

PSYCHOLOGY MISCELLANY

No.57 - March 2014

Kevin Brewer

ISSN: 1754-2200

Orsett Psychological Services
PO Box 179
Grays
Essex
RM16 3EW
UK

orsettpsychologicalservices@phonecoop.coop

This document is produced under two principles:

1. All work is sourced to the original authors. Most of the images are available in the public domain (mainly from http://commons.wikimedia.org/wiki/Main_Page). You are free to use this document, but, please, quote the source (Kevin Brewer 2014) and do not claim it as your own work.

This work is licensed under the Creative Commons Attribution (by) 3.0 License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/3.0/> or send a letter to Creative Commons, 171 2nd Street, Suite 300, San Francisco, California, 94105, USA.

2. Details of the author are included so that the level of expertise of the writer can be assessed. This compares to documents which are not named and it is not possible to tell if the writer has any knowledge about their subject.

Kevin Brewer BSocSc, MSc

An independent academic psychologist, based in England, who has written extensively on different areas of psychology with an emphasis on the critical stance towards traditional ideas.

A complete listing of his writings at <http://kmbpsychology.jottit.com>.

CONTENTS

	Page Number
1. POST-TRAUMATIC STRESS DISORDER IN DIFFERENT SITUATIONS	4
1.1. Introduction	
1.2. Natural disasters	
1.2.1. Older adults	
1.3. Human caused events	
1.4. Motor vehicle accidents	
1.4.1. Psychological help	
1.4.2. Treatment responders	
1.5. References	
2. A SELECTION OF STUDIES ON THE EFFECT OF THE USE OF ONLINE SOCIAL NETWORK SITES	19
2.1. Introduction	
2.1.2. Digital natives	
2.2. Positive effect	
2.3. Negative effect	
2.4. Variable effect	
2.5. References	

1. POST-TRAUMATIC STRESS DISORDER IN DIFFERENT SITUATIONS

- 1.1. Introduction
- 1.2. Natural disasters
 - 1.2.1. Older adults
- 1.3. Human caused events
- 1.4. Motor vehicle accidents
 - 1.4.1. Psychological help
 - 1.4.2. Treatment responders
- 1.5. References

1.1. INTRODUCTION

About one in six Americans have a lifetime exposure to a natural or human-generated disaster, and experiencing a natural disaster leads to post-traumatic stress disorder (PTSD) symptoms in between 5-60% of adults (depending on the study) (Galea et al 2005).

Galea et al (2005) reviewed studies of PTSD after disasters from 1980 (when PTSD was first included in DSM-III¹) and 2013, and covering events from the 1963 landslide and flood in north-east Italy² to September 11th 2001 in New York City. Only studies explicitly assessing PTSD and/or using the DSM criteria were included.

Galea et al (2005) summarised the main findings of the studies:

i) Human-made or technological disasters (eg: plane crash; shooting).

a) Adult disaster victims - 30-60% PTSD prevalence in first three months and 25-75% in first year post-event.

b) Rescue workers - 5-40% in year after event.

c) General population - 1-11% in years afterwards.

d) Children - limited and inconsistent studies (eg: around 40% of children in month after 1984 sniper shooting on school playground in Los Angeles; Pynoos et al 1987).

e) Risk factors for PTSD - eg: being female, having

¹ DSM = "Diagnostic and Statistical Manual of Mental Disorders" produced by the American Psychiatric Association (APA).

² Many studies are retrospective - eg: those who have PTSD now and work backwards.

history of trauma, degree of exposure, and lack of social support.

ii) Natural disasters.

a) Lower PTSD prevalence than in home-made disasters (but this may be due to methodological differences in studies; Galea et al 2005).

b) Similar risk factors for PTSD.

Galea et al (2005) outlined four key methodological issues:

1. Definition and assessment of exposure to a disaster - ie: who are the victims? This could include those who narrowly escaped death, those injured (to varying degrees), family members of the deceased and injured, and witnesses of the event (in the geographical vicinity, or even, nowadays, via mass media coverage).

2. How PTSD is assessed - this includes the criteria to diagnose used (which varies between DSM-III, DSM-IIIR, and DSM-IV; table 1.1³), and the questionnaire or interview used by the clinician to make the diagnosis. Furthermore, which clinician is involved (eg: psychiatrist or trained layperson)?

CRITERION	DSM-III	DSM-IIIR	DSM-IV
B - re-experiencing symptoms	≥1 of 3	≥1 of 4	≥1 of 5
C - numbing symptoms	≥1 of 3	≥1 of 7	≥1 of 7
D - miscellaneous symptoms	≥2 of 6	≥2 of 6	≥2 of 5

(Information from Galea et al 2005 web table 1)

Table 1. - Key differences in diagnostic criteria for PTSD.

3. Assessment of the prevalence and incidence of PTSD - prevalence is the number of cases whereas incidence is the number of new cases. Most studies have no pre-disaster measures, and so PTSD post-event will always be prevalence. In other words, the researchers tend not to know if an individual was suffering from PTSD after other events, and this could "muddy the waters" in

³ DSM-III (3rd edition) (1980), DSM-IIIR (3rd edition revised) (1987), and DSM-IV (4th edition) (1994).

diagnosing post-disaster PTSD. The length of follow-up also varies between studies.

4. The comparability of studies - studies use different designs and statistical analysis. For example, one study reports a gender difference in PTSD, and another study does not. Is the finding of the latter study because there is no gender difference (and thus contradicts the first study) or because of the difference in statistical analysis, for example?

Comparability is difficult because it can be like comparing oranges and lemons. For example, how comparable are the findings of PTSD prevalence in a study of a shooting in Texas and one of Australian bush firefighters (Galea et al 2005)?

Furthermore, most studies are cross-sectional with few longitudinal ones.

Galea et al (2005) concluded their review: "The course of PTSD in the intermediate and long term after disasters remains largely unexplored. This is undoubtedly due to the difficulties inherent in establishing long-term cohort studies that have adequate statistical power to detect different trajectories of PTSD. However, the potential of such research should not be underestimated. While post-disaster PTSD may be associated with decreased quality of life and decreased productivity..., it is likely that most early-onset PTSD after a disaster will eventually resolve. As such, understanding who is at risk for long-term PTSD after disasters and exploring different PTSD trajectories, such as lapsing-relapsing patterns or late-onset PTSD, is critical" (p85).

1.2. NATURAL DISASTERS

The quantity of stressors experienced during the disaster is important (eg: property loss and damage) as well as post-disaster ones (eg: disrupted employment; relationship problems). Thus, immediate stressors can predict long-term stressors (and psychological problems)⁴. For example, property damage (immediate stressor) leads to residential instability/relocation (long-term stressor). The long-term stressors distinguish greater PTSD symptoms in the long-term more than just exposure to the disaster.

Lowe et al (2013) found support for this idea in their study of 448 Hurricane Ike survivors in the USA. This hurricane made landfall over Galveston, Texas, on

⁴ Hobfoll (1989) called this situation, "loss spirals".

the 13th of September 2008 (figure 1.1). Survivors were interviewed 2-5 months (wave 1), 5-9 months (wave 2), and 14-18 months (wave 3) post-disaster ⁵.



(Source: US Coast Guard 13/9/2008; in public domain)

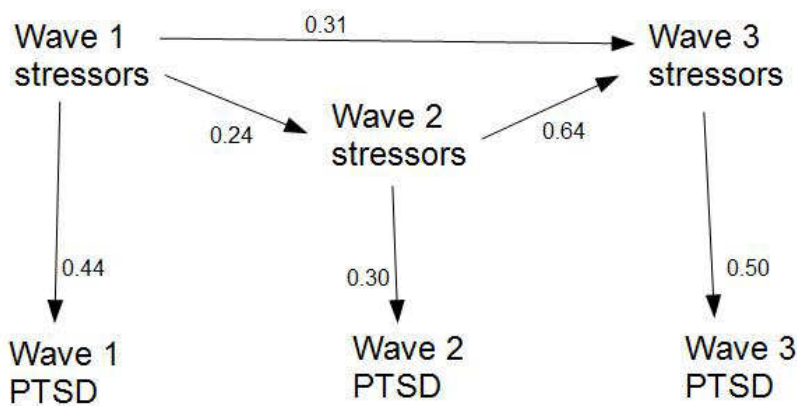
Figure 1.1 - Aftermath of Hurricane Ike on Galveston Island near Bolivar Point.

Wave 1 focused on seven immediate stressors (eg: displacement for over one week; loss or damage to sentimental possessions; financial loss), while waves 2 and 3 concentrated on twelve long-term stressors (eg: lost job; divorce or break-up; serious financial problems; serious legal problems). The PTSD Checklist-Specific Version (PCL-S) (Blanchard et al 1996) was used as an outcome measure. It has seventeen items which were adapted for the study (eg: "repeated, disturbing thoughts or memories of Hurricane Ike"), and each scored from 1 (not at all) to 5 (extremely). The minimum score was seventeen (no PTSD) and the maximum was 85 (severe PTSD). The mean scores in the study were in the mid-20s (eg: 26.52 - wave 1) with the full range of individual scores.

More immediate stressors was associated with more

⁵ Sonis et al (2006) highlighted two key issues in the study of the long-term effects of natural disasters:
i) High drop-out/attrition rate in longitudinal studies.
ii) How to distinguish internal sources of change over time (eg: natural tendency to recover from stressful events) from external factors that predict PTSD severity (eg: previous trauma; social support).

long-term stressors (significant positive correlations - waves 1 and 2 = 0.24; waves 1 and 3 = 0.31). Immediate stressors were significantly linked to immediate PTSD symptoms, but not PTSD symptoms at waves 2 and 3. Long-term stressors were significantly associated with PTSD symptoms at waves 2 and 3 (figure 1.2). Immediate stressors at the time of the disaster led to longer term psychological problems via the mechanism of long-term stressors. In other words, disaster-related stress that is quickly resolved is less likely to cause long-term psychological problems compared to stress that continues. For example, an individual whose property is damaged in a way that can be swiftly repaired (and normal life resumed) will suffer less psychologically in the long-term compared to an individual whose property damage leads to relocation, say.



(Data from Lowe et al 2013 table 1 p758)

Figure 1.2 - Significant correlations between stressors and PTSD symptoms.

Lowe et al (2013) noted the implications of their findings - "...resources that connect survivors with permanent housing options or assist survivors in facilitating repair of their pre-disaster homes, as well as job training and placement programmes for unemployed survivors, would promote longer-term psychological well-being..." (p760).

1.2.1. Older Adults

What about the effects of the experience of the natural disaster on older adults? The studies have conflicting findings. Some of them find no difference in the level of PTSD symptoms between older and younger adults, while prior experiences may help older

individuals (ie: less symptoms) or cumulative stress over the lifetime leads to higher PTSD levels (Bei et al 2013).

Flooding is a commonly experienced natural disaster. Bei et al (2013) surveyed 274 over 60s in rural Victoria and New South Wales in Australia where there were floods in 2010-11. These individuals were part of a general survey of mental health in rural areas of Australia, and this gave the pre-flood (baseline) measures. A number of different questionnaires were completed post-flood.

For analysis purposes the respondents were divided into three groups - personally affected (PA) by flood (n = 58), not personally affected (NPA), and indirectly personally affected (IPA) (the latter two groups were combined subsequently). The PA group reported significantly more PTSD symptoms (eg: intrusive thoughts) (but only 15% were clinically diagnosable with PTSD). The likelihood of PTSD symptoms was influenced by a number of factors (table 1.2).

FACTOR	INCREASED PTSD	DECREASED PTSD
Length of flood exposure	Increased time	Less time
Social support	Lacking	Have
Stoicism (eg: suppress emotions)	More	Less
Coping style	Venting Distraction	Acceptance Positive reframing Humour use
Previous flood exposure	No relationship	No relationship
Financial loss	Limited effect	Limited effect
Daily routine	Disrupted; evacuated	Not disrupted

Table 1.2 - Factors influencing PTSD symptoms after flood exposure.

1.3. HUMAN CAUSED EVENTS

On 22nd July 2011, seventy-seven people were killed in Norway by a bombing in Oslo and a mass shooting on the island of Utoya. This has been called the "Oslo Terror", and defined as a natural disaster (Nordanger et al 2013). Experiencing such events (even indirectly - ie: "psychological proximity") can produce general effects, like changes in worldview and in the sense of safety, as well as PTSD symptoms.

Nordanger et al (2013) investigated the psychological impact of the event seven months later

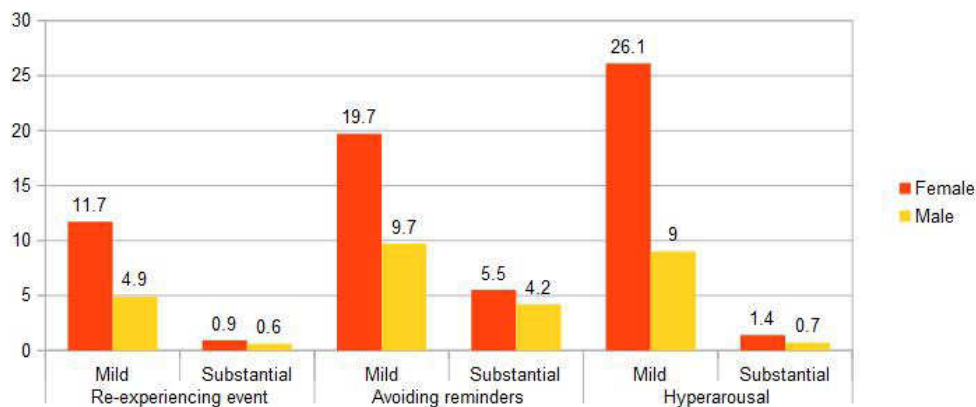
among 10 220 Norwegian 17-19 year-olds (the same age as many of the victims on the island of Utoya).

Overall, 19% had been themselves or knew someone who had been in the geographical vicinity of the events. Survivors were eleven times more likely to report substantial distress than those not in the vicinity, and the respondents with a friend or family member who had died were 6-9 times more likely.

In the total sample, 10.8% of respondents perceived the event as substantially threatening to their lives or to someone close to them (females significantly more than males, and children of immigrant parents more than of native-born parents). Around 14% said that their worldview had changed substantial, and two-thirds a little or some (females significantly more than males).

In terms of PTSD, 4.9% of the respondents reported one of three symptoms (re-experiencing the event; avoiding reminders; hyperarousal) almost every day, and 0.4% all three symptoms ⁶ (females and children of immigrants were significantly higher) (figure 1.3).

Nordanger et al (2013) concluded: "Results indicate that the terror events made a deep impression on Norwegian adolescents, with girls in general and immigrants in particular as the most affected, but seemingly without causing many posttraumatic problems in terms of PTSD symptoms" (p684).



(Mild = 1-2 times per month or 1-2 times per week; Substantial = 3-4 times per week or every day/almost every day)

(Data from Nordanger et al 2013 table 4 p682)

Figure 1.3 - Percentage of respondents reporting mild or substantial to three symptoms of PTSD.

⁶ This compares to 10.6% of 9-21 year-olds in New York City six months after 9/11 (Hoven et al 2005), and 11% of Londoners seven months after the 7/7 bombings in 2005 (Rubin et al 2007).

Psychological distress caused by fleeing a country as a refugee has long-term consequences.

Vaage et al (2010) reported follow-up interviews 23 years after a group of Vietnamese refugees settled in Norway. One hundred and forty-five of them were interviewed soon after arrival (T1 - 1982), then in 1985 (T2; n = 131), and now in 2005-6 (T3; n = 80). A normative sample of 973 Norwegians were used as a comparison group.

The refugees showed a significant decline in psychological distress over the study period, but 18% of them were still above the cut-off point for psychological problems in 2005-6 (compared to 7% of the normative sample). Higher levels of psychological distress at T1 and T2 predicted it at T3. The researchers suggested that this early psychological intervention on arrival for refugees ⁷.

1.4. MOTOR VEHICLE ACCIDENTS

Survivors of motor vehicle crashes (MVCs) ⁸ who end in accident and emergency (A&E) departments are vulnerable to developing PTSD symptoms (eg: 5-20% of 596 survivors in Hong Kong six months later; Wu and Cheung 2006; figure 1.4) ^{9 10}.

Blanchard and Veazey (2001) listed four "primary psychiatric disorders" as a consequence of experiencing a MVC - PTSD, acute stress disorder (ASD) ¹¹, major depression and other mood disorders ¹², and anxiety (including driving phobia) ¹³.

The prospective follow-up study is the best method, according to Blanchard and Veazey (2001). This involves recruiting individuals soon after a MVC, and following them forward to see who develops psychological problems.

⁷ Studies of refugees have tended to focus upon the traumatic experiences and their psychological effects, but Rosbrook and Schweitzer (2010) argued that the meaning of the loss of home should also be included. They interviewed nine refugees from Burma (of Karen and Chin ethnicity) living in Brisbane, Australia. Based on qualitative interviews, the experience of the loss of home was elicited under three themes - "home as the experience of a psychological space of safety and retreat; home as the socio-emotional space of relatedness to family; and home as geographical-emotional landscape" (p159).

⁸ Also called road traffic accidents (RTAs), and includes pedestrians involved.

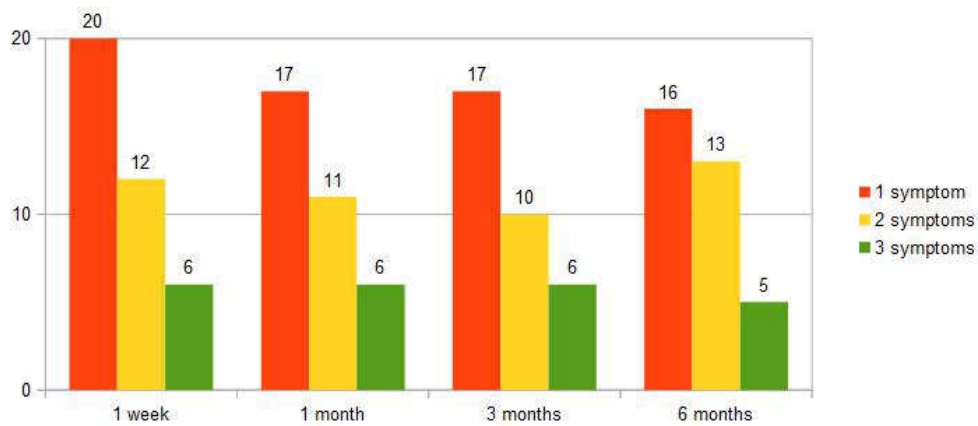
⁹ 5% of survivors had three symptoms (intrusion into thoughts by event memories; avoiding reminders; hyperarousal), and 20% had at least of the symptoms. The symptoms of intrusion and hyperarousal declined over time, but avoidance did not.

¹⁰ Those who developed PTSD was predicted from variables like being female, having pre-MVC psychological problems, perceived event as life-threatening, and severe injury.

¹¹ Eg: 10-15% of individuals in a MVC (Blanchard and Veazey 2001).

¹² Eg: around 20% of survivors at one-year later (Koren et al 1999).

¹³ Eg: 62% of 158 survivors had some level of anxiety related to driving at 12-18 months later (Blanchard and Hickling 1997).



(Data from Wu and Cheung 2006 table 1 p926)

Figure 1.4 - Percentage of MVC survivors reporting one to three PTSD symptoms at four points post-event.

This is opposed to a retrospective study which takes individuals with PTSD, say, and looks back to see what happened in their past (figure 1.5).

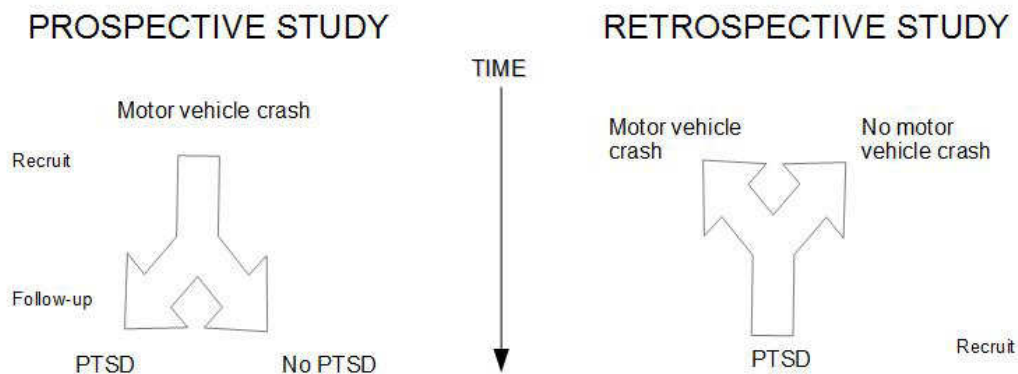


Figure 1.5 - Prospective and retrospective study of MVC and PTSD.

In prospective studies, individuals are usually recruited in hospital, and then followed up six or twelve months later (table 1.3).

Based on four prospective studies in 1999-2000, Blanchard and Veazey (2001) calculated a mean prevalence rate of PTSD three months post-MVC of around 25%, about 18% at six months, and 15% at one year. Among children and adolescents, around one-third of A&E department attendees in the UK 3-11 weeks post-MVC, for example (Stallard 1997).

STUDY	NUMBER OF PARTICIPANTS	COUNTRY	BASELINE - TIME AFTER MVC	HOW RECRUITED	FOLLOW-UP PERIOD (MTHS)
Ursano et al (1999)	122	USA	14-21 days	A&E depts; police referrals	1, 3, 6, 9 & 12
Koren et al (1999)	99	Israel	1 week	Hospital	1, 3, 6 & 12
Harvey & Bryant (1999)	92	Australia	1 month	Hospital	1, 6 & 24

Table 1.3 - Three prospective studies of MVC survivors.

1.4.1. Psychological Help

So, is it a good idea to provide psychological help to search individuals in hospital ¹⁴ ? Providing self-help booklets to prevent the development of PTSD, for example, tends not to be that effective (eg: Turpin et al 2005).

Turpin et al (2005) recruited 142 A&E patients at the Northern General Hospital in Sheffield, England, between August and November 2001, who had attended for a MVC, occupational injury, or assault. They were randomly given a self-help booklet or not. It was called "Responses to traumatic injury", and described the physiological, psychological, and behavioural effects of such injury while encouraging readers to seek emotional support.

Self-reported measures of PTSD were collected two weeks after hospital attendance and before the booklet given (baseline), and 10-12 and 24-26 weeks post-hospital.

There was no difference in the reduction of PTSD symptoms from baseline to follow-up depending on whether the self-help booklet had been given. The intervention group had a mean score reduction of 2.22 and the control group 1.82 over the whole study. But the controls were significantly less depressed at follow-up.

There are certain limitations with this study:

a) Less than 10% of those eligible (2818) agreed to participate. Participants were more likely to be injured in MVCs, while non-participants were male and younger, and received occupational injury.

b) High drop-out - only 100 participants completed the whole study. The drop-outs were more likely to be female.

c) Content of eight-page booklet limited. The mean

¹⁴ Sometimes called "psychological debriefing".

rating of usefulness was 2.98 out of 5 with two-thirds of readers saying that it was useful.

d) Three different group of injuries studied altogether.

e) All contact was postal including completion of questionnaires.

Turpin et al (2005), however, stated: "it is difficult to conclude that the trial sample was not generally representative of A&E samples" (p80). Furthermore, they said: "Before we finally conclude the ineffectiveness of information provision, we must consider some further questions... [for example] that early interventions ought to be targeted at those patients who are unable to recover naturally from trauma" (p80).

Brief-cognitive behavioural therapy (B-CBT) (eg: four weekly sessions) can be effective, though (Wu et al 2014). This study recruited participants at a hospital in Hong Kong, China. Sixty survivors of MVCs, with at least a moderate level of distress, but no pre-existing other psychiatric problems, were randomised to B-CBT or a four-week structured self-help programme booklet (SHP). The B-CBT and SHP were based on educating participants about psychological reactions after MVCs and encouraging them to think about the experience (using the principles of exposure and habituation). Self-reported outcome measures were taken three and six months after the MVC ¹⁵.

The B-CBT group reported greater improvements in symptoms than the SHP group. Put another way, the B-CBT group were less likely to show PTSD symptoms at three and six months post-MVC.

This study has a number of limitations:

- One hospital A&E department only.
- Self-reported measures (completed as postal questionnaires) and no formal diagnosis of PTSD.
- Only four sessions of CBT (or four weeks of SHP).
- No control group with no treatment.
- Small sample.
- Comparability of two treatments - ie: more resources

¹⁵ Chinese versions of the Hospital Anxiety and Depression Scale (HADS) and the Impact of Event Scale-Revised (IES-R).

invested in B-CBT, or compliance to SHP (46% of group reported completing all exercises).

- No details of symptoms between follow-up points (ie: between three and six months).
- Length of follow-up could be longer.
- Drop-out rate - at six months: 35% of B-CBT group vs 23% of SHP group.
- In the B-CBT group, only 14 participants (48%) completed all four sessions.

Blanchard and Veazey (2001) felt that "relatively intensive CBT, either early or later, is very effective in alleviating ASD and PTSD. Very brief treatment (1 hour) does not help, and may be detrimental" (p146).

1.4.2. Treatment Responders

Some individuals respond to treatment while others do not. So it is important to establish the reasons for the difference. One recent suggestion is epigenetic differences.

Epigenetics is where environmental events can alter genes through biochemical processes (eg: DNA methylation)^{16 17}. For example, maternal care by rats affects genes involved in brain development, and consequently the physiological stress reaction (known as the hypothalamic-pituitary-adrenal; HPA axis). In other words, a lack of care (or early adversity) will indirectly affect the later response to stress. This seems to be the case for humans as well. For example, adult offspring of Holocaust survivors had higher rates of PTSD than the general population (Yehuda et al 1998).

Early experience of adversity is known to be a risk factor for developing PTSD after a traumatic adult experience, and epigenetic processes may be able to explain the physiological basis. The childhood experiences sensitise the individual to stress (eg: through cortisol levels) (Yehuda et al 2013).

Lower cortisol is linked to PTSD. Holocaust survivors with PTSD and their children had lower cortisol levels (Yehuda et al 2002). But cortisol is involved in

¹⁶ DNA methylation is where a chemical sub-unit called a methyl group adds itself to the four bases (or "letters") of DNA.

¹⁷ "Plasticity of the epigenome appears to constitute a molecular mechanism whereby genetic predispositions may be influenced by environmental exposures resulting in sustained alterations in gene expression and protein synthesis" (Yehuda et al 2013).

triggering the liver to convert stored protein. Individuals in concentration camps were malnourished as well as traumatised (Yehuda et al 2009). It seems that "the survivors adjusted their metabolism to suit malnutrition, and then passed on that state to their offspring, probably through epigenetic changes to their genes. A vulnerability to PTSD may have been an undesirable byproduct of that adjustment, or a useful adaptation to an environment that was both lacking in food and dangerous" (Spinney 2010 p49).

Offspring of Holocaust survivors may have been influenced by stories of their parents' experiences as much as epigenetics. Yehuda et al (2005) found thirty-eight pregnant women who were at or near the World Trade Centre during the attacks on September 11th 2001. They had lower cortisol levels, and so did their nine month-olds. "Unlike the children of Holocaust survivors, the researchers could rule out storytelling as a mechanism. Whatever was happening was happening very early, in pre-verbal infants" (Spinney 2010 p48).

Yet such individuals do recover from PTSD. Is it possible that treatment for PTSD can produce epigenetic changes that explain the recovery? Yehuda et al (2013) found some evidence for this idea in a study of sixteen combat veterans from Vietnam, Iraq, or Afghanistan attending the James J. Peters Bronx VA Medical Center in New York, USA. All the individuals, diagnosed with PTSD, received twelve weeks of prolonged exposure therapy. This involves focusing on the traumatic event with the assumption that the emotional effect will decline with prolonged exposure. Half of the sample responded to the treatment and were no longer diagnosed with PTSD (as determined by clinical interview and self-reported measures), and half of the participants were non-responders. Based on blood samples, differences in two genes related to cortisol levels¹⁸ were found between the two groups, both in terms of who would respond (pre-treatment) and who had responded (post-treatment).

Yehuda et al (2013) felt that "different genes may be associated with prognosis and symptom state". One gene predicted treatment outcome, but was not altered by treatment, while the other gene did not predict treatment outcome, but was altered in responders post-treatment. Most importantly, say the authors, there had been "an epigenetic alteration in association with treatment response".

¹⁸ Cytosine methylation of glucocorticoid related genes (technically).

1.5. REFERENCES

- Bei, B et al (2013) A prospective study of the impact of floods on the mental and physical health of older adults Aging and Mental Health 17, 8, 992-1002
- Blanchard, E.B & Veazey, C.H (2001) Mental disorders resulting from road traffic accidents Current Opinion in Psychiatry 14, 143-147
- Blanchard, E.B & Hickling, E.J (1997) After the Crash: Assessment and Treatment of Motor Vehicle Accident Survivors Washington DC: American Psychological Association
- Blanchard, E.B et al (1996) Psychometric properties of the PTSD Checklist (PCL) Behaviour Research and Therapy 34, 669-673
- Galea, S et al (2005) The epidemiology of post-traumatic stress disorder after disasters Epidemiologic Reviews 27, 78-91
- Harvey, A.G & Bryant, R.A (1999) The relationship between acute stress disorder and post-traumatic stress disorder: A two-year prospective evaluation Journal of Consulting and Clinical Psychology 67, 985-988
- Hobfoll, S.E (1989) Conservation of resources: A new attempt at conceptualising stress American Psychologist 44, 513-524
- Hoven, C.W et al (2005) Psychopathology among New York City public school children six months after September 11 Archives of General Psychiatry 62, 545-552
- Koren, D et al (1999) Acute stress response and post-traumatic stress disorder in traffic accident victims: A one-year prospective, follow-up study American Journal of Psychiatry 156, 367-373
- Lowe, S.R et al (2013) Immediate and long-term stressors and the mental health of Hurricane Ike survivors Journal of Traumatic Stress 26, 753-761
- Nordanger, D.O et al (2013) Post-traumatic responses to the July 22, 2011 Oslo Terror among Norwegian high school students Journal of Traumatic Stress 26, 679-685
- Pynoos, R.S et al (1987) Life threat and post-traumatic stress in school age children Archives of General Psychiatry 44, 1057-1063
- Rosbrook, B & Schweitzer, R.D (2010) The meaning of home for Karen and Chin refugees from Burma: An interpretative phenomenological approach European Journal of Psychotherapy and Counselling 12, 2, 159-172
- Rubin, G.J et al (2007) Enduring consequences of terrorism: Seven-month follow-up survey of reactions to the bombings in London on July 7, 2005 British Journal of Psychiatry 190, 350-356
- Sonis, J et al (2006) Special section: Innovations in trauma research methods, 2005 Journal of Traumatic Stress 19, 6, 755-756
- Spinney, L (2010) Born sacred New Scientist 27/11, 47-49
- Stallard, P (1998) The prevalence of PTSD in children involved in road traffic accident British Medical Journal 317, 1619-1623
- Turpin, G et al (2005) Effectiveness of providing self-help information following acute traumatic injury: Randomised controlled trial British Journal of Psychiatry 187, 76-82
- Ursano, R.J et al (1999) Acute and chronic post-traumatic stress disorder in motor vehicle accident victims American Journal of Psychiatry 156, 589-595
- Vaage, A.B et al (2010) Long-term mental health of Vietnamese refugees in the aftermath of trauma British Journal of Psychiatry 196, 122-125

Wu, K.K & Cheung, M.W (2006) Post-traumatic stress after motor vehicle accident: A six-month follow-up study utilising latent growth models analysis Journal of Traumatic Stress 19, 923-936

Wu, K.K et al (2014) A randomised controlled trial of the effectiveness of brief-CBT for patients with symptoms of post-traumatic stress following a motor vehicle crash Behavioural and Cognitive Psychotherapy 42, 31-47

Yehuda, R et al (1998) Vulnerability to post-traumatic stress disorder in adult offspring of Holocaust survivors American Journal of Psychiatry 155, 9, 1163-1171

Yehuda, R et al (2002) Cortisol levels in adult offspring of Holocaust survivors: Relation to PTSD symptom severity in the parent and child Psychoneuroendocrinology 27, 1, 171-180

Yehuda, R et al (2005) Transgenerational effects of post-traumatic stress disorder in babies of mothers exposed to the World Trade Centre attacks during pregnancy Journal of Clinical Endocrinology and Metabolism 90, 7, 4115-4118

Yehuda, R et al (2009) Enduring effects of severe developmental adversity, including nutritional deprivation, on cortisol metabolism in ageing Holocaust survivors Journal of Psychiatric Research 43, 9, 877-883

Yehuda, R et al (2013) Epigenetic biomarkers as predictors and correlates of symptom improvement following psychotherapy in combat veterans with PTSD Frontiers in Psychiatry 4, article 118

2. A SELECTION OF STUDIES ON THE EFFECT OF THE USE OF ONLINE SOCIAL NETWORK SITES

- 2.1. Introduction
 - 2.1.2. Digital natives
- 2.2. Positive effect
- 2.3. Negative effect
- 2.4. Variable effect
- 2.5. References

2.1. INTRODUCTION

Online social network sites (SNS), particularly Facebook¹⁹, are an increasingly popular aspect of Internet use in the 21st century²⁰. Kross et al (2013) noted: "Given the frequency of Facebook usage, identifying how interacting with this technology influences subjective well-being represents a basic research challenge that has important practical implications"²¹.

Wilson et al (2012) offered three reasons why social scientists should study Facebook:

- A new opportunity to study human behaviours (eg: making friends).
- The importance of Facebook (and SNS) in everyday life.
- Concerns about privacy and information disclosure.

Wilson et al (2012) conducted the first major review of academic articles about Facebook (up to the end of 2010). Four hundred and twelve articles were found, and they were divided into five categories:

i) Description of Facebook users (24% of articles) - eg: average number of "friends"; ethnicity of users.

For example, researchers in Italy with Facebook's own research team examined 721 million users' profiles (eg: Backstrom et al 2011).

¹⁹ Facebook began in February 2004 at Harvard University by Mark Zuckerberg (Wilson et al 2012).

²⁰ The number of users is in the 100 millions, if not more, and the amount of shared content per day is over four billion items (Wilson et al 2012).

²¹ Valenzuela et al (2009) observed that: "Moral panic is a common reaction to new forms of communication... The advent of television spawned fears of mass escapism... In the 1990s, critics held the diffusion of Internet as evidence of individuals' increasing alienation from society and public life... The story with Facebook, MySpace, and other social network sites (SNSs) is not any different. Unsafe disclosure of information, cyberbullies, addiction, risky behaviour, and contact with dangerous communities are popular concerns raised in the mainstream media about the use of SNSs..." (p875).

ii) Motivations for Facebook use (19%) - eg: keeping in touch with friends; relieve boredom.

For example, a study of 1193 users found that active viewing (eg: leaving wall posts) reduced feelings of loneliness more than passive viewing (eg: viewing photographs) (Burke et al 2010).

iii) Identity presentation on Facebook (12%) - ie: is the Facebook profile an accurate picture of the individual?

Individuals can manage their Facebook self-presentation by editing messages, carefully selecting photographs, highlighting positive attributes, and linking themselves to desirable others, symbols, and objects (Chou and Edge 2012).

Wilson et al (2012) noted that "although some self-enhancement may occur, profile owners are generally portraying a fairly accurate representation of their offline identity" (p210)²². For example, Back et al (2010) found a positive correlation between the impressions of strangers from rating the Facebook profile, and ratings of the individual by offline friends and acquaintances for 236 17-22 year-olds in the USA and Germany²³.

iv) Social interactions on Facebook (27%) - including between individuals, and between organisations and individuals (eg: business-customers).

v) Privacy and information disclosure (18%).

2.1.2. Digital Natives

Individuals born roughly between 1980 and 1994 have been called "digital natives" (Prensky 2001) or the "Net generation" (Tapscott 1998) as they had grown up with information and communication technology (ICT) and SNS²⁴. At the same time, Arnett (2004) has referred to "emerging adulthood" for the period 18-29 years old (where settling down and parenthood is postponed) as "a time of

²² Two theories exist in relation to this issue. The idealised virtual identity hypothesis sees online profiles as having little relation to actual personality as they are ideal versions of the individual. But the extended real life hypothesis argues that profiles are reflections of the real personality because others will spot exaggerations etc (Back et al 2010).

²³ The rating by four well-acquainted offline friends was the accuracy criterion. Accuracy was highest for the personality characteristics of extraversion, and openness, and lowest for neuroticism.

²⁴ The consequences of the growth of the Internet has been hailed as both positive and negative. For example, in the latter case, the idea that the availability of information through search engines is reducing intelligence as summed up by Carr's (2008) article, "is Google making us stupid?". Though he does admit that all new technologies have been viewed negatively - eg: Plato in Ancient Greece feared that the development of writing would lead to the end of memory.

exploration and instability, a self-focused age, and an age of possibilities" (quoted in Sheldon 2009). This allows time for such individuals to spend on the many "friends" on Facebook, for example.

Online relationships have been described as "hyperpersonal" (Walther 1996) because they feel more intimate than face-to-face ones. Lacking non-verbal cues, online relationships place the emphasis on self-disclosure²⁵ and social exchange of information to develop intimacy. But individuals must trust the receiver in order to self-disclose, and trust is based on predictability of the receiver's behaviour. Sheldon (2009) found that "the more Facebook users talk, the less uncertainty they experience... and are able to like each other more. The more certain they are about their behaviour, the more they trust them, and the more they trust them, the more they disclose to them"²⁶.

This finding was derived from 243 undergraduates at the Louisiana State University, USA, who completed measures of social attraction, self-disclosure, predictability of other's behaviour (eg: "I am very uncertain about what this person is really like"), and trust related to Facebook interactions²⁷.

The increasing amount of time using the Internet has led to interest in the idea of "Internet addiction". One way of assessing this behaviour is with a questionnaire like the Internet-Related Experiences Questionnaire (IREQ). This has ten items (with four answer options in each case: never - quite a lot) covering intrapersonal and interpersonal conflicts. Examples of the six items related to the former include: "When you are in trouble, does getting online help you to escape from them?" and "If someone disturbs you while you are connected, do you get angry or irritated?". Examples of the interpersonal conflicts include: "How often do you make new friends in the Internet?" and "Do you think your academic and professional performance have been negatively affected due to Internet use?" (Casas et al 2013). A higher score is a sign of greater risk of addiction.

Casas et al (2013) found an association between higher interpersonal IREQ sub-scale scores of Spanish teenagers and positive self-esteem²⁸. The researchers said: "It is possible that a positive outlook and high self-esteem may be related to greater presence in social

²⁵ Self-disclosure can be based on depth (intimacy) and amount (breadth) of information exchanged.

²⁶ This supports the Uncertainty Reduction Theory of relationship development - "As the amount of verbal communication between strangers increases, the level of uncertainty for each interactant in the relationship will decrease. As uncertainty is further reduced, the amount of verbal communication will increase" (Berger and Calabrese 1975 quoted in Sheldon 2009).

²⁷ The average number of "friends" was 455 (range of 4 to 2000), with seven classed as "close".

²⁸ The overall mean IREQ score was 19.40 with 525 respondents.

networks, a more extensive use of the Internet connection and, consequently, a higher probability of addiction" (Casas et al 2013 p46). But a higher intrapersonal sub-scale score was linked to lower self-esteem.

Here are a selection of studies of Facebook use, showing the different effects on well-being - positive, negative, or nuanced.

2.2. POSITIVE EFFECT

Valenzuela et al (2009) found a positive association between the amount of Facebook use by US students and life satisfaction, social trust, civic engagement, and political participation ²⁹. The authors noted: "While these findings should ease the concerns of those who fear that Facebook has mostly negative effects on young adults, the positive and significant associations between Facebook variables and social capital were small, suggesting that online social networks are not the most effective solution for youth disengagement from civic duty and democracy" (p875) ³⁰.

The participants were 2603 undergraduates at two large universities in Texas who completed an 85-item web-based survey in November-December 2007. Initially, over 40 000 students were emailed and invited to participate in the study. The response rate was only 8.2% ³¹.

The survey included questions on:

a) Life satisfaction (5 questions) - eg: "In most ways my life is close to my ideal" (1 = strongly disagree; 6 = strongly agree). The answers were combined into an index of life satisfaction (varying 0 to 1). The overall mean was 0.87.

b) Social trust (6 questions) - eg: "Generally speaking, would you say people can be trusted" (1 = never; 5 = all of the time). An index of social trust was created from the combined answers (overall mean: 0.52).

c) Civic and political participation - Three items

²⁹ The authors referred to the concept of "social capital" - "It is the resources available to people through their social interactions... Individuals with a large and diverse network of contacts are thought to have more social capital than individuals with small, less diverse networks" (Valenzuela et al 2009 p877).

³⁰ "Although the intellectual battle between cyber-pessimists and cyber-optimists continues, it is clear that the positive and negative effects of the Internet on social capital are contingent upon the way scholars conceptualise the medium... and how people use it" (Valenzuela et al 2009 p880).

³¹ The researchers gave three reasons for the low response rate - students receiving requests from many web-based surveys; their survey was "rather dense" (ie: 85 questions); official university email addresses used and the students may check these infrequently (Valenzuela et al 2009).

for civic activities (eg: "worked or volunteered in a community project") and six activities for political participation (eg: "voted in a local, state or national election") (0 = never; 0.5 = yes, but not within the last twelve months; 1 = yes, within the last twelve months). Two scales were produced from combining answers - civic participation (mean: 0.74) and political participation (mean: 0.41).

d) Facebook use - Three criteria: number of "friends" (mean: 200-249), amount of time per day on site (mean: around 30 minutes), and responses to six attitude items (eg: "I would be sorry if Facebook shut down"). All combined to give an intensity of Facebook use scale (mean: 0.66).

e) Facebook Group use - An index was created as above based on online groups participants had joined on Facebook.

Valenzuela et al (2009) proposed six hypotheses to test:

H1 - The intensity of Facebook use will be positively associated with life satisfaction. This was supported. There was a significant correlation between index of life satisfaction score and intensity of Facebook use scale. This relationship was stronger than for social trust.

H2 - The intensity of Facebook use will be positively associated with social trust. Supported by the data.

H3a + b - The intensity of Facebook use/Facebook Groups use will be positively associated with civic participation. This was supported. Comparing the highest and lowest Facebook users and Group users, there were over 10% higher civic participation scores for the former.

H4a + b - The intensity of Facebook use/Facebook Groups use will be positively associated with political participation. The higher users of Facebook Groups had over 25% higher political participation scores than the lowest users, but the level of Facebook use was not associated with political participation.

Valenzuela et al (2009) admitted: "Given the cross-sectional nature of this study, we cannot conclude that there is a causal relationship between using Facebook and increased social capital. It may well be that happy, trusting, civically and politically engaged students are more likely to join Facebook. The analysis of the profile

of Facebook users suggests that those who are more civically oriented choose to join the online network in a disproportionate fashion. This limitation could be better addressed by a longitudinal study, which would track changes in Facebook usage to changes in social capital variables" (p894).

Manago et al (2012) surveyed eighty-eight undergraduates in Los Angeles, California, USA, about their Facebook social networks. Participants reported the number of "friends", the categories of "friends", and the amount of communication as well as scoring their life satisfaction ³², self-esteem ³³, and perceived online social support ³⁴.

The mean number of "friends" was 440 (and median 370) ³⁵, while the modal category was 200-299 ³⁶. Focusing on twenty randomly chosen of the "friends", about a quarter was classed as acquaintances, a quarter as close, and another quarter as "activity connections" (eg: class-mate, team-mate). Participants spent about one hour a day on Facebook.

Individuals with more "friends" reported significantly higher self-esteem ($r = +0.24$) ³⁷, and larger networks were also significantly associated with more life satisfaction ($r = +0.29$), and higher perceived social support ($r = +0.26$).

2.3. NEGATIVE EFFECT

The amount of Facebook use does influence perceptions of the world. Longer use was associated with the perceptions that others were happier than the self, and had better lives, and that life was not fair (Chou and Edge 2012).

³² Nine statements - eg: "I have a good life".

³³ Ten items - eg: "On the whole, I am satisfied with myself".

³⁴ Eight items - eg: "When I feel lonely, there are several people online that I can talk to using a social networking site on the Internet".

³⁵ Acar (2008) suggested that individuals have so many "friends" because of the low perceived risk of accepting new ones, the ease of doing so, social desirability (ie: popularity based on quantity of "friends"), and not "defriending" individuals no longer in contact.

³⁶ Previous studies in Los Angeles reported the average number of "friends" of students as 137 in 2006, 185 in 2007, and 225 in 2008 (Manago et al 2012). "Differences between the studies notwithstanding, the trend toward ever larger social networks is unmistakable" (Manago et al 2012 p377).

³⁷ The authors stated: "We do not know whether high self-esteem leads to higher estimates of audience size or larger perceived audiences are a source of self-esteem. If the latter is the case, then the new possibility of large audiences created by social networking sites would tend to inflate self-esteem, augmenting narcissistic personality traits. This interpretation is in line both with Twenge et al's (2008) finding of a jump in narcissistic personality in the present decade — during which Facebook and other communication technologies have evolved — and the prediction from Greenfield's (2009) theory of social change and human development that the expansion of technology produces increasing individualism" (p378).

Over 400 undergraduates at a university in Utah, USA, completed a questionnaire in a wide selection of classes (eg: astronomy; chemistry; dance). Three statements, rated from 1 (strongly disagree) to 10 (strongly agree), were used as the outcome measures - "many of my friends have a better life than me", "many of my friends are happier than me", and "life is fair". The variable of Facebook use was measured in two ways - years of using Facebook, and number of hours spent each week on it.

The number of hours spent on Facebook correlated significantly with agreement on others having a better life ($r = +0.11$), and others being happier ($r = +0.13$). Years of using Facebook was significantly correlated with others being happier ($r = +0.16$), and not agreeing with "life is fair" ($r = -0.12$).

When dealing with a vast amount of information, individuals use an "availability heuristic" (ie: judgments made from easily recalled information rather than a representative amount). So, Chou and Edge (2012) pointed out: "Constantly reading others' reported positive life events, as well as frequently seeing others' pictures of happy moments, could give Facebook users an impression that others are happy and have good lives. In contrast to their own life events, which might not always be happy and positive, frequent Facebook users might perceive that life is not fair. Although Facebook users are all prone to employ the availability heuristic, heavy Facebook users have more available examples from Facebook; thus they are more vulnerable to a distorted perception" (p118).

Another process in social cognition is "correspondence bias" (ie: to assume that words and actions reflect dispositional factors rather than situational ones). For example, an individual giving money to charity will be seen as kind (dispositional factor) rather than the fact that everybody else was giving and social pressure led to the behaviour (situational factor). Thus, Chou and Edge (2012) said: "When seeing others' happy pictures posted on Facebook, users might conclude that others are happy, while ignoring the circumstances or situations that made others happy. The correspondence bias is more likely to happen when Facebook users make attributions about people whom they have never met before. They assume that happiness is a stable characteristic of their temperaments and that they are constantly enjoying good lives" (p118).

Kross et al (2013) used experience-sampling in their research. This involved random text-messages to participants five times per day (between 10am and midnight) for fourteen days, which asked them to complete a brief online survey at that moment. It involved five questions - eg: "how do you feel right now?"; "how

worried are you right now?" (both scored 0-100, where a smaller number is more positive). Other detailed questionnaires like the Satisfaction with Life Questionnaire and the Beck Depression Inventory were completed before and after the study. Overall, "affective well-being" (how individuals feel about their lives) and "cognitive well-being (how satisfied with life) were being assessed. The participants were 72 Facebook-using adult volunteers in Ann Arbor, Michigan, USA.

The more the individuals used Facebook, the worse they felt subsequently on the same day ("affective well-being") (ie: negative correlation between use and well-being). But how individuals felt did not predict later Facebook use. A negative correlation was also found between Facebook use and life satisfaction ("cognitive well-being"). Interacting face-to-face did not produce negative well-being responses, rather individuals felt better. One explanation for the findings of this study could be that Facebook use leads to negative social comparisons. Kross et al (2013) said: "On the surface, Facebook provides an invaluable resource for fulfilling such needs by allowing people to instantly connect. Rather than enhancing well-being, as frequent interactions with supportive 'offline' social networks powerfully do, the current findings demonstrate that interacting with Facebook may predict the opposite result for young adults—it may undermine it".

Kross et al (2013) noted two caveats with their findings: "First, although we observed statistically significant associations between Facebook usage and well-being, the sizes of these effects were relatively 'small'. This should not, however, undermine their practical significance... Subjective well-being is a multiply determined outcome—it is unrealistic to expect any single factor to powerfully influence it". Secondly, the use of bipolar scales to rate well-being has limitations.

2.4. VARIABLE EFFECT

Facebook use and self-esteem has a mixed relationship according to research. For example, excessive Facebook use (based on number of times site checked per day and time spent on site) was related to low self-esteem (Mehdizadeh 2010). On the other hand, self-esteem is raised by positive feedback to postings, and construction of a Facebook profile can improve self-awareness (and self-esteem) (Pettijohn et al 2012).

But friendship contingent self-esteem can be a problem. This is where individuals value themselves based on how well their relationships are going. Individuals with high contingent self-esteem are vulnerable to

depression (via rumination ³⁸, and the need for reassurance) (Cambron et al 2010).

Pettijohn et al (2012) found a significant positive correlation ($r = +0.21$; $p = 0.003$) between friendship contingent self-esteem and intensity of Facebook use in a study of 200 undergraduates in Ohio and South Carolina in the USA ³⁹. Participants completed the Facebook Intensity Scale (Ellison et al 2007), which has eight questions related to emotional engagement with Facebook (eg: "I would be sorry if Facebook shut down"; "Facebook is part of my everyday activity"). They also completed the eight-item Friendship Contingent Self-Esteem Scale (FCSES) (Cambron et al 2010) ⁴⁰.

Facebook use has the potential to help individuals with low self-esteem and those who are shy, and find face-to-face social interactions difficult. In particular, Facebook could provide the opportunity for self-disclosure which helps in developing intimacy ⁴¹. Forest and Wood (2012) found that this was not the case in their three studies.

In Study 1, the researchers investigated the attitudes of undergraduates towards Facebook based on self-esteem. Eighty Facebook-using students at a Canadian university completed a measure of self-esteem, and an attitude questionnaire about Facebook (eg: "posting on Facebook makes me feel less self-conscious"). Comparing the high and low self-esteem scorers ⁴², the latter were significantly more likely to see Facebook as a safer place to express themselves than in face-to-face interactions, for example. So, individuals with low self-esteem are aware of the social interaction benefits of Facebook use.

Study 2 examined the Facebook postings made by 177 more Canadian undergraduates. Participants were asked to provide their ten most recent status updates from their Facebook account. These were coded (by other students) for positive and negative self-disclosure (on a scale of

³⁸ "Rumination about negative events may make individuals with high friendship contingent self-esteem especially vulnerable to depression, although rumination about positive events for individuals high in friendship contingent self-esteem further reinforces their self-worth. Exposure to changes in Facebook information and posts may make self-esteem for those with high friendship contingent self-esteem fluctuate" (Pettijohn et al 2012).

³⁹ The average number of "friends" was over 600, and more than one hour per day was spent on Facebook by the students.

⁴⁰ Items include: "I only feel good about myself when things are going well in my friendships"; "It really affects the way I feel about myself when friendships fall apart".

⁴¹ The social comparison or "poor-get-richer" hypothesis suggests that introverts and individuals with social anxiety benefit more from SNS than extraverts and offline sociable individuals. On the other hand, the social enhancement or "rich-get-richer" hypothesis proposes that extraverts offline benefit more online on SNS (Sheldon 2009).

⁴² High self-esteem was above +1 standard deviation above the mean score, and low self-esteem was below -1 standard deviation.

1-9; where 9 = "a great deal"). A positive update might be about looking forward to a great day tomorrow, while a negative update is about the loss of a personal possession, say. The coders also rated the liking for the person posting the comment, whether they would want to spend time with them, and have as a friend. The scores on the nine-point scale were combined to give an index of likeability.

Individuals with low self-esteem had significantly less positivity and more negativity in their postings than high self-esteem Facebook users, and thus were liked significantly less by the coders. Forest and Wood (2012) stated: "Study 2, then, yielded findings that are unfortunate for participants with low self-esteem: Although these participants saw great promise in using Facebook to safely reap rewarding social experiences (Study 1), they failed to capitalize on this opportunity. Participants with lower self-esteem made posts that were more negative and less positive than those of participants with higher self-esteem and were liked less as a result- 'liked less' by strangers, that is. Our coders did not know the people posting Facebook updates. Because nearly half of Facebook friends are strangers or acquaintances rather than close or even casual friends..., the effects of posts on these distant others are important" (p298).

Study 3 with another 98 undergraduates, looked at the last ten Facebook postings as well, but this focused on the responses of "friends" to the postings (eg: click "Like" button) (ie: social reward for posting). Individuals with low self-esteem received significantly more "Likes" for their high positivity postings.

"In sum, the responses of strangers and of participants' Facebook friends suggest that people with low self-esteem are not rewarded for their tendency to express negativity. The more negativity an update contained, the less participants were liked by coders. Although participants with high self-esteem garnered more attention and validation from friends the more they expressed negativity, participants with low self-esteem did not. Indeed, friends of participants with low self-esteem rewarded the latter's posts with more validation and attention the more positive they were, perhaps trying to encourage this atypical behaviour" (Forest and Wood 2012 p299).

Overall, Forest and Wood (2012) found that, though individuals with self-esteem can see the benefits of Facebook use to develop relationships, the posting of negative comments limits that benefit - ie: "people with low self-esteem use the site in a manner that may push other people away. It is ironic that feeling safe enough to disclose their feelings on Facebook may encourage people with low self-esteem to reveal things that could

lead to the very rejection they fear" (Forest and Wood 2012 p300).

Forest and Wood (2012) finished with this advice: "Rather than posting phoney positive updates, however, people with low self-esteem might try to share more of the positive things that do happen to them and to be selective about what negative things they post" (p300).

2.5. REFERENCES

- Acar, A (2008) Antecedents and consequences of online social networking behaviour: The case of Facebook Journal of Website Promotion 3, 62-83
- Arnett, J.J (2004) Emerging Adulthood: The Winding Road from the Later Teens Through the Twenties New York: Oxford University Press
- Back, M.D et al (2010) Facebook profiles reflect actual personality, not self-idealisation Psychological Science 21, 372-374
- Backstrom, L et al (2011) Anatomy of Facebook Palo Alto, CA: Facebook
- Berger, C.R & Calabrese, R.J (1975) Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication Human Communication Research 1, 99-112
- Burke, M et al (2010) Social network activity and social well-being Postgraduate Medical Journal 85, 455-459
- Cambron, M et al (2010) When friends make you blue: The role of friendship contingent self-esteem in predicting self-esteem and depressive symptoms Personality and Social Psychology Bulletin 36, 384-397
- Carr, N (2008) Is Google making us stupid? The Atlantic July/August
- Casas, J.A et al (2013) Validation of the Internet and social networking experiences questionnaire in Spanish adolescents International Journal of Clinical and Health Psychology 13, 40-48
- Chou, H-T, G & Edge, N (2012) "They are happier and having better lives than I am": The impact of using Facebook on perceptions of others' lives Cyberpsychology, Behaviour, and Social Networking 15, 2, 117-121
- Ellison, N.B et al (2007) The benefits of Facebook "friends": Social capital and college students' use of online social network sites Journal of Computer-Mediated Communication 12, 1143-1168
- Forest, A.L & Wood, J.V (2012) When social networking is not working: Individuals with low self-esteem recognise but do not reap the benefits of self-disclosure on Facebook Psychological Science 23, 3, 295-302
- Greenfield, P.M (2009) Linking social change and developmental change: Shifting pathways of human development Developmental Psychology 45, 401-418
- Kross, E et al (2013) Facebook use predicts declines in subjective well-being in young adults PLoS ONE 8, 8, e69841 (Freely available at <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0069841#references>)
- Manago, A.M et al (2012) Me and my 400 friends: The anatomy of college students' Facebook networks, their communication patterns, and well-being Developmental Psychology 48, 369-380
- Mehdizadeh, S (2010) Self-presentation 2.0: Narcissism and self-esteem on Facebook Cyberpsychology, Behaviour, and Social Networking 13, 357-364
- Pettijohn, T.F et al (2012) Relationships between Facebook intensity,

friendship, contingent self-esteem, and personality in US college students
Cyberpsychology: Journal of Psychosocial Research on Cyberspace 6, 1,
article 1

Prensky, M (2001) Digital natives, digital immigrants On The Horizon
9, 5, 1-6

Sheldon, P (2009) "I'll poke you. You'll poke me!". Self-disclosure,
social attraction, predictability and trust as important predictors of
Facebook relationships Cyberpsychology: Journal of Psychosocial Research on
Cyberspace 3, 2, article 1

Tapscott, D (1998) Growing Up Digital: The Rise of the Net Generation
New York: McGraw-Hill

Twenge, J.M et al (2008) Egos inflating over time: A cross-temporal
meta-analysis of the narcissistic personality inventory Journal of
Personality 76, 875-902

Valenzuela, S et al (2009) Is there social capital in a social network
site?: Facebook use and college students' life satisfaction, trust, and
participation Journal of Computer-Mediated Communication 14, 875-901

Walther, J.B (1996) Computer-mediated communication: Impersonal,
interpersonal, and hyperpersonal interaction Communication Research 23, 3-
43

Wilson, R.E et al (2012) A review of Facebook research in the social
sciences Perspectives on Psychological Science 70, 3, 203-220