. If an individual with a moderate brain injury applied for a teaching position at a primary school and was qualified for the job I would recommend hiring him or her
3. One important thing about brain injury sufferers is that you cannot tell what they will do from one minute to the next. (Reversed Scoring)
4. If I know a person who has suffered a brain injury, I will be less likely to trust him. (Reversed Scoring)
5. The main purpose of mental hospitals should be to protect the public from mentally ill and people with a brain injury. (Reversed Scoring)
6. If an individual with a brain injury lived nearby I would not hesitate to allow young children under my care to play on the sidewalk.
7. Although some brain injured people may seem alright it is dangerous to forget for a moment that they suffered a brain injury. (Reversed Scoring)
8. There should be a law forbidding a former brain injury individual the right to obtain a hunting license. (Reversed Scoring)

Response format 0 = strongly agree, 1 = agree, 2 = not sure but probably agree, 3 = not sure but probably disagree, 4 = disagree, 5 = strongly disagree.

## Appendix D

## Disability Questionnaire - Affective Reactions Subscale (Copeland et al., 2010)

## Factor 1 – Negative Affective Reactions

1. Working with an individual with a brain injury would increase my workload.
2. I would find it difficult to supervise a person with a brain injury
3. I am comfortable with the idea of working with a person with a brain injury
4. Working with a person with a brain injury will slow down the rate at which I complete work.
5. Workers with a brain injury would require high levels of supervision.
6. It would be difficult to be supervised by a person with a brain injury.
7. I am uncomfortable with the idea of sharing my workspace with a person with a brain injury
8. I would not want to work on a work site where workers with a brain injury were operating machinery.
9. If I was on a work team with a co-worker with a brain injury, I would not want my performance rewards to depend on the performance of the worker with a brain injury

## Factor 2 - Positive Affective Reactions

10. I would be willing to cover work for a co-worker with a brain injury who had to miss work because of their brain injury
11. People with brain injuries can handle the stresses of daily work life

12. I wouldn't mind having my job redesigned to accommodate a co-worker with a brain injury

13. I trust that workers with brain injuries who are hired would be able to perform the necessary tasks of the job

14. It is important to have workers with a brain injury in the workforce

15. I wouldn't mind taking the time to set up the workspace for a person with a brain injury

16. It would not be difficult to take directions from a worker with a brain injury

17. All workers, including workers with brain injuries, should be evaluated on the same performance standards

Response format: 7-point Likert scale, 1 = Completely agree, 7 = Complete disagree