

Aggressive Scrollers:
Investigating Online Aggression and its relationship
with Social Media Use, Envy, Self-Control and
Aggressive Behaviour

Lucy Sumarno, B.Sc., M.Sc.

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Abstract

Online Aggression, social media use, envy, self-control and trait aggression, what is the relationship? This thesis aimed to contribute some answers to this question. Social media and aggression are the main topics covered, this combination in recent years has been shown to be detrimental to individuals and society with 'online' aggression on the increase. The other more recent concern is the influence of social media on other outcomes such as the experience of envy or 'offline' aggression, including the cross over between threats 'online' and acting them out 'offline'. This thesis is an exploratory piece of work with the overall aim of investigating 'online' aggression, it's similarities and differences with 'offline' aggression, and the different psychological constructs that may help to explain the phenomena.

This was carried out using a variety of methods, a systematic review, empirical research study, research case study and a psychometric critique. The main findings of the overall thesis suggest social media and aggression have a significant relationship that appeared to work in two directions. Whereby social media use and aggression influenced each other. Self-control and trait aggression appeared significant contributors to the relationship, and although the social comparison processes of malicious envy did not show a significant effect, its relationship was still worth noting. 'Online' and 'Offline' Aggression were explored for its similarities and differences, the results in this thesis suggest that 'online' and 'offline' aggression are not distinctly different, more that the manner in which they are carried out is.

This thesis informed the development of a map of the findings so far (Figure 8.) which is explained in Chapter 6 and is hoped to guide future research, and assessment, formulation and intervention into online aggression.

Overview/Preface

The digital age is reshaping our interactions with one another and more often than not research plays catch up to the understanding of the positive and negative impact of this. Social media, the fastest growing of these technological developments (Greenwood, Shannon; Perrin, Andrew; Duggan, 2016) receives a lot of bad press, mainly focused on trolling behaviours and cyberbullying. These behaviours cause distress to victims and are being taken more seriously due to the damage they are known to cause. However, literature is still sparse in this research area, and 'online' aggression is often thought of as less serious than its 'offline' counter part. This thesis aimed to fill in some more of the gaps and explore the 'online' and 'offline' differences and similarities of aggression.

The four components of this thesis explore the existing literature to identify what research exists currently and what research we need more of. Psychological factors such as envy, self-control, trait aggression and social comparison are also explored in a general sample, and on an individual level, to identify whether there are distinct differences or similarities in the 'online' and 'offline' forms of aggression. Social media use/exposure is also explored to identify its association with 'online' and 'offline' aggression. This thesis aims to take you on an explorative journey attempting to answer questions and develop a further knowledge base in online aggressive behaviour (OAB). It aims to contribute valuably to the literature by establishing whether existing knowledge of 'offline' aggression can be applied to 'online' aggression, influencing practice on how to understand 'online' aggression better, applying assessment and intervention to the topic, and providing direction for future development of research, prevention or intervention.

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Chapter One

Introduction to Thesis

1.1 Introduction

The changing nature of communication towards more digital means has revamped how society interacts with one another, hence the importance of paying attention to this ever-evolving area. Online communication takes place through social media platforms which initially began with basic communication systems allowing users to connect with each other via instant messaging services. However, it wasn't until the early 21st century that social media platforms made significant advances, introducing 'Friendster' in 2002, followed by LinkedIn and Hi5 in 2003. The social media evolution was propelled further into the heart of society's interactions with the launch of Facebook and MySpace in 2004, swiftly followed by Youtube in 2005, Twitter in 2006, and then Instagram in 2010. This generation of social-networking really defined the term 'Social Media', coining its description as "forms of electronic communication through which users can create online communities, share information, ideas, personal messages and other content (such as videos)" (Merriam-Webster Dictionaries, 2018). This led to the landscape of social interaction and communication changed forever.

Online interactions have become a part of everyday life with interactive technology like social media acting as an extension of an individual (Belk, 2013), even representing a part of a person's identity, such as their personality, self-expression, attitudes, achievements, and social network. This is what makes online communication unique, along with its accessibility, portability, and vast connectivity to others. However, like with any other type of communication, there can be maladaptive forms such as aggressive behaviour and the purpose of this

thesis is to add to the understanding of online aggression that exists as a result of the development of electronic communication technologies.

In order to begin to explore online aggression, we must first define 'offline' aggression. This thesis classifies aggressive behaviour by the following three points: the aggression is an observable behaviour, the aggression must have the intention of harming another, and the aggression must involve harm caused to a person who is motivated to avoid the harm. (Allen, Anderson, & Bushman, 2018). The General Aggression Model (GAM) is one of the most commonly applied theories to the understanding of aggression (Allen et al., 2018), it suggests person and situational factors influence cognitions, emotions and arousal resulting in an aggressive or non-aggressive outcome depending on these factors. The GAM has been applied to many different types of aggression, including domestic violence, pain intolerance, and media violence. This suggests the model may also be easily applicable to 'online' aggressive processes and therefore is the primary framework that will be relied upon to define 'offline' aggression throughout this thesis. Other explanations of 'offline' aggression include social learning theory which proposes aggression develops as a learnt behaviour (Bandura, 1978). More recent theories of aggression pay attention to particular psychological concepts, for example the development of an aggressive personality which stems from childhood trauma and attachment difficulties (Anderson & Bushman, 2002), and social information processes triggering hostile attribution bias, priming an individual to perceive a situation as warranting an aggressive response (Lösels, Bliesener, & Bender, 2007).

The definition for 'online' aggression is a little less refined compared to 'offline' aggression due to its younger research base. However, 'online' aggression can be generally defined as the "wilful harm inflicted" through the use of electronic devices (p.1, Hinduja & Patchin, 2008). Theories of the GAM (Kowalski, Giumetti, Schroeder, & Lattanner, 2014), social learning theory (Holt, Bossler, & May, 2012) and social information processes (Nicol & Fleming, 2010) have all been applied to the understanding of aggression perpetrated online. This suggests that what we already know about 'offline' aggression can help us understand the mechanisms of 'online' aggression. However, there are some distinct differences in the online environment that possibly play a key role in online aggression and therefore 'offline' aggression may not explain the phenomena in its entirety. Moral disengagement, although a known component in aggression and violent behaviour, (Rubio-Garay, Carrasco, & Amor, 2016), really uses the online environment to its fullest to trigger diffusion and displacement of responsibility, minimizing and disregarding the consequences for others, dehumanization, and attribution of blame processes (Runions & Bak, 2015). Another unique concept to the online environment is that of anonymity, which can reduce the amount of empathy experienced, and lessen the consequences of any aggressive behaviour due to the perpetrator being unknown or unseen (Suler, 2004). Known as the online disinhibition effect, this theory claims to explain why aggression may occur online (Suler, 2004b), suggesting individuals may feel less restrained and freer to express themselves due to factors such as anonymity and invisibility. This concept is termed 'toxic inhibition' for those that may act aggressively online, for example making harsh comments, expressing hatred, accessing violent content, or becoming involved in antisocial activities. The online disinhibition effect is thought to be a significant contributor to online aggression (Zimmerman & Ybarra, 2016).

Social comparison theory (Festinger, 1954), which describes the natural drive to evaluate ourselves by comparing ourselves with others and making 'upward' and 'downward' comparisons has also been associated with negative outcomes such as 'offline' and 'online' aggression (Mola, Saavedra, & Reyna, 2014). Again the online environment lends itself well to fostering social comparison processes. An aggressive behavioural outcome as a result of an upwards social comparison would be defined as causing harm to the perceived superior other. This process is thought to occur more commonly 'online' and particularly when using social media as people present an unbalanced more positive representation of their life inducing a social comparison or envious effect (Appel, Crusius, & Gerlach, 2015). It is the malicious envy form of social comparison that is suggested more closely linked with destructive and harmful behaviour (White et al., 2006). Due to the nature of the online environment and the social comparison processes that appear to be influential in online aggression, this thesis will explore envy as one of the psychological constructs potentially contributing to online aggressive behaviour (OAB).

Social Media Use (SMU) and its relationship with various psychological constructs and outcomes will also be explored in this thesis. Research has been emerging on the impact of SMU on individuals feelings and behaviour (Holland & Tiggemann, 2016; Krasnova, Wenninger, Widjaja, & Buxmann, 2013) and is a current topic of conversation. This academic thesis intends to add to this emerging research and has focused on the topic of SMU and aggressive behaviour. Although research has explored subsets of aggression such as cyberbullying (Kiriakidis & Kavoura, 2010),

physical aggression (Law, Shapka, Hymel, Olson, & Waterhouse, 2012a), hostility (Yen, Yen, Wu, Huang, & Ko, 2011) and trolling (Buckels, Trapnell, & Paulhus, 2014), and its relationship with SMU, as of yet no research thesis has drawn together a wide range of data or literature to explore aggression as a whole in order to establish similarities and differences between 'online' and 'offline' aggression, and to gauge the current evidence and where the gaps may be.

There have been some key studies influential to the understanding of 'online' aggression. Cyberbullying has been frequently researched with many studies highlighting the link between the unique factors of an online platform allowing opportunities to aggress online (Grigg, 2010; Pyżalski, 2012; Schoffstall & Cohen, 2011). Runions, Bak, & Shaw (2017) proposed a quadripartite typology of cyber aggression. This model suggests that cyberaggression occurs due to a mixture of motive and capacity for self-control which determines the type of online aggression; reactive or proactive. Other studies have explored individual personality differences in online aggression. With extraversion, agreeableness and emotional stability predicting online aggressive behaviours (McCreery & Kathleen Krach, 2018). Buckels et al.(2014) found the darker sides of personality influential in online aggression, with sadism, psychopathy and Machiavellianism associated with trolling behaviours. It has also been found that heavy online use can be predicted by personality traits (Andreassen et al., 2013; Juvonen & Gross, 2008; Phillips, Butt, & Blaszczyński, 2006). However less research evidence exists on the influence of social media on general aggression, or general aggressions influence on social media use. Some research does suggest social media inflames offline aggression, particularly in school bullying (Dooley, Pyżalski, & Cross, 2009b), and

gang crime (Patton et al., 2014), although most present a correlational link but provide little understanding of the psychological factors or processes behind it. This research thesis begins to add further to the understanding of social media's relationship with, not only online aggression, but aggression perpetrated in the real world. We will present information to help understand how social media and aggression relate to one another, what individual psychological characteristics are relevant, and how certain theories may explain the relationship.

1.2 Thesis Structure

This Academic Thesis presents readers with reviews of literature, a research study, individual case study and an overview of limitations in subject areas relating to social media use and aggression. The thesis comprises of a systematic review on social media use and its relationship with aggression (Chapter 2). It reports on current literature identifying social media use (including type, frequency, attitudes), and aggression (including cyberbullying, physical aggression, and harassment). Literature was systematically reviewed, and qualitative data synthesis was carried out to clarify the themes and direction of any relationship between SMU and aggression. Chapter 3, 'Green-Eyed Scrolling: Envy, Self-control and Aggression in Online Aggressive Behaviour within an adult population' is an empirical project exploring how self-control, aggression and envy contribute to online aggressive communication in an adult population. Research was gathered online from social media users via questionnaires and psychometrics measuring each construct. This study allowed for important comparisons to be made between aggression perpetrated 'online' and 'offline' and added to the psychological profile

of online aggressors. Chapter 4 'Anger, Problematic Personality Traits, Social Comparison and Use of Technology: A Case Study', reports on assessment, formulation and intervention of a client who experiences intense aggression perpetrated either face to face or using electronic means, such as a mobile phone or social media. Relating personality and psychological factors were identified and an intervention developed to address the treatment needs. The outcome of this case study has important implications for how problems with online aggression can be treated. Chapter 5 'Psychometric Critique: Can envy be measured?' takes one of the measures, the Benign and Malicious Envy Scale (BeMas) used in both the research case study and empirical research study, which related to the measurement of social comparison. A process thought to be contributed by excessive social media use. It critically appraises the use of the BeMas in relation to understanding aggression, social media use and the identification of social comparison processes with recommendations for further development of this measure. Finally, Chapter 6 draws together the findings of the main chapters and evaluates how they add to the wider literature relating to social media use and aggression. It also discusses limitations and implication for the future with a focus on recommendations of where to go next.

Chapter Two

A Systematic Review of Social Media Use and its Relationship with Aggressive Behaviour

Abstract

Social media use (SMU) and aggression have been a topic of discussion in recent years, with concerns raised about their relationship and the impact on an individual and societal level. This systematic review aimed to explore this relationship by completing a systematic search of peer-reviewed articles on SMU and aggressive behaviour ('online' and 'offline' behaviours). Twenty-three studies met specific inclusion criteria and a textual data synthesis was carried out to review results. SMU was measured using a wide range of tools, assessing frequency of use, number of social connections, and social media attitudes. Aggression was assessed using a variety of tools measuring cyberbullying, physical and verbal aggression, hostility, and other antisocial behaviour problems relating to aggression. Twenty-two out of the twenty-three studies found a significant association between increased SMU or general technology use and aggression. In these twenty-two studies underlying processes were identified, including mediating and moderating factors of personality, attitudes, self-control and age. It was concluded that a two way influential interaction explained the relationship between SMU and aggression, creating a maladaptive cycle. Included studies were mainly correlational, therefore recommendations for research directions highlighted the need for longitudinal or experimental designs, and the development of validated SMU measures to explore the relationship further.

2.1 Introduction

Research into Social Media (SMU) and its psychological and behavioural implications for individuals is gaining pace. Both positive and negative outcomes have been identified in a variety of studies, which have also been explored further in a number of systematic reviews. Significant links have been found between SMU and its associations with social anxiety (Dobrea & Pasarelu, 2016), depression (Seabrook, Kern, & Rickard, 2016), body image and eating disorder outcomes (Holland & Tiggemann, 2016), and deliberate self-harm (Dyson et al., 2016). Although SMU brings with it many benefits, it is the problematic outcomes that cause concern to society. With the continued growth of social media showing no signs of slowing down (Smith & Anderson, 2018) the need for more research into SMU and the specific problems it is associated with deserve attention, in this review the specific problem explored is aggression.

2.1.1 Social Media Use (SMU)

SMU can be described as the digital way in which individuals interact and engage with one another 'online' (Kende, Ujhelyi, Joinson, & Greitemeyer, 2015). Social Media is easily recognised by its most popular social networking sites (SNS) which include 'Facebook', 'Instagram' and 'Twitter' (Smith & Anderson, 2018).

In 2013 research showed 73% of adults used a social networking site (SNS) with Facebook being the most popular (Duggan & Smith, 2013). International data suggested 83% of social media users were aged 18 to 29 years old and were most likely to check and update their accounts daily (Duggan & Brenner, 2013). In 2016 38 million people were reportedly active on social media in the UK; over half of the UK population (Greenwood, Shannon; Perrin, Andrew; Duggan, 2016). A 6% growth was reported in SMU since January 2014 to January 2016, with an increasing amount of people using mobile phones, as well as tablets and computers to access their social media accounts.

SNS are the most common form of online communication; described as “websites which make it possible to form online communities and share user created content” (Kim, Jeong, & Lee, 2010). SNS allow online users to create a profile which they can make either public or private and can start communicating with other online users. SNS users can choose what activity they want to participate in which includes sharing photos, videos or personal information, commenting on current affairs, expressing their thoughts or opinions, or searching for other online users. SNS have many benefits to individuals including enhancing contact between family members (Mahmud, Rahim, & Miskon, 2016), improving friendship quality (Antheunis, Schouten, & Krahmer, 2014) and providing a space for people to access support for each other (Naslund, Aschbrenner, Marsch, & Bartels, 2016). However due to the nature of SNS technology it allows for private and hidden communication which makes SMU very difficult to monitor and leaves individuals exposed to the risk of malicious use of online communication. This includes cyberbullying (Slonje & Smith, 2008), trolling (Buckels et al., 2014), sexual

harassment (Zimmerman & Ybarra, 2016) and threats or intimidation (Moore, Nakano, Enomoto, & Suda, 2012) conveyed through SNS.

The negative outcomes associated with SMU include social isolation (McPherson, Smith-Lovin, & Brashears, 2008), mental health problems such as depression (Appel, Gerlach, & Crusius, 2016) and anxiety (Vannucci, Flannery, & Ohannessian, 2017), eliciting feelings of envy (Krasnova et al., 2013), and increased likelihood of aggressive interactions (Zimmerman & Ybarra, 2016). This review is interested in these acts of aggression related to SMU. It is suggested aggression can occur through SMU due to the anonymity provided to individuals who use SNS. The Online Disinhibition Effect (Suler, 2004a) explains how someone's behaviour can change online because of certain factors created by the online environment which include 'dissociative anonymity' and 'invisibility' meaning a SNS user can remain anonymous if they wish. Other factors include 'asynchronicity' and 'dissociative imagination' which creates the sense the internet is not a 'real' world, does not have 'real' people, and is not happening in 'real' time. It is possible this generates the impression that the online environment is a place where behaviour can be carried out with no real consequence or real impact on others.

This chapter aims to systematically review the research evidence from investigations into SMU to seek out the relationship it has with aggressive and violent behaviour in an unselected population sample.

2.1.2 Aggression and Violence

For the purpose of this review violence and aggression will be referred to as a range of verbal or physical behaviours or actions that can cause harm, hurt or injury to another person who does not willingly consent (Bushman & Huesmann, 2010; Warburton & Anderson, 2015). Definitions of violence and aggression slightly vary depending on the psychological approach, with social psychology or the general aggression model definitions being the most commonly used in developing and testing the phenomena of aggression and violence. Despite the different theories there are distinct factors in each that help to unify the explanation of aggression and violence. Firstly that aggression is an observable behaviour, secondly the act must be intentional, thirdly it must involve harm towards people not objects, and fourthly the recipient of harm must be actively trying to avoid the harm (Allen et al., 2018).

Aggression has different forms and functions, this review will explore all subtypes of aggression to establish any themes or trends in the types of aggression related or resulted from SMU. These different forms of aggression may include *physical aggression*; causing physical harm to a person (e.g. punching, biting, kicking) (Dodge, Coie, & Lynam, 2006), *verbal aggression*; causing hurt through spoken words (e.g. shouting, swearing, name-calling) (Stewart & Bowers, 2013), and *relational aggression*; causing hurt through damaging relationships or social status (e.g. spreading malicious lies, gossip, saying hurtful things about someone to others) (Crick & Grotpeter, 2012). Aggression can also be distinguished as *Direct Aggression* where the victim is present or aware of the aggression, which includes

physical aggression and the making of threats to harm, or *Indirect Aggression* in the absence of the victim, where the aim is social exclusion, or causing harm to the victims social status (Archer & Coyne, 2005; Campbell, 1999; Wyckoff & Kirkpatrick, 2016). The function of aggression can be divided into three categories; the intent or goal to harm the person, the level of emotion felt, and the degree to which the aggressive act was planned (Anderson & Huesmann, 2003). This review will explore which forms and functions of aggression are associated with SMU. These aggression characteristics are identified in some of the most well-used research instruments and scales to measure aggressive and violent behaviour, such as the Buss and Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992a) and The Overt Aggression Scale (Yudofsky, Silver, Jackson, Endicott, & Williams, 1986). This review will distinguish from face to face (offline aggression) in the direct presence of the recipient and cyber-aggression (online aggression) in the virtual presence of the recipient.

Cyber aggression refers to aggression carried out using electronic means (Corcoran, Guckin, & Prentice, 2015). Research is establishing in this relatively modern area and has tried to define cyber-aggression by its typology, its targeted victims, and its functions (Pyżalski, 2012). As with 'offline' aggression, there is no unified explanation of 'online' aggression, and terms used to describe it can vary from electronic aggression to cyber-bullying, making it a challenge to establish whether the literature is talking about the same phenomena. Some research suggests existing theories of aggression can be applied to the understanding of 'online' aggression. The general aggression model (GAM), which assumes

aggression is expressed due to situational factors such as cognition, affect and arousal (Anderson & Bushman, 2002), suggests context is the distinguishing factor between 'online' aggression and 'offline' aggression, but that the other processes are relatively similar. The contexts that make 'online' aggression distinct relate to factors in the online environment such as the lack of authority, the perceived anonymity and the audience size (Graf, Yanagida, Maschler, & Spiel, 2020). 'Online' aggression has also been suggested to be comparable to *relational aggression*, having similar motivations, such as revenge or jealousy (Crick & Grotpeter, 2012; Varjas, Talley, Meyers, Parris, & Cutts, 2010). However other research indicates slightly different motives for aggression when using technology like social media which include fun-seeking or vengeance (Compton, Campbell, & Mergler, 2014; Gradinger, Strohmeier, & Spiel, 2012; Raskauskas & Stoltz, 2007). This differs from motives suggested to be more associated with 'offline' aggression such as power-seeking, rage, or expressing frustration (Crick & Dodge, 1996; Dodge & Coie, 1987; Gradinger et al., 2012). For the purpose of this review 'online' aggression will include any type of aggression carried out through the use of information communication technology (ICT) in order to capture the heterogeneity of the context and functions.

Exploration of aggression and violence in this review will incorporate both 'online' and 'offline' forms of aggressive behaviour in order to systematically examine social media uses impact on both and help to uncover similarities and differences, including predicting and mediating factors, and what gaps there are in the current literature.

2.1.3 Technology's relationship with Aggression: Previous research

During the evolution of digital technology research has explored the detrimental effects of such developments on human behaviour. Of most concern is aggressive behaviours, due to the level of harm it can cause to individuals both psychologically and physically (Berkowitz, 1993). The digital age was in its infancy in the 1950's when television became a popular household item, however observations of changes in behaviour, particularly in adolescents, raised questions about its effects and some research indicated those who were exposed to violent content were more likely to display increased aggression (Eron, Huesmann, Lefkowitz, & Walder, 1972; Freedman, 1984). This followed on with increased aggression associated with mobile phone use, (Abraham, Pocheptsova, & Ferraro, 2012; Ehrenreich, 2013), and video games (Bartholow, Bushman, & Sestir, 2006; Carnagey & Anderson, 2004; Uhlmann & Swanson, 2004). With the digital age continuing to evolve, and social media taking precedence over other forms of communication, research is beginning to emerge into SMU and aggression, this review identifies the state of play in current evidence.

2.2 Aims and Objectives

This paper will systematically review existing research to examine links between SMU and aggressive behaviour, exploring the antecedents and consequences of SMU and aggression. No systematic approach, has so far, investigated this relationship. This review aims to add to further understanding of the issues and have future implications for identifying potential triggers to aggressive behaviour

and SMU, development of management/intervention strategies, and to protect the population through preventative measures when using social media. Both 'online' aggression and 'offline' aggression are explored to capture all aggressive behaviour in order to identify the different associations with SMU. Differing views could benefit from an overall scope to help draw out consensus. Some research suggests 'online' aggression can mitigate the perpetration of 'offline' physical aggression (Schnurr, Mahatmya, & Basche III, 2013) whilst other findings suggest people who hold normative beliefs about 'online' aggression were also more physically aggressive in 'offline' interactions (Wright & Li, 2013). An alternative view to these is that 'online' and 'offline' aggression are not separate concepts, but that it is the technology that has become the new tool for carrying out aggressive behaviours they would have engaged with anyway (Dempsey, Sulkowski, Dempsey, & Storch, 2011). Systematically exploring the similarities and differences of 'online' and 'offline' aggression outcomes from SMU, as well as the association SMU has with different types of aggressive behaviour, could provide vital information on understanding the risk and seriousness of the harm further and could indicate the presence of predicting or triggering factors useful for prevention and intervention in the future.

The main objectives:

- a) Is there a significant relationship between SMU and aggressive behaviour?
- b) Is there a predictive relationship between SMU and aggressive behaviour?
If so, are there any mediating variables?
- c) Does SMUs' relationship with 'offline' and 'online' aggression differ?

2.3 Method

2.3.1 Search Strategy

Electronic literature databases EMBASE, PubMed, PsycINFO, ScienceDirect, Scopus and Web of Science were searched in June 2018 to identify relevant papers for this review. A manual search was also carried out using the internet search engine 'google.com' to identify any studies not captured by the electronic database searches.

The following key words relating to social media were combined with key words relating to aggression and entered into the databases' search fields:

1. Social Media* OR Social Network* OR Facebook OR Twitter OR Instagram OR Youtube* OR Myspace OR Forum* OR Reddit OR 4Chan OR Snapchat OR Internet* OR Online* OR Chatroom
2. Aggress* OR Violen* OR Cyberaggress* OR Troll* OR Harrass* OR Stalk* OR Threat* OR Abus* Bully* OR Cyberbully*
3. 1 AND 2

All included search terms are outlined in (Appendix 1.). References of identified articles were also scanned for additional relevant studies. Search terms were selected after an initial scope of the literature into each area. 'Social Media' and 'Social Network' were the umbrella terms selected based on definitions describing them as the tools and the manner in which individuals interact with each other online (Duggan & Smith, 2013; Kende et al., 2015; Kim et al., 2010). Specific social networking sites were also selected as search terms based on a recent

review of the most popular social networking sites used (Yougov.co.uk, 2018). 'Aggression' and 'Violence' were the umbrella terms selected to search for the general aggressive behaviour outcomes. More specific terms were used to search for electronic aggression based on a systematic review identifying current designations (Aboujaoude, Savage, Starcevic, & Salame, 2015) and on a review of individuals experiences of online aggression and the type of aggression they have been subjected to (Duggan et al., 2015). All search terms used can be found in Appendix 1.

2.3.2 Selection Criteria

Studies were included or excluded if they met the following inclusion criteria.

Studies included must have:

- a)** Involved participants who use social media
- b)** Included a measure of electronic communication such as measuring SMU
- c)** Involved participants aged 10 years old and over
- d)** Included a measure of aggressive behaviour (online or offline)
- e)** Were published after 2003
- f)** Were published in English
- g)** Were experimental/quasi-experimental, cohort, case-control, or cross-sectional study designs

Studies were excluded if they did not meet the above criteria. All studies must have involved participants who had used social media. Studies that specifically measured social media use were included, however studies that measured electronic communication in general, which included the use of social media, were

also included. Participants aged 10 years old and over was the age range selected due to being the age in the UK where a person can be held criminally responsible and this was relevant to the exploration of aggressive behaviour. In addition an initial scope showed many studies involved school age participants and as SMU was highly prevalent in this age range it was important not to completely exclude people under the age of 18. Studies were also only included if they were post the year 2003 because social media and SNS were not fully established or in general use by the population until after this year (Duggan & Smith, 2013). Only quantitative studies were included in the review to ensure the research had an empirical basis and that aggression and electronic communication were measurable.

The (P)opulation, (E)xposure, (C)omparison and (O)utcome (PECO) framework (Morgan, Whaley, Thayer, & Schünemann, 2018) was used to help structure, formulate and identify the different elements needed to carry out the systematic review exploring the relationship between SMU and aggressive behaviour. For studies to be included in this systematic review they must have met the following criteria (Appendix 1):

i. (P)opulation

Participants were adolescents and adults (10 years old and above). This criteria was selected because the age a person is criminally responsible in the UK is 10 years old, this is not recognised internationally, however adolescence is widely

recognised to begin at the age of 10 years old (Laberge et al., 2001). Participants from any gender, nationality, community or social backgrounds will be included. The participants must have had some experience of using social media.

ii. (E)xposure

The exposure assessed in this review was SMU. Social media is generally understood to be “web-based platforms that enable and facilitate users to generate and share content, allowing subsequent online interactions with other users” (Kaplan & Haenlein, 2010). Kaplan and Haenlein (2010) broke the Social Media definition up into six groups of electronic communication; blog sites (e.g. Twitter, Tumblr), Social networking sites (e.g. Facebook, MySpace), Content communities (e.g. YouTube, Daily Motion, Pinterest, Instagram, Flickr, Vine), Collaborative projects (e.g. Wikipedia), Virtual game-worlds (e.g. World of Warcraft) and Virtual social worlds (e.g. Second Life, Farmville). Other online platforms of communication not representing the above were excluded such as email or Skype communication. To be included in the systematic review the studies had to have a measure of SMU (e.g. scale, prevalence measure, questionnaire).

iii. (C)omparison

The comparison was participants with less exposure to social media. This was examined in the review to further understand the relationship between SMU and aggressive behaviour.

iv. (O)utcomes

The outcome of interest was aggressive behaviour. This could take the form of 'online aggression' which included offensive name calling, purposeful embarrassment, physical threats, sustained harassment, stalking, and sexual harassment (Duggan et al., 2015). It could also take the form of 'offline aggression' which included *physical aggression* (e.g. punching, biting, kicking), *verbal aggression* (causing hurt through spoken words) *relational aggression* (causing hurt through damaging relationships or social status such as spreading malicious lies, gossip, saying hurtful things about someone to others) and *Direct Aggression* (in the presence of the victim), or *Indirect Aggression* (in the absence of the victim). To be included in the systematic review the studies had to have a measure of aggression (e.g. scale, prevalence measure, questionnaire).

v. Study type

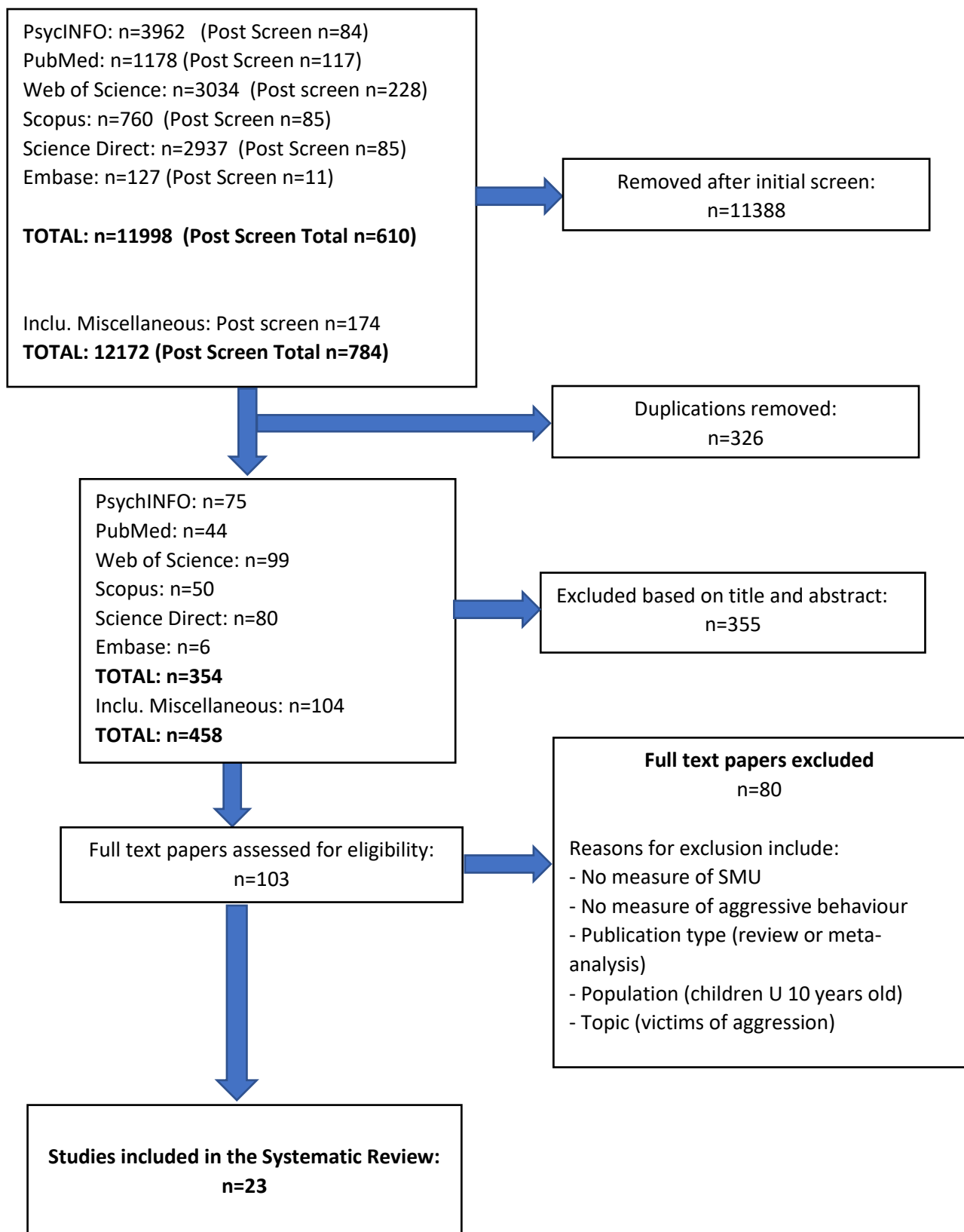
A large proportion of studies exploring SMU had a cross-sectional design capturing prevalence at a single moment, and this was reflected in this review limiting the causal conclusions drawn from the results. However, this did not impact on the aim of the systematic review, which was to explore the relationship between SMU and aggression, including associations, correlations and predictive factors.

2.3.3 Study Selection Process

Endnote was used to import references from the initial searches and duplications were removed. The search strategy generated a total of 12172 papers, after initial

screening, 11388 papers were removed having not met the review criteria, leaving 784 papers post initial screen. After removing 326 duplicates, 458 papers were screened by viewing their title and abstract which led to 355 papers being excluded based on not meeting the review criteria. 103 papers were selected for full-text assessment. Of these papers, 80 were excluded based on the exclusion criteria. The most common reasons for exclusion were no measure of SMU, no measure of aggressive behaviours, or inappropriate publication type (Figure 1).

Figure 1. Flow Diagram of study selection process



2.4 Results

2.4.1 Selected Studies

Twenty-three papers met the inclusion criteria and were included in this systematic review (Figure 1). Nineteen studies involved a cross-sectional design, three studies were longitudinal and one study was a case-control design. The samples in the studies were either Adults (n=7), Adolescents (n=7), or both adolescents and adults (n=9). Of the twenty-three papers, participants were based across different continents, Europe (n=11), the US (n=7), and Asia (n=5). The earliest study included was 2009 and the latest study included was 2018. All twenty-three studies were separate samples each based on a unique set of participants. For more information on the twenty-three included articles please see table 1.

2.4.2 Assessment of risk of bias in included studies

Risk of bias was assessed using a quality assessment form developed specifically for this systematic review (Appendix 2.). The Effective Public Health Practice Project (EPHPP) tool was used as a guide to develop the quality assessment form which provided a standardised way to assess the quality of studies included (Thomas, Ciliska, Dobbins, & Micucci, 2004). There were seven different risk of bias assessed.

- A) Selection Bias: assessed how representative the participants of the study were to the target population.

- B) Study Design: assessed how the study had been set up, how well it had been designed, and considered the hierarchy of study designs (Cochrane Collaboration, 2008).
- C) Confounders: assessed how likely the Study may have been influenced by confounding variables (external variables) that may have affected the results. Moderators were examined as confounders for the purpose of assessing their presence and risk of bias, however for the data extraction moderators and confounders were considered separately to understand more clearly the type of relationship, the strength of the influence and whether there was a causal effect.
- D) Blinding: assessed whether participants and/or assessors were blind to the aims of the study to reduce performance and detection bias.
- E) Data Collection Method: Assessed the validity, reliability and objectivity in the measurement tools for SMU and aggression. It also considered how well the data collection method measured each construct.
- F) Withdrawals and Dropouts: assessed how incomplete data was handled, and whether it was controlled for in order to minimise attribution bias.
- G) Statistical Analysis: assessed whether analysis was appropriate in answering the research questions, and for the type of data collected.

Each category was scored based on the strength it had controlled for risk of bias; 'Strong' (little evidence for risk of bias), 'Moderate' (mixed evidence for risk of bias), and 'Weak' (clear risk of bias). Then an overall risk of bias rating was provided; 'Strong' (no weak ratings), 'Moderate' (one weak rating), and 'Weak' (two or more weak ratings). Each included study was assessed, and a bias rating was decided based on clinical judgement. A second reviewer independently

assessed 43% of the studies (n=10). Both reviewers discussed the ratings and discrepancies were resolved through discussion.

All studies included in this review moderately or weakly controlled for bias. A 'strong' rating could not be allocated due to all studies using self-report data collection methods. This impacted on the reliability and validity of self-report methodology as it relies on truthfulness, introspective ability, and understanding of measured concepts, all of which are difficult to ascertain when administering a self-report measure. Bias due to missing data was another common risk of bias identified amongst the included studies. Missing data was either not reported in the study, or management of missing data was not clear, potentially leading to selective outcome reporting in the studies. The other common bias identified involved controlling for confounding variables. Some included studies did not collect data to identify possible confounders in order to control for them, and some statistical analysis did control for confounders, this made it harder to establish the clear causal or associative relationship between social media and aggression without possible bias. Please see table 1 for further details on risk of bias in included studies.

2.4.3 Data extraction and management

Data was extracted using a data extraction form developed based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement (Shamseer et al., 2015).

The data extraction form (Appendix 3) directed the reviewer to extract the following information from the included studies:

- (a) authors and year of publication
- (b) PROGRESS Factors (Place, Race, Occupation, Gender, Relationship status, Education, Socioeconomic status, Social status)
- (c) sample characteristics (number of participants, mean age, age range, gender, type of sample)
- (d) amount of time spent using social media per day
- (e) type of SMU
- (f) type of aggressive behaviour
- (g) information regarding the association between social media and aggression.
- (h) potential moderating and confounding factors

Data extracted on SMU varied in its form due to the differences in the data collection measures. Nine studies measured SMU within a general technology use measure. Three studies measured specifically Facebook frequency and intensity of use. Two studies measured content-based media exposure (including violent and antisocial content). Six studies measured general social media usage, and three studies measured problematic internet use including problematic social networking site use. The reporting of SMU type and frequency was poor, with studies often providing an indication of "increased use", "greater use" or "intensity of use", however with no specific results or figures as evidence. The general technology measures identified participants average technology use as 2.3 hours

a day, 6.63 hours a week, and indicated that spending eight hours or more a week using technology can be problematic. The limitation with this type of measure was that, although it included SMU in its questionnaire, it did not break down the types of technology use which prevented the extraction of specific SMU data for inclusion in the data synthesis. Frequency of Facebook use and intensity measures identified that 59.4% of participants had engaged in a form of Facebook bullying, and having an increased number of friends with weaker strengths in the relationships was related to more problematic SMU. SNS use measures identified average use at three hours a day, and participants generally were registered with four social media sites at one time. This information gathered from SMU measures demonstrates how embedded SMU has become with in society with daily average use high, individuals using multiple social media and internet-based communication technologies, and number of online friends being indicative of social networks. In addition to the SMU measures some studies also included a measure of attitude towards SMU (n=2). Confounding variables were also extracted such as age and gender, and moderating variables were extracted separate to confounding variables, such as personality traits, attitudes and anonymity to explore further the effect of SMU on aggressive behaviour and the factors that may influence the strength or direction of the relationship.

Data extracted on aggression were categorised into five aggression related outcomes. Seven studies measured the outcome of cyber-aggression (including cyberbullying, virtual violence, and Facebook harassment). Six studies measured 'offline aggression' (including proactive, reactive, physical and verbal aggression), three studies measured problematic personality traits that can lead to aggressive behaviour (including Machiavellianism, narcissism and sadism), two studies

measured offline problematic behaviours (including antisocial behaviour), and five studies measured both 'online' and 'offline aggression as a comparison. In addition to the aggressive behaviour measures three studies also incorporated measures on anger.

Twenty-two out of twenty-three included studies found a significant association between SMU and aggressive behaviour with some identifying a predictive relationship (n=12) and others identifying a correlational relationship (n=10). One study did not find any associative or predictive relationship between SMU and aggressive behaviour. With the majority of the studies included being of a cross-sectional design, caution must be taken when considering the predictive ability of the variables (Reichenheim & Coutinho, 2010). This review does consider the possible causal and predictive variables when reviewing the studies, however the overall aim of the systematic review was to explore whether the exposure of SMU is associated with the outcome of aggression whether causal or not. Information identified suggesting a causal or predictive relationship should be treated mindfully, and with the notion that this finding should direct further research to support this initial indication of a causal/predictive relationship.

Table 1. Characteristics of the studies included

Author (year)	Country	Study design	Sample (N)	SMU measure	Aggressive behaviour measure	Key findings	Controlled for Bias Rating
Barlett & Chamberlin (2017)	US	Case-control	Adolescents and Adults Middle and High School students sample 11 to 19 years old (167) Adult sample 18 to 75 years old (552)	Technology time questionnaire. The attitudes towards internet action Questionnaire (Barlett & Gentile, 2012)	Cyberbullying Frequency Questionnaire (Ang & Goh, 2010) Positive attitudes towards cyberbullying scale (Barlett & Gentile, 2012)	Technology time was positively associated with cyberbullying attitudes ($r=0.22$, $p<0.001$) and cyberbullying behaviour ($r=0.20$, $p<0.001$) Cyberbullying attitudes and technology time predicted cyberbullying behaviour, although as age increased the strength of this predictive relationship decreased. Anonymity predicted cyberbullying however did not have a relationship with technology use.	Moderate <i>Not all data collection methods were validated</i>
Carpenter, (2012)	US	Cross-sectional	Adults University Students 18 to 65 years old (294)	Frequency of Facebook behaviours questionnaire Quantity of Facebook friends	Narcissistic Personality Inventory (NPS) subscales of Grandiose Exhibitionism (GE) and Entitlement/Exploitativeness	EE was a significant predictor of retaliating against mean comments, seeking more support, and Facebook checking behaviours. GE was significantly associated with increased likelihood of retaliating against mean comments.	Weak <i>Does not report missing data management</i> <i>Not all measures validated</i>

					s (EE) (Ackerman et al., 2011)	GE was also associated with getting angry about lack of comments, however EE was not.	
					Feeling angry scale (Dillard & Shen, 2005)		
den Hamer, Konijn, & Keijer (2014)	Holland	Cross-sectional	Adolescents and Young Adults Secondary School Students 12 to 18 years old Mean age = 13.37, SD = 1.36 (892)	Content-based media exposure scale (C-ME; den Hamer et al., 2017).	Cyberbullying Behaviour Questionnaire (CBQ; Calvete, Orue, Estévez, Villardón, & Padilla, 2010) Anger and frustration-scale (Brezina, 1996)	Significant positive relationships were found between exposure to antisocial content and anger ($B=0.48$, $p<0.01$), and cyberbullying behaviour ($B=0.24$, $p<0.01$). Anti-social media exposure mediates significantly between anger/frustration and cyberbullying behaviour ($B=0.14$, $p<0.01$). Suggests angry adolescents are inclined to seek antisocial media content in order to cope with their anger.	Moderate <i>SMU measure does not define whether exposed via television or internet.</i>
den Hamer & Konijn (2015)	Holland	Longitudinal (Three time points over a year)	Adolescents Secondary school students 11 to 17 years old Time 1 and Time 2 (326) Time 3 (111)	Content-based media exposure scale (C-ME; den Hamer et al., 2017)	Cyberbullying Behaviour Questionnaire (CBQ; Calvete et al., 2010)	At all three time points males perpetrated more cyberbullying than females. Higher levels of exposure to antisocial and risk behaviour content via media significantly contributed to cyberbullying behaviour and had a higher growth rate of cyberbullying perpetration over time.	Moderate <i>Use of validated data collection measures</i> <i>Missing data managed appropriately</i>

Erreygers, Vandebosch, Vranjes, Baillien, & De Witte (2018)	Belgium	Longitudinal	Adolescents Secondary School Students Time 1 Mean age= 13.55, SD=0.55 (1746) Time 2 Mean age= 14.08, SD= 0.56 (1590)	EU Kids online questionnaire (EU Kids Online, 2014)	Anger questionnaire European Cyberbullying Intervention Project Questionnaire (Brighi et al., 2012)	Time 2 Cyberbullying was predicted by Time 1 digital media use and Time 1 sleep quality This relationship was also mediated by anger. Previous cyberbullying perpetration. Frequency of digital media use, poor sleep quality, predicts later cyber bullying perpetration, indirectly via increased feelings of anger.	Moderate <i>Use of validated data collection measures</i> <i>Controlled for confounding variables and missing data</i>
Festl, Scharkow, & Quandt (2013)	Germany	Cross-sectional	Adolescents and Young Adults High School Students 13 to 19 years old (276)	ICT use questionnaire assessing individual media exposure	Cyberbullying behaviours questionnaire developed by researchers Class level bullying questionnaire developed by researchers	Average internet use was 2.3 hours a day. Intensive use of social network sites increased the risk of perpetrating cyberbullying.	Moderate <i>Data collection tools not validated</i>
Fisoun et al. (2012)	Greece	Cross-sectional	Adolescents and Adults Students	8-question Youth Diagnostic Questionnaire for internet	'Offline' problematic behaviours questionnaire	Increased internet use demonstrated a clear tendency for both males and females to engage in problematic 'offline' behaviours, such as 'hitting a teacher', 'using a	Moderate <i>Not all data collection measures</i>

			14 to 19 years old (1221)	addiction (Young, 1998) Computer internet usage questionnaire		weapon to rob' and 'hurt someone seriously'. Gender difference demonstrated increased internet use and problematic 'online' behaviours in males involved solitary problem behaviours such as watching excessive pornography, and in females involved more problematic online communication.	<i>were validated</i> <i>No statistical test to explain the relationship</i>
Galica, Vannucci, Flannery, & Ohannessian (2017)	US	Cross-sectional and Retrospective	Adults Emerging adults 18 to 22 year olds (567)	Technology Use Questionnaire. Assessed how much time spent on SM in an average day	Childhood conduct disorder (CD) and Antisocial behavioural syndrome (ABS) questionnaire	Participants reported 6.63 hours using social media in an average day. More childhood CD symptoms were significantly associated with greater daily SMU $B=0.98$, 95% CI=0.66-1.30, $p<0.001$ Higher daily SMU was significantly associated with ABS $B=0.03$, 95% CI=0.01-0.05, $p<0.003$	Weak <i>Data collection tools not validated</i> <i>Self-reported measures used</i>
(Goodboy & Martin, 2015)	US	Cross-sectional	Adults Undergraduate Students 18 to 40 years (227)	Self-report internet frequency and type of social media site use.	Dark Triad Dirty Dozen Scale (Jonason & Webster, 2010) used to assess Machiavellianism	All participants were frequent internet and mobile phone users with 86.8% having a Facebook account. Machiavellianism ($r=0.25$, $p<0.001$), Psychopathy ($r=0.34$, $p<0.001$), and Narcissism	Weak <i>Does not report how missing data or confounding variables</i>

				Revised adolescent peer relations instrument (RAPRI; Griezel, Finger, Bodkin-Andrews, Craven, & Yeung, 2012) measures cyberbullying from the 'bully's' perspective.		($r=0.38$, $p<0.001$), were positively correlated with visual and text based cyberbullying. Psychopathy a significant predictor of cyberbullying ($B=0.27$, $t= 3.49$, $p<0.001$).	were dealt with SM measure was not validated
Kircaburun, Jonason, & Griffiths (2018)	Turkey	Cross-sectional	Adults University students 18 to 28 years old (761)	Bergen Social Media Addiction Scale (Andreassen, Griffiths, Hetland, & Pallesen, 2012) Daily SMU question.	Dark Triad Dirty Dozen Scale (Jonason & Webster, 2010) used to assess Machiavellianism Short sadistic impulse scale (O'Meara, Davies, & Hammond, 2011) Cyberbullying offending scale (Patchin	Daily SMU positively correlated with cyberbullying ($r=0.31$, $p=0.001$), cyberstalking ($r=0.42$, $p=0.001$) and cyber-trolling ($r=0.22$, $p=0.001$) Dark tetrad traits and problematic SMU mediated by cyberbullying and cyberstalking behaviours. Sadism was indirectly associated with Problematic SMU via cyberbullying/ trolling/ stalking. Narcissism was indirectly associated with Problematic SMU via cyberstalking.	Moderate Participants were aware of the aims of the study Used validated measure, although self-report

					& Hinduja, 2015)	Machiavellianism was indirectly associated with Problematic SMU via cyberbullying/stalking. Gender difference – Machiavellianism a unique predictor of cyberbullying and stalking in men. Narcissism a unique predictor of cyberstalking in women, both related to problematic SMU.	
Ko, Yen, Liu, Huang, & Yen, 2009	Taiwan	Cross-sectional	Adolescents Junior and Senior high school Students (9405) Age - M = 14.61, SD=1.70	Chen internet addiction scale (CIAS) (Chen, Weng, Su, Wu, & Yang, 2003) Internet Behaviours questionnaire assessing frequency and type of online activity	Adolescent Aggressive Behaviours Questionnaire (McConville & Cornell, 2003)	Adolescence with internet addiction had a higher risk of aggressive behaviour in the past year (odds ratio = 1.84, 95% CI:1.63-2.07) Internet behaviours of online chatting (odds ratio = 1.86, 95% CI:1.67-2.08), and use of bulletin board systems (odds ratio = 1.27, 95% CI:1.67-2.08), was positively associated with aggressive behaviour	Moderate <i>Controlled for confounding variables</i> <i>Used validated measures although self-report</i>
Kwan & Skoric (2013)	Singapore	Cross-sectional	Adolescents Secondary school pupils Aged 13 to 17 years old (1597)	Facebook intensity scale (Ellison, Steinfield, & Lampe, 2007) Scale developed to	Adapted cyber bullying scale – to reflect cyberbullying occurrence via Facebook (Patchin & Hinduja, 2015)	59.4% of participants indicated they had engaged in at least one form of facebook bullying. Being involved in school bullying was positively related to Facebook bullying ($r=0.56, p < 0.001$).	Moderate <i>Not all data collection methods were validated</i>

				measure risky Facebook use,	Adapted school bullying scale (Ng & Rigby, 2010)	Intensity of Facebook use ($r=0.16, p < 0.001$) and Risky Facebook use ($r=0.33, p < 0.001$) was positively correlated with engagement in Facebook Bullying. No predictive relationship found between intensity of Facebook use and Facebook bullying.	
Martínez-Ferrer, Moreno, & Musitu, (2018)	Spain	Cross-sectional	Adolescents 11 to 16 years old (1952)	Problematic use of SNS scale developed by researchers.	Aggressive Behaviour Scale (Little, Henrich, Jones, & Hawley, 2003)	Higher use of problematic SNS was associated with all dimensions of peer aggression and higher overt and relational aggression scores.	Moderate <i>Not all data collection methods were validated</i>
McCreery & Kathleen Krach (2018)	US	Cross-sectional	Adults Average age 25 years old, SD=7 (106)	Questionnaire exploring time spent online and how many social media sites individuals accessed.	IPIP Big 5 personality Scales (Goldberg, 1999) Scale of aggressive fantasies (Dahlberg, Toal, Swahn, & Behrens, 2005) Scale of Proactive-Reactive	Participants reported using an average of four social media sites and spending three hours a day using social media. Personality did predict pro-active or reactive aggression and aggressive fantasies among SM users. Anger-based ruminations were found to increase aggression among SM Users. However, time spent online did not appear to be a mediating or influential factor.	Moderate <i>Social media measure was not validated</i>

							Aggression (Dodge & Coie, 1987)
Odaci & Çelik (2013)	Turkey	Cross-sectional	Adults University students Aged 18 to 23 years old (424)	Problematic Internet Use Scale (PIU; Ceyhan, Ceyhan, & Gürcan, 2007). High scores indicate internet use is unhealthy and has a negative impact.	Buss and Perry Aggression scale adapted into Turkish (BPAQ; Buss & Perry, 1992a). Social Comparison Scale adapted into Turkish (Allan & Gilbert, 1995)	PIU was found positively correlated with Aggression ($r=0.36, p<0.001$) Other factors: Shyness was significantly positively correlated with PIU, however narcissism, loneliness, and social comparison did not exhibit a significant association. Regression analysis showed shyness, loneliness and aggression to be antecedents of PIU. Suggesting personality characteristics may predispose individual to engage in PIU.	Moderate <i>Data collection measures were translated to a different language to original validated measure</i> <i>No reporting of management of missing data</i>
Park, Na, & Kim (2014)	South Korea	Cross-sectional	Adolescents 12 to 15 years old (1200)	Time spent online measuring daily average time in minutes online. Type of online activities. Developed by the researchers to assess online	Bullying and cyberbullying behaviour questionnaire developed by the researchers. Netiquette Questionnaire , assessing	Time spent online and using SNS positively correlated with bullying someone online, being a victim and witnessing bullying online. Frequent use of information and entertainment content online were positively related to cyberbullying.	Moderate <i>Data collection methods were validated</i> <i>Does not report how</i>

				activities and how often they engaged in them.	online ethical dilemmas adapted from Freestone & Mitchell (2004)	Online bullying was mediated by Netiquette (what people perceive as the right way to behave online).	<i>missing data or confounding variables were dealt with</i>
				SNS use measure. More specific measure of SNS activities and frequency of engagement.			
Peker (2015)	Turkey	Cross-sectional	Adolescents Secondary school students 6 th to 8 th Grade (400)	Questions assessing students internet usage time. Social Media Attitudes Questionnaire (SMAQ). Determines social attitudes, social empowerment, and dependency towards social media.	The revised cyberbullying Inventory (RCBI; Topcu & Erdur-Baker, 2010)	Being male, using the internet for 8 hours or more a week, less parental control over child's internet use, and difficulties in socialisation increase the likelihood of cyberbullying behaviour. Individuals with a pro-social media attitude are more at risk of perpetrating cyberbullying behaviours.	Weak <i>Data collections tools were not validated</i> <i>No detail of how confounders were controlled</i>

Piko, Prievara, & Mellor (2017)	Hungary	Cross-sectional	Adolescents and Adults High School and University Students Aged 14 to 24 years old (408)	Problematic Internet Use Scale (PIU; Demetrovics, Szeredi, & Rózsa, 2008) High scores indicate internet use is unhealthy and has a negative impact.	Buss and Perry Aggression scale translated into Hungarian (BPAQ; Buss & Perry, 1992a)	Disinhibition dimension of sensation seeking scale, loneliness, being male, and PIU (neglect) all significantly contributed to physical aggression. Boredom susceptibility of the sensation seeking scale, PIU (neglect) and stress were positive contributors to verbal aggression.	Moderate <i>Data collection measures were translated to a different language to original validated measure</i>
Tripathi, (2017)	India	Cross-sectional	Older Adolescents and Adults College Students Aged 16 to 30 years old (360)	Survey on social media frequency and type of use.	Survey on virtual violence.	75% spend more than one hour per day on social media, and 20% spend more than 4 hours a day on social media. 72% reported social media as a new type of weapon to violate someone.	Weak <i>No validated data collection measures</i> <i>No statistical analysis</i>
Wegge, Vandebosch, Eggermont, & Walrave (2015)	Belgium	Cross-sectional	Adolescents Secondary School Students 13 to 14 years old (1229)	Measured the amount of Facebook Friends participants were connected with	Harassment measure developed by researchers	Having a higher number of facebook friends that are "less close" or "no underlying friendship" or existing social relationship increases the likelihood of online harassment and bullying behaviours. This includes sending rude private messages, posting malicious comments, pictures of messages, and bullying.	Moderate <i>Data collection methods were validated</i> <i>Does not report how missing data</i>

								The number of Facebook Friends and the Strength of the relationship (weak or unbalanced friendship ties) is predictive of involvement in harassment and bullying (weak or unbalanced friendship ties)	or confounding variables were dealt with
Werner, Bumpus, & Rock (2010)	US	Cross- sectional and Longitudinal	Adolescents 6 th to 8 th grade students (330) (150) of original participants completed survey again a year later	Computer- Mediated- Communication (CMC) Questionnaire exploring frequency of CMC and type of use e.g. chatrooms, blogs.		Internet Aggression Questionnaire Traditional (offline) aggression questionnaire adapted from the Bullying scale (Bosworth, Espelage, & Simon, 1999) Normative Beliefs about Aggression Questionnaire (Huesmann & Guerra, 1997)	Higher levels of CMC were a significant predictor in internet aggression. Normative beliefs about overt and relational aggression were significant predictors in engaging in internet aggression. For traditional (offline) aggression, relational aggression emerged as a significant predictor of internet aggression, but not physical or verbal aggression.	Weak <i>Did not collect SES participant information</i> <i>Data collection tools not validated</i>	
Wright (2017)	US	Longitudinal (Two time points over a year)	Adolescents Middle School Students	Time measures: Usage of Technology Questionnaire	1	Time measures: Face to face and Cyber	1 Did not report direct relationship between technology use and face to face or cyber aggression. Increases in anger overtime related positively to more hostile	Moderate <i>No validated data collection measures</i>	

			Mean age= 12.76 Time 1 (462) Time 2 (439)		peer conflicts measure (Crick & Dodge, 1996) Self-reported face to face relational aggression measure Self-reported cyber aggression measure Time 2 measures: Face to face and cyber aggression vignettes	and aggressive blame attributions being made in unambiguous situations online, which were related to greater use of face to face and cyber aggression. Findings suggest social context is important for the processing social situations, this can be impacted by the online environment.	<i>No reporting of SMU exposure measure</i>
Yen, Yen, Wu, Huang, & Ko (2011)	Taiwan	Cross-sectional	Adults College Students Mean age = 20.97 years old, SD= 1.83 year (2262)	Chen internet addiction scale (CIAS; Chen et al., 2003)	Buss-Durkee Hostility Inventory-Chinese version-Short form (BDHIC-SF; Buss & Durkee, 1957).	Internet addiction was associated with higher scores on the four dimensions of hostility in both the real world and online. Individuals with higher scores of internet addiction also had higher scores expressive hostility behaviour online, particularly if they used the internet mainly for 'chatting'.	Moderate <i>Data collection measures had reasonable validity</i>

Total hostility levels decreased when individuals went online, suggesting online activities could be an outlet for hostility.

2.5 Data Synthesis

Data Synthesis was carried out with a qualitative (descriptive) analysis, where the results of each included study were described narratively based on the PECO and risk of bias. These studies were presented in table 1, and when compared against one another, they differed greatly in their exposure and outcome measures. This meant study results were heterogeneous and quantitative analysis in the form of a meta-analysis was not appropriate or meaningful. Therefore, qualitative synthesis on included studies was carried using textual data describing the findings. Themes were identified to build a picture up of the relationship between SMU and aggressive behaviour, including predicting and mediating factors. However, as many of the studies were of a cross-sectional design, and the exposure variable of social media use not a stable concept over time, predictive ability of variables must be interpreted with caution (Reichenheim & Coutinho, 2010).

2.5.1 General electronic communication use and aggressive behaviour

SMU was measured as part of general electronic communication use in nine of the included studies. Social media shares characteristics with other forms of electronic communication such as email or text messaging, for example ease of connectedness and versatile ways of communicating quickly via text, image or video based messages. General electronic communication use also refers to devices used such as the internet, smart phones and tablets whereby electronic

communication and exposure to social media is likely. However, social media is also unique to other forms of electronic communication use in its fast formation of online social networks and its ability to share information in an instance with wide audiences. Studies using general electronic communication use measures were included in this review in order capture the information they gathered on SMU, however this limited the inferences that could be made specifically about social media exposure due to the lack of identifiable information separating SMU from other forms of technology. This will be important to keep in mind when reading this section.

Most studies found general electronic communication use had a significant relationship with aggressive behaviour. Barlett and Chamberlin (2017) examined the relationship between adolescents and adult's technology time and cyberbullying behaviour and attitudes. Findings indicated increased time spent online was associated with increased cyberbullying behaviour and increased positive attitudes relating to cyberbullying such as a willingness to engage in cyberbullying and minimisation of the harm caused by it. They also found a predictive relationship suggesting positive attitudes towards cyberbullying and increased time spent online was predictive of cyberbullying behaviours. The Attitude-Social Influence-Self-Efficacy Model (ASE) supports these findings highlighting the influential role attitudes have in behaviour and intention of online aggression (Lee & Wu, 2018). The predictive relationship between positive attitudes and time spent using technology decreased in strength when explored in older participants. Unified theory of acceptance and use of technology

(Venkatesh, Thong, & Xu, 2012) suggests older individuals may have a lower drive to cyberbully due to their lack of ambition to learn how to use the technology in order to do so. This may explain some practical reasons behind lower technology use and cyberbullying behaviours in older individuals but does not explore further other contributing variables. Age was found not to have an effect on cyberbullying attitudes, indicating that adults and adolescents shared commonly held beliefs about electronic communication. The strongest predicting variable was found between attitudes and perpetration of cyberbullying across all age groups. Suggesting technology use plays an important role, however without the presence of positive attitudes towards cyberbullying, perpetration may not occur. Werner et al. (2010) findings also supported the predicting influence attitudes had on adolescent offline' and 'online' aggression. Computer-mediated communication was found a significant predictor of internet aggression, along with normative beliefs about overt and relational aggression. They suggested that these findings reflected "online" activities provided increased opportunities for pro-aggressive "wired" youth to be aggressive.

Fisoun et al., (2012) study found that as adolescents and adult's general electronic communication technology use increased, so did 'offline' aggressive behaviour such as hitting someone, using a weapon or hurting someone seriously, and 'online problematic behaviours' such as watching excessive pornography or becoming involved in problematic online communication. Their conclusions about the link between increased electronic communication technology use and aggressive or problematic behaviours appeared to suggest electronic communication technology

was a significant factor in creating environments suitable for individuals with antisocial behaviour problems to act out without the normal buffers of 'face to face' interaction (Joinson, 2007).

Erreygers et al. (2018) completed a longitudinal study on adolescents which found the frequency of general electronic communication technology use had a significant negative relationship with sleep quality suggesting adolescents suffered from sleep problems as a result of increased digital exposure. When mediated by anger this predicated later cyberbullying perpetration. This study provided a pathway for understanding contributing factors to online aggressive behaviour which suggested technology use impacted sleep which led to heightened anger (Ireland & Culpin, 2006; Thomsen, Mehlsen, Christensen, & Zachariae, 2003) fuelling online aggression.

Yen et al. (2011) studied adult's general electronic communication technology use and the relationship with hostility, identifying internet addiction through exploring compulsive use, withdrawal, intolerance, and time management. Internet addiction was associated with all four dimensions of hostility (Buss & Durkee, 1957) in both 'real world' and 'online' environments, and in particular expressive hostility. Online chatting behaviours were mostly associated with expressive hostility when compared with other online activities. When comparing the level of expressive hostility experienced 'online' and in 'real world' environments, the

levels of hostility were lesser in activities 'online', than in 'offline' activities. Wright (2017) found engaging in frequent online activities such as communication was not significantly related to increased cyber-aggression or hostility, although anger appeared to have a mediating effect, there was still no significant association. This suggested there may be buffering effects of general technology use for hostility 'online' compared to in the 'real world'. The anonymous environment and lack of face to face interaction could lessen the provoking effect on hostility reducing the intensity (Suler, 2004b). Exposure to general technology use may also have a relaxing and entertaining effect on individuals wellbeing hence reducing the level of hostility felt when engaged in online activities (Magsamen-Conrad, Billotte-Verhoff, & Greene, 2014). As hostility is a predictive factor in aggressive behaviour (Ramírez & Andreu, 2006) these findings are important in the understanding of technology use and its relationship with aggressive behaviour.

Ko et al., (2009) found adolescents with internet addiction were more likely to have carried out aggressive behaviour in the past year. They suggested adolescents who had existing problems with aggressive behaviour were more vulnerable to internet addiction and prone to increased electronic communication technology use. Previous research has suggested adolescents with higher risk of violence were more likely to seek out, or be vulnerable to engaging with more violent media content (Cantor, 2000). Frustration-intolerance (Ko, Yen, Yen, Chen, & Wang, 2008) may explain this increased use of technology suggesting individuals who have problems managing their frustration may use the internet as a way to vent and release their frustration. Social learning theory would suggest

this pre-disposition to seeking violent media content could trigger a cycle whereby adolescents begin to learn aggressive behaviour through their increased technology use, and practice in the 'online' and 'real world'. Another important factor raised in this study was the increased sensory overload individuals may experience through increased online exposure, which could lead to decreased self-awareness and minimise individuals concern for social situations increasing the likelihood of perpetration of aggressive behaviour (Reicher, Spears, & Postmes, 1995).

Overall studies exploring general electronic communication technology use and aggressive behaviour found significant two-way relationships, where technology use exposure appeared to influence aggression and aggression appeared to influence increased general technology use. Other factors such as anger, sleep problems and attitudes were found relevant in the relationship between technology use and aggression.

2.5.2 Facebook frequency and intensity of use and aggressive behaviour

Facebook, for many people is the most popular social media site in the world, and a huge part of millions of people's day to day lives and relationships (Ahmad, 2011). Three studies in this systematic review explored specifically Facebook frequency and intensity of use and its relationship with aggressive behaviour.

Carpenter (2012) explored the frequency of Facebook behaviours such as self-promotion, retaliation to mean comments, acceptance of strangers, and number of Facebook friends, and the relationship with problematic personality traits in adults. Entitlement and Exploitativeness traits were found to be a predictor of Facebook aggression, and Facebook checking behaviours. Grandiose Exhibitionism was found associated with increased likelihood of becoming angry regarding lack of Facebook comments. This finding demonstrated the influence personality may have on antisocial and aggressive behaviour patterns online, and the frequency and type of SMU. Facebook intensity and risky facebook use was explored in adolescents and associations found between higher intensity of facebook use and engagement in facebook bullying (Kwan & Skoric, 2013). In the adolescent population Facebook bullying was found common amongst Facebook users, demonstrating that despite the positive experiences Facebook provides society, it also brings its problems. Facebook bullying was found positively related to offline bullying which suggested similarities. Social rank theory (Beran & Li, 2008) has been used to explain 'offline' bullying behaviour suggesting that the peer group establishes a hierarchy, and aggression is used to gain dominance over peers. Olweus (2001) suggests this is translated to the online environment, whereby Facebook bullying is a way of gaining social acceptance amongst peers, and aggression acts as a way to restore power balance and a higher position in the social hierarchy. This explanation is supported by findings in Wegge et al. (2015) study that suggests having a higher number of facebook friends with distant associations can increase the likelihood of online harassment and bullying behaviours. The weak tie between Facebook friends could be representative of an imbalance and perceived loss of power or social status, and therefore aggression online may function as a way to regain social standing (Mouttapa, Valente,

Gallaher, Rohrbach, & Unger, 2004). Social comparison theory can also be used as a framework to understand the frequency of social media exposure and increased aggressive behaviour as it would suggest that individuals may act in a way to level the difference between people they perceive as socially superior to them (Lange & Crusius, 2015; Smallets, Streamer, Kondrak, & Seery, 2016). This can create unhealthy feelings of envy (Krasnova et al., 2013), depression (Appel et al., 2016) and hostility (Crusius & Lange, 2015) and may explain why increased aggressive behaviour is the outcome.

2.5.3 Content-based media exposure (including violent and antisocial content) and aggressive behaviour

It is widely established in the research that general media exposure to violent and aggressive content can influence violent and aggressive behaviour in individuals (Cantor, 2000). This review identified two studies exploring the impact of exposure to antisocial and risk behaviour online and its effect on initial (den Hamer et al., 2014) and longer term cyberbullying (den Hamer & Konijn, 2015). These two studies used the 'content-based media exposure scale' (den Hamer et al., 2017) which reflected the change in how media content is consumed, previously exposure was mainly via television and computer games, however content now is primarily consumed online, via digital devices (mobile phone, tablet, computer) and the use of social media sites. Both studies findings indicated higher levels of exposure to media portraying antisocial behaviour (e.g. fighting or destroying property) contributed significantly to perpetration of cyberbullying. den Hamer &

Konijn's (2015) longitudinal study suggested greater antisocial media exposure escalated the development of more severe perpetration of online aggression a year later. Social cognitive theory suggests these findings could be related to modelling and vicarious learning through the exposure of anti-social and aggressive material (Bandura, 2001). In addition, another significant process was identified as an underlying mechanism in online aggression. Face to face victimisation or bullying was found to trigger feelings of anger, den Hamer et al. (2014) suggests this encourages individuals to seek out antisocial or aggressive social media content which then can have an influential effect on the perpetration of online aggression. It is suggested that this process may be how individuals attempt to cope with their anger, consistent with general strain theory (Patchin & Hinduja, 2011), therefore creating a self-sustaining cycle of aggressive media exposure and aggressive behaviour perpetration.

These two studies provide important theoretical suggestions that a two-way interaction impacts on the exposure (SMU) and outcome (aggression) variables influencing one another simultaneously, and being reinforced through social learning theory over time (Bandura, 2001).

2.5.4 Social media usage and aggressive behaviour

There were nine studies in total specifically measuring SMU; five exploring the relationship with cyberbullying, and four exploring general aggressive behaviour.

Social media, now one of the most frequently used methods of communication, allows individuals to build their identity, become part of new social groups, and form or maintain relationships (Staksrud, Ólafsson, & Livingstone, 2013). These nine included studies report on the antisocial side of social media to understand the relationship with aggressive behaviour.

Festl et al. (2013) explored cyberaggression in adolescents and young adults, finding intensive SMU heightened the risk of cyberaggression, and frequency of general internet use did not have the same relevant effect. This suggested that something specific to SMU was enhancing the likelihood of committing aggression online. Festl et al. (2013) indicates social media's infrastructure creates an environment for toxic interactions to form, with anonymity, large audiences, the buffer of lack of face to face interaction, and ease of instant access to online activity, all important factors in the perpetration of online aggression. Peker (2015) analysed the risk factors associated with cyberbullying in secondary school students. Being male, using the internet for eight hours or more a week, less parental control, and difficulties in socialisation placed individuals at more risk of carrying out cyberbullying behaviour. Peker (2015) suggested gender differences could be explained by social norms that considered aggressive behaviours in males as more acceptable, and suggested females have more empathy than males (Topcu & Erdur-Baker, 2012). Findings also indicated those who held positive attitudes towards how social media benefits their lives were more likely to use social media pro-socially. When positive attitudes decreased, and negative opinions of social media began to form, the risk of using social media sites for

online aggressive acts increased. This supports other research suggesting negative experiences on social media such as being a victim of online aggression, could act as a triggering factor (Law, Shapka, Hymel, Olson, & Waterhouse, 2012b). Park et al. (2014) found increased adolescent SMU was associated with increased online aggression, in particular frequent activities of accessing information and entertainment content. Park et al. (2014) also introduced the interesting concept of 'netiquette', described as rules and boundaries that apply when communicating online. Higher 'netiquette' had a moderating effect on online aggression appearing to reduce the likelihood. It is thought that lower 'netiquette' may be characterised by higher levels of moral disengagement (Runions & Bak, 2015), lack of empathy (Topcu & Erdur-Baker, 2012), and desensitisation through media exposure (Cantor, 2000). These study outcomes suggest the interaction between personological characteristics and environment impact on the likelihood of online aggression perpetration.

Two studies explored personological characteristics further, looking into the mediating effect personality may have on SMU and online aggression. Both found increased daily SMU was positively correlated with cyberaggression (Goodboy & Martin, 2015; Kircaburun et al., 2018) and both found dark tetrad traits were positively associated with problematic SMU. Kircaburun et al. (2018) linked sadism, narcissism and Machiavellianism to cyberaggression and identified gender differences, in that male cyberaggression was more associated with Machiavellianism and female cyberaggression with narcissism. Moral disengagement was suggested a possible influential process in the prediction of

online antisocial behaviour, and appears an established factor in the Dark Tetrad traits (Egan, Hughes, & Palmer, 2015). Goodboy and Martin (2015) additionally found psychopathy was the strongest predictor of online aggression. Previous research suggests individuals with dark tetrad personality traits are pre-disposed to aggression (Jones & Paulhus, 2010), raising the question of whether aggression predicts types of SMU, or SMU predicts aggressive behaviour. Both studies also indicate dark tetrad traits lead malevolent motivations to cyberaggress; for Machiavellianism it's to strategically gain something, narcissism it's for revenge or face restoration, and with psychopathy there may be no provocation or discernment (Goodboy & Martin, 2015). This suggests the possibility that personality factors may predict type of SMU, although this cannot be confirmed as much of the studies in this review lack evidence of causal links.

In terms of offline aggression, SMU was found to positively correlate with aggressive behaviour in the 'real world', such as fighting, bullying, and face to face verbal aggression. These studies were included in this systematic review to shed further light on the dynamic relationship between SMU and aggression perpetrated in the 'real world'. Martínez-Ferrer et al. (2018) study explored this dynamic in adolescents, finding that problematic SNS use was associated with increased levels of overt aggression (physical and verbal), and impulse control was an important factor in this relationship. In addition to reactive aggression, Martínez-Ferrer et al. (2018) also identified pro-active aggression correlated positively with greater SMU supporting existing evidence suggesting controlled expression of aggression and greater hostility may be affected by individual's lack

of care for consequences or harm caused to others potentially contributed to by desensitisation via frequent problematic SMU (Krahé et al., 2011). McCreery & Krach (2018) also explored the outcome of pro-active and reactive aggression and its link with SMU however did not find that amount of time spent online was relevant to the relationship, and that it was more anger-based ruminations and aggressive fantasies that had a mediating effect. More frequent users of social media were found more likely to engage in aggressive fantasy. This is consistent with findings on social learning theory that suggest the impact of engaging in 'virtual' and 'unrealistic' activities online can impact on behaviour in the offline world.

Galica et al. (2017) found greater conduct disorder and anti-social personality disorder symptoms in emerging adults who frequently used social media during childhood into their adulthood. Social learning theory, again, could explain the development of greater anti-social behaviours due to modelling and learning from antisocial SMU exposure. However, social compensation theory was also suggested to explain this link (Mikami, Szvedo, Allen, Evans, & Hare, 2010). Galica et al. (2017) described young people with existing problem behaviours may be drawn to using social media sites. This is in order for them to act out their problem behaviours in a 'safer' way, perceiving less harm caused to others and minimal consequences for themselves as a result of the anonymity and distance social media provides between perpetrators and victims. Two further studies addressed other psychological characteristics relating 'offline aggression' and SMU. Loneliness, disinhibition and being on the receiving end of internet

associated 'neglect' were found associated with physical aggression in youth (Piko et al., 2017). Obsessive internet use was also found a significant predictor of anger, both of which are associated with self-control suggesting that lack of self-control is likely associated with SMU and aggression (Denson, DeWall, & Finkel, 2012). Odaci and Çelik (2013b) researched problematic SMU and the personological factors of shyness, loneliness, aggression and narcissism, only finding a significant relationship between aggression, shyness with Problematic SMU. They suggested those who chose to spend more time using SMU engaged in less face to face interactions, therefore in 'offline' social situations these individuals may lack social skills resulting in shyness or aggressive behaviour.

These studies exploring SMU and 'offline' aggression demonstrated the complex role social media plays in aggressive behaviour; being either an antecedent or consequence in the relationship.

2.6 Discussion

2.6.1 *Main results and interpretation of findings*

Increased SMU was identified as an antecedent or trigger for aggressive behaviour in a number of studies within this review. The mere nature of the social media environment was found to be inductive to developing aggressive interactions.

Firstly, the anonymity of the environment and the distance it creates between individuals supposedly works as a buffer, where by the normal restraints found in the 'offline' world are not present in the 'online' world and therefore do not prevent individuals from being aggressive (Festl et al., 2013; Fisoun et al., 2012). This may explain why prevalence of aggression online was higher than aggression 'offline' in some cases. This supports the online disinhibition effect theory suggesting people can show a lack of restraint online due to dissociative anonymity and invisibility in their interactions (Suler, 2004b). Social learning theory was also supported as a framework in which to understand increased SMU as a significant contributor to aggressive behaviour. Some findings suggested that any type of social media exposure could desensitise individuals to aggressive behaviour through sensory overload, and decreased awareness of the environment and consequences (Barlett & Chamberlin, 2017; Ko et al., 2008; Werner et al., 2010). Whilst other findings suggested aggression was more likely predicted by exposure to content of an aggressive or antisocial nature (den Hamer et al., 2014; den Hamer & Konijn, 2015), where modelling and vicarious learning processes may lead individuals, particularly of a younger age to practice, online or in the real world, any aggressive behaviour learnt. This is consistent with previous research on general media exposure and aggressive behaviour (Cantor, 2000), and highlights the importance of monitoring what individuals are exposed to in order to reduce any problematic effects such as aggression. Problematic SMU was found to increase the likelihood of aggressive behaviour through a variety of other factors. For example increased use of social media impacted on sleep quality which meant frustration-tolerance was low, making an aggressive reaction more likely (Erreygers et al., 2018). Also exposure to social media could lead to unhealthy social comparisons, as a result of individuals being overloaded by

information from others that insinuate social status, success, and happiness. This may trigger a perceived loss of power or social status where aggression may function to regain social standing (Wegge et al., 2015). The concept that online aggression may be motivated by feelings of envy or social comparison is one needing further research. Of the studies included in this review there were elements that suggested this process, although no specific research focusing solely on these two variables. The online environment lends itself well to creating a social comparison effect due to the amount of 'filtered' information individuals receive about others when using social media. With existing research evidencing the link between social comparison and 'offline' aggressive behaviours (Guerrero & Andersen, 1998; Smith, Parrott, Ozer, & Moniz, 1994; van de Ven, 2014), it would be important to establish whether this link exists in the online environment to add to the understanding of the phenomena of online aggression.

As well as a triggering factor, social media was also found to be a consequence of aggression with many studies identifying a link between problems with anger, hostility, and aggression, and the use of social media. Engaging in frequent communication online was associated with increased hostility, suggesting social media may be a preferred vector for expressing anger and hostility (Yen et al., 2011). Individuals who experienced poor frustration-tolerance were also more prone to increased SMU (Ko et al., 2008). These studies indicate SMU, as a consequence of aggressive behaviour, may be used by individuals as a way to vent, act out or cope with their anger and frustrations (den Hamer & Konijn, 2015), consistent with general strain theory which suggests stressors or triggers lead to negative feelings which lead to the need to express them through aggression (Patchin & Hinduja, 2011). Certain problematic psychological and

personality factors appeared to mediate the relationship between aggression and SMU, suggesting that pre-existing problems, such as having antisocial attitudes, dark-tetrad personality traits and behavioural disorders, may draw individuals to using social media in a more antisocial or aggressive way. Hence adding to the self-sustaining cycle suggested by the findings in this in review.

2.7 Limitations

There are a number of limitations to consider when interpreting the results of this systematic review. Firstly, due to the different designations used to describe online aggression the searches were likely not to have captured all studies exploring the phenomena. For example terms such as 'flaming', which is the online act of posting insults (Alonzo & Aiken, 2004), were not searched on the basis that 'trolling' or 'online aggression' would cover such behaviours, however on review of the literature flaming is suggested as a distinct phenomena important to the understanding of online aggression. Therefore future systematic reviews into online aggression would benefit from including it in their search strategy. Secondly, there were methodological limitations, none of the studies included had strong control over bias, most studies moderately controlled for bias and some only weakly controlled for bias. This was mainly due to the reliability of the measures used, most of which were self-report and not all validated, also there was a common lack of reporting on missing data, and the cross-sectional design of most of the studies impacted on bias. There was also a lack of standardised measures to investigate social media use, or online aggressive behaviours such as cyberbullying or trolling, this made it more difficult to review studies against

each other, highlighting the gap in research tools for assessing online aggression. Thirdly the participants were mainly students, either in secondary school or university, which was not representative of the general population. Fourthly, due to the heterogeneity of the data a quantitative data synthesis could not be performed and data was interpreted textually. Finally, due to the rapidly changing nature and growing interest in understanding social media much of the research in this field is currently in progress, meaning that not all current research to date was captured by the review due to awaiting publication.

2.8 Conclusions and Recommendations

The overall findings of this systematic review present an interesting account of social media's relationship with aggressive behaviour whereby SMU and aggression can influence one another. The impact of this maladaptive cycle appears to increase online and offline aggressive behaviour, and in turn increases SMU. The effect is found greater in those of a younger age, therefore intervention and prevention would primarily be most effective to this vulnerable group. Individual factors such as self-control, frustration-tolerance, and personality contribute to the relationship between aggression and social media use. There was also an interesting association emerging between social media exposure and negative feelings such as envy or hostility related to perceived social standing, the motivation to engage in an aggressive response online to level this difference warrants further research as evidence from the included studies was not strong enough to make inferences about this link.

Due to more similarities, than distinguishable features found in 'online' and 'offline' aggression it may be reasonable to treat them together as general aggressive behaviour for the purpose of intervention. Intervention should take a dual-approach targeting the environmental and individual factors associated with the aggression in order to break the cycle of the problematic relationship between SMU and aggression. To understand SMU and aggression further researchers are recommended to carry out studies with experimental and longitudinal designs, and with validated assessment measures to add robust studies to the research base.

Chapter Three

Green-Eyed Scrolling: Envy, Self-control and Aggression in Online Aggressive Behaviour within an adult population

Abstract

Technological developments have adversely increased online criminality; common offences include fraud and internet sexual offending. This study explored a more undefined area of online offending involving communication through social media. The primary objective was to investigate the constructs of envy, self-control, and aggression in online aggressive behaviour (OAB). It was hypothesised individuals who experienced higher levels of malicious envy, problems with self-control and problems with aggression were more likely to engage in OAB. A secondary objective explored SMU and its relationship with OAB. 415 adults participated in the study advertised on social networking sites and online forums targeting adults who use social media. Participants completed an OAB questionnaire, and envy, aggression, self-control and SMU measures. Data were collected using an online survey website. A stepwise multiple regression analysis found participants with higher levels of physical and verbal aggression, lower levels of self-control, and who had more harmful intentions were most likely to engage in OAB. Malicious envy was not significantly predictive of OAB as hypothesised, although still showed an interesting relationship. The results of the study allow for important comparisons to be made between aggression perpetrated 'online' and 'offline'. Other important implications include adding to the psychological profile of online aggressors to improve identification, intervention, and prevention of this harmful behaviour.

3.1 Introduction

The internet has increasingly taken over face to face interactions (Drago, 2015). Friendships maintained, romantic relationships created, and work deals made through online communication. These advancements have hugely/ benefitted our population, however little is known about the impact on human interactions, behaviours and psychological well-being (Przybylski & Weinstein, 2012). Online communication has darker sides, where aggressive, intimidating and threatening communication is frequent (Zimmerman & Ybarra, 2016). Convictions for online aggression have increased and three main motivations identified include; profit-motivated, work-related revenge and online harassment/stalking (Sutherland and Dowling, 2015). The most common prosecutions fell under the Computer Misuse Act, s.127 Communications Act and Malicious Communications Act (Sutherland and Dowling, 2015), with others falling under Stalking and Harassment legislation or Public Order offences (McGuire and Dowling, 2013). Research exploring the psychological mechanisms underlying behavioural outcomes can help to gain a better understanding of behaviour and its negative consequences. In this present study we focus on the behavioural outcome of online aggression, by examining various psychological processes; aggression, self-control, envy, and social media exposure.

3.1.1 Online Aggressive Behaviour (OAB)

The sparse amount of research into online behaviour and communication makes it difficult to come to a singular definition of OAB. Forms of OAB include trolling,

cyberbullying, cyberstalking and cyber-harassment (Duggan et al., 2015). Trolling is defined as "behaving in a deceptive, destructive, or disruptive manner in a social setting on the internet with no apparent instrumental purpose" (p. 97, Buckels et al., 2014). Although it is argued trolls intentionally aggravate, provoke and lure individuals into useless arguments (Coles & West, 2016). Cyberbullying is described as "wilful and repeated harm inflicted" through electronic devices (p.1, Hinduja & Patchin, 2008) targeting specific people known to them, unlike 'Trolls' who target someone unknown (Hinduja & Patchin, 2010). Online aggression is described as an age old problem "through a new medium" (p. 277, Short & Maple, 2011) with technology providing new avenues to commit existing acts like stalking or harassment. Cyberstalking aims to harass, intimidate and cause emotional distress to an individual (Paul & Leroy, 2002) and Cyber-harassment is "the intimidation, repeated or otherwise, of one individual by another or a group perpetrated through electronic means" (p. 277, Short & Maple, 2011). Though different in their form, these behaviours share a common theme, their ability to induce provocation, hostility, or distress to those on the receiving end (Grigg, 2010; Kellerman, Margolin, Borofsky, Baucom, & Iturralde, 2013; Kowalski et al., 2014). This study examines a variety of online aggressive behaviours, the decision to include such a range comes from a scope of the initial research which highlighted gaps in the literature in understanding the phenomena of online aggression. Research does specifically explore certain types of online aggression, such as trolling behaviours and their link with sadistic personality traits (Buckels et al., 2014), low self-esteem and lack of empathy as influencers of cyberbullying (Brewer & Kerslake, 2015), and cyberstalking being motivated by obsession and revenge (Haron & Yusof, 2010). However other evidence points towards the need for the broader definition of online aggression to be studied due to its change in

trends over time and the range in behaviours that are common to it (Grigg, 2010). This will limit the specific detail in which certain types of OAB are investigated, however will allow for exploration of online aggression as an overall concept and the ability to compare OAB with its offline counterpart.

Research suggests anonymity in an online environment creates more opportunities for people to display aggressive behaviour (Zimmerman & Ybarra, 2016). Anonymity reduces the amount of empathy experienced (Suler, 2004), hence increasing the likelihood of acting aggressively online. However, this cannot alone explain why OAB occurs and does not account for the many people that do communicate online in an appropriate, supportive, and non-aggressive manner, or those who are aggressive yet use their identity.

As Suler's (2004) research only contributes so far to the understanding of aggressive behaviour online, co-construction theory (Subrahmanyam, Smahel, & Greenfield, 2006) offers another explanation. It describes an overlap between 'offline' (face to face and verbal interaction) and 'online' environments (interaction through electronic means). It suggests people construct their online environment in a similar way to their offline environment and if they are aggressive 'offline' they will likely display this type of behaviour in the 'online' environment (Estevez, Villardon, Calvete, Padilla, & Orue, 2010; Gradinger et al., 2012). In a study exploring the use of social networking sites a pattern was found indicating that individuals use online environments to strengthen aspects in their 'offline' world (Subrahmanyam, Reich, Waechter, & Espinoza, 2008). For example facebook bullying has been found an extension of existing face to face battles (Kwan & Skoric, 2013), and research into cyber-bullying and cyber-stalking has

demonstrated the fluid crossover of these behaviours from online to offline during perpetration (Lyndon, Bonds-Raacke, & Cratty, 2011). However, other research suggests differences in how we experience 'online' and 'offline' environments (Nowak, Watt, & Walther, 2005), for example the anonymity of the 'online' environment reduces the ability for the victim to defend themselves, hence minimising the consequence of any harmful online behaviour (Moore et al., 2012). The online environment also lends it's self well to fuelling mechanisms such as moral disengagement (Runions & Bak, 2015) and social information processing associated with face to face interactions do not occur in the same way online (Dooley, Pyżalski, & Cross, 2009a). This suggests distinct differences in the 'online' and 'offline' environments and therefore co-construction theory may not explain OAB adequately. This research aims to explore traits found significant in 'offline' aggressive behaviours to investigate their presence in OAB, the results will help to clarify further whether co-construction theory can be applied to describing why aggression may occur online.

3.1.2 Aggression and Self-Control

If co-construction theory (Subrahmanyam et al., 2006) suggests online and offline environments are not dissimilar, then aggression 'online' and 'offline' would also not be dissimilar. General aggression is described as the intent to harm another when they do not wish to be harmed (Bushman & Huesmann, 2010). Aggression is influenced by four facets; physical aggression, verbal aggression, anger and hostility (Buss & Perry, 1992a). Aggression can present in many different forms; hitting, biting, using a weapon, swearing, damaging someone's property or

reputation (Warburton & Anderson, 2015). It can be direct or indirect, deliberate, or automatic, and can serve many different functions highlighting its complexity. A suggested approach to understanding aggression is to distinguish intention, level of anger or hostility, and the reactive or planned nature (Anderson & Huesmann, 2003). Links between 'offline' aggression and engagement in 'online' aggression have been found in adolescent populations where increased aggression levels predicted more likely engagement in cyberbullying (Raskauskas & Stoltz, 2007; Williams & Guerra, 2007). However, research is limited when exploring OAB and aggression in an adult population.

Self-control is commonly accepted as having a strong association with aggressive behaviour (Denson et al., 2012). Reactive automatic aggressive acts are thought to be a partial consequence of poor impulse control (McMurrin, Blair, & Egan, 2002; Piko & Pinczés, 2014; Warburton & Anderson, 2015). Lack of self-control is also factor within extreme aggressive acts, including violent offending (Larson, Vaughn, Salas-Wright, & Delisi, 2015; Piquero, MacDonald, Dobrin, Daigle, & Cullen, 2005; Tittle, 2011). The I³ model suggests three underlying processes in aggressive behaviour: instigation, impellance, and inhibition (Finkel, 2007; Finkel et al., 2012). Instigation and impellance are the powerful aggressive urges that arise in a situation, however it is the inhibition process that defines whether the aggressive urge can be suppressed or is acted upon (Denson et al., 2012). Self-control is an important aspect of inhibition, this model suggests if self-control is weak then it reduces the restraint a person has to prevent acting on their aggressive urge.

Associations between lack of self-control and cyber-crimes have been emerging in research (Holt et al., 2012) including viewing sexual material online (Buzzell, Foss, & Middleton, 2006), illegal music downloading (Wolfe & Higgins, 2009) and film piracy (Malin & Fowers, 2009). However there appears to be little research into the role of self-control in OAB.

3.1.3 Social Media Exposure

Online environments bombard us with information about other people's lives, often people presenting their 'ideal' self, not a true representation (Hogan, 2010). Watling (2012) suggests individuals are anxious to make good impressions and manage their online identities by filtering out information they don't want others to know. Whereas in 'offline' environments, although still attempting to present their 'ideal self', people are more likely to show a 'truer' self due to face to face interactions where body language, appearance and behaviour can be physically observed in real time (Subrahmanyam & Greenfield, 2008). Increased exposure to online environments have been linked to negative psychological consequences, including higher levels of stress (Hampton, Rainie, Lu, Shin, & Purcell, 2015), increased loneliness (Chou & Hsiao, 2000), and low self-esteem (Ayas & Horzum, 2007; Aydn & Sar, 2011; Brewer & Kerslake, 2015). However less appears known about behavioural consequences of exposure to online environments, in particular aggression. General media exposure has been associated with an increase in aggression and violence perpetrated in 'offline' environments (David-Ferdon &

Hertz, 2007; Funk, Baldacci, Pasold, & Baumgardner, 2004; Ostrov, Gentile, & Crick, 2006), this includes watching violent content online, and playing violent computer games. Increased media exposure suggests processes such as moral disengagement (Richmond & Wilson, 2008), and desensitisation (Krahé et al., 2011) come into play mediating the act of aggression.

3.1.4 Envy

'Offline' and 'Online' environments differ in their form (Subrahmanyam et al., 2008), but not a lot is known about the differences in the psychological processes of each environment. This study explored the process of envy, defined as the feeling of lacking a desired attribute enjoyed by another (Parrott & Smith, 1993). Envy has been found a consequence of increased consumption of social information from social media (Burke, Marlow, & Lento, 2010; Tandoc, Ferrucci, & Duffy, 2015) and the tendency to compare is thought a common trait amongst Social Media Users (Jordan et al., 2011). This supports the view that increased exposure to social media, including ease of access to other's personal information, the more envious a person becomes (Chou & Edge, 2012).

Envy has been linked to aggressive behaviour in the 'offline' world with envy being the source of much aggressive behaviour (Leach, 2010; Smith, 2010). Envy has been found to translate into hostility, and people who felt envious, wished ill-will on the person they envied (Cuddy, Fiske, & Glick, 2007; Leach, 2010). Envy is divided into two forms, benign and malicious (Lange & Crusius, 2015) which represents two different ways individuals can achieve "levelling the difference"

between themselves and the superior other. If someone experiences benign envy they may “level up” and attempt to become as successful. With malicious envy, someone may “level down” by causing harm or expressing hostility towards the superior other. This model evolved from Social Comparison Theory (Festinger, 1954; White, Langer, Yariv, & Welch, 2006; Yip & Kelly, 2013) which suggests people evaluate and make judgements about themselves in comparison to others, a common experience for those using social media due to the ‘filtered’ information overload they receive about others (Appel et al., 2015). It is thought that these two forms of envy predict different outcomes (van de Ven, Zeelenberg, & Pieters, 2009). As malicious envy has been found associated with the motivation to harm and the feeling of satisfaction when harm has been achieved (Shamay-Tsoory, Tibi-Elhanany, & Aharon-Peretz, 2007; van de Ven, 2014), it therefore malicious envy traits that appear more likely to relate to OAB. For example research into trolling found OAB correlated positively with sadism, psychopathy, and Machiavellianism, the Dark Tetrad Personality Traits (Buckels, Trapnell, & Paulhus, 2014; Buckels, Jones, & Paulhus, 2013; Takahashi et al., 2009) suggesting intent to harm through online aggression and pleasure in doing so. Relational aggression, where a person may damage someone’s relationship or social status (Warburton & Anderson, 2015), appears to also reflect an envious reaction. With these concepts pointing to possible links with OAB and the nature of the ‘online’ environment, it seems important to establish whether there is any evidence highlighting envy as a potential variable in the perpetration of online aggression (Smith & Kim, 2007), along with understanding the roles of self-control, social media exposure and aggression in OAB.

3.1.5 Research Hypotheses and Questions

H1: Higher levels of aggression, the more severe the OAB

H2: Lower self-control, the more severe the OAB

H3: Higher levels of malicious envy, the more severe the OAB

H4: Increased social media exposure, the more severe the OAB

RQ1: How is envy, aggression, self-control and social media exposure related to OAB in adults?

H5: The intention to cause more serious harm, the more severe the OAB.

H6: More severe OAB, the lower the perception of harm caused to others

RQ2: How does intention and perception of harm caused to others relate to OAB severity, and what is the association with other psychological characteristics (malicious envy, aggression and self-control)?

3.2 Method

3.2.1 Study Design

The overall goal of this study was to explore psychological mechanisms behind OAB. Participants completed the Online Aggressive Behaviour (OAB) Measure which identified their most severe OAB. They were then subjected to measures of Envy, Trait Aggression, Self-control and Social Media Exposure.

3.2.2 Participants and Procedure

Participants were recruited through social media posts advertising the study on Facebook pages (www.facebook.com), Reddit 'discussion rooms' (www.reddit.com), and 4Chan 'imageboards' (www.4Chan.org). These sites were selected to reach a range of participants using social media for a variety of activities. The target audience was adult (18 years old and above) Social Media Users. Participants were mainly recruited from the UK (N=215), however also the US (N=96), Europe (N=45) and the rest of the world (N=21). 38 participants did not disclose their country. Data were collected between May and August 2017, using Bristol Online Surveys (BOS). The total number of participants was 415. Records not completed appropriately or completely were excluded. Online consent was obtained through a form within the survey (Appendix 4). The Division of Psychiatry & Applied Psychology's Research Ethics Committee (DPAP), at The University of Nottingham approved the study protocol.

3.2.3 Questionnaires and Measures

I. Demographic information

We gathered demographic information on the participants, which included gender, age, employment status, relationship status, country of residence, and inquired about criminal convictions (Appendix 5).

II. The Online Aggressive Behaviour Measure (OAB)

The Online Aggressive Behaviour Measure (OAB; Appendix 6 and 7) identified individuals that carried out OAB, their main intention, and their perception of harm caused to others. It contained sixteen items and three sections. The measure was developed from previous research into OAB and aimed to identify six types; Cyberbullying, Trolling, Sustained Harassment, Stalking, Sexual Harassment and Physical Threats. Participants were asked to indicate which OAB's they had carried out if any. Pew Research Centre's paper (Duggan et al., 2015) exploring peoples experiences of online harassment was the main influence in the development items. The Trolling items were influenced by research into trolling behaviour (Buckels et al., 2014). This section was scored by placing type of OAB in rank order of seriousness from one to seven based on 'Guidelines on prosecuting cases involving communications sent via social media' (CPS, retrieved 03/04/2017), Appendix 7. The most severe OAB reported by participants was used for analysis. For sections two and three, participants were asked to select their main intention from the following; Communicate, Banter, Tease, Annoy, Upset, Insult, Threaten, Scare, and to indicate how harmful they perceived their behaviour was to others. This measure was developed based on the evidence that suggests online aggression is motivated by the intent to commit harm or discomfort to others (Patchin & Hinduja, 2015; Tokunaga, 2010). The different categories of the intention and the order in which they were selected to occur in the scale were based on the perceived harm that the intended behaviour would cause to a victim with the most serious harm being to scare, and the least harmful impact on the victim being to communicate (Gradinger et al., 2012; Juvonen & Gross, 2008).

Research exploring bystanders observations on what constitutes as online aggression indicated that to communicate, banter and tease were not high impact OAB intentions, however when the intention became to annoy a victim or more, that is when the bystanders felt the need to intervene and recognised it as online aggression (Desmet et al., 2012). The additional scale asking participants to rate their perception of harm caused by their behaviour was included because evidence indicated that individuals who perceived less harm caused by their behaviours were more likely to carry out more severe OAB (Law, Shapka, Hymel, et al., 2012b; Runions & Bak, 2015). This scale has not been validated, therefore its included for the purposes of adding exploratory value to the understanding of intention and perception of harm in online aggressive behaviour.

III. The Benign and Malicious Envy Scale (BeMas)

The Benign and Malicious Envy Scale (BeMas; Lange & Crusius, 2015; Research Appendix 8.) measured dispositional envy by exploring a person's behaviour and reactions towards others they perceived superior to them. It contained ten statements relating to situations where individuals feel they lacked another's superior quality, achievement possession and desired it (Lange & Crusius, 2015). The items measured benign and malicious envy reactions and responses on a six point Likert-type scale ranging from strongly disagree to strongly agree. The BeMas internal structure was tested and a structural equation model showed good fit to the data (GFI = .96, CFI = .97) and a 95% confidence interval (Lange & Crusius, 2015). The higher the total score on each subscale the greater the

experience of malicious or benign envy. The Cronbach alpha for Benign ($\alpha = .84$) and Malicious ($\alpha = .85$) subscales were found highly reliable.

IV. The Buss and Perry Aggression Questionnaire- Short Form (BPAQ-SF)

The Buss and Perry Aggression Questionnaire – Short Form (BPAQ-SF; Research Appendix 9.) measured trait aggression and hostility. The refined twelve item version (BPAQ; Buss & Perry, 1992) was found to have as good reliability as the full version, hence was used for practicality (Diamond & Magaletta, 2006). The self-report measure included four subscales: physical aggression, verbal aggression, anger, and hostility (Bryant & Smith, 2001). Participants responded to items on a five point Likert-type scale ranging from 'very unlike me' to 'very like me'. The total score was used for analysis, the higher the score, the greater the severity of aggression. The BPAQ-SF was found highly reliable with a Cronbach's alpha of $\alpha = .86$.

V. The Brief Self Control Scale (BSCS)

The Brief Self Control Scale (BSCS; Tangney, Baumeister, & Boone, 2004; Appendix 10) was used to measure restraint and impulsivity (Maloney, Grawitch, & Barber, 2012). Thirteen items were rated on a five point Likert-type scale, ranging from 'Not at all like me' to 'Very much like me'. The BSCS was found highly reliable with an alpha of $\alpha = .85$ and showed adequate internal validity with a test re-test reliability of .87 (Tangney, Baumeister, & Boone, 2004). A higher score indicated participants had a greater level of self-control.

VI. Social Media Exposure and Envy Questionnaire

The Social Media Exposure and Envy Questionnaire (Research Appendix 11.) was developed for this study to identify how often participants used social media and the impact on their feelings and behaviours. It contained fifteen items and three sections. The first section participants were asked to rate how frequently they used social media. The next section explored how often participants experienced feelings of envy, resentment, anger, motivation and pleasure after social media exposure. The final section asked how often participants had been a victim of OAB, all rated on a five point Likert-type scale ranging from 'Never' to 'Almost Daily' ($\alpha=.86$). These sections have been scored separately and treated independent of each other for analysis, they aimed to add context and enhance understanding of links identified from the results.

3.2.4 Statistical analysis

Statistical analysis was performed using SPSS for Windows. Initial correlation analysis was carried out with the OAB measure and the independent variables. Then a step-wise multiple regression analysis was performed to explore significant predictors of OAB. The independent variables included were those found statistically significantly correlated with OAB. Some additional analysis were performed on intention of OAB, and the association between malicious envy and aggression.

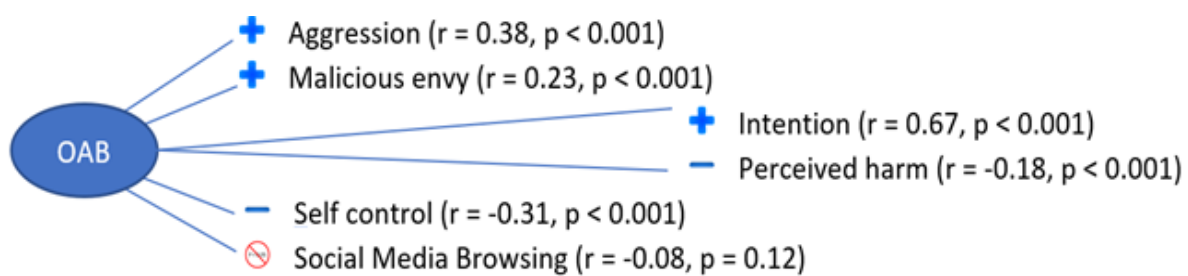
3.3 Results

Demographic information and characteristics of SMU in participants can be found in Appendix 12 and 13. Participants were mostly between the ages of 18 to 24 years (N=183), then 25 to 34 years (N=160), and 35 years and over (N= 72), and were mainly living in the UK (N=215), US (N=96), Europe (N=45) and rest of the world (N=21). There were 221 female participants, 186 male participants and 8 transgender participants who took part in the study. Only 14 participants overall reported having committed a criminal offence.

In terms of social media characteristics 75% (N= 310) of participants reported browsing their social media every couple of hours or more frequently. When asked how often they felt envious when using social media, 45% (N=185) of participants said they did, with 133 participants reporting feeling envious online occasionally, 37 participants feeling envious online frequently and 15 participants feeling envious online almost daily. A total of 31% (N=126) of participants also reported that they enjoyed hearing the failures of others (occasionally N=79, frequently N=24, almost daily N=23) through social media. A total of 63% (N=264) participants reported feeling motivated (occasionally N=183, frequently N=57, almost daily N=24) when using social media, and 68% (N=283) reported enjoying hearing other people's good news (occasionally N=183, frequently N=57, almost daily N=24) when using social media.

Correlation analysis was conducted to examine correlation coefficients (r) between OAB scores and various continuous independent variables (Figure 2.). These results show that aggression ($r = 0.38, p < 0.001$) and malicious envy ($r = 0.23, p < 0.001$) were positively related with OAB. Self-control ($r = -0.31, p < 0.001$) was found to be negatively related to OAB, and Social Media Browsing ($r = -0.08, p = 0.12$) was not significantly related.

Figure 2. Correlation Analysis Results



A multiple regression model with all four hypothesised predictors; aggression, malicious envy, low self-control and SMU, produced $R^2 = 0.16$, $F(4, 410) = 20.98$, $p < 0.001$ suggesting these independent variables explained 16% of the total variance in OAB. A stepwise multiple regression was conducted with aggression, malicious envy and lack of self-control to explore further the strongest predicting variables. Social media browsing was excluded from the stepwise analysis due to the insignificant correlation with OAB. The results indicated two significant models. Model 1 containing only aggression as the predictor variable produced $R^2 = 0.15$, $F(1, 413) = 70.821$, $p < 0.001$. Model 2 containing lack of self-control and aggression as predictor variables produced $R^2 = 0.17$, $F(2, 412) = 41.810$, $p < 0.001$.

0.001. Aggression produced a significant positive regression weight indicating individuals who scored higher on the aggression scale were more likely to score higher on the OAB measure. Self-Control produced a significant negative regression weight, indicating individuals with lower levels of self-control scored higher on OAB measure.

Another multiple regression was performed using the stepwise method. The predictor variables used showed significant associations with OAB. These included two subtests of the BPAQ (Physical Aggression and Verbal Aggression), lack of self-control, and enjoying hearing the failures of others. The model with all four variables explained the most variance producing an $R^2 = 0.26$, $F(4, 410) = 38.204$, $p < 0.001$ (Table 2). Significant positive regression weights for physical aggression, verbal aggression and enjoying hearing the failures of others indicated individuals who have higher scores on these scales were likely carry out more severe OAB. Significant negative regression weight on self-control indicated less self-control predicted more severe OAB.

Participant's OAB intention had a strong significant association with OAB severity ($r = 0.67$, $p < 0.001$), its relationship with aggression subtests, malicious envy, and self-control was explored further in a stepwise regression. The model explaining the most variance included predictor variables of enjoying hearing the failures of others, verbal aggression, physical aggression and self-control producing an $R^2 = 0.24$, $F(5, 409) = 82.897$, $p < 0.001$. When intention was added

the variance increased to 50% with an $R^2 = 0.50$, $F(4, 414) = 38.084$, $p < 0.001$ (Figure 3.). Suggesting intention had a significant influence on OAB severity.

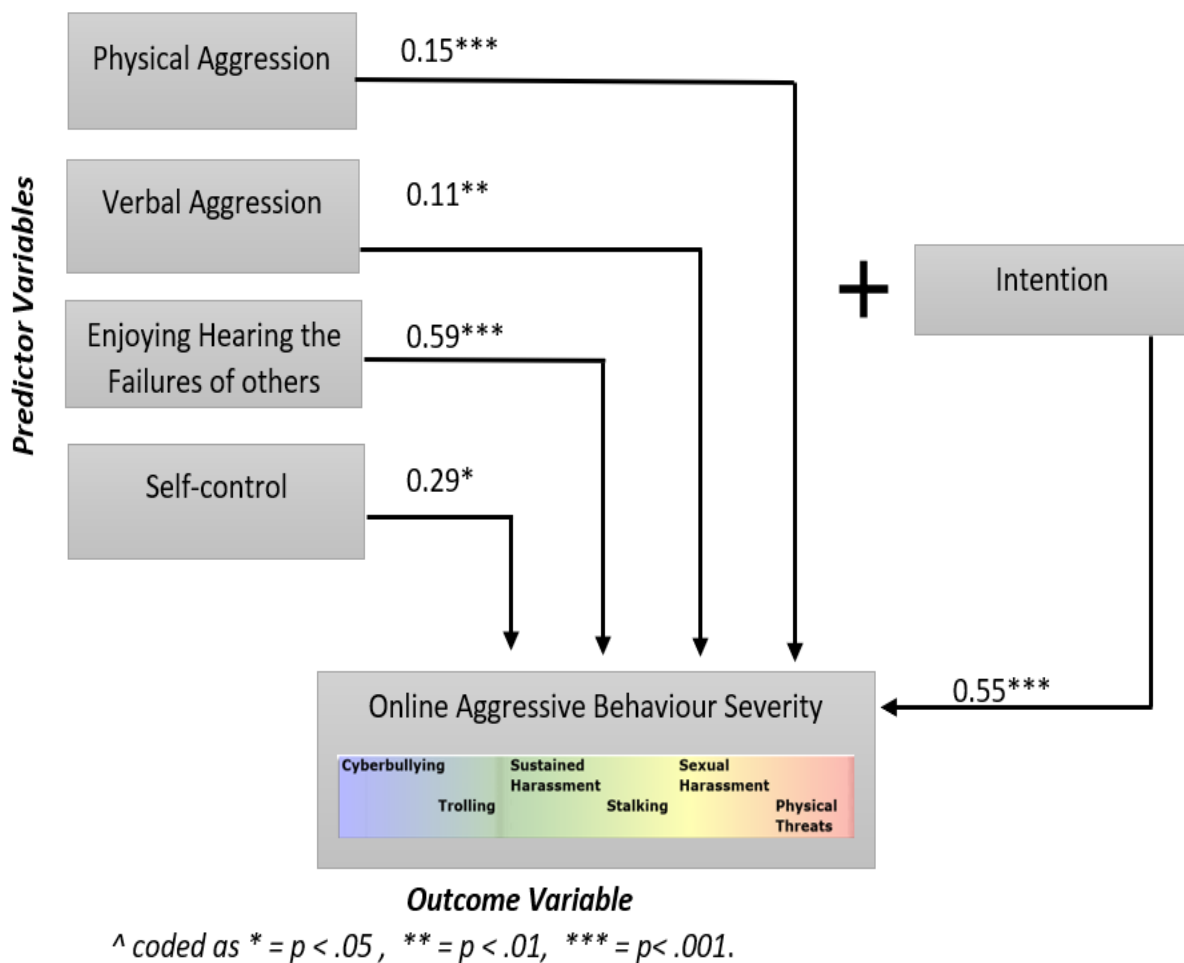
Collinearity statistics were explored for multicollinearity, the Variance Inflation Factors (VIF) were all between 1 and 10 suggesting no multicollinearity symptoms and therefore the multiple regression results have not been adversely affected.

Table 2. Summary of results

Summary Statistics and Correlation				Multiple regression weights	
Variable	Mean	SD	Correlation with OAB	b	β
Physical Aggression	5.85	3.24	0.363***	0.150***	0.200
Verbal Aggression	8.28	3.29	0.356***	0.111**	0.149
Enjoy hearing the failures of others	2.17	1.10	0.416***	0.586***	0.264
Self-Control	41.00	9.67	-0.313***	-0.29*	- 0.116

^coded as *= $p < .05$, **= $p < .01$, ***= $p < .001$.

Figure 3. Regression model explaining the most variance



3.4 Discussion

This study principally focused on exploring psychological characteristics of envy, aggression, and self-control and how they relate to OAB in adults. Hypothesis one predicted that higher levels of aggression would be associated with more severe OAB. This hypothesis was proven, with participants showing higher levels of physical and verbal aggression being more likely to perpetrate more serious online aggressive behaviours. Hypothesis two predicted lower levels of self-control were associated with more severe online aggressive behaviour. This hypothesis was

also proven, suggesting that participants with deficits in their self-control were more likely to perpetrate the most serious online aggression. These two hypotheses, supported by the findings start to provide evidence for the similarities between 'online' and 'offline' aggression. With self-control and higher levels of trait aggression key factors in the perpetration of aggressive behaviour in the 'offline' world (Bryant & Smith, 2001; Buss & Perry, 1992a; Kaliski, 2015). This will have significant implications for the assessment and treatment of 'online' aggression if it shares the same characteristics as 'offline' aggression, this will be considered in more detail later in the discussion. Hypothesis three predicted higher levels of malicious envy were associated with increased severity of OAB. The findings of this study did not support this hypothesis. There are a variety of factors to explore in regards to this finding such as the reliability of the measure (Crusius & Lange, 2015), socially desirable responding (Van De Mortel & Van De Mortel Rn, 2008), and the subjective definition of envy (Maijala, Munnukka, & Nikkonen, 2000). 'Enjoying hearing the failures of others' whilst using social media, was found significant in partly explaining OAB, this trait is suggested to be related to malicious envy (van de Ven, 2016) and therefore evaluation of the role of malicious envy and OAB will be considered further in the discussion. Hypothesis four suggested increased social media exposure was associated with more severe OAB, again the findings of the study did not prove this despite existing literature linking increased social media with unhealthy or negative outcomes (Appel et al., 2015; Holland & Tiggemann, 2016; Kaplan & Haenlein, 2010). Hypothesis five tested the prediction that the more serious the intention to cause harm, the more severe the OAB. This hypothesis was proven, supporting literature that defines 'online' aggression as a purposeful and intentional act to cause harm (Gradinger et al., 2012; Graf, Yanagida, & Spiel, 2019).

The overall findings of the study produced a model significantly explaining some of the key variables contributing to OAB (Figure 3.). These key variables are higher levels of physical aggression, higher levels of verbal aggression, a tendency to enjoy hearing the failures of others, and deficits in self-control. The discussion will outline further the findings of this study including the implications and conclusions.

All four facets of aggression were positively correlated with OAB, with verbal and physical aggression being strongest in association with OAB severity. Verbal aggression can be described as the act of using aggressive language on a targeted individual and usually elicits hostility (Hamilton, 2012). It can take the form of borderline 'banter', rudeness, teasing, to making threats. Verbal aggression may not always be in the form of spoken word, online it is delivered through a message that insinuates tone, volume, and intensity through the use of punctuation marks, capital letters, emoticons, videos and GIFs (Graphics Interchange Format; animated image) explaining why verbal aggression was significant in predicting OAB.

The verbal aggression subtest appears to have captured video, image or symbol-based aggression. These increasingly popular forms of communication, including using emoticons (vocabulary of text-based symbols representing non-verbal cues), can replace vocabulary completely. (Park, Barash, Fink, & Cha, 2013). Some research suggests emoticons make emotion expression more elaborate with the choice people have to express how they are feeling. Added to negative

messages, emoticons have been found to increase the intensity of the message, potentially inflaming further the problem (Wolf, 2000), however others suggest emoticons buffer nasty messages, making them look more sarcastic and reducing the negative impact on the receiver (Wallace, 2007). The BPAQ did not specifically measure non-verbal communication, highlighting a need to develop an aggression measure reflecting new forms of technological communication.

Anonymity 'online' can make verbal aggression easier due to the lack of face to face contact (Suler, 2004b). However, OAB is not exclusive to anonymous individuals, in many circumstances it is carried out directly from a person's own account identifying them. The online disinhibition effect (Suler, 2004b) does not alone explain why a variety of individuals may aggress online. The prevalence of self-reported OAB was high with 59% of participants reporting having engaged in an aggressive act (Appendix 14). Our results showed OAB prevalence to be more common in the general population than compared with 'offline' aggression (Diamond & Magaletta, 2006; Pechorro, Barroso, Poiares, Oliveira, & Torrealday, 2016).

Cognitive distortions (irrational or exaggerated thought patterns; Chiang, Lin, & Liu, 2012a) known to exacerbate 'offline' aggression (Berkowitz, 1993; Crick & Dodge, 1994) are a significant risk factor in aggressive behaviour (Lochman, Barry, & Pardini, 2003; Rubio-Garay et al., 2016; Wallinius, Johansson, Larden, & Dernevik, 2011). The online environment lends itself well to the development of cognitive distortions because online users are not exposed to the usual prompts

that may help challenge a cognitive distortion, such as environmental (face to face interaction and situation data) and behavioural feedback (non-verbal cues and body language) which puts the communication into context (Mann & Beech, 2003) and buffers distorted judgements, perceptions or justifications (Drake, Ward, Nathan, & Lee, 2001). This could partly explain why OAB appears more common in the general population, identifying the need for research that measures cognitive distortions.

Physical aggression, aimed at causing physical harm to the target (Onukwufor, 2013), was also found a significant predictor of OAB severity. Physical aggression is associated with impulsive traits (Kaliski, 2015), pro-violent attitudes (Jackson, Brown, Davis, & Pitman, 1999), poor social problem solving skills (Ireland, 2001; McMurren et al., 2002) and lack of empathy (Richardson, Hammock, Smith, Gardner, & Signo, 1994), all traits expected to increase the likelihood and severity of OAB. Recent research provides a worrying view on the likenesses and interaction between 'online' and 'offline' aggression, suggesting online aggression transcends into the 'offline' world with potentially devastating consequences. Prevalence rates in this study suggest aggressive behaviour is easier to carry out 'online', however evidence shows it inflames 'offline' physical aggression. Gang violence (Balasuriya, Wijeratne, Doran, & Sheth, 2016; Patton, Eschmann, Elsaesser, & Bocanegra, 2016), stalking, bullying (Patton et al., 2014), and physical aggression including murder (Wiederhold, 2013) can all pass over into the 'offline' world supporting the existence of co-construction theory (Subrahmanyam et al., 2006). Worrying trends indicate OAB is increasingly causing conflict situations to escalate, leading to revenge or reactive behavioural

responses with physical violence (Patton, Lane, Leonard, Macbeth, & Smith Lee, 2017). This indorses the importance of our results showing verbal aggression and physical aggression as significant predictors of OAB and will help target preventative measures and intervention to minimise the developing risk of psychological or physical harm caused by OAB.

Low self-control including impulsive traits and lack of self-discipline, established factors in 'offline' aggression (Denson et al., 2012; Tittle, 2011), were hypothesised to predict OAB, which our results supported. Spontaneous aggression online could derive from the absence of evaluating costs and benefits or consequences and was impulsive or reactive to perceived provocation. Again, the lack of human 'face to face' interaction, minimal restraints on how individuals behave behind a "screen", and the loose undefined laws associated with OAB, are likely to affect an individual's ability to exercise self-control 'online'. However despite these findings our research also indicated online aggression could occur from carefully derived and planned behaviour (Runions, 2013), mainly with motives of revenge or to achieve a social goal (Runions et al., 2017). A significant correlation was found between 'enjoying hearing the failures of others' and intention, indicating traits related to social comparison processes (van de Ven, 2015), in particular malicious envy, and elements of pre-planning were associated with the severity of reported intentions.

Aggression and self-control proved influential factors in the perpetration of OAB and the severity of reported intentions. Similarities between 'online' aggression

and 'offline' aggression were identified, finding OAB not distinctly different to its 'offline' counterpart, however what was distinctly different was the manner in which OAB was carried out. Technology has adapted verbal and physical aggression's appearance, now including the use of videos, emoticons, symbols and pictures. Other distinctive feature online mean aggression can be perpetrated without any direct victim contact, has wider audiences and reduced risk of immediate repercussion. This could increase how likely individuals engage in OAB and cause more harm to victims. Development of existing aggression measures should consider how to measure the digital avenues aggression is perpetrated through and capture differences in perpetrator characteristics.

Our findings highlighted gender differences in OAB severity (Figure 4) and intent (Figure 5) suggesting males were more likely to engage in more severe forms of OAB than females, and were more likely to report more serious intent. Males are often reported to have higher levels of general aggression, (Burton, Hafetz, & Henninger, 2007; Buss & Perry, 1992a), in particular physical aggression (Archer, 2004). However, a recent review suggested aggression levels in males and females were generally equal, although identified males as more physically aggressive and females more indirectly aggressive. With self-control being a significant factor in OAB it could explain why males are more likely perpetrators as impulsivity is more often a trait associated with males (Piko & Pinczés, 2014). Female's exert more self-discipline (Duckworth & Seligman, 2006) indicating they may have better abilities to control urges to aggress online.

Figure 4. Gender differences OAB Severity

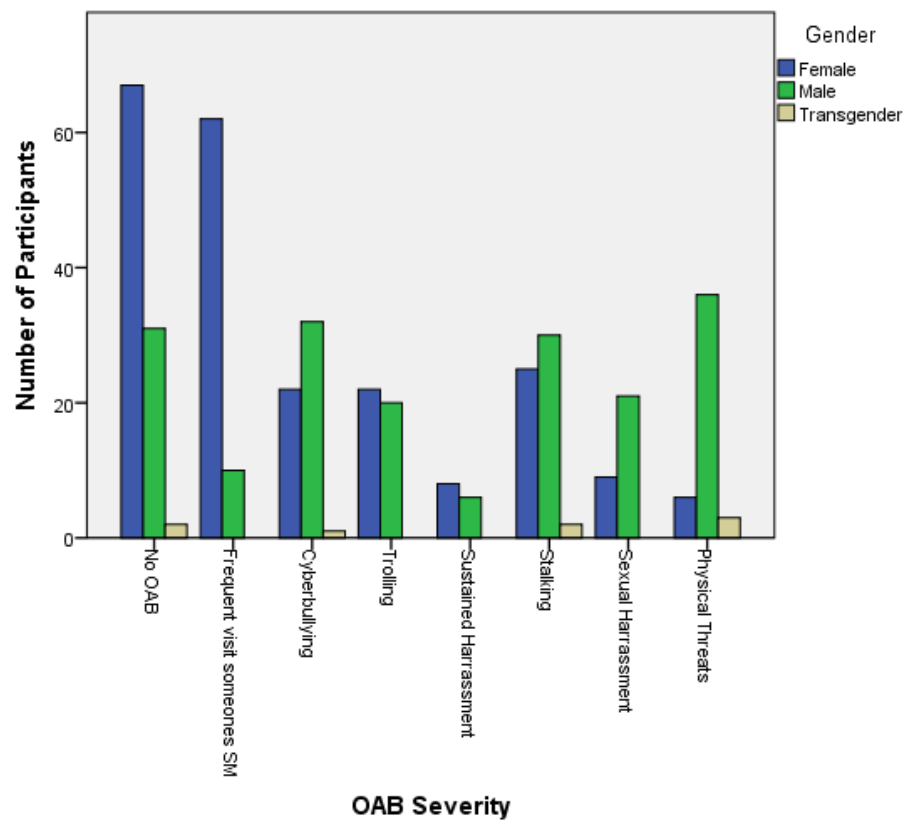
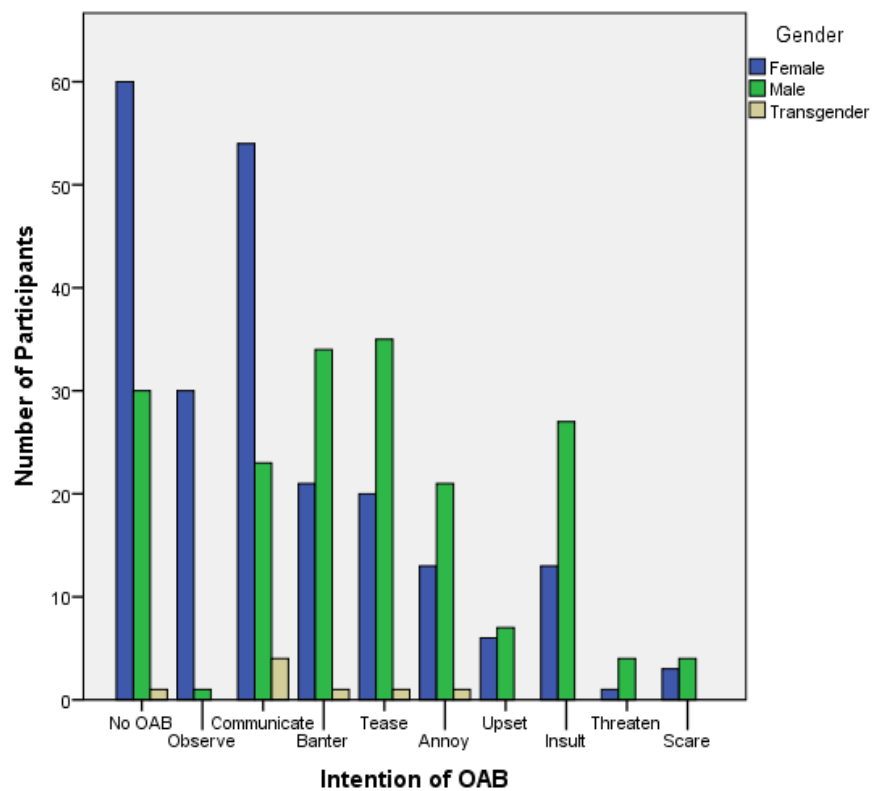


Figure 5. Gender Differences OAB Intention



Social comparison processes (Festinger, 1954; Yip & Kelly, 2013), more specifically malicious envy were hypothesised to predict OAB, however no significant predictive effect was found. Exposure to social media was thought to be a predicting factor in the relationship between OAB and malicious envy. Research suggests social media exposure can have various negative psychological consequences (Ayas & Horzum, 2007; Hampton et al., 2015), including making people believe other people's lives appear much better than their own (Chou & Edge, 2012). This was thought to trigger malicious envy and increase OAB severity in order to harm the superior other to level the difference (Crusius & Lange, 2015; van de Ven et al., 2009), however no relationship was found between social media exposure and OAB or malicious envy. The social media exposure measure used was brief and only asked how many times a person browsed or posted on social media, not distinguishing different types of SMU, or content they had been exposed to. This indicated it may not be about the amount of time someone spends online but the type of activities they engage with, seen in the relationship between aggressive behaviour and films or video games (Adachi & Willoughby, 2011; Bartholow et al., 2006; Krahé et al., 2011). Being a victim of OAB did appear to have an influence on OAB severity, suggesting exposure to OAB may de-sensitise an individual (Krahé et al., 2011), and increase the likelihood they may aggress online. However, it could also indicate the individual was already involved in a two-way aggressive interaction making it more likely they were the target of OAB as well as an aggressor.

Higher levels of malicious envy were associated with increased OAB severity, however did not significantly predict OAB, despite research suggesting it could

lead to aggression (Cuddy et al., 2007; Guerrero & Andersen, 1998; Lange, Weidman, & Crusius, 2018). Anger and hostility, measured on subtests within the BPAQ, are aggressive traits most likely to activate malicious envy (Leach, 2010). Malicious envy's close association with hostility could explain its non-predictive relationship with OAB, as hostility may be the component that predicts an aggressive outcome triggered by envy, which may have been captured in the BPAQ. Hostility appears to be the common feature present in both envy (Smith & Kim, 2007) and aggression (Gallagher & Ashford, 2016), however it appears it is aggression that significantly predicts the likelihood of OAB. Research suggests that perceived injustice or unfairness can lead to displaced hostility towards the envied other (Marcus-Newhall, Pedersen, Carlson, & Miller, 2000) demonstrating envy as a likely factor in OAB, however further research needs to take place to establish this relationship.

Malicious envy and schadenfreude highly correlate in previous research (Buckels et al., 2014; Lange et al., 2018), suggesting people who experience envy may gain pleasure from other people's misfortunes. Our results found pleasure gained from 'enjoying hearing about the failures of others' was significant in predicting OAB severity. This supported the existence of schadenfreude traits within OAB (van de Ven et al., 2014), and being highly correlated with malicious envy, it demonstrated evidence towards the existence of a destructive relationship. The envy measure used (BeMas; Lange & Crusius, 2015) was still in the stages of validation due to its infancy, and although showed a good internal structure including good consistency and reliability, test-retest reliability was limited, and its versatility with different populations had not yet been established. This may have

impacted on the BeMas's ability to measure malicious envy and its behavioural outcomes, highlighting the need for development of envy measures.

In addition to aggression, self-control and 'enjoying hearing the failures of others', intention proved to be an important component in explaining OAB. The more malicious the intention the more severe the online aggression, suggesting OAB was likely to be a deliberate attempt to cause harm, rather than a lack of awareness of the impact on others. In 'offline' aggressive acts, in particular instrumental aggression (Anderson & Bushman, 2002; Berkowitz, 1993), it is suggested there is a deliberate attempt to cause harm to achieve a certain goal. This process is similar to that in malicious envy, where harm may be caused intentionally to the 'perceived superior other' to achieve the goal of 'levelling the difference'. The intention to cause harm to others may be easier to carry out online due to processes such as the online disinhibition effect, in particular anonymity and moral disengagement. Increasing access to technology could exacerbate the ease of aggressing towards others at the click of a button with little restraints. Intention could also be for thrill-seeking, or humour purposes (Law, Shapka, Domene, & Gagné, 2012; Runions, 2013), where perpetrators may minimise how harmful their behaviour could be (Runions et al., 2017). Our research found people who committed the most severe OAB, perceived their behaviour to be less harmful. Cognitive distortions may make it easier for someone to carry out OAB, by minimisation or justification (Berkowitz, 1993; Rubio-Garay et al., 2016). Intention appears to be an important factor in committing OAB, although intention may not always be malicious, there appears likely to always be a gain for the

perpetrator, and less awareness of the impact on others. This along with aggression and self-control creates the ingredients for OAB.

3.5 Limitations

Although the result of this study has deepened our understanding of OAB, there are several limitations to consider. Firstly, with no formalised criteria of online aggression, there is no consensus on the specific types and definition. Much more research is needed to develop further understanding of online aggression to produce more robust and accurate scales measuring OAB. Secondly, the opportunistic sampling method had inherent biases. Adverts on a variety of selected social media websites gathered a sample that would have responded at their own convenience and limited to those using selected social media sites. This impacted on the generalisability of the results and therefore the outcomes of this study must be interpreted with this in mind. Also by using an online survey method and self-reported measures objectivity of information gathered was compromised, increasing biases such as socially desirable responding. Thirdly validity is impacted by the online data collection method as you cannot be certain the participants are who they say they are in terms of their reported demographics (Wood, Griffiths, & Eatough, 2004). Fourthly, due to the cross-sectional nature of the study we cannot address causality within our findings.

3.6 Future implications

Future research needs to address implications of increasing amounts of aggressive online interactions and how they relate to various psychological traits. This study has unearthed some basis for this research to continue. It also highlights the need for the development of a specific OAB measure, or the incorporation of online aggression items in existing aggression measures, to reflect the technological developments within societies interactions. Envy traits may still be important in some forms of online aggression, in particular 'enjoying hearing the failures of others', however the improvement of a social comparison measure will be vital in exploring the link. The results uncovered traits that could be used to identify "at risk" individuals more vulnerable to carrying out online aggression. This could open doors for the development of preventive measures and intervention to minimise the real, fast changing risk of harm caused by OAB.

3.7 Conclusions

Our findings suggest an interesting profile of individuals who carry out online aggression. People with higher levels of physical and verbal aggression, lower levels of self-control, and who have more harmful intentions were most likely to engage in OAB. Envy was also shown to have an interesting relationship with OAB highlighting the need to explore further, including its triggering or predisposing effect. OAB does not appear distinctly different to 'offline' aggression, however, what is different is the manner it is carried out. With technology evolving people can be verbally and physically aggressive online through social media with the

click of a button. This study has provided important information to contribute to the understanding of online aggression and the battle to gain control over it.

Chapter Four

Anger, Problematic Personality Traits, Social Comparison and Use of Technology: A Case Study

Abstract

This case study explored the effectiveness of a psychological intervention for aggression perpetrated 'offline' (face to face), and 'electronic aggression' perpetrated through the use of technology including online social networking sites (SNS), mobile phone text messaging and emails. Assessment and formulation guided an intervention of personality psycho-education combined with Acceptance and Commitment Therapy (ACT), developed to target psychological difficulties underling the clients 'face to face' and 'electronic' aggression. The outcomes suggest 'electronic' aggression can be treated within a general aggression intervention, rather than as a distinct treatment need. The personality psycho-education and ACT intervention was shown effective in reducing incidences of both 'face to face' and 'electronic' aggression.

4.1 Introduction

The systematic review in this academic thesis indicated the two way interaction between social media use (SMU) and aggression. This maladaptive cycle suggests that individuals engage in problematic SMU and in turn increase their perpetration of aggression both 'offline' and 'online' (Cantor, 2000; Ko et al., 2009; Magsamen-Conrad et al., 2014; Reicher et al., 1995; Yen et al., 2011) . The client in this case study presented with behaviour that appeared to resemble this cycle of SMU and aggression. For the purpose of this case study we explore not only online aggression, and in particular the use of social media, but also include other forms of aggression using electronic communication such as mobile phone text messaging and sending emails. We refer to these forms as 'electronic aggression'. The different types of electronic communication share similar characteristics such as their versatility in human interaction (Belk, 2013), easy and quick ways in which text, image or video-based messages can be sent (Grigg, 2010), and the physical distance they can put between each person in the interaction (Lapidot-Lefler & Barak, 2012).

The client in this case study was selected due to the presence of both 'face to face' and 'electronic' aggression, providing the unique opportunity to investigate these two forms, allowing for comparisons to be made in assessment, formulation and intervention. Both the systematic review and primary research in this thesis discuss 'online' and 'offline' aggressive behaviours in the literature, and examine them in a qualitative synthesis and an online study in the general population. This piece of work offers the opportunity to study these aggressive behaviours in more depth and on an individual level. Concepts of self-control, envy, SMU and the

exploration of trait aggression, suggested as significant variables from the systematic review and explored on a wider level in the research study, can be examined more closely with the aim of understanding implications for clinical and practical application such as the development of appropriate intervention or prevention.

4.1.1 Client Overview

Client Z is a 27-year-old man admitted to a Medium Secure Unit (MSU) in August 2016 under Section 37/41 of the Mental Health Act (as amended 2007). He is diagnosed with Paranoid Schizophrenia, Emotionally Unstable Personality Disorder (EUPD), and Mental and Behavioural Disorder due to multiple drug use. Client Z had a traumatic upbringing experiencing neglect, abuse, and many broken attachments. His forensic history includes offences involving harassment, inappropriate sexual behaviour, and physical violence. Since his admission to MSU his mental state improved with a reduction in psychotic symptoms and paranoia, however his problematic personality traits became more prominent. This caused difficulties in his relationships, with Client Z experiencing intense anger and hostility towards those around him, including family, friends, patients and staff.

4.1.2 Referral

Client Z was referred for assessment and intervention by his multidisciplinary team (MDT) because his problems with anger frequently developed into aggression

directed at others, usually in the form of verbal aggression via 'face to face' interactions or 'electronic' aggression using a mobile phone and text messaging. This was observed in his behaviour and interactions with peers and staff on the ward, and in his recent contact with family via his mobile phone as a result of the new hospital policy allowing him access to his mobile phone whilst residing in MSU. Client Z frequently expressed perceptions that others had 'better' lives than him suggesting his anger may be triggered by the sense of injustice this created, indicating social comparison processes at work (Crusius & Lange, 2014a; Krasnova et al., 2013). In the community these emotions, attitudes and behaviours had also materialised with previous incidences of harassment, including the use of Facebook to post malicious messages to threaten and intimidate an individual. Client Z suffered with extreme fluctuations in his attitude and emotions towards different individuals creating a difficult and unpredictable environment on the ward and impacting on his therapeutic engagement with his treatment. His hostile and aggressive behaviour led to threats to harm others and criminal damage on the ward, therefore a referral was made to prevent further escalation.

Secondly, a referral was made relating to the new hospital policy allowing patients access to a mobile phone. Client Z's family were mostly estranged, however in receiving the mobile phone he had regained contact with members, including his mother, grandparents, and stepfather. Client Z found this contact with family members triggered the experience of intense emotions such as anger, sadness, and feelings of rejection, especially when he received no immediate response to his texts or calls. His mother and step-grandfather reported receiving abusive calls and text messages and due to Client Z's previous cautions for harassment via

electronic communication (text message and social media), it highlighted 'electronic' aggression as an important area to address.

4.1.3 Anger, Social Comparison, Problematic Personality Traits in Aggression

Aggression is "any behaviour directed towards another" carried out with the "intent to cause harm" (Anderson & Bushman, 2002, p298). Different theories propose explanations for aggression; social learning theory (Bandura, 1999), script theory (Rowell Huesmann, 1988) and the general aggression model (Anderson & Bushman, 2002). Whilst these theories provide a framework to understand aggression, there are also more specific constructs that contribute to aggression on an individual level, that, when identified can be targeted directly by intervention. Anger, the most well-documented driver of aggression (Buss & Perry, 1992b; Harmon-Jones, 2003; Nasir & Ghani, 2014) is related to poor emotion regulation (Robertson, Daffern, & Bucks, 2012) and impulse control (Denson et al., 2012). Cognition, another major contributor, suggests thought patterns influence aggressive behaviour (Leung & Poon, 2001), including processes such as unhelpful social comparison leading to feelings of envy (Salovey, 1991), increasing potentially hostile and aggressive behaviour to harm the 'superior other' (Guerrero & Andersen, 1998). Social comparison and other social cognitive impairments, are suggested to be born from the development of personality, influenced by attachment and developmental history (Mikulincer & Shaver, 2011). This leads to another factor in aggression; problematic personality patterns, such as emotionally unstable (Látalová & Praško, 2010) or antisocial personality disorder (Jones, Miller, & Lynam, 2011), both with strong correlations to aggression.

Aggression is harmful to others, but also to the individual themselves. The complex nature of each individual's aggression, including emotional, cognitive and personality factors suggests individualised interventions are most beneficial for targeting individualised aggression problems.

4.1.4 General vs. Electronic Aggression

Aggression is widely recognised as verbal, physical, anger-related and hostile (Buss & Perry, 1992b), and most commonly known for being perpetrated 'face to face'. However with development of technology, perpetration of aggression is changing (Kowalski et al., 2014), with the addition of electronic devices increasing the frequency of electronic aggression (via mobile phone or internet). Raising the question of whether 'electronic aggression' was a new form or a new tool to aggress with. Research makes distinctions between 'face to face' aggression and 'electronic aggression', with significant differences in its direct (face to face) or indirect (electronic) nature (Chiang, Lin, & Liu, 2012b; Fenaughty & Harré, 2013;). However, this does not significantly distinguish 'electronic' aggression as a separate behaviour. Increasing evidence suggests 'electronic aggression' is an extension of general aggression (Kowalski et al., 2014), co-constructed alongside 'face to face' aggression (Belk, 2013; Schoffstall & Cohen, 2011). This indicates effective intervention is likely one that targets general aggression but pays particular attention to the type of 'electronic' aggression identified in the client's assessment and explores the use of technology as a vessel or tool for perpetration.

4.2 Assessment

4.2.1 Semi-structured interview

A semi-structured interview was used to gather history and explore presenting problems including aggressive behaviour and electronic technology use. Client Z's full history is detailed in Case Study Appendix 15.

4.2.2 Presenting Problems: Aggressive Behaviour Patterns

Client Z has problems in forming and maintaining relationships which have often led to them breaking down as a result of 'face to face' verbal threats, accusations and abuse. His recent access to his mobile phone created another avenue to channel his aggressive behaviour, damaging the relationships he was attempting to build with his family. Client Z also reported further indirect aggression (Langos, 2012) using his social media via requesting a friend to post images and statements for him, aimed at sending subtle hostile messages to particular people, including family who were 'following' him. Although this appeared a distinctly different behaviour to his 'face to face' aggression, some of his behaviour on the ward did mirror the sending of subtle messages to staff and patients through certain looks and behaviour to create a reaction or test the relationship. This indicated Client Z's use of technology was creating additional avenues for aggressive perpetration, which were harder to monitor in MSU due to the frequent unsupervised mobile phone use.

4.2.3 *Short-Term Assessment of Risk and Treatability – START* (Nicholls, Brink, Desmarais, Webster, & Martin, 2006)

START is a structured professional judgement (SPJ) tool assessing risk in inpatient settings and aiding management of different types of risk (Webster, Martin, Brink, Nicholls, and Middleton, 2004). It was used collaboratively with Client Z and his MDT, to ensure transparency and inclusion in risk-related decisions, improving insight, and empowering Client Z to make changes to reduce his risk (Horstead & Cree, 2013). It was selected as a pre and post measure exploring Client Z's risk factors and the effectiveness of intervention by identifying any reduction in vulnerabilities and any improvement in his strengths.

Client Z's most recent START (March 2017) was reviewed pre-intervention (Appendix 16). His risk to others was rated as 'moderate', because of his history of violence and current aggressive behaviour. Eight specific risk items were selected for monitoring pre, mid and post intervention; social skills, relationships, mental state, emotional state, impulse control, external triggers, attitudes, and coping. Formulation of Client Z's needs indicated these areas to be associated with Client Z's aggressive interactions and recommended them as treatment targets. Two domains were rated as 'full' vulnerability; external triggers and coping. The remaining six rated as 'partial' vulnerabilities (Appendix 16).

4.2.4 *SMU and Mobile Phone Use Measure*

Client Z's previous SMU was explored. He indicated browsing social media every couple of hours when in the community, and reported seeing other people "living their lives" contributing to his own feelings of inadequacy and perceptions that others' lives were better (Appel et al., 2015, 2016; Krasnova et al., 2013). Client Z also indicated frequently posting on social media every few days, which has been linked with certain personality traits (Scott, Boyle, Czerniawska, & Courtney, 2018) and insecure attachment possibly reflecting the desire for comfort and intimacy (Nitzburg & Farber, 2013). Client Z's adult attachment style is insecure and his Facebook use may be attempts to have the close relationships he desires and decrease his feelings of loneliness (Deters & Mehl, 2013). Although, whilst in MSU, he does not have access to Facebook, his posts via a friend and his preoccupation with how many 'likes' he gets was problematic, especially as his previous Facebook behaviour has resulted in criminal cautions.

Client Z's access to the internet was currently limited reducing his risk of further 'electronic' aggression over social media, however his recent access to a mobile phone had created a new tool to aggress with. Client Z reported checking his phone approximately every 10 minutes to see if anyone had contacted him and reported contact with family members or friends every couple of hours, usually in the form of texting. Client Z was typically the first person to make contact, and often he would not get responses, negatively impacting on his emotional state, sense of belonging, self-esteem, and aggressive reactions (Smith & Williams,

2004). Client Z reported this to reinforce feelings of rejection, injustice, and that no one cares for him.

4.3 Psychometrics

I. Millon Clinical Multiaxial Inventory-III (MCMI; Millon, 2005)

The MCMI is a 175-item measure of personality patterns and pathology used to identify problematic personality traits that could impact on Client Z's aggressive behaviour. His profile indicated several prominent traits causing him difficulties in interpersonal, situational and personal areas of his life. For 'Axis II clinical personality patterns'; Dependent (78), Sadistic (75), and Negativistic (75) subscales were clinically significant. On 'Axis II severe personality pathology' scores indicated the significant persistence of schizotypal (97), borderline (79) and paranoid (80) pathology. 'Axis I Clinical Syndromes' indicated the presence of significant psychological difficulties in Anxiety (87), Bipolar (81) and Drug Dependence (81). Please see Case Study Appendix 17. for the full MCMI report.

II. Rosenberg Self-esteem Scale (RSES; Rosenberg, 1965)

RSES is a one-dimensional self-report measure assessing individuals' level of self-esteem (their conscious attitude, positive or negative, towards self). The scale ranges from 0 to 30 with scores between 15 to 25 being within normal range. Client Z scored 12 suggesting he struggles with low self-esteem, which is consistent with his expressed feelings of inadequacy. Leary, Twenge, & Quinlivan,

(2006) suggested that low self-esteem as a result of rejection in childhood was a determinant of aggression, something that client Z has had to cope with repeatedly over his lifetime.

III. Buss and Perry Aggression Scale – BPAQ (Buss & Perry, 1992)

Client Z's aggression was measured using the BPAQ (Buss & Perry, 1992a), selected due to its validation across different populations including forensic psychiatric populations (Diamond, 2005), and because of its multidimensional nature. Client Z's scores indicated Anger, Hostility and Overall Aggression as significantly higher than average (Table 1.).

Table 3. Client Z Aggression Profile

	Raw Score	Normal Range	Interpretation**
Physical	30	17-32	Within Norm Group High Average
Verbal	15	12-19	Within Norm Group Average
Anger	29	12-22	Significantly High
Hostility	28	16-26	Significantly High
Total Aggression	102	62-94	Significantly High level of overall aggression

*Mean scores (SD=10) based on 612 American Undergraduate Males

** Male Aggression Profile interpretation (Barlow and Williams, 1998)

IV. Brief Self-Control Scale (BSCS; Tangney, Baumeister, & Boone, 2004)

Client Z scored 42 on the brief self-control scale (BSCS), a one-dimensional measure of trait self-control. His score fell within the average range (31-48) along with 70% of the population. Tangney (2004) suggests having good self-control predicts interpersonal success, and good adjustment, however poor self-control is thought a significant risk factor in interpersonal and personal problems.

V. Benign and Malicious Envy Scale (BeMas; Lange & Crusius, 2015)

The BeMas is a 10-item measure to assess dispositional envy (an individual's desire for someone else's possessions, achievements, or qualities they perceive better than their own), identifying malicious or benign forms. Both forms involve a social comparison however benign envy evokes admiration and motivation, whereas, malicious envy evokes hostility and resentment. Client Z's mean benign envy score was 5.2 suggesting his experience of benign envy was high (above the norm average mean = 3.41). Client Z's mean malicious envy score was 1.6 suggesting his experience of malicious envy was within 'normal range' (norm average mean = 1.58) (Lange and Crusius). These results indicate Client Z experiences a high level of envy that appears Benign in its form. Although it is malicious envy that has been more closely linked in the literature with aggression (Lange & Crusius, 2015; van de Ven, 2016) there is differing evidence that's suggests both malicious and benign envy can create wide ranging reactions, including undesirable responses such as hostility and aggression (Yochi Cohen-

Charash & Larson, 2017)), indicating that Client Z's increased presence of benign envy may be relevant to his 'face to face' and 'electronic' aggressive behavior.

4.4 Formulation of Current Problem Behaviour

Client Z's previous history is marked by poor attachment, neglect and abuse. As a consequence, he has developed several negative attitudes towards others; they are untrustworthy, will abandon him, are selfish, and will seek to harm him in some way. Client Z had limited opportunities to develop emotional literacy skills making emotions difficult to separate, causing problems with emotion regulation, where aggression is used as a strategy to protect himself emotionally from others, or to balance out the perceived injustice he feels.

Due to the development of these maladaptive attitudes and behaviours, Client Z appears to have difficulty thriving in areas such as relationships, occupation, schooling, and family life. Previous early life events, many of which involve Client Z being let down by those supposedly caring for him, continue to leave him with feelings of inadequacy, low self-esteem and a confused self-identity. These negative feelings and attitudes towards himself and others, reinforce a cycle of alienation from society and isolation from people. This conflicts with his strong desire for closeness, wanting to be accepted and respected by others. This is considered a disinhibiting factor towards his anger and ultimate aggression.

Client Z has developed some prominent personality traits, that when met with environmental triggers, may act as destabilisers in his aggression. These include social cognitive biases, such as the propensity to jump to negative conclusions, over-personalisation of situations, poor emotional reasoning and unhealthy social comparisons. His past traumatic experiences and insecure primary attachments have led to deficits in the processing of social information which causes Client Z to experience these attribution errors mediating the pathway between his perceived trigger and his aggressive behaviour (Crick & Dodge, 1994). This, along with the weakening influence of social presence, self-control, social norms and behavioural feedback when interacting behind a screen (Derks, Fischer, & Bos, 2008), may explain his recent increase in using electronic aggression as an avenue to regain power over his perceived threats and injustice (Nicol & Fleming, 2010; Runions, Shapka, Dooley, & Modecki, 2013). Client Z's social cognitive biases also result in hypervigilance to signs of abandonment and criticism, and fear of emotional closeness due to his perceptions of inevitable abandonment. His envious feelings towards others reinforce his belief that his life has been unfair and unjust and these hyper-perceptions to threat and injustice evaluate his aggressive responses as reasonable in both his face to face and electronic interactions.

Other links between Client Z's early traumatic experiences and psychosis appear to play a role in his risk of aggression. Due to the negative and threatening nature of Client Z's psychotic experiences and his potential impaired reasoning, intrusive thoughts, impulsivity and disinhibition, his reaction to external triggers can be aggressive, and vengeful. Client Z in the past had used illicit substances potentially as a way of coping with his emotions or psychotic experiences, however, it is likely this would have only added to his negative experiences.

Client Z is self-conscious, and shy, finding it hard to speak up when in a group of people. His use of technology both in the community and in hospital appears to have become an easier path for his aggression, where he can avoid drawing attention to himself, and is able to aggress towards others within his own safe space, hence minimising the risk of further rejection and immediate repercussions.

4.5 Intervention

4.5.1 Selection of Psychological Intervention

Client Z had engaged in previous psychological intervention using Cognitive Behavioural Therapy (CBT) and Dialectical Behavioural Therapy (DBT) approaches to address aggression, however had found both difficult to engage with. CBT and DBT techniques assume fault with the individual's thinking and due to Client Z's history of trauma and neglect he finds it hard accepting responsibility for his difficulties. Therefore trying to change his thinking patterns in this way could be punishing (Harris, 2006) and dismissive of his past experiences (Eifert & Forsyth, 2011). Longer-term psychotherapy such as schema or attachment-based therapies would likely be hugely beneficial for Client Z. These therapies would aim to address the unresolved trauma which appeared to underpin much of his aggressive behavior (Burns, Jackson, & Harding, 2010; Gay, Harding, Jackson, Burns, & Baker, 2013; Hecker, Fetz, Ainamani, & Elbert, 2015), stemming from his social cognitive bias, his deficits in self-control, his fears of rejection and

abandonment, and his low self-esteem triggered by unhealthy social comparisons. These difficulties have been prominent in his 'face to face' and 'electronic' aggressive behaviours, and therefore the intervention aimed to target both forms. This was intended to provide an opportunity to gather useful information on how 'face to face' and 'electronic' aggression can be addressed in psychological intervention. To evaluate the effectiveness of the selected interventions the outcome of Client Z's aggressive behaviour was assessed pre, mid and post intervention. As Client Z's difficulties with his 'face to face' and 'electronic aggression' warranted immediate attention, psychotherapy was deemed not appropriate as an urgent intervention due to change being evident over a longer duration of time (Kazdin, 2009). CBT and DBT were also not deemed as suitable due to the previous unsuccessful interventions Client Z had engaged with.

The intervention selected was in two parts; initially psycho-education into personality aiming to target Client Z's understanding of how his view of the world, others around him and attitudes towards himself may have formed. This was intended to help Client Z develop his insight into the social information biases that he may have developed. The main intervention targeting his aggressive behavior was Acceptance and Commitment Therapy (ACT) (Russell Harris, 2006), selected for its focus on skills to choose to live in line with personal values whilst also not trying to resist negative feelings, thoughts, and biased beliefs. ACT allows for these feelings to co-exist with value orientated mind-sets aiming to increase Client Z's psychological flexibility. The experiential avoidance promoted by CBT and DBT interventions can increase the negative feelings and consume mental energy in the process of trying to suppress or avoid them (Bach, 2015) which can increase aggressive behaviour. ACT helps to preserve this mental energy by accepting and

even using these negative feelings to help drive focus on chosen values and in turn increasing self-control, self-esteem and a reduction in intensity of feelings of anger and hostility (Berkout, Tinsley, & Flynn, 2019).

4.5.2 Development of Intervention

The Intervention aim was to reduce Client Z's aggressive behaviour, either 'face to face' or by 'electronic' means. His assessment directed the development of the intervention which targeting the various psychological constructs that underlie his aggression, such as anger and hostility, attachment difficulties, problematic personality traits, and unhealthy social comparisons. The intervention was split into two parts, starting with psychoeducation and followed by a behavioral change psychological intervention.

I. Intervention Part 1: Understanding Personality (6 x 1 to 1 ½ hour sessions)

Table 4. Understanding Personality Psychoeducation Plan

Session No.	Session Content
1	What is personality?
2	How does a personality develop?
3	What can make a personality disordered?
4	Attachment and Personality
5	The Environment and Personality
6	Moving Forward: What my personality means for me?

Client Z's diagnosis of EUPD, along with Schizotypal and Paranoid personality patterns of can lead to emotion deregulation causing oscillation between anxiety, anger and sadness (Reisch, Ebner-Priemer, Tschacher, Bohus, & Linehan, 2008), the re-experience of interpersonal rejection (Leary et al., 2006) and identity disturbances (Wilkinson-Ryan & Westen, 2000). These complexities were thought relevant in Client Z's aggression, and therefore an intervention targeted at understanding the development of his personality traits, including his strengths and vulnerabilities appeared a priority.

'Understanding Personality' was developed from an existing psycho-education programme, used in Elysium Healthcare (Allen, 2009), aimed at helping individuals diagnosed with significant problematic personality traits, understand personality development and functioning. Additional attention was paid to 'Attachment and Personality' to help Client Z understand the impact his previous attachments had on his development of strategies to help him 'survive' his childhood (Agaibi & Wilson, 2005). This strength-based approach aimed to increase Client Z's self-esteem and recognise his strengths, including resilience. It also aimed to minimise feelings of shame, and attitudes of blame when exploring the development of his maladaptive and problematic traits (Luoma & Platt, 2015). Part 1 session plans can be found in Appendix 18.

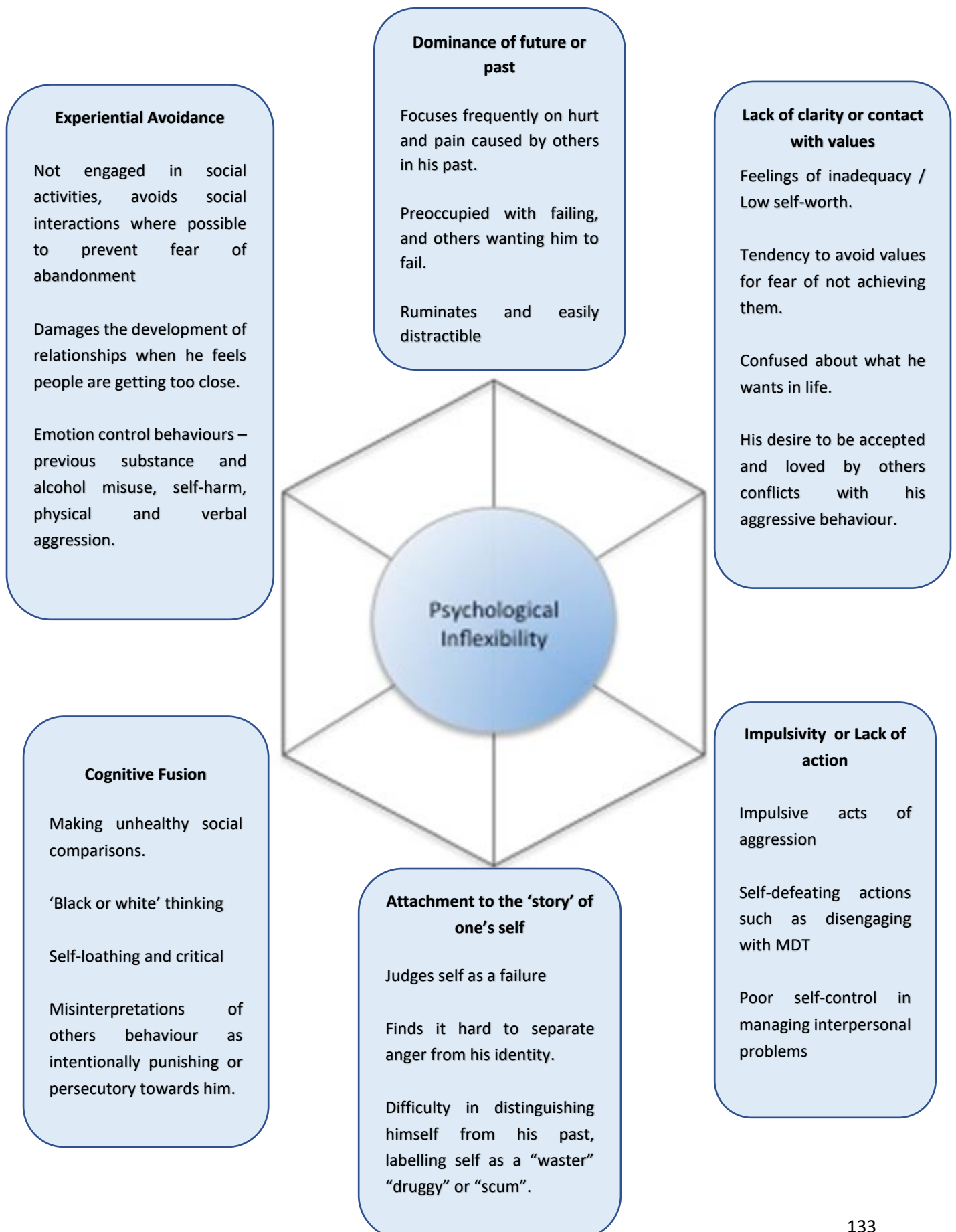
II. Intervention Part 2: Acceptance and Commitment Therapy (ACT)

(10 x 1 to 1 ½ hour sessions)

To guide the ACT intervention a case conceptualization was developed from initial assessment and information gathered in 'Understanding Personality' sessions. The case conceptualization aimed to answer questions about what experiences Client Z was trying to avoid, and the avoidance behaviors was he using (Hayes & Strosahl, 2004). Motivational and environmental barriers were also considered in formulating Client Z's psychological inflexibility (Figure 6).

The 'understanding personality' sessions helped Client Z to develop awareness of his difficulties, but did not address the underlying factors, nor target specifically his aggressive behavior. Assessment found anger, hostility, social comparison processes, and low self-esteem as factors in Client Z's 'face to face' and 'electronic' aggression. His engagement in previous CBT and DBT, which attempted to distort or avoid these unpleasant emotions and trigger avoidant behavior patterns, were ineffective and potentially more harmful or obstructive (Blackledge & Hayes, 2001; Russell Harris, 2006). ACT offered an alternative to the repeated cycle of avoiding the unpleasant emotions and problematic behaviour encouraging the acceptance of these unpleasant emotions and no longer seeing them as obstacles to a better quality of life (Blackledge & Hayes, 2001).

Figure 6. Client Z's Pre-intervention ACT Case Conceptualisation



ACT sessions (Table 5) were developed using literature including 'ACT Made Simple' (Harris, 2009) and 'Act on Life Not on Anger: The New Acceptance and Commitment Therapy Guide to Problem Anger' (Eifert & Forsyth, 2011).

Table 5. ACT Intervention Plan

Session No.	Session Content
1	What is ACT? Why for me?
2	What is Anger and Aggression? Why can ACT help?
3	Contacting the Present Moment and 'Make room'
4	Contacting the Present Moment and 'Defuse'
5	The Cost of Anger and Aggression on Others
6	Introducing Values – What really matters to me
7	Values and Action as an Alternative
8	Back to Acceptance: As an Alternative
9	Letting go and Forgiveness
10	Taking off your Armor

ACT was selected as it aimed to facilitate acceptance of unpleasant and difficult emotional experiences and encourage behavior patterns that lead to a more valued and meaningful life (White et al., 2011). ACT introduced techniques to increase psychological flexibility; the ability to be "in the present moment, with full awareness and openness to our experience, and to take action guided by our values" (Harris, 2009, p. 12). Simply put, ACT is to accept thoughts and feelings presently experienced, choose a valued direction, and take action, moving from

psychological inflexibility to psychological flexibility (Appendix Figure 2. ACT Hexaflex; Harris, 2009). ACT is found to reduce negative symptoms in psychosis (White et al., 2011), reduce PTSD symptoms (Orsillo & Batten, 2005; Thompson et al., 2011), and improve self-esteem through acceptance, mindfulness and values techniques (Luoma, Kohlenberg, Hayes, Bunting, & Rye, 2008; Thompson & Waltz, 2008), all treatment needs for Client Z. The enhancing affect ACT has on self-acceptance could target Client Z's tendency to make frequent social comparisons (Carson & Langer, 2006), reducing his experience of destructive emotions caused by his negative evaluation of his self, compared to others (White, Langer, Yariv, & Welch IV, 2006). Primarily targeted at making behavioral changes in Client Z's aggressive behaviour, ACT appeared appropriate to encompass the other psychological needs entangled in his complicated presentation. The full ten session programme is outlined in Case Study Appendix 20.

4.5.3 Delivery of Intervention: Engagement and Barriers

Client Z engaged in twenty weekly sessions (three pre-intervention assessment, six 'understanding personality', ten ACT and one post assessment). The duration of sessions varied from between thirty minutes to one and a half hours due to Client Z's initial difficulty in managing his intense feelings of anger, which at times resulted in terminating the session. Session content was adapted to Client Z's cognitive functioning, although no cognitive measure had been completed, it was suspected he may have some difficulties in this area. Material was made as simple, clear and as concrete as possible. Out of session work was practical rather than written to prevent Client Z becoming overwhelmed or confused.

Client Z found the 'Understanding Personality' intervention particularly hard to engage with when asked to apply content to his own life, thinking back to his past, his early attachments and his difficult childhood experiences. Although, aimed to help Client Z gain further insight into the development of his personality, it may have triggered difficult feelings and memories of traumatic experiences, potentially risking Client Z reliving events. This was addressed through ensuring sessions were trauma-informed to minimise any risk of re-traumatisation (Arthur et al., 2013; Substance Abuse and Mental Health Services Administration, 2015a).

On occasions Client Z displayed anger in the session, he would be quite verbally abusive towards the therapist. For example, stating that she was "just there to get paid" or accusing her of being "sick" for wanting to work with people like him. Although unpleasant for the therapist, it allowed for observation of psychological inflexibility and experiential avoidance (Eifert & Forsyth, 2011). This was consistent with the formulation of Client Z's behaviour patterns which appeared pervasive in most of his relationships, where he attempts to push people away by being aggressive and abusive to avoid the risk of being hurt. This was addressed by the therapist remaining in the room for the full session when Client Z had left and returning every week at the same time to demonstrate she was not going to abandon the sessions.

During ACT, Client Z had developed a better therapeutic rapport with the therapist and was more able to remain in the full sessions and was more open to engaging in the material. Therapeutic rapport is an important factor in the success of

interventions hence why having the assessment and psycho-educational sessions prior to ACT was beneficial (Leach, 2005; Marshall & Serran, 2004). The pace, structure and non-judgmental approach of ACT (Harris, 2009) appeared to have a positive effect on Client Z's engagement, he was more willing to use his own examples to apply ACT techniques. He did find mindfulness a challenge, stating that he felt "stupid", however still practiced the skills. Client Z particularly thrived in the session content on values, goal-setting and identifying what really mattered to him. See Case Study Appendix 21. for an example of Client Z's session work.

4.6 Results

4.6.1 Outcome Measures

Psychometrics completed during pre-intervention assessment were completed again post-intervention to explore changes that could reflect Client Z's engagement in the intervention (Table 6.). The only psychometric not repeated was the MCMI, which identified Client Z's personality functioning, and was not used to measure change. Please see section 2.3 for additional information on each psychometric.

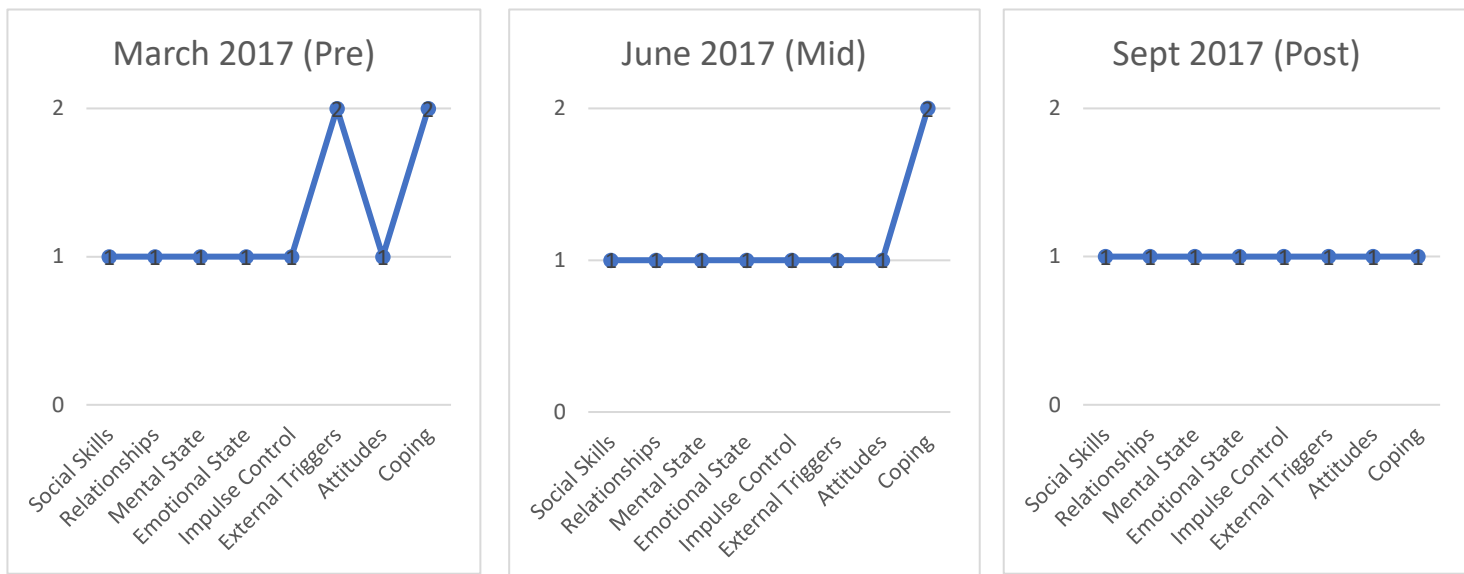
Table 6. Pre and Post Intervention Psychometric Results

		Pre-Intervention		Post-Intervention	
Psychometric	Subscale	Score	Interpretation	Score	Interpretation
RSES	n/a	12	Below Average	14	Slightly Below Average
BPAQ	Physical	30	Within norm group average	27	Within norm group average
	Verbal	15	Within norm group average	10	Below norm group average
	Anger	29	Significantly high	24	Significantly above norm group average
	Hostility	28	Significantly high	24	Within norm group high average
	Overall Aggression	102	Significantly high	85	Within norm group high average
BSCS	n/a	42	Within average range	47	Within average range
BeMas	Benign (BE)	5.2	Significantly high experience of BE	5.8	Significantly high experience of BE
	Malicious (ME)	1.6	Normal experience of ME	1.2	Normal experience of ME

4.6.2 Observed changes in Risk and Behavior

The START was used pre (March 2017), mid (June 2017) and post (September 2017) intervention to measure changes in Client Z's risk. His overall risk estimate remained at 'moderate' mid and post intervention. However, there were changes in two out of the eight specific risk estimates (Figure 7). After three months of intervention, Client Z's vulnerability to external triggers reduced from full to partial, suggesting the influence of external triggers was less of a risk in his aggressive behaviour. After six months of intervention, Client Z's vulnerabilities in coping reduced from full to partial, indicating improvement in coping skills, and a reduction of use of maladaptive methods. Other notable changes were commented on, for example, in the relationship domain at mid-START improvements were noticed in maintaining relationships without conflict, and reconnecting with family members, although also commented on was an increase in 'electronic' aggression towards family. In the Post-START healthier interactions were observed when Client Z was using his mobile phone and email, and improvements observed in progress with family relationships with a home leave booked to visit his mother. Client Z's mid and post intervention STARTs detailed further improvement in other areas such as emotional state and social skills, please see Appendix 22 and 23.

Figure 7. START Pre, Mid and Post Results



0 = no problems in this domain

1 = partial problems present in this domain

2 = definite problems present in this domain

In Client Z's monthly MDT ward rounds, feedback was provided from each discipline regarding progress towards his recovery. Prior to intervention, Client Z's ward rounds were often focused on problem behaviours, such as interpersonal conflict and aggression. At post-intervention it was observed Client Z had more insight into these problem behaviours, particularly his anger towards others, and his maladaptive coping strategies. Nursing staff reported much less verbal aggression and incidences of misinterpretation between Client Z and staff. Occupational therapy had observed an increase in Client Z's engagement in meaningful activities, including baking, gaining a hospital job, and developing a regular gym routine. Social work reported much improvement in Client Z's inappropriate mobile phone use. His mother had verified she had not received abusive text messages off of Client Z in two months, although telephone arguments were still occurring occasionally. Client Z's friend had also informed his social worker that requests for updating and managing his social media account

had stopped. Client Z's overall relationship with his MDT had improved, attending most meetings, and remaining in them even when feeling angry, his hostility and aggressive outbursts had reduced indicating an improvement in his impulse control and emotion regulation.

4.6.3 Summary of Results

Overall Client Z had shown improvements in a variety of psychological and behavioural domains relating to his aggression. His overall level of anger was now 'within normal range' and his experience of anger and hostility had reduced, although his level of anger was still significantly higher than average. Client Z's scores relating to benign and malicious envy did not significantly change, suggesting his experience of benign envy remained significantly high which may be a prominent feature in his personality (Rentzsch & Gross, 2015). Changes in Client Z's risk factors were observed in his behaviour, he was less likely to be disturbed or provoked by external triggers and was more likely to use helpful and appropriate coping strategies.

4.7 Discussion

Client Z's response to intervention produced a range of positive outcomes. Firstly, Client Z's ability to engage in the intervention which had not happened in his previous CBT or DBT therapies. Secondly, his problematic behaviors relating to his mobile phone use and aggression had reduced. Thirdly, his risk of violence in two

domains decreased; being destabilised by external triggers and use of appropriate coping skills. Fourthly, Client Z's awareness and focus of what was important to him became stronger, evidenced in his motivation to engage with more 'toward moves' (e.g. increasing meaningful activities), rather than becoming trapped in making unhealthy social comparisons and choosing 'away moves' (e.g. aggressive interactions).

Client Z's needs were complex, and he will continue to require long-term therapy, hence his detention in MSU. However, this intervention was able to target a particularly prevalent problem; his aggression towards others, including 'electronic' aggression through text messages, email and indirect facebook posts. Client Z's history of physical, verbal and 'electronic' aggression suggests this behavior was pervasive. 'Electronic' and 'face to face' aggression are suggested to co-exist (Kellerman et al., 2013) and potentially inflame one another, therefore addressing the underlying factors of both appeared the most effective treatment. Although Client Z often found it easier to aggress using electronic means, due to the lack of face to face contact (Suler, 2004b) and minimal immediate repercussions (Nicol & Fleming, 2010), it appeared the same psychological mechanisms were at play, such as his anger and hostility, feelings of inadequacy, poor emotion regulation, and vulnerability to external triggers.

Psychoeducation prior to ACT helped build rapport, observe Client Z's experiential avoidance behaviors, and increase self-awareness of strengths, difficulties and where they may have developed from. Its brief nature makes psychoeducation limited, likely to not have a significant effect on improving personality function

(Hesse, 2010), however this was not the aim. Brief interventions exploring personality development risk the potential to unearth suppressed painful memories, without a longer term therapy to contain and address them (Substance Abuse and Mental Health Services Administration, 2015b). This may have occurred for Client Z as he terminated sessions on occasions attempting to avoid revisiting past experiences. Although long-term personality intervention is likely more beneficial (Renner et al., 2013), this was not feasible due to time restraints, often a problem in psychological therapies. Psychoeducation bridges this gap, with benefits for individuals who are likely to disengage in longer term therapy and suiting services where resources are limited (Lukens & McFarlane, 2004).

Continuing directly into ACT minimised the risk of leaving Client Z with unanswered questions and uncontainable emotions from 'understanding personality'. Themes raised were explored in ACT helping the continuity of the two interventions. ACT's effectiveness for EUPD as well as aggression suggests personality psychoeducation and ACT combined could be a potentially powerful intervention (Morton, Snowden, Gopold, & Guymer, 2012). The outcomes showing reduced aggression of both face to face and electronic forms suggest this intervention combination is effective also for 'electronic' aggressive behaviour. Client Z's improvement in his interpersonal interactions signified he was not only able to manage his aggression and impulses better, but insight of his personality traits may have also had a positive impact (Banerjee, Duggan, Huband, & Watson, 2006). He appeared to benefit from the structured, non-judgmental and accepting nature of ACT, creating a safe space to explore his negative view of himself, his shameful feelings of anger towards others, and his regretful acts of aggression (Luoma & Platt, 2015).

The ACT conceptualisation (Figure 6, Hayes & Strosahl, 2004) was useful in identifying particular areas of psychological inflexibility which appeared to relate to Client Z's 'away moves' (Appendix 21); identified as his aggressive behavior. This proved to be a helpful formulation for exploring 'electronic' aggression by using the same framework understanding face to face aggression. The conceptualisation identified a protective function for his 'away moves' preventing him from experiencing or accepting unpleasant painful emotions or memories, known as 'Experiential Avoidance'. Client Z's levels of anger and hostility were high pre-intervention, and aggressive outbursts may have provided an emotional relief (Bushman, Baumeister, & Phillips, 2001). Experiential avoidance is a key process to target in the management of aggression (Kingston, Clarke, & Remington, 2010), and was the main focus of the intervention. Exercises exploring the function and the cost of his face to face and electronic aggressive behaviors, increased Client Z's awareness of the negative impact on his future and what matters to him.

Acceptance is an alternative to experiential avoidance, encouraging Client Z to connect with the present moment, without trying to change the frequency or form of his thoughts or emotional pain (Hayes, 2004). Some of which were self-loathing, envious of others, or persecutory and paranoid. As ACT did not ask Client Z to fight these thoughts, unlike CBT or DBT, it prevented invalidation or minimization causing more emotional turmoil (Harris, 2006). Mindfulness was a core technique in developing acceptance and self-awareness. The goal was to encourage Client Z to be more aware of his 'direct world' rather than what was in

his mind, or his perceived comparisons to others, so that he can take better informed action to deal with situations (Eifert & Forsyth, 2011). Client Z's reactions to external triggers, and his coping showed a marked improvement post intervention, two areas thought to benefit greatly from mindfulness (Teper, Segal, & Inzlicht, 2013). Mindfulness is also thought to be effective in the reduction of envy, although evidence is scarce (Schurtz, 2014; Weltfreid & Ahrens, 2014), Client Z was still able to apply mindfulness to unhealthy social comparison cognitions and reported a reduction in his rumination of what others were doing and achieving.

The final process of ACT, knowing what matters and taking committed action, drove the behavior change (Eifert & Forsyth, 2011). Client Z's lack of motivation, feelings of inadequacy, and intentional avoidance of engaging in behaviour in line with his values (Hayes & Strosahl, 2004) appeared to be a factor in his aggression. Values are important in managing aggression because they help the individual choose an alternative action (towards moves) other than aggression (Eifert & Forsyth, 2011). This appears to also apply to electronic aggression as evidence of his value-consistent behaviour increased during and post intervention and outcomes demonstrated improvements in managing external triggers and in coping resulting almost eliminating electronic aggression. Attending the gym and gaining a hospital job were steps Client Z had taken during and post intervention, adding value and creating a more meaningful life (Harris, 2009). These steps helped to replace isolative, non-engaging hostile behaviors seen in his previous interactions face to face and electronically.

4.8 Conclusion

This case study exploring the presenting problem of aggression perpetrated through forms of 'face to face' and 'electronic' means, unearthed complex contributing factors; controlled paranoid schizophrenia, EUPD, emotion regulation difficulties, unhealthy thinking patterns including social comparison, all further complicated by unresolved trauma from his childhood. 'Electronic' aggression and general aggression are highly correlated (Subrahmanyam et al., 2008), and inflame one another, hence the importance of targeting intervention to address both (Karle, 2013). This case study provided the opportunity to explore outcomes of both 'face to face' aggression and 'electronic' aggression from an ACT intervention targeting both. ACT had shown a wide range of benefits across a multitude of problems making it suited to the complexities of this case. Results did demonstrate benefits in treating both forms of aggression as a unified problem and by focusing on the underlying psychological factors, there appeared to be improvements observed with Client Z's expression of aggression in both 'face to face' and 'electronic' forms. Limitations to note are the limited well-controlled studies documenting ACT's effectiveness (Hayes, Luoma, Bond, Masuda, & Lillis, 2006), the generally short length of interventions, potentially missing out key ACT components (Hayes et al., 2006), and the complicated processes which may exclude individuals with lower IQ from participating in effective therapy. Despite this, its benefits appear greater. ACT's structured, non-judgmental and gentle approach has helped Client Z manage his pain more effectively, reducing the anger behind his aggression, hence reducing the incidences of both 'face to face' and 'electronic' aggression. The positive outcomes from this case study suggest

'electronic' aggression can be assessed, formulated and treated within a general aggression intervention, and ACT was shown effective for this.

Chapter Five

Psychometric Critique: Can envy be measured and used to explore as a construct in 'online and offline' aggression?

5.1 Introduction

This is a psychometric critique of the Benign and Malicious Envy Scale (BeMas), developed by Lange and Crusius (2015) after they revisited a measure for trait envy, the Dispositional Envy Scale (DES) (Smith, Parrott, Diener, Hoyle, & Kim, 1999). This critique will examine the BeMas scientific properties in accurately measuring envy, its application to the understanding of envy within different populations and amongst different psychological constructs, in particular aggression, and the limitations and implications for future development of the BeMas's potential uses.

This thesis explores the relationship between social media use and aggressive behaviour and is intended to add further to the understanding of 'online' aggression. With the growth of social media, attention has shifted towards its impact on psychological well-being. Social Media has been linked with triggering widespread and pervasive social comparison (Appel et al., 2016; Lin & Utz, 2015; Oswald, 2017) and some evidence appears to point towards worrying consequences of envious experiences online, including lower mental wellbeing (Shakya & Christakis, 2017; Taylor & Strutton, 2016; Verduyn et al., 2015) and feelings of inadequacy (Oswald 2017). Envy has been found to also influence hostility and aggression (Rentzsch, Schröder-Abé, & Schütz, 2015; Smith, Parrott, Ozer, & Moniz, 1994), therefore the combination of poor psychological wellbeing, feelings of inadequacy and triggered hostility could form the right ingredients for perpetration of online aggression. If envy is as detrimental to wellbeing as research appears to suggest, it will be important to identify a measure that can

explore accurately envy in a society where social comparison is triggered daily through the use of social media.

The BeMas was selected for use in this thesis in both the primary research study (Chapter 3) and the research case study (Chapter 4). The primary research of this thesis identified benign and malicious envy tendencies in participants, with the aim of exploring the relationship between envy experiences and online aggression. The research case study used the BeMas for initial assessment of constructs associated with the clients 'face to face' and 'electronic' aggression. It was then used post intervention to explore its application to assessing change in the experience of envy. As well as the general validity of the BeMas, this critique will consider how appropriate and effective the measure was when applied practically to primary research and assessment and intervention with a client exploring 'online' and 'offline' aggression.

5.1.1 Social Comparison and Envy

To understand what the BeMas measures we first need to understand Social Comparison Theory (Festinger, 1954), which describes the natural drive to evaluate ourselves by comparing ourselves with others and making 'upward' and 'downward' comparisons. An upward comparison is when individuals compare themselves with someone else who they believe to be "socially better" or "superior" than they are. When people are around others they perceive to be "superior" or "socially better", this can lead to a negative self-evaluation, creating

unpleasant feelings of inferiority, injustice, and lower self-esteem (Mola, Saavedra, & Reyna, 2014). This 'upward' social comparison is thought to trigger envy in individuals (Nabi & Keblusek, 2014). Envy is described as an emotion that occurs when "a person lacks another's superior quality, achievement or possession" (p. 906, Parrott & Smith, 1993). It is generally seen as a negative emotional response which activates a pattern of thoughts, emotions and behaviours that result from the perceived disadvantage. This is thought to occur more prevalently in the 'online' environment as individuals are presented with a filtered version of other people's lives showing most commonly the positives, which gives an unbalanced view when making a social comparison against oneself (Appel et al., 2015)

Much research has supported the idea that only a malicious type of envy exists (Miceli & Castelfranchi, 2007; Smith & Kim, 2007), causing destructive emotions and behaviour (White et al., 2006). However, recent evidence points towards the existence of a non-malicious (benign) form of envy (Parrott & Smith, 1993), which may elicit positive emotions such as admiration, and motivational behaviours such as positive improvement of oneself (van de Ven, Zeelenberg, & Pieters, 2012). Both forms of envy are thought to cause feelings of frustration and inferiority, however it is the route that one chooses to level the difference between themselves and the 'superior' other, that defines the type of envy they may experience (Crusius & Lange, 2015).

Social comparison processes have become of more interest with the rise of social media and the evidenced triggering negative effect SMU has on experiencing envy

(Appel et al., 2016; Lin & Utz, 2015; Mujcic & Oswald, 2018). Research suggests envy also has a motivating effect that drives an individual to improve their personal situation (Crusius & Lange, 2014a; De Vries, 1992), however it is counterargued that envy is more likely to cause harm than do good due to the increased social information consumption of one-sided, unrealistic lifestyles of others. This leaves individuals vulnerable to lower self-evaluations, and the destructive emotions and behaviour that come with this (White et al., 2006). The detrimental impact of envy highlights the importance of being able to measure envy experiences and behavioural motivations for the purpose of further research.

5.1.2 Envy and Aggression

Envy studies have highlighted the link with aggressive behaviour (Leach, 2010; Smith, 2010), with earlier studies suggesting envy being related to hostile responses (Smith et al., 1999) and Schadenfreude (Smith et al., 1996), and current research continuing to support the view that envy has detrimental consequences that causes harm to those around them (Behler, Wall, Bos, & Green, 2020). There are wide-ranging explanations as to why aggression can be an outcome from an experience of envy. For example aggression may be the response to an ego threat (Bushman & Baumeister, 1998), it may be to regain the perceived power imbalance through a domineering aggressive interpersonal style (Wink, 1991), or it may be the result of the need to relieve anger or frustration triggered by the experience of envy (Leach, 2010). The BeMas assesses envy as a dual-concept, dividing it into benign and malicious forms which is suggested to determine the behavioural response (Lange & Crusius, 2015). It is malicious envy

that Lange and Crusius (2015) found to have more detrimental effects due to the response of “levelling down” by causing harm or expressing hostility towards the superior other. However, research supporting envy as a unitary concept would propose that all envy has the potential to trigger aggressive behaviour, therefore not distinguishing between a benign and malicious form (Yocheved Cohen-Charash, 2001; Guerrero & Andersen, 1998; White, Langer, Yariv, & Welch IV, 2006b). More recently research has also demonstrated envy’s presence in online aggression (Wu & Srite, 2014), with trolling (Buckels et al., 2014), cyberbullying (Madan, 2014) and cyber-aggression (Runions & Bak, 2015) studies demonstrating the experience of envy associated with increased online aggressive behaviour. These studies, exploring both ‘online’ and ‘offline’ aggression, have used a variety of envy measures, some validated such as the DES (Smith et al., 1999), and others using experiential measures such as recreating the envious experience. The lack of validated envy measures makes it difficult to evaluate the literature on aggression and envy and draw comparisons and conclusions about its relationship. The BeMas was used in this thesis as the standardised tool to explore the type of envy experienced by online aggressors in the primary research and in the individual research case study.

5.1.3 Describing the BeMas

The BeMas was created to capture the “full spectrum of motivational dynamics related to experiences of envy and envious responding” (p. 286, Lange & Crusius, 2015). The measure contains ten self-report items split into two subscales, which uniquely predict benign or malicious reactions to upwards social comparisons.

Previous research treated envy as a unitary concept, assuming there was only one form of trait envy, with a negative, more socially destructive influence (Smith & Kim, 2007), in which a person may display hostile and resentful behaviours (Duffy, Scott, Shaw, Tepper, & Aquino, 2012). Lange and Crusius (2015) agree that malicious tendencies are an essential part of envy (Shengold, 1994), but argue benign envy also exists, lacking in hostility and triggering an increase in personal effort to better one's self (Schaubroeck & Lam, 2004, van de Ven, Zeelenberg, & Pieters, 2011). Lange and Crusius (2015) developed the BeMas because they believed in order to understand how individuals experience envy and the differences in their behavioural outcomes, it was necessary to distinguish between benign and malicious envy. The BeMas aims to identify distinct motivational dynamics of envy, linking them to a distinct "concrete behaviour" (Lange & Crusius, 2015).

5.1.4 Alternative measures of Envy

I. Measuring the Unitary Concept of Envy

Belk's Materialism Scale (Belk, 1985) was an early measure tapping into envy as a status-related concept. The scale correlated with negative antecedents and consequences (Belk, 1985). The York Enviousness Scale (YES) was developed to identify patterns in cognition which indicate an envious personality trait (Gold, 1996) and focused on resentment and ill will associated with anger and hostility (Gold, 1996). The popular Dispositional Envy Scale (DES) taps into inferiority, ill will, frustration and perceptions of injustice (Smith et al., 1999). The DES findings

suggest envy elicits a painful emotion and predicts hostile interpersonal interactions (Lange & Crusius, 2015). Correlations have been found between DES and negative self-esteem, depression, hostility and resentment (Lange & Crusius, 2015), antisocial behaviours such as schadenfreude (van de Ven, 2014) and unhelpful responses to others in social dilemmas (Parks, Rumble, & Posey, 2002). These scales appear to measure envy of the malicious form only and as unitary concept. They are based on historic research, not reflecting current evidence suggesting a two-dimensional model of envy (Lange & Crusius, 2015).

II. Measuring Envy as a Dual Concept

Until the development of the BeMas, no standardised tool had distinguished between benign and malicious envy. Previous research had used different techniques to measure these including recall methods (Lin & Utz, 2015; van de Ven et al., 2009) and using scenarios (van de Ven et al., 2014, 2012). These methods have their limitations; retrospective recall methods were left open to recall bias processes (Hassan, 2005) and the quality of information relied on memory and interpretation (Koriat, 1998). Other measurements asked participants directly about their experiences of benign and malicious envy which could have resulted in reluctance to be truthful due to negative connotations associated with the word malicious (van de Ven et al., 2009), this may have led to underreporting of malicious envy (Lin & Utz, 2015). These two-dimensional measures were un-standardised and appeared vulnerable to various biases.

5.2 The BeMas Potential Uses

Envy's overall function is to level the difference between the individual and the person they envy (van de Ven et al., 2009). This is done in different ways depending on the form of envy a person experiences, benign or malicious (Mola, Reyna, & Godoy, 2015; Smallefs, Streamer, Kondrak, & Seery, 2016; van de Ven, 2016). Lange and Crusius (2015) suggest that using the BeMas as a standardised tool to differentiate between these two forms of envy will therefore allow us to predict a behavioural outcome and enable comparisons between different groups of people. If the BeMas is shown to have good scientific properties, the standardised measure has great potential to add to research into personality and behaviour.

5.2.1 Personality Research

Envy has been linked to various personality traits including components of the dark triad (Veselka, Giammarco, & Vernon, 2014), neuroticism (Jylha & Isometsa, 2012) and antisocial behaviours (James, Kavanagh, Jonason, Chonody, & Scrutton, 2014). Benign envy's motivational tendencies to do better (van de Ven et al., 2011) can be representative of conscientiousness (Barrick, Stewart, & Piotrowski, 2002), however malicious envy destructive tendencies can relate to schadenfreude, which can form part of narcissism or psychopathy (van de Ven, 2014). The use of the BeMas to identify the form of envy could help further add to understanding personality.

5.2.2 Behavioural Research

Lange and Crusius's (2015) suggestion benign or malicious envious responses result in distinct 'concrete behaviour' indicate envy is more than just a 'feeling'. Social comparison theory suggests Envy prepares people to respond after their "status" is at threat (Rentzsch & Gross, 2015). Research has identified this in social dilemmas (Parks et al., 2002), sporting competitions (Lange & Crusius, 2015; Pila, Stamiris, Castonguay, & Sabiston, 2014), and in work places (Bedeian, 1995). These different behavioural outcomes can be constructive or destructive (Tai, Narayanan, & McAllister, 2012). This depends on the form of envy experienced, with benign behaviours bettering oneself and malicious behaviours harming the perceived superior other to level the difference (van de Ven et al., 2009). Using the BeMas to explore different behavioural outcomes could help to understand the function of benign and malicious envy across different settings, circumstances and populations, which is particularly relevant to social media due to its very present pervasive and potentially harmful impact on society (Appel et al., 2016; Lin & Utz, 2015; Mujcic & Oswald, 2018). Also assisting in the development of interventions and preventative methods to address the destructive behaviours and improve constructive behaviours as a result of experiencing envy.

5.2.3 Other Potential uses

The BeMas could be used to predict certain psychological and emotional characteristics, for example studies have shown envy's impact on happiness (Lin & Utz, 2015), anger (Leach, 2010), anxiety (Yocheved Cohen-Charash, 2001), and

self-esteem (Colman, 1991). This would add to the understanding of possible triggers, including thinking and attitudes, or reactions to these emotions, and therefore enabling the development coping strategies, psychological therapies, and other interventions to manage negative emotions, and increase positive emotions related to envy. There is also the possibility the BeMas could be used in pre and post assessment for psychological interventions.

5.3 Evaluating the BeMas Measure

5.3.1 The Development

Lange and Crusius (2015) developed the BeMas to disentangle the two sides of envy, aiming to create a standardised assessment distinguishing between behavioural and motivational consequences. They generated twenty three items to measure benign envy focusing on liking the superior other, increased personal performance, and increased goal setting, and twenty five items to measure malicious envy, focusing on hostile behaviour, resentful feelings, and general anger. The items aimed to explore responses after an upward comparison. 365 participants were asked to indicate how much they agreed or disagreed with statements on a six-point Likert-type scale (Smith et al., 1999) and also completed the DES to investigate its correlation with malicious envy items. Lange and Crusius (2015) refined the scale to five items per subscale, ten items in total to create the final version of the BeMas. These items were chosen because they had good psychometric properties and loaded highly only within their factor, explaining the features of benign and malicious envy.

The BeMas was chosen for use in this thesis for number of reasons, including its ability to differentiate malicious envy which was hypothesised to be a driver in 'online aggression', its practicality and usability being a short scale and most significantly it's development, testing and validity which will be described in this critique in more detail

5.3.2 Reliability and Validity

I. Internal Consistency

The BeMas's two subscales aimed to predict feelings and behaviour of benign and malicious envy. They were found not significantly correlated $r(365)=0.1$, $p=.89$ demonstrating independence from each other. However, they were both found to be significantly related to the general tendency to compare and intensity of negative affect (Benign $r(167) = .15$, $p = .06$; Malicious $r(167) = .27$, $p < .001$) after making upward comparisons (Lange & Crusius, 2015). This indicates although benign and malicious envy are separate concepts, they are also distinctly connected, representing a pattern of double dissociation. This supported the BeMas use as one standardised tool measuring two types of envy. Internal consistency on both scales was good (benign envy $\alpha = .85$ and malicious envy $\alpha = .89$).

II. Test re-test reliability

In Lange and Crusius (2015) study the BeMas was administered to the same sample of participants twice within a time frame of three to four weeks. The test

re-test reliability was satisfactory on both scales with benign envy $r(174) = .67$, $p < .001$, and malicious envy $r(174) = .66$, $p < .001$, although this does fall below the recommended minimum level .70 (McCrae, Kurtz, Yamagata, & Terracciano, 2011). Due to the dispositional nature of envy it is more of a challenge to obtain good test re-test reliability which is reflected in the BeMas. Relying on test re-test in the case of dispositional characteristics can result in possible misinterpretation of reliability the measure (Berchtold, 2016) therefore test re-test reliability may not be suited to assessing validity of any envy measure.

III. Construct Validity

To examine the validity of the BeMas translational validity (translation of the concept) and criterion validity (relationship between the concept and its performance on other related variables) are explored (Trochim and Donnelly, 2006) as they are particularly useful when examining the validity of a tool measuring a more abstract concept such as envy (Devon et al., 2007). Envy's internal process cannot be observed unless the response leads to a behavioural outcome, and even then, it cannot guarantee causality in attributing the outcome to an envious response.

The internal structure of the BeMas was tested by Lange and Crusius (2015) using a confirmatory factor analysis (CFA) on five independent samples (totalling $N = 933$). The CFA analysed relationships between the two constructs and confirmed the internal structure of the BeMas was consistent with a dual-factor model of

envy, with a good fit to the data ($\chi^2(34) = 189.89, p < .001$). The BeMas CFA supports the movement towards approaching measuring envy as a two factor model and substantiates the structural stability of the BeMas (Lange & Crusius, 2015) suggesting it is a robust tool in the study of envy.

Translational validity of the BeMas firstly considers face validity. The benign and malicious envy items relate to two different types of feelings and motivational tendencies as a result of making an upward comparison. For example the BeMas malicious envy items are characterised by feelings of ill will, wishing others to lose their advantage, and resenting others which fits with existing literature about levelling down the superior other (van de Ven et al., 2009) and causing harm to the superior other's advantage (Smith et al., 1996). These malicious envy items are proposed to be more strongly associated with an aggressive outcome. Whereas the BeMas benign envy items are characterised by the drive to improve oneself and the hope for success demonstrated by existing literature recognising a non-malicious form of envy which elicits positive emotions such as admiration (van de Ven, 2015) and motivational self-improvement behaviours (van de Ven et al., 2012). However unitary envy theories suggest that the benign and malicious processes are so similar and evoke similar negative feelings that they are not distinct enough to be treated separately. Although, on the surface the BeMas may appear relevant and appropriate in explaining two forms of envy, other types of validity also need to be explored to establish if they are being identified distinctly through the BeMas and not by other confounding or overlapping factors.

Secondly content validity of the BeMas was considered. The varying definitions of envy and the abstract concept could leave envy vulnerable to individual interpretation making it more challenging to analyse the content validity of any measure of envy. The BeMas items were developed from previous research into the experience, motivational consequences and action tendencies of benign and malicious envy (Lange & Crusius, 2015). These include feelings of admiration or resentment (van de Ven et al., 2009, 2012), motivation to reach or avoid a standard of excellence (Crusius & Lange, 2014; Smith & Kim, 2007), and actions of improved performance or hostile behaviour (Belk, 2011; van de Ven et al., 2014). The benign envy items do align with previous research, for example "I strive to reach other people's superior achievements" has a clear link to motivation to reach a standard of excellence conceptualising benign envy. Whereas the malicious envy items, such as "seeing other people's achievements makes me resent them" has a clear link to feelings of resentment conceptualising malicious envy. This provides evidence for the structural stability of the two factors supporting the conception that envy is a dual factor construct.

Criterion Validity was firstly measured by exploring the predictive validity of the BeMas in predicting motivational behaviour in certain settings. The BeMas was tested in a field study looking at race performance in a Marathon, mediated by benign and malicious envy (Lange & Crusius, 2015). Benign envy was positively related to better race performance whilst malicious envy was not. Another additional finding showed malicious envy was significantly related to the avoidance of setting a race goal, whereas benign envy was related to being more likely to set a concrete race goal. This supported the use of the BeMas to predict motivational and behavioural outcomes, and therefore would suggest it was

suitable to use to predict aggressive behavioural outcomes. Secondly concurrent validity was considered, in the development of the BeMas an existing measure of envy focusing on the malicious type (Lange & Crusius, 2015), the DES, was used alongside the initial application of the BeMas to investigate its correlation with malicious envy which was found significant corroborating good concurrent validity that malicious envy is measuring what the construct it is supposed to. However, as there are no direct measures for benign envy the BeMas was not able to be tested against an equivalent measure.

5.4 Evaluation of the use of the BeMas in the study of 'online' and 'offline' aggression

As outlined earlier, the BeMas was selected to measure envy in both the primary research study and individual research case study exploring the psychological factors contributing to 'online' and 'offline' aggression. Its good validity, simple design, and its ability to differentiate from benign and malicious envy were the main reasons for its selection in the studies.

In the primary research study it was hypothesised that malicious envy would predict online aggressive behaviour. This was assessed using the BeMas, with the measure showing good predictive validity of motivational behaviour in certain settings (Lange & Crusius, 2015), it was applied to explore predictive ability in the motivation to perpetrate online aggression. However the results did not find a predictive effect despite showing that higher levels of malicious envy were associated with increased online aggressive behaviours. In the individual research

case study the BeMas was used to assess envy levels in the client, and it was hypothesised that the client would present with higher levels of malicious envy associated with his face to face and electronic aggression. Again this was not proven, with the client scoring within normal range for malicious envy, however scored above the normal average for benign envy. Overall the envy measure did not show what was expected in both studies therefore the suitability of the application of the BeMas to studying aggression should be considered carefully.

When considering the reliability and validity of the BeMas scale there are factors that may explain why malicious envy was not found significant in either study. Although the internal consistency suggested that envy can be measured as two separate concepts, it also identified that both benign and malicious envy were highly correlated sharing the tendency to make social comparisons and experience negative feelings as a result (Lange & Crusius, 2015). This indicated that measuring envy as two separate concepts may not have been an effective method, and that if envy had been measured as a unitary concept like other research suggests (Yochi Cohen-Charash & Larson, 2017; Smith et al., 1999) then the significance of envy and its association with online aggression may have shown a stronger relationship. The BeMas appeared to show good face validity, however, when applied to the study of aggression, specific confounding variables were not considered. For example, in the primary research the aggression measure found hostility significantly correlated with malicious envy which may explain the insignificant relationship found between malicious envy and aggression. It may have been hostility predicting the aggressive outcome over the malicious envy (Smith & Kim, 2007) being that hostility is a factor present in both aggression and envy (Gallagher & Ashford, 2016).

The strengths of using the BeMas in the primary research study, and the individual research case study meant that it allowed for the exploration of benign and malicious envy in 'online' and 'offline' aggression using a validated measure. Good face validity supports the initial interpretation of associations made between envy and aggression although this does need to be reported with care. Another strength of the BeMas is its practicality in administering as it is simple and short, therefore when exploring alongside a concept such as aggression, whereby psychometrics are lengthier, it works well.

Limitations to consider in the application of the BeMas to the study of aggression is its difficulty in being able to replicate results due to the dispositional nature of envy, being that it is dependent on the 'experience' at that moment of testing (Neufeld & Johnson, 2016). This makes the BeMas harder to use for pre and post measures assessing the stability of the construct of envy for the purpose of evaluation of treatment and intervention. This was attempted in the individual research case study, however the envy scores remained the same, and with little evidence to support the BeMas use as a measurement over time, caution had to be taken when reporting these results. This, along with the internal processes of envy not being observable unless there is a behavioural outcome, means that causality cannot be assumed and interpretation of results of the BeMas must be proceeded with this in mind. In both studies the BeMas results could only be assumed as associated with an aggressive outcome when studied alongside an aggression measure as the BeMas only assesses the motivation of envy, not the actual behaviour. This limits how much inference can be made from the results of

the envy scale and how they might contribute to aggression overall. Further research needs to be conducted in applying the BeMas to the behavioural outcome of aggression.

5.5 Overall Problems, Criticisms and Limitations of the BeMas

The BeMas being a short scale may have weaker reliability which could reduce the chances of finding significant results when correlating or exploring group differences (van Dierendonck, 2005). However, the BeMas was originally designed as a shorter scale and has not been modified, reducing the potential cost to the measure's quality which is demonstrated in the good reported internal consistency and construct validity.

In the construction of the BeMas the developers do not obviously address participant bias. One concern is absence of a "neutral" response option or an option to "opt-out" if participants are unsure of their answer, which could lead to making a guess. The BeMas scale includes six options and does provide two options of "somewhat agree" and "somewhat disagree" allowing participants more flexibility in identifying the intensity of their answer, this may minimise the negative impact on participant bias. Socially desirable responding was also not obviously addressed in the development. Due to the nature of the questions in the BeMas participants may be reluctant to respond truthfully either because of what others may think, or because they do not want to admit to themselves. Questions such as "I feel ill will towards people I envy" have negative connotations about a

person's character and questions like "Envy others motivates me to accomplish my goals" has clear positive connotations about a person's character. These questions have an ethical significance in society and may impact on the truthfulness of participants (Paulhus, 2002). To minimise this problem it could be beneficial to measure of social desirable responding alongside the BeMas, such as the Marlowe-Crowne Social Desirability Scale (Barger, 2002).

Although Envy generally appears related to an upward social comparison, its definition can vary depending on cultures, experiences, languages and other individual factors (Cohen-Charash, 2001; Smith & Kim, 2007a). This is problematic in measuring envy in individuals as they may understand the concept differently, and therefore comparisons between participants and populations may provide misleading results. The BeMas could benefit from providing a definition of 'envy' to increase translational validity. Envy, as a psychological characteristic can change over time depending on situational and psychological contexts, making it harder to apply test re-test reliability. These factors may indicate the self-report Likert-type scale may not be an appropriate measure for a complex concept like envy (Devon et al., 2007). Although internal consistency did strongly indicate good psychometric reliability.

Due to how newly developed the BeMas is (Lange & Crusius, 2015), it does not have a sufficient body of research to support the psychometric quality. Due to the limited number of participants and contexts the BeMas has been used in, there are no appropriate norms to guide scoring. This limits its capabilities in comparing

against different populations and exploring cultural differences (Tayler & Bloomfield, 2011).

5.6 Conclusion

The BeMas attempts to do what no current envy measures has achieved, to measure a complex dual-concept empirically, with clear succinct questioning, and not only identify motivational dynamics, but also behavioural dynamics. This is challenging with an internal construct as complex as envy, which can often be thought of as subjective to individuals own experiences. This review has raised questions about how we define envy, whether its experienced in the same way by everyone and if it can be measured. The literature base for exploring envy and aggression is poor which was problematic for making evidenced based decisions on how best to measure envy for the research studies. Despite this, the psychometric properties of the BeMas indicated that, as a tool, it fits well to the task of identifying benign or malicious envious responding, providing evidence to support its ability as a measure of envy. The problems and limitations suggest there is still much more room for improvement in developing more accurate measures of dispositional envy and its application to various psychological constructs such as aggression. However, the BeMas has shown that it can be a valuable addition to assessment and research, helping us to understand further the psychological and behavioural mechanisms of envy and how these are expressed in individuals.

Chapter Six

Discussion

6.1 Overall Discussion

The aim of this thesis was to explore online aggression and its relationship with social media use, envy, self-control and trait aggression. It was motivated by the concerning limited knowledge and understanding in this area, resulting in a lack of awareness of the negative and potentially harmful impact social media may have on individuals lives. Technological developments bring so much benefit to individuals lives which often overshadows the risks leaving individuals needing to be reactive to harmful effects once the technology has become embedded into society. This appears to be what has happened with social media. This research, although also reactive, aimed to add to the understanding of the negative and darker consequences of social media, with implications creating greater awareness for future intervention for the harm already caused, and also preventative methods which could aid changes in how new social media technology is developed, or how individuals are able to protect themselves against the negative consequences.

These aims were achieved through a variety of methods, exploring both adult and adolescent populations and looking at 'online' and 'offline' aggression. Initially this thesis systematically reviews literature on social media (exposure) and aggressive (outcomes) in Chapter 2, it then researches constructs of envy, self-control, aggression and social media exposure in online aggressive behaviours in adults in Chapter 3, then Chapter 4 explores electronic aggression and 'offline' aggression in an individual case study to illustrate the application of assessment, formulation and intervention. Chapter 5 critically reviews an envy measure used in the primary

research study and the individual case study to explore it's ability to measure envy, and its application to understanding online aggression and the consequences of increased social media exposure.

6.2 Summary of Findings

Chapter 2. The aim of this chapter was to evaluate the research exploring the relationship between social media use and aggression in adolescents and adults, considering the direction of the relationship, possible functioning and underlying psychological processes moderating or mediating the relationship.

Databases were searched systematically and twenty three primary studies reporting on social media and aggression were identified for reviewing. Twenty two out of the twenty three studies reported a significant relationship between social media use and aggressive behaviour. However, each study differed greatly in how they were researched and what was found reflecting on how extensive and diverse a topic area it is. Another difficulty with the systematic review was the cross-sectional nature of the majority of studies meaning that no causal relationships could be assumed and highlighting the need for more experimental and longitudinal studies in this area. The systematic review did highlight the impact of individual factors on aggression and social media use, either as a mediating or pre-disposing factor. Individual factors such as self-control, shyness, frustration-tolerance and hostility were found important in explaining the relationship between social media and aggression. What the systematic review did

reveal about this relationship was the two way nature of the interaction. Whilst social media exposure was hypothesised to increase aggressive behaviour, what was not hypothesised, but found, was that aggression including anger and hostility also influenced the frequency and type of social media use. This suggested that the relationship between social media use and aggression had the potential to form into a maladaptive cycle, influencing and negatively reinforcing each other.

Chapter 3. A research scope highlighted the limited research into social media and aggression in an adult population, which was also confirmed by the systematic review. This chapter focused its attention on exploring online aggression and the potential contributing factors in an empirical research study.

Adults who reported higher levels of physical and verbal aggression were more likely to engage in online aggression. Individuals who were less able to exert self-control were also more likely to engage in online aggression. These factors indicated that predisposing vulnerabilities such as aggression and lack of self-control were likely to put an individual at risk of online aggression. This was consistent with the findings in chapter 2 that suggested pre-existing individual characteristics such as aggression can lead individuals to be drawn to certain types of activities online. This empirical study also looked at the role social media exposure had on envy and aggressive behaviour. Our hypothesis suggested malicious envy was a result of increased social media exposure and then in turn would influence online aggression, this was not supported. However a significant predictor in online aggression was the concept of 'enjoying hearing the failures of others' which in envy literature is a component of malicious envy (van de Ven,

2014). This indicated that social comparison processes should not be ruled out in this relationship, and that it was possible the measure for malicious envy was not reliable or amenable to this research (explored further in chapter 5). The overall findings of this research conclude that aggression perpetrated 'online' and in the real world did not appear distinctly different because similar constructs were underlying. The unique factors associated with online aggression were the online environment, potential for increased social comparisons, and the ease of access for individuals with a propensity to aggressive behaviour, making it quick to act on an aggressive impulse.

Chapter 4. Following on from the empirical research study's findings suggesting online and offline aggression were not distinctly different, and that aggression, self-control and 'enjoying hearing the failures of others' were important features in online aggressive behaviour, a case study was completed to look at these constructs on an individual level. This case study evaluated the applicability of assessment, formulation and intervention of a client with problematic 'electronic aggression and 'real world' aggression.

Assessment and formulation identified some complex contributing factors to the client's aggression, some of which he expressed using social media and text messaging using his mobile phone. These included high aggression levels, particularly with hostility and the tendency to fall into unhealthy thinking patterns such as making social comparisons. The clients electronic aggression and real world aggression were assessed, formulated and treated as a unitary concept, supported by findings in chapter 2 and 3, which suggests they 'online' and 'offline' aggression are highly correlated and likely to be similar more than distinct

(Subrahmanyam et al., 2008) and potential fuel one another (Karle, 2013). ACT was selected as the intervention and was found to contribute to the reduction the client's electronic and real world aggression. However, other external factors were not measured, therefore it cannot be ruled out that other external variables during this time may have also explained the reduction in aggression. This case study does have implications for future assessment and interventions supporting that electronic aggression could be treated using existing aggression techniques, and alongside other interventions targeting 'offline aggression'.

Chapter 5. One of the factors hypothesised in this thesis as mediating between social media exposure and aggression was malicious envy. This chapter critically evaluated the reliability and validity of the BeMas (used to identify malicious and benign envy) and its suitability and applicability understanding online aggression.

The BeMas demonstrated good psychometric properties suggesting it fitted well to the identification of malicious and benign envious responding. However, envy as a construct can be defined as something different depending on culture, country, language and experiences. This meant the understanding of envy was subjective and the responses may not have been measuring the same construct. The BeMas was used in both the empirical research study and the case study. In both cases the scores on the malicious envy scale were low, suggesting most individuals experienced very little malicious envy. However benign envy was more prominent and correlated higher with online aggression. In the discussion the effectiveness of treating envy as a dual concept or unitary concept was considered. If envy was treated in the study as a unitary concept it would have shown a

stronger relationship with online aggression. One explanation for the low malicious envy scores suggested the BeMas may allow for social desirable responding due to the obvious nature of the questions targeting malicious envy and the negative connotations it is related to. Although the BeMas was shown to be a valuable and practical tool in indicating benign and malicious envy reactions, if envy is to be explored further as a consequence of increased social media exposure, and a contributing factor to aggression, the development of a more defined and robust measure will be necessary for future research in this area.

6.3 A Map of the Thesis findings (Figure 8.)

Figure 8. demonstrates how the findings of the different components of this thesis can be drawn together into an exploratory map to highlight what has been learnt from the investigation of online aggressive behaviour and what more can be discovered. The map demonstrates the different findings including personological (individual) factors and psychological process that were explored in the different chapters. It also makes suggestions about the possible relationships between the constructs and the implications for future research to build upon these findings.

6.3.1 *Exposure to Social Media:*

How people use social media was found relevant to the increased likelihood of perpetration of online aggressive behaviour. The systematic review found that frequency, type of use and attitudes towards social media use were all important to consider when exploring the outcomes related to social media exposure.

Social media use may have different functions depending on the individual, for example individuals who may have more introverted and shy personality traits and low self-esteem may use social media to try and feel better about themselves (White et al., 2006). It is these factors that may determine how social media is used, this map highlights the relevance of considering individual characteristics that are influential in the use of social media and how they may impact on different outcomes. Validated social media use measures could benefit from being developed to study this concept further as this thesis highlighted some initial interesting findings from the systematic review about the relationship between social media use and the outcome of online aggression.

6.3.2 Psychological Processes

Two theories; social comparison theory and social learning theory, discussed throughout the thesis, remain prominent as suggested frameworks to understanding social media exposure and its relationship with aggression. The findings of the thesis did not clearly support the explanatory function of these theories, although it is important to note that the components of the thesis did not directly explore social learning theory, and only explored malicious and benign envy as part of social comparison theory. Therefore suggesting further investigation of these psychological processes will tell us more about their explanatory power. The systematic review did highlight some studies that suggested social learning theory mechanisms applied to online aggression. Social learning theory suggests that individuals learn from what they have seen in the

media and may make attempts to act out what they have seen in a virtual or real world environment (Cantor, 2000). Although this was not explicitly discovered in this thesis, it raises interesting questions and has been added to the map as it warrants further investigation into online aggressive behaviour.

Social comparison theory (Festinger, 1954) is also included in the Map as its relevance to understanding social media and online aggression is more clearer. In the digital world people are presented with a filtered version of others' lives, in this thesis, although not proved to be significant, there were enough indicators that this process does take place. More research is required to strengthen the evidence for social comparisons association with social media use and aggression.

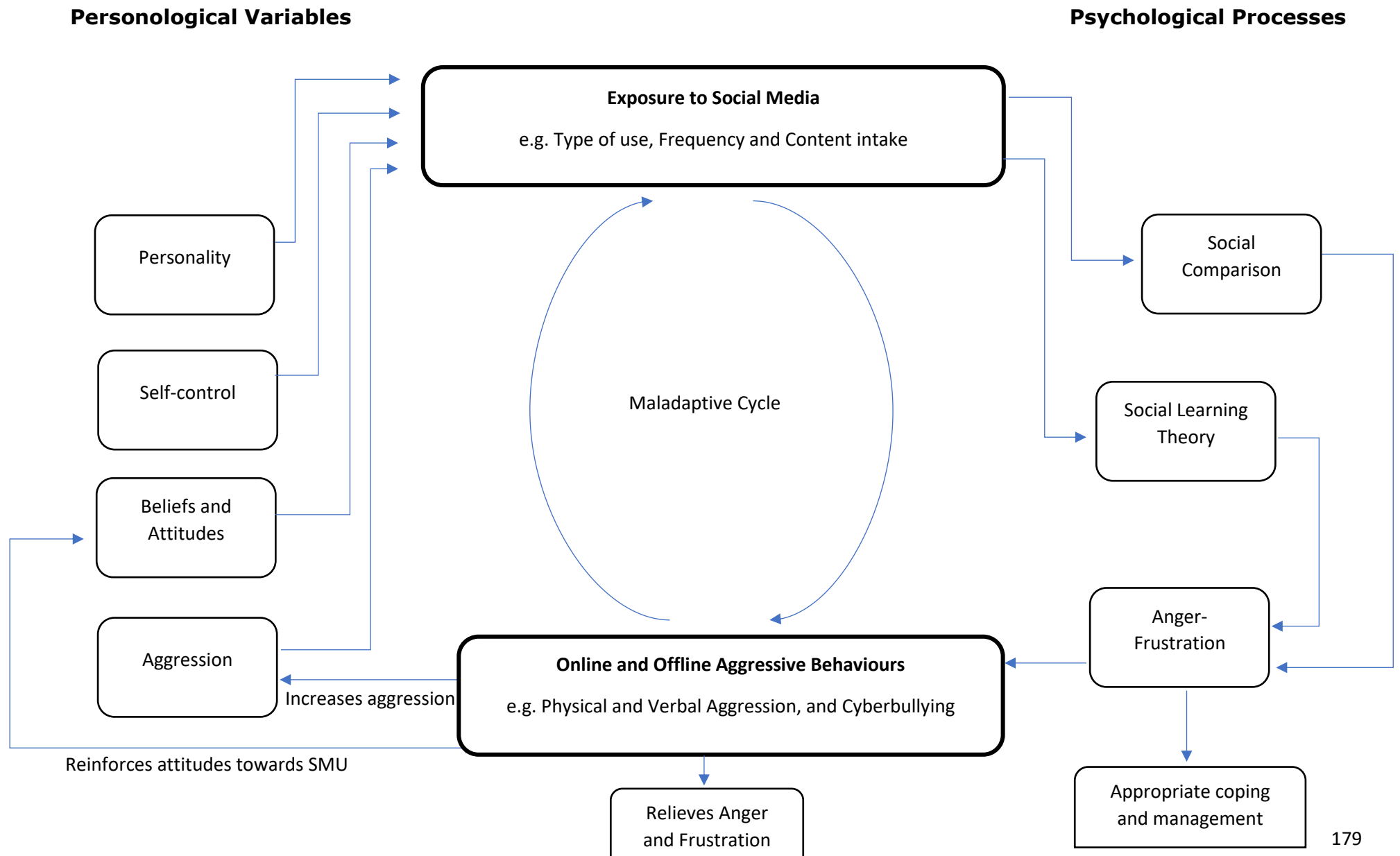
6.3.3 Online and Offline aggressive behaviours

The map highlights a similar process in online and offline aggressive behaviours resembling some factors of the general aggression model (Anderson & Bushman, 2002). The map proposes that aggression could be triggered by anger and frustration, usually as a result of a situational event, however it could also be triggered by individual personality traits or unhelpful thinking patterns. This was evident in the individual research case study when aggression, envy and cognitive biases were explored. In the map it recognises anger and frustration as a potential trigger, and if individuals do not have the appropriate coping mechanisms to manage this it suggests it could lead to aggressive behaviour, perpetrated 'online' or 'offline'.

6.3.4 *Summary*

From the findings of each component of this thesis, the map indicates the possibility of a maladaptive cycle that begins to form. It recognises that social media use has the potential to influence aggressive behaviour, and in turn aggression has the potential to influence social media use. If this two way interaction/cycle is not broken the implications for escalating social media use, intensifying feelings of envy, heightened anger arousal and disinhibited self-control could become apparent. Each of these factors all demonstrated some association with online aggression at different stages of this thesis. The Map highlights how and in what way the initial findings of this thesis can built upon to further the investigate online aggression.

Figure 8. A map outlining initial findings of the thesis and proposed associations to study further.



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Appendices

Chapter 2: Systematic review

Appendix 1. PECO Framework and All Search terms used.

	Combine with AND				
		P	E	C	O
	Concept	Adolescence (Age) And Adults (18 years +)	Exposed to Social Media	Less exposed to Social Media	Aggressive Behaviour
	Keywords and/or Subject Headings	Adults and Adolescents	Social Media	No search term required	Aggressive Behaviour
Combine with OR	Truncation, alternative spellings & variants	'Adult*' 'Adolescen*'	'Social Media' 'Social Network*' 'Forum*' 'Computer mediated communication' 'Chatroom*' 'Online' 'Internet' 'Facebook' 'Twitter' 'Instagram' 'Youtube' 'Myspace' 'Reddit' '4Chan' 'Snapchat'	No search term required	'Aggres*' 'Violen*' 'Troll*' 'Harras*' 'Stalk*' 'Relational Aggres*' 'Threat*' 'Abus*' 'Bull*' 'Cyberbull*'

Appendix 2. Quality Assessment Form

A Systematic Review exploring the relationship between SMU and Aggressive Behaviour in adolescence and adulthood

COMPONANT RATINGS

A) Selection Bias

Q1. Are the individuals selected to participate in the study likely representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

Q2. What percentage of selected individuals agreed to participate?

1. 80 – 100 %
2. 60 – 79%
3. Less than 60% agreement
4. Can't tell
5. Not applicable

Rate This Section	STRONG	MODERATE	WEAK
	1	2	3

B) Study Design

Q1. What was the study design?

1. Experimental (including randomized controlled trial and controlled clinical trial)
2. Cohort (one group pre + post / before + after)
3. Case-control (two different groups identified by outcome)
4. Cross-Sectional (analyses what is happening in a group at a particular time)
5. Longitudinal (analyses what is happening in a group repeatedly over a period of time)
6. Other _____
7. Can't tell

Rate This Section	STRONG	MODERATE	WEAK
	1	2	3

C) Confounders

Q1. Were there important differences between groups prior to the intervention?

1. Yes
2. No
3. Can't tell

Examples of important differences between groups prior to the intervention include:

- Race
- Age
- SES (income or class)
- Psychological Characteristics
- Gender
- Marital Status
- Education
- Pre-intervention/exposure score on outcome measure

Q2. If Yes, indicate the percentage of relevant confounders that were controlled (either at design stage – such as matching or stratification, or analysis –such as regression or ANOVA)?

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't tell

Rate This Section	STRONG	MODERATE	WEAK
	1	2	3

D) Blinding

Q1. Were the outcome assessor(s) aware of the intervention/exposure status of the participants?

1. Yes
2. No
3. Can't tell

Q2. Were the study participants aware of the research question?

1. Yes
2. No
3. Can't tell

Rate This Section	STRONG	MODERATE	WEAK
	1	2	3

E) Data collection methods

Q1. Were data collection tools shown to be valid (SMU measure and aggressive behaviour measure)?

1. Yes
2. No
3. Can't tell

Q2. Were data collection tools shown to be reliable (SMU measure and aggressive behaviour measure)?

1. Yes
2. No
3. Can't tell

Rate This Section	STRONG	MODERATE	WEAK
	1	2	3

F) Withdrawal and drop-outs

Q1. Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not applicable (e.g. one time surveys or interviews)

Q2. If applicable, indicate the percentage of participants completing the study.

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't tell

Rate This Section	STRONG	MODERATE	WEAK
	1	2	3

G) Statistical Analysis

Q1. Were meaningful analyses conducted to test hypothesis related to social media use and aggressive behaviour?

1. Yes
2. No
3. Can't tell

Q2. Were the statistical methods appropriate for the study design?

1. Yes
2. No
3. Can't tell

Q3. How normality tested (for parametric statistical tests)?

1. Yes
2. No
3. Can't tell

Rate This Section	STRONG	MODERATE	WEAK
	1	2	3

GLOBAL RATING

COMPONANT RATINGS

A) Selection Bias	STRONG 1	MODERATE 2	WEAK 3
B) Study Design	STRONG 1	MODERATE 2	WEAK 3
C) Confounders	STRONG 1	MODERATE 2	WEAK 3
D) Blinding	STRONG 1	MODERATE 2	WEAK 3
E) Data Collection Method	STRONG 1	MODERATE 2	WEAK 3
F) Withdrawals and drop outs	STRONG 1	MODERATE 2	WEAK 3
G) Statistical Analysis	STRONG 1	MODERATE 2	WEAK 3

OVERALL GLOBAL RATING FOR THIS PAPER:

STRONG (no WEAK ratings)	MODERATE (one WEAK rating)	WEAK (two or more WEAK ratings)
1	2	3

Both reviewers discuss the ratings:

Is there a discrepancy between the two reviewers?

No ____

Yes ____

If yes, indicate reason for discrepancy

1. Oversight
2. Differences in interpretation of criteria
3. Differences in interpretation of study

FINAL DECISION =	STRONG	MODERATE	WEAK

Appendix 3. Data Extraction Form

A Systematic Review exploring the relationship between Social Media Use and Aggressive Behaviour in adolescence and adulthood

A) GENERAL INFORMATION

Date of data extraction:

Author:

Article Title:

Source (e.g. journal, conference) – Year / Volume / pages / country of origin:

Identification of Reviewer:

Notes:

B) SPECIFIC INFORMATION

Study Characteristics

P (Population)		I (Exposure)		C (Comparison)		O (Outcome)		S (Study Design)	
Adolescence (Age)	☐	Exposed to Social Media	☐	Not exposed to Social Media	☐	Aggression	☐	Cohort	☐
And Adults (18 years+)	☐							Case Control	☐
								Cross-Sectional	☐
								Experimental	☐

Population Characteristics

1. Target Population (describe)

2. Inclusion Criteria

Population:

Intervention:

Outcome:

3. Exclusion Criteria

4. Recruitment Procedures (including participation rates if possible)

5. Characteristics of participants

Age

Ethnicity

Family SES

Gender

Geographical Region

Other information

6. Number of participants in each group

1)

2)

3)

4)

Exposure

1. Type of Social Media
2. How was exposure assessed (measurement tool, questionnaire etc.)?
3. Definition to distinguish different types (Social Network, Chatroom, video and photo sharing site)
4. Focus of exposure (Activity – Active or Silent: posting, browsing, searching, debating etc.)
5. Number of conditions including control conditions
6. Content of each condition
 - a)
 - b)
 - c)
 - d)
7. Specific theoretical model (e.g. social learning theory, Bandura)
8. Exposure setting (e.g. school, work, home, research lab)
9. Exposure device (e.g. laptop, mobile phone)
10. Type of measure used (must measure frequency / duration of exposure)
11. Duration and Frequency of Exposure
 - a)
 - b)
 - c)

d)

12. Content type

a)

b)

c)

d)

13. What mediating variables were investigated (if any)

14. Outcomes measured (e.g. Aggression – violence, verbal aggression, cyberbullying etc.)

Outcomes and Outcome measures

1. What was measured at baseline?

a)

b)

c)

d)

2. What was measured after exposure, or at follow up?

a)

b)

c)

d)

3. Who carried out the measurement?

4. Was the assessor blind?

5. What was the measurement tool used?
6. Was / were the tools validated? If so, how?
7. How was the validity of self-reported behaviours maximised?
8. Time interval between first and second measurement (if applicable)
9. Time interval between first and last measurement (if applicable)
10. Drop-out rates (plus proportion of those who did not agree to participate, if possible) and reasons for drop out.
11. Notes

Analysis

1. What statistics were used?
2. Do the statistics adjust for confounding? And how?
3. How was missing data dealt with?
4. Conclusions
5. Notes

Chapter 3: Research Project Appendices

Appendix 4. Participant Information and Consent Form



PARTICIPANT INFORMATION

Division of Psychiatry & Applied Psychology

School of Medicine, Faculty of Medicine & Health Sciences

**Title of Project: Green-Eyed Scrolling: Envy, Self-control and Aggression
in Online Aggressive Behaviour within an adult
population**

Researcher: Lucy Sumarno

Msxls8@nottingham.ac.uk

Supervisor: Dr Simon Duff

Simon.duff@nottingham.ac.uk

Ethics Reference Number: 225

This is an invitation to take part in a research study about Envy and Social Media Exposure, and the effect they have on Online Behaviour. This information is designed to tell you what it will involve.

Your participation is voluntary, and you may change your mind about being involved, or decline to answer a particular question without giving a reason. You are free to withdraw at any point before or during the study. As the study will be anonymous, once you have finished the questionnaire and submitted your answers it will not be possible to withdraw the data unless you take note of your unique ID number and provide it to the researcher.

What is the project about?

The aim of this study is to further understand Online Aggressive Behaviour and the factors that can contribute to it in an adult population. We are looking at how people behave online and how experiencing envy, self-control and aggression relate to this. Envy can be defined as the emotion that occurs when someone lacks another's superior quality, achievement or possession and they either desire it or wish that the other lacked it. Aggression can be defined as thoughts (e.g. hostile), emotions (e.g. anger), and behaviour (e.g. Verbal and Physical Aggression) that are intended to cause harm to another person. Self Control can be defined as a

person's ability to control their self, in particular to their emotions and desires, in response to different environmental and situational events.

We would also like to investigate whether exposure to Internet / Social Media websites effects how a person feels and behaves online. Our research aims to explore further these areas of Envy, Aggression, Self-Control and Social Media Exposure and their relationship with Online Aggressive Behaviour because there is currently little research into what factors influence how an adult behaves online.

Who is being asked to take part, and why?

You are being invited to take part because you are aged 18 or over and have followed the link on a social media website or on other survey websites. We are inviting as many as possible participants like you to take part.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part, should you wish you may print of a copy of this information webpage, and click to continue to go through a consent webpage. If you decide to take part, you are still free to withdraw from the study at any time and without giving a reason. This would not affect your legal rights.

What will I be asked to do?

Once you have read this information sheet you will have an understanding of the nature and purpose of the research. If you decide to continue, you will click to continue and you will be presented with a consent webpage where you are asked if you wish to continue in order to participate in the study. Once consent has been given, you will be presented with a page asking for some general information (age, gender etc.). Following this, you will then be presented with questionnaires to complete. There are a total of 71 items in this research study. It is expected that this will take you 10-20 minutes to complete but this time depends on how quickly you read and answer the questions. The questionnaire is not timed and you are encouraged to read the questions carefully. You are also asked to 'share' the link to the research in order to help more people to have the opportunity to decide if they want to take part in the research.

What are the possible disadvantages and risks of taking part?

You may not like the questions asked in the questionnaire or you may not wish to disclose your opinions on the topics covered. If you feel at any time during the questionnaire that you do not want to continue then you may withdraw from the study at any point. You are also able to contact the researcher at any point on the email address provided below. There may be some questions of a sensitive nature, if you have any concerns over these questions you contact the researcher on the contact details provided or any of the organisations listed at the end of this information sheet to access support if needed.

With any online related activity, the risk of a breach is always possible. We will do everything possible to ensure your answers in this study will remain anonymous. We will minimize any risks by ensuring no identifiable information will be collected such as name, age or IP address.

Will the research be of any personal benefit to me?

We cannot promise that you will experience any direct benefits from taking part in this study but the information we get from this study may help researchers and others in understanding what factors can contribute to online behaviour. This could help shape future interventions and the development of preventative measures to address unwanted and problematic online behaviour.

What will happen to the information I provide?

We will follow ethical and legal practice and all information about you will be handled in confidence. All information that is collected about you during the course of the research will be kept strictly confidential. It will be stored securely and on a password-protected computer. As with all information collected online there is a data trail, we will not be collecting information about IP addresses and therefore will not be able to identify your data from the network you have accessed to complete the study.

Your name will not be asked for during the study and therefore your participation is anonymous. You will be asked to create a unique ID number which will start with the 1st letter of your favourite country, your year of birth, and the first two letter of your favourite food. (For example : France, 1977 and Pizza would form the Unique ID Number F77PI). The information you provide will be viewed by the researchers. It may be viewed by other authorised individuals at the University of Nottingham who may check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and we will do our best to meet this duty.

All research data will be kept securely for 7 years. After this time your data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain your confidentiality, as you will not be identifiable in the data set.

We would like encourage you to have a role in helping keep information confidential. We would ask if possible that you use your own personal media device with passwords and some level of security/virus protection. You are also asked to consider your own environment and are encouraged to undertake the research in a place where you are not overlooked by others.

What will you do with the data?

It is hoped that the results of the research will be published in scientific journals or communicated in presentations. Participants will not be identified in any publication, as your participation is anonymous. Participants will be able to obtain a summary of findings once the research project is complete. This is likely to be at the end of 2017. Please contact the lead researcher using the contact details provided below to request the results.

We would also like to seek your consent so that your information/data can be stored and used in possible future research – this is optional but will be useful for future research (please indicate you agree to this on the consent form on the next page). Your data will be stored anonymously. Some of these future studies may be carried out by researchers other than Lucy Sumarno and Dr Simon Duff, who are responsible for this research study, this could include other staff and students based at the University of Nottingham or researchers working for commercial companies. As the data is anonymised, you will not be identified in any way. If you do not agree to this your data will not be used in other studies

If you have any questions or concerns, please don't hesitate to ask. We can be contacted before and after your participation at the above address.

THANK YOU FOR YOUR PARTICIPATION

If you have any queries or complaints about this study, please contact the student's supervisor in the first instance. If this does not resolve the query to your

satisfaction, please write to the Administrator to the Division of Psychiatry & Applied Psychology's Research Ethics Committee (MS-DPAPEthics@nottingham.ac.uk, +44 (0)115 8232214) who will pass your query to the Chair of the Committee



PARTICIPANT CONSENT

Division of Psychiatry & Applied Psychology

School of Medicine, Faculty of Medicine & Health Sciences

Project Title: **Green-Eyed Scrolling: Envy, Social Media Exposure, and Online Aggressive Behaviour in an Adult Population**

Researcher: Lucy Sumarno Msxls@nottingham.ac.uk

Supervisor: Dr Simon Duff simon.duff@nottingham.ac.uk

Ethics Reference Number: 225

You have been invited to participate in an online study on Envy, Social Media Exposure, and Online Behaviour. Please read the following consent statements. By choosing 'Submit and Continue' you are agreeing with the statements and consenting to take part in this online study.

- Have you read and understood the Participant Information?

YES/NO

- I agree to answer the questionnaires in this online study by following the instructions provided.

YES/NO

- Do you know how to contact the researcher if you have questions about this study?

YES/NO

- Do you understand that you are free to withdraw from the study without giving a reason?

YES/NO

- Do you understand that as an anonymous questionnaire, once you have completed the study and submitted your questionnaire, the data cannot be

withdrawn unless you provide the researcher with your unique ID number?

YES/NO

- Do you understand that complete confidentiality and privacy cannot be guaranteed due to the nature of the internet setting and the researchers will do everything possible to minimize these risks?

YES/NO

- Do you give permission for your data from this study to be shared with other researchers in the future provided that your anonymity is protected?

YES/NO

- Do you understand that non-identifiable data from this study might be used in academic research reports or publications?

YES/NO

Signature of the Participant

Date:

Name (in block capitals)

Please create your unique ID number:

This is made up of the 1st letter of your favourite country, your year of birth, and the first two letters of your favourite food.

For example: France, 1977, and Pizza would form the Unique ID Number F / 77 / PI

Participant Unique ID Number: ____ / ____ / ____

Please take note of this as you will be asked to enter at the beginning of the questionnaires.

By clicking the button above/below I indicate that I understand what the study involves and that my answers are anonymous. I agree to take part and I understand that once I click 'submit' at the end of the questionnaire it will not be possible to withdraw the data unless you can provide your unique ID number.

☐ Submit and Continue

Appendix 5. Demographics

Demographics

1. What is your Gender? ☐ Female ☐ Male ☐ Transgender

2. How old are you?

☐ 18 to 24 years

☐ 25 to 34 years

☐ 35 to 44 years

☐ 45 to 54 years

☐ 55 to 64 years

Age 65 or Over

3. What is your employment status?

☐ Employed, working 35 or more hours per week

☐ Employed, working 1-34 hours per week

☐ Not employed, looking for work

☐ Not employed, NOT looking for work

☐ Retired

☐ Unable to work

4. What is your Relationship Status?

- ☐ Single (never married)
- ☐ Single (been married)
- ☐ In a relationship (not living together)
- ☐ In a relationship (living together)
- ☐ In a relationship (married)

5. Have you ever been convicted of a criminal offence? ☐ Yes ☐ No

6. **If Yes**, have you been convicted of any of the following Offences. Please indicate whether "online" (through means on the internet, e.g. sending a message online) or "offline" (through any other means other than the internet, e.g. face to face or verbal):

	Online	Offline
Harassment	☐	☐
Malicious Communication	☐	☐
Stalking	☐	☐
Threatening Violence	☐	☐
Any Other Offence	☐	☐

Please state Any Other Offence _____

Appendix 6. Online Aggressive Behaviour Measure (OAB)

Online Aggressive Behaviour Measure (Cyberbullying, Cyberstalking, Cyber Harassment, and Trolling Behaviours)

Please read below a list of behaviours that can be carried out on the internet (e.g. through social media, email, comment sections on websites, internet forums).

Please indicate whether you have carried out one or more of these behaviours by checking the box next to the behaviour:

1. Called someone offensive names online ☒
2. Posted a picture, video, or comment online about someone else to
purposefully ☒
make fun of, embarrass or upset
them?.....
3. Posted something online containing content aimed to shock or disturb
another online user..... ☒

4. 'Trolled' people in forums or the comments section of Websites to get a reaction from other online users..... ☐
5. Been part of an online group engaging in unpleasant online communication targeting one individual, cause or organisation..... ☐
6. Engaged in unpleasant, threatening or hostile exchanges with the same person on more than one occasion..... ☐
7. Repeatedly posted photos, videos or messages with offensive or aggressive content to the same person on more than ☐ one occasion.....
8. Persisted in contacting a person online when they have not been responding to requests for communication..... ☐
9. Used a different identity to my own (e.g. fake social media account) to try and communicate with someone online..... ☐
10. Frequently visited a particular person's social media accounts to keep up to date with what they are up to..... ☐
11. Sent or posted sexual content/images (e.g. pornographic images) to a particular person online without having consent from them to do so..... ☐

12.Used sexually offensive language in online communication towards a particular person..... ☐

13.Used online communication to tell someone that they deserve to be a sexually abused (for example raped ☐ or assaulted).....

14.Made a threat online to physically harm someone..... ☐

15.Please indicate below which items are most representative of your main intention when carrying out the behaviours above (you can indicate up to three items):

1 = To Communicate

2 = To Banter

3 = To Tease

4 = To Annoy

5 = To Upset

6 =To Insult

7 = To Threaten

8 = To Scare

9 = Other intention _____

16. Please rate how harmful to others you view your online behaviours on the scale below:

1 2 3 4 5 6 7 8 9 10

*Not harmful at all----- Extremely
harmful*

Items

Cyber Bullying: 1,2

Trolling: 3, 4, 5

Sustained Harassment: 6, 7

*Stalking: 8, 9, 10**

Sexual Harassment: 11, 12

Physical Threats: 13,14

Appendix 7. Online Aggressive Behaviour Scoring Guidelines

Item No.	Online Aggressive Behaviour	CPS Category	Severity Rank
1	Called someone offensive names online	4	2
2	Posted a picture, video, or comment online about someone else to purposefully make fun of, embarrass or upset them	4	2
3	Posted something online containing content aimed to shock or disturb another online user	4	3
4	'Trolled' people in forums or the comments section of Websites to get a reaction from other online users	4	3
5	Been part of an online group engaging in unpleasant online communication targeting one individual, cause or organization	4	3
6	Engaged in unpleasant, threatening or hostile exchanges with the same person on more than one occasion	2	4
7	Repeatedly posted photos, videos or messages with offensive or aggressive content to the same person on more than one occasion	2	4

8	Persisted in contacting a person online when they have not been responding to requests for communication	2	5
9	Used a different identity to my own (e.g. fake social media account) to try and communicate with someone online	4	5
10*	Frequently visited a particular person's social media accounts to keep up to date with what they are up to	5	1
11	Sent or posted sexual content/images (e.g. pornographic images) to a particular person online without having consent from them to do so	2	6
12	Used sexually offensive language in online communication towards a particular person	4	6
13	Used online communication to tell someone that they deserve to be a sexually abused (for example raped or assaulted)	1	7
14	Made a threat online to physically harm someone	1	7

OAB Severity Rank Process:

CPS Legal Guidance on cyber/ online crime (CPS Social Media Prosecution Guidelines, 2017) was used initially to categorise the OAB into behaviours

from least severe to most severe in terms of prosecution and sentencing. This provided a guideline for each behaviour severity to be ranked. The reported level of harm caused to individuals from PEW Online Harassment Survey was also used to guide the ranking of OAB severity.

OAB Severity Ranking:

*1 = Frequently visiting a person's social media: 10**

2 = Cyber Bullying: 1,2

3 = Trolling: 3, 4, 5

4 = Sustained Harassment: 6, 7

5 = Stalking: 8, 9

6= Sexual Harassment:11, 12

7= Physical Threats: 13,14

**Question 10. was re-categorised from a stalking behaviour to a common social media activity (browsing people's social media accounts). Our results showed prevalence of item 10 was very high and therefore suggested participants interpreted this item as more of a general and common activity where by individuals regularly visited other people's social media sites to see what they were up to. It was more appropriate to score it as a minor OAB than with in the stalking category.*

Appendix 8. Benign and Malicious Envy Scale (BeMas)

The Benign and Malicious Envy Scale (BeMas)

Respond to the statements below using the following scale:

1 = strongly disagree

2 = disagree

3 = somewhat disagree

4 = somewhat agree

5 = agree

6 = strongly agree

___ 1. When I envy others, I focus on how I can become equally successful in the future.

___ 2. I wish that superior people lose their advantage.

___ 3. If I notice that another person is better than me, I try to improve myself.

___ 4. Envyng others motivates me to accomplish my goals.

___ 5. If other people have something that I want for myself, I wish to take it away from them.

- ___ 6. I feel ill will towards people I envy.
- ___ 7. I strive to reach other people's superior achievements.
- ___ 8. Envious feelings cause me to dislike the other person.
- ___ 9. If someone has superior qualities, achievements, or possessions, I try to attain them
for myself.
- ___ 10. Seeing other people's achievements makes me resent them.

Scoring:

benign1	<i>When I envy others, I focus on how I can become equally successful in the future.</i>
malicious1	<i>I wish that superior people lose their advantage.</i>
benign2	<i>If I notice that another person is better than me, I try to improve myself.</i>
benign3	<i>Envyng others motivates me to accomplish my goals.</i>
malicious2	<i>If other people have something that I want for myself, I wish to take it away from them.</i>
malicious3	<i>I feel ill will towards people I envy.</i>
benign4	<i>I strive to reach other people's superior achievements.</i>
malicious4	<i>Envious feelings cause me to dislike the other person.</i>
benign5	<i>If someone has superior qualities, achievements, or possessions, I try to attain them for myself.</i>
malicious5	<i>Seeing other people's achievements makes me resent them.</i>

Participants answer on a 6-point scale (1 = *strongly disagree*, 6 = *strongly agree*).

SPSS Syntax

```
COMPUTE benign = MEAN(benign1, benign2, benign3, benign4, benign5).
COMPUTE malicious = MEAN(malicious1, malicious2, malicious3, malicious4, malicious5).
EXECUTE.
```

Appendix 9. Buss and Perry Aggression Questionnaire – Short Form (BPAQ-SF)

Buss and Perry Aggression Questionnaire – Short Form (BPAQ-SF)

Please read the following statements and indicate how like or unlike you each of them is by indicating the number from the code below:

1 = Very unlike me

2 = Somewhat unlike me

3 = Neither like nor unlike me

4 = Somewhat like me

5 = Very like me

___ 1. Given enough provocation, I may hit another person. 1PA

___ 2. There are people who pushed me so far that we came to blows. 2PA

___ 3. I have threatened people I know. 3PA

___ 4. I often find myself disagreeing with people. 1VA

___ 5. I can't help getting into arguments when people disagree with me. 2VA

___ 6. My friends say that I'm somewhat argumentative. 3VA

___ 7. I sometime feel like a powder keg about to explode. /. I flare up quickly
but get over it quickly 1ANG

___ 8. Sometimes I fly off the handle for no good reason. 2ANG

___ 9. I have trouble controlling my temper. 3ANG

___10. At times I feel I have gotten a raw deal out of life. 1HO

___11. Other people always seem to get the breaks. 2HO

___12. I wonder why sometimes I feel so bitter about things 3HO

Sub-scales: PA - Physical Aggression

VA - Verbal Aggression

ANG - Anger

HO - Hostility

Appendix 10. Brief Self-Control Scale (BSCS)

Brief Self Control Scale (BSCS)

Using the 1 to 5 scale below please indicate how much each of the following statements reflects how you typically are:

1 = Not at all like me

2 = A little like me

3 = Somewhat like me

4 = Mostly like me

5 = Very much like me

_____ 1. I am good at resisting temptation

_____ 2. *I have a hard time breaking bad habits (R -6)*

_____ 3. *I am lazy (R -6)*

_____ 4. *I say inappropriate things (R -6)*

_____ 5. *I do certain things that are bad for me, if they are fun (R -6)*

_____ 6. I refuse things that are bad for me

_____ 7. *I wish I had more self discipline (R -6)*

_____ 8. People would say that I have strong self discipline

_____ 9. *Pleasure and fun sometimes keep me from getting work done (R -6)*

_____ 10. *I have trouble concentrating (R -6)*

_____ 11. I am able to work effectively towards long term goals

_____ 12. *Sometimes I can't stop myself from doing something even if I know it is wrong (R-6)*

_____ 13. *I often act with out thinking through all the alternatives (R -6)*

Scoring: Items in italics (2, 3, 4, 5, 7, 9, 10, 12, 13) should be reversed scored (Subtract by 6)

Total Score is (13-65) =

Adapted from: Tangney, J.P., Baumeister, R.F., Boone, A.L. (2004). High Self-Control Predicts Good Adjustment, Less Pathology, Better Grades, and Interpersonal Success. Journal of Personality, 271-324

Appendix 11. Social Media Exposure Questionnaire

Social Media Exposure and Envy Questionnaire

1. On average how often do you check your social media sites (for example browsing your newsfeed)? Choose the item closest to your general usage.

- ☐ Every 10 minutes 1
- ☐ Every 30 minutes 2
- ☐ Every Hour 3
- ☐ Every couple of hours 4
- ☐ Once a day 5
- ☐ A few times a week 6
- ☐ Once a month 7
- ☐ A few times a Year 8
- ☐ Never 9

2. What is your preferred Social Media Site (name a forum, blog or social networking site)?

3. How often do you post something about yourself on a social media site?

- ☐ Every 10 minutes 1
- ☐ Every 30 minutes 2
- ☐ Every Hour 3
- ☐ Every couple of hours 4
- ☐ Once a day 5
- ☐ A few times a week 6
- ☐ Once a month 7
- ☐ A few times a Year 8
- ☐ Never 9

Please indicate from the scale below how often you have experienced the following:

1 = Never

2= Rarely

3 = Occasionally

4 = Frequently

5 = Almost Daily

4. Feeling envious of other people online? _____

5. Feeling angry towards someone online? _____

6. Feeling motivated or driven to improve yourself by others online? _____

7. Enjoying hearing about someone's good news online? _____

8. Enjoying hearing the failures of someone online? _____

How often have you experienced the following in an online environment (e.g. social media, internet forums, emails, comments sections on websites):

1 = Never

2= Rarely

3 = Occasionally

4 = Frequently

5 = Almost Daily

9. Being called Offensive names _____

10. Being purposefully embarrassed _____

11. Being physically threatened _____

12. Harassment for a sustained period of time _____

13.Stalking _____

14.Sexual harassment _____

15.Trolling _____

Appendix 12. Demographic Data

Demographics		Type of Online Aggressive Behaviour (OAB)									
		No OAB	Frequently visit someone's SM	Cyberbullying	Trolling	Sustained Harassment	Stalking	Sexual Harassment	Physical Threats	Total	
		N	N	N	N	N	N	N	N	Mean	Total N
Gender	Female	67	62	22	22	8	25	9	6	2	221
	Male	31	10	32	20	6	30	21	36	4	186
	Transgender	2	0	1	0	0	2	0	3	4	8
Age	18 to 24 years	21	25	23	26	7	30	18	33	4	183
	25 to 34 years	47	30	28	15	3	20	9	8	2	160
	35 to 44 years	14	11	2	1	3	4	2	0	2	37
	45 to 54 years	6	4	1	0	0	1	0	1	1	13
	55 to 64 years	9	1	0	0	0	1	1	1	1	13
	Age 65 or Over	3	1	1	0	1	1	0	2	3	9
Employment Status	Employed, working 35 or more hours per week	60	33	36	14	5	26	11	9	2	194
	Employed, working 1-34 hours per week	19	19	10	9	5	6	8	9	3	85
	Not employed, looking for work	9	3	2	12	1	13	6	14	4	60

	Not employed, NOT looking for work	8	15	5	5	2	7	3	10	3	55
	Retired	3	1	1	0	1	2	0	0	2	8
	Unable to work	1	1	1	2	0	3	2	3	4	13
Relationship Status	Single (never married)	31	29	24	22	8	32	18	30	3	194
	Single (been married)	5	3	0	1	0	2	2	1	3	14
	In a relationship (not living together)	11	9	2	8	2	7	6	8	3	53
	In a relationship (living together)	26	14	16	9	3	6	2	4	2	80
	In a relationship (married)	27	17	13	2	1	10	2	2	2	74
Criminal Offence	No	95	72	54	42	14	54	29	41	3	401
	Yes	5	0	1	0	0	3	1	4	4	14
Country	UK	66	53	35	17	9	21	4	10	2	215
	US	11	7	6	12	4	20	16	20	4	96
	Europe	8	4	6	7	1	8	5	6	3	45
	Rest of World	6	3	1	3	0	3	0	5	3	21

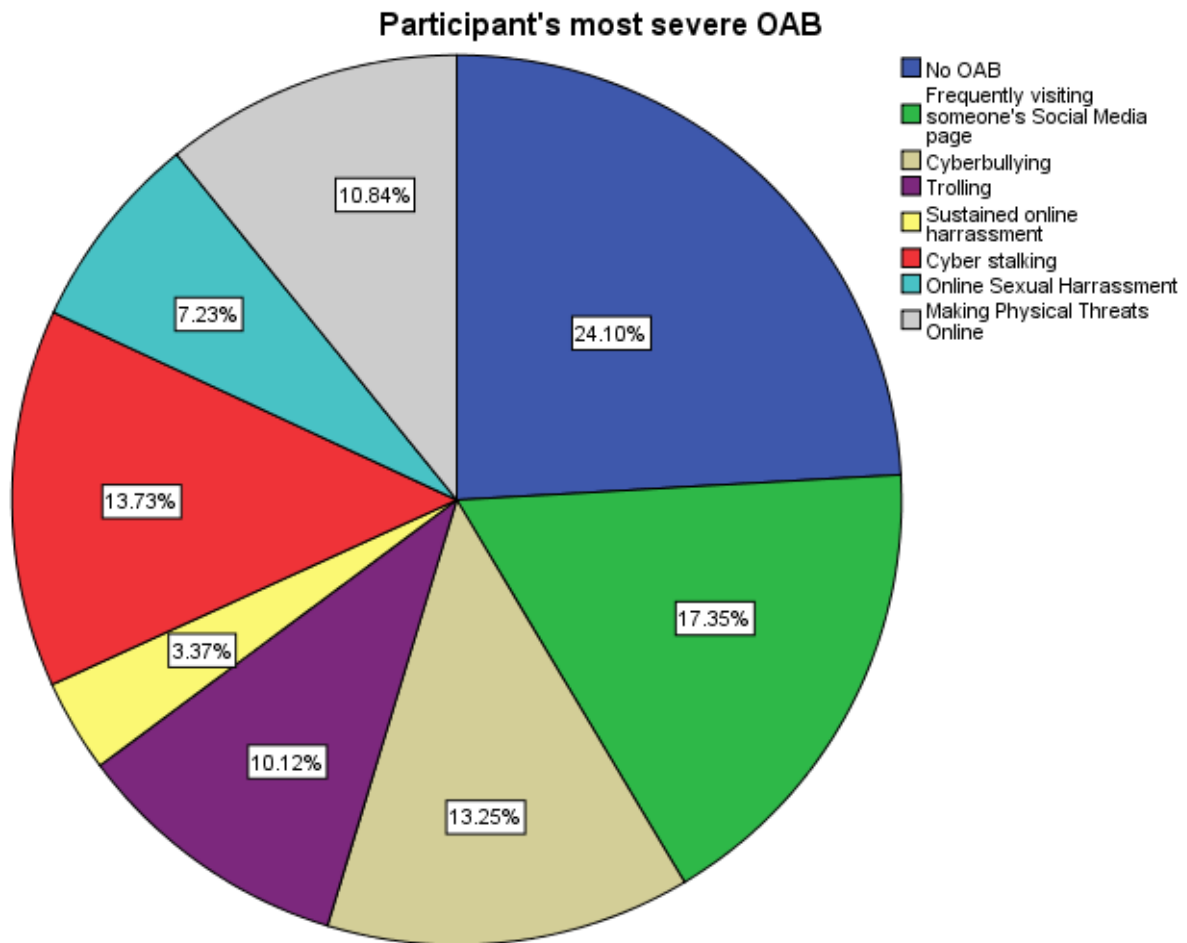
Appendix 13. SMU Characteristics

Social Media Characteristics		Gender				
		Female	Male	Transgender	Total	
		N	N	N	Mean	Total N
Type of Online	No OAB	67	31	2	1	100
Aggressive Behaviour	Frequently visit someone's SM	62	10	0	1	72
	Cyberbullying	22	32	1	2	55
	Trolling	22	20	0	1	42
	Sustained Harassment	8	6	0	1	14
	Stalking	25	30	2	2	57
	Sexual Harassment	9	21	0	2	30
	Physical Threats	6	36	3	2	45
	Total	221	186	8	1	415
Intent of Online	No OAB	60	30	1	1	91
Aggressive Behaviour	Observe	30	1	0	1	31
	Communicate	54	23	4	1	81
	Banter	21	34	1	2	56
	Tease	20	35	1	2	56
	Annoy	13	21	1	2	35
	Upset	6	7	0	2	13
	Insult	13	27	0	2	40
	Threaten	1	4	0	2	5
	Scare	3	4	0	2	7
	Total	221	186	8	1	415
How often do you browse social media	Every 10 minutes	18	11	0	1	29
	Every 30 minutes	31	20	0	1	51
	Every Hour	39	26	1	1	66
	Every couple of hours	82	79	3	2	164

	Once a day	36	23	1	1	60
	A few times a week	9	14	0	2	23
	Once a month	3	3	0	2	6
	A few times a year	0	2	0	2	2
	Never	3	8	3	2	14
	Total	221	186	8	1	415
How often do you post on Social Media?	Every 10 minutes	2	5	1	2	8
	Every 30 minutes	1	2	0	2	3
	Every Hour	3	2	0	1	5
	Every couple of hours	7	7	0	2	14
	Once a day	12	7	0	1	19
	A few times a week	60	44	1	1	105
	Once a month	86	31	2	1	119
	A few times a year	36	45	2	2	83
	Never	14	43	2	2	59
	Total	221	186	8	1	415
When using Social Media How often have you ...?						
Felt envious	Never	26	51	3	2	80
	Rarely	69	78	3	2	150
	Occasionally	88	44	1	1	133
	Frequently	29	8	0	1	37
	Almost Daily	9	5	1	1	15
	Total	221	186	8	1	415
Felt angry	Never	38	27	2	1	67
	Rarely	95	65	1	1	161
	Occasionally	63	72	4	2	139
	Frequently	20	15	0	1	35
	Almost Daily	5	7	1	2	13
	Total	221	186	8	1	415
Felt motivated	Never	26	25	2	2	53
	Rarely	49	48	1	2	98
	Occasionally	105	76	2	1	183

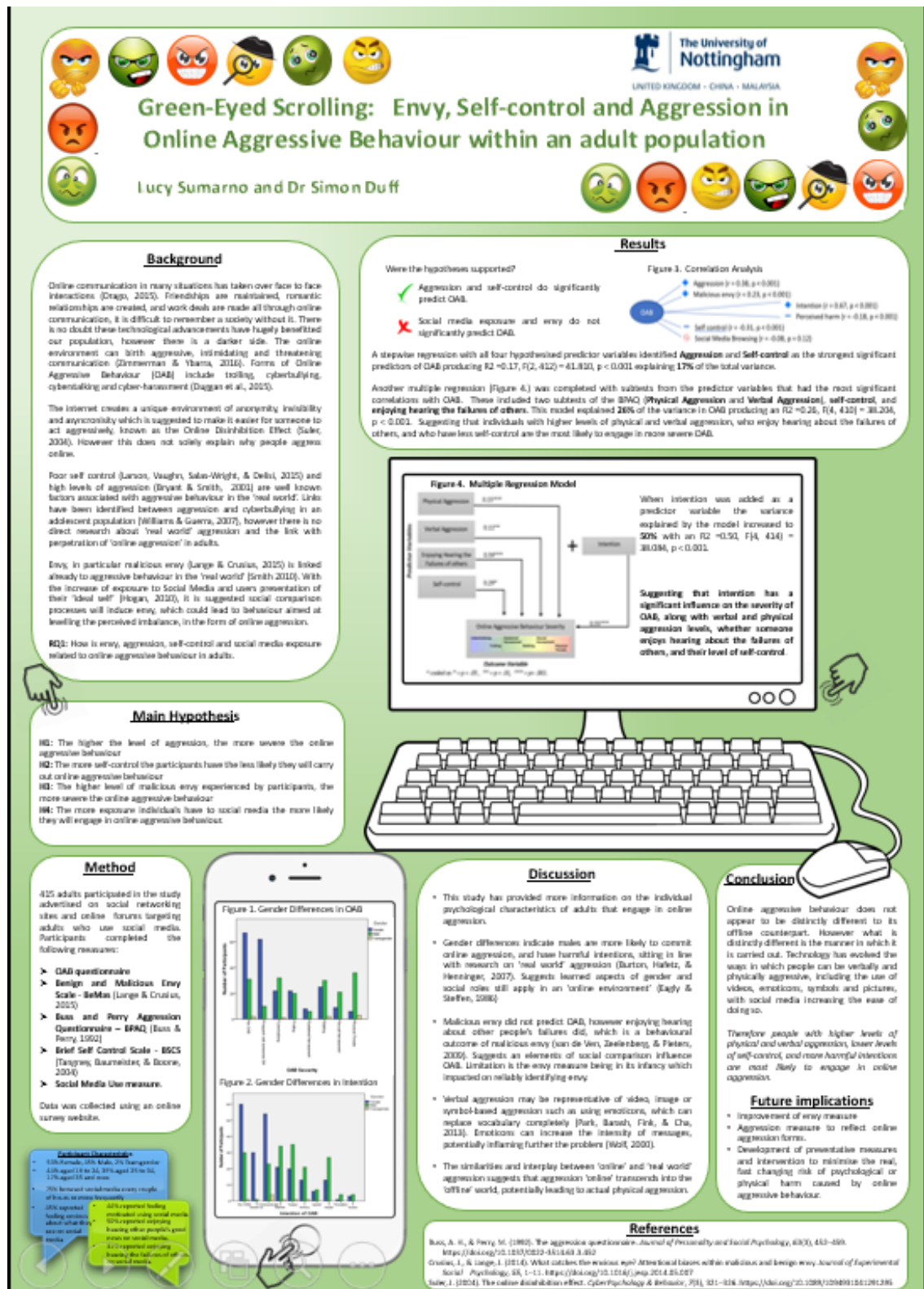
	Frequently	32	24	1	1	57
	Almost Daily	9	13	2	2	24
	Total	221	186	8	1	415
Enjoyed hearing someone's good news	Never	5	9	2	2	16
	Rarely	4	12	0	2	16
	Occasionally	53	65	2	2	120
	Frequently	124	81	1	1	206
	Almost Daily	35	19	3	1	57
	Total	221	186	8	1	415
Enjoyed hearing someone's failures	Never	83	40	4	1	127
	Rarely	94	68	0	1	162
	Occasionally	30	48	1	2	79
	Frequently	6	17	1	2	24
	Almost Daily	8	13	2	2	23
	Total	221	186	8	1	415
When using Social Media how often have you experienced...?						
being called offensive names	Never	108	44	1	1	153
	Rarely	57	43	1	1	101
	Occasionally	42	43	3	2	88
	Frequently	10	26	0	2	36
	Almost Daily	4	30	3	2	37
	Total	221	186	8	1	415
being purposefully embarrassed	Never	127	63	3	1	193
	Rarely	62	72	2	2	136
	Occasionally	25	25	0	2	50
	Frequently	5	18	1	2	24
	Almost Daily	2	8	2	2	12
	Total	221	186	8	1	415
being physically threatened	Never	181	111	3	1	295
	Rarely	31	32	2	2	65
	Occasionally	7	26	0	2	33
	Frequently	1	8	0	2	9
	Almost Daily	1	9	3	2	13
	Total	221	186	8	1	415

sustained harassment	Never	165	137	5	1	307
	Rarely	35	26	0	1	61
	Occasionally	19	11	0	1	30
	Frequently	1	7	0	2	8
	Almost Daily	1	5	3	2	9
	Total	221	186	8	1	415
Online stalking	Never	160	141	5	1	306
	Rarely	35	30	1	1	66
	Occasionally	19	10	0	1	29
	Frequently	5	2	0	1	7
	Almost Daily	2	3	2	2	7
	Total	221	186	8	1	415
online sexual harassment	Never	165	153	4	2	322
	Rarely	27	21	1	1	49
	Occasionally	23	6	1	1	30
	Frequently	5	1	0	1	6
	Almost Daily	1	5	2	2	8
	Total	221	186	8	1	415
being trolled	Never	153	49	1	1	203
	Rarely	36	41	0	2	77
	Occasionally	19	36	1	2	56
	Frequently	9	28	2	2	39
	Almost Daily	4	32	4	2	40
	Total	221	186	8	1	415

Appendix 14. Participants most severe OAB

Appendix 14B: Research Project Poster Presentation at the BPS Conference (Division of Forensic Psychology), Newcastle, 2018.

***This poster won first place in the BPS poster presentation competition**



Chapter 4: Research Case Study

Appendix 15. Client Z's History

Family History/Early Life

Client Z has experienced significant family difficulties during his early life. His start in life was preceded the death of his older brother, a few months before Client Z was born. Client Z's mother has a diagnosis of Bi-polar disorder, along with acrophobia. When Client Z was 18 months old his mother told her health visitor she could no longer cope with his behaviour and that she was a risk to him. Social services became involved however the family did not engage well. Client Z spent weekends in respite care, with grandmother, however his mother felt she still could not cope, and he moved in permanently with his grandmother at the age of 4. At aged 6 his grandmother raised serious concerns about his behaviour, reportedly including truanting from school, smearing faeces on walls, exhibiting sexualized behaviour, bed wetting and setting fires. From the age of 12 he was found smoking cannabis and making burns in his bedroom, it was also reported to social services that his grandmother had been violent towards and Client Z was taken from her care and placed in fostered. At the age of 15 Client Z attempted suicide by taking an overdose and received his first inpatient care at Lincoln County Hospital. He moved into respite care and foster care with his step-uncle and partner. Whilst staying with his step uncle further concerns were raised due to sexualized behaviour such as masturbating in front of his peers, there were also reports that Client Z had been given drugs and sexually abused by this step-uncle. When Client Z was 16 years old he reported experiencing hallucinations and delusions believing that his foster carers were trying to kill him. He took with him a knife, left the house and appeared at his grandmother's house. The police were called, and this was the start of Client Z's entry within the secure system.

Early Adulthood

Client Z has spent most of his adulthood as a resident in the secure system. His inpatient stays have been marred by criminal damage, physical assaults on staff and patients, inappropriate sexual behaviour and attempted sexual assaults towards staff, suicide attempts, substance misuse, smearing faeces in his room, and paranoia about other people's intentions, including believing staff were trying to poison him. Client Z had absconded on various occasions, spending periods of time as a missing person. He would end up staying in "squats", using drugs until unconscious, he also reports sexual abuse

from peers at this stage, and distressing hallucinations and reactions to taking substances. His substance misuse has included legal highs, cannabis, MDMA, Ketamine and Heroin. He was initially diagnosed with drug-induced psychosis, however he was later re-diagnosed with paranoid schizophrenia and emotionally unstable personality traits.

In 2009 he was transferred into locked rehabilitation and then into supported housing in the community in 2010 when his mental state improved, and his paranoid ideas reduced. He was moved between a variety of locations, although describes not being happy. Client Z had lost contact with most family members, although did remain in contact with a cousin who was also estranged from the family and they would use substances together. Client Z also had a variety of acquaintances who he would describe as his friends, however the only activity they would do together was use illicit substances. Client Z's main grievance with moving locations was that he was being taken away from his "friends". When in less secure settings or in the community Client Z's pattern of non-compliance with medication and use of illicit drugs results in exacerbation of his mental illness, which occurred in this setting and led to criminal damage in these setting and the violent physical offences such as Client Z's index offence.

Psychosexual History

Client Z has never been in any significant romantic relationships throughout his life course. He reports to have been unsure of his sexuality since his childhood. He currently believes that he is heterosexual and hopes to marry and have a family. He can still become confused about his sexuality as he reports having sexual thoughts and feelings towards other males, but this is then followed by an angry reaction because he reports feeling annoyed and disgusted in himself for feeling this way and wishes he could be "normal". Client Z has indicated in the past he was in a relationship with a male partner, and has reported to have had various sexual encounters with males, although it is not clear whether these have been consensual or abusive, with descriptions of these experiences appearing more abusive, such sexual interactions with a number of men whilst Client Z was under the influence of substances to the point of unconsciousness, and other reports of sexual abuse when Client Z was five years old. Client Z has a history of displaying sexually inappropriate behaviour since his childhood, such as masturbating in the classroom, indecent exposure in residential units, inserting items into his anus, and making threats to rape or sexually assault staff.

Client Z has also had a history of developing romantic obsessions with certain people. For example, he reports falling in love with a female neighbour and reports having "visions" that they were having a sexual relationship to the point that he believed it was real. He reported that using substances helped him visualise further the relationship, and he would follow this female on social media sites to gather more information on her. When this neighbour rejected his advances, Client Z became aggressive and abusive towards her posting messages on her Facebook page, and making threats to rape her. He was cautioned for malicious communication and harassment.

Past Forensic History

Client Z's forensic history dates to 2003. He has convictions for four theft and kindred offences between 2003 and 2005, two offences against property in 2005, one offence relating to police/courts/prisons in 2005 and one offence against a person in 2012 (this was the assault on the member of staff – index offence).

Despite allegations of Client Z exposing himself to others and being sexually inappropriate towards other service users at his residence in 2005 to 2006, as well as police involvement, he was not prosecuted in relation to these behaviours.

Client Z has received two cautions for harassment. The first was in relation to harassment of his previous foster carer, where he sent a parcel containing blood and semen with stained underpants, together with pornographic material to her and made obscene phone calls. The second was in relation sending malicious communication to a female neighbour via Facebook and text messages.

Index Offence

On 12th May 2012, whilst living in supported housing, Client Z was involved in an argument with another male resident. Client Z went away, returning with a hidden knife sometime later. A member of staff spoke to him, not knowing that he had a secreted weapon, and Client Z 'lashed out' with the knife, causing cut to the member of staff's head.

Client Z was subsequently detained under a Section 37/41 Hospital Order because of this incident and was admitted to the Francis Willis Unit for the second time, starting his current period of detention, on 6th July 2012.

Appendix 16. Pre-Intervention START (Eight Risk Domains)

START Item	Strength	Vulnerability	Comments
Social Skills	Partial	Partial	Strengths: Engages in social activities and wants to be social with others Vulnerabilities: Becomes suspicious and paranoid about others in social situations and pre-occupied with their intentions.
Relationships	Partial	Partial	Strengths: Wants close relationships with others. Building therapeutic relationships. Vulnerabilities: Misunderstands other's interactions and becomes defensive. If other patients appear to be doing well can become pre-occupied with this and either distance self or react aggressively.
Mental State	Partial	Partial	Strengths: Psychosis stable. Vulnerabilities: Affected by paranoia. Personality traits problematic in interactions with others, and in progress in own recovery.
Emotional State	Partial	Partial	Strengths: can be in good spirits and humorous at times Vulnerabilities: Quick to anger, can project his anger about himself onto others, becoming blaming and accusatorial.
Impulse Control	Partial	Partial	Strengths: Can be calm and relaxed. Vulnerabilities: Can react to anger suddenly kicking or punching the wall or doors, making threats and being verbally abusive
External Triggers	Partial	Yes	Strengths: Uses support from staff. Expresses desire to reduce the impact external triggers has on his anger. Vulnerabilities: Affected by the progress of other patients, and makes comparisons perceiving himself to be unfairly treated compared with them. Affected by contact with family triggering anger.
Attitudes	Partial	Partial	Strengths: Apologises when aggressive or abusive.

			Vulnerabilities: Shows hostility towards staff when needs not met immediately. Can become accusatory towards staff members.
Coping	Partial	Yes	Strengths: Uses some coping skills such as listening to music. Vulnerabilities: Poor problem solving, uses maladaptive ways to respond to difficulties such as making threats. Response with aggression to perceived criticism.
Overall Risk Estimate	Specific Risk Estimate	Risk to Others = MODERATE	

Appendix 17. Millon Clinical Multiaxial Inventory-III Report (Millon, 2005)**Millon Clinical Multiaxial Inventory-III (Millon, 2005)****Client Z****20th June 2017****Name of Client:** Client Z**Client date of birth:** XX XX XX**Name of Assessor:** Lucy Sumarno (Forensic Psychologist in Training)**Date of Assessment:** 07.06.2017**Date of report:** 20.06.2017**Millon Clinical Multiaxial Inventory-III (MCMI; Millon, 2005)**

Client Z was administered the MCMI-III (a measure of personality patterns) which is a 175-item true/false self-report questionnaire. It is a clinical tool designed to measure the presence of a number of clinical syndromes and personality patterns. Overall it looks for evidence of 11 types of clinical personality patterns, 3 types of severe personality pathology, 7 clinical syndromes and 3 severe syndromes. The inventory also includes four scales to give an indication of the reliability and validity of the responses given.

1. Response Style

The MCMI-III has a total of four scales, which measure the extent to which the individual's responses are valid and useful. Client Z's Validity Scale score indicates that he read and understood the test items. However, his disclosure index score was very high (>BR 85) at

BR= 100 indicating that he tends to be secretive and self-deprecating which may be reflected in responses in this assessment. He also scored highly (BR = 74) on the Debasement Index, and although not clinically significant it still suggests that he may be putting forward more troublesome and emotional personal difficulties. Client Z's base rate on the Desirability Index was within normal range suggesting that he is not inclined to give responses which are deemed socially favourable.

2. Axis II: Clinical Personality Patterns

Axis II responses relate to pervasive personality patterns underlying an individual's emotional, cognitive and interpersonal style, as opposed to transitory difficulties that fluctuate over time and across situations.

Client Z scored above the clinically significant range (>BR 75) on the following traits: Dependent (78), Sadistic (75), and Negativistic (75). Additionally, he had a notable score on the Depressive subscale (70).

2.1 Dependent

Dependent individuals have learned not only to turn to others for nurturance and security but to wait passively for their leadership in providing them. They are characterized by a search for relationships in which they can lean on others for affection, security and guidance. Their lack of initiative and autonomy is often a consequence of parental overprotection. As a function of these experiences, they have simply learned the comforts of assuming a passive role in interpersonal relations, accepting what kindness and support they may find and willingly submitting to the wishes of others in order to maintain their affection.

2.2 *Sadistic*

Sadistic individuals who are not judged to be antisocial may still get personal pleasure and satisfaction in ways that humiliate others and violate their rights and feelings. They are generally hostile and pervasively combative, and they appear to be indifferent to or pleased by the destructive consequences of their contentious, abusive, and brutal behaviour. Although many cloak their more malicious and power-oriented tendencies, they give themselves away by their dominating, antagonistic and frequently persecutory actions.

2.3 *Negativistic*

Negativistic individuals are torn between following the rewards that are offered by others and those they desire themselves. This struggle represents an inability to resolve conflicts which intrudes into everyday life. These individuals experience endless wrangles and disappointments as they waver between deference and defiance, between obedience and aggressive opposition. Their behavior is characterized by an erratic pattern of explosive anger or stubbornness intermingled with periods of guilt and shame.

2.4 *Depressive*

The depressive personality experiences pain as permanent. Pleasure is no longer even considered possible. Some individuals are inclined to pessimism and a disheartened outlook. Similarly, experience can condition a hopeless orientation to significant loss. A disconsolate family, a barren environment and hopeless prospects can all shape the depressive character style.

3. Axis II: Severe Personality Pathology

Three additional personality patterns are assessed in this section: schizotypal, borderline and paranoid. These differ from basic personality disorders by several criteria including deficits in social competence and frequent (but usually reversible) psychotic episodes. People with these traits are less likely to be effective at coping and are more vulnerable to everyday strains of life.

Client Z scored above the cut-off point (>BR 75) for schizotypal (97), borderline (79) and paranoid (80). Scores above 85 indicate a persistence of a particular severe personality pattern.

3.1 Schizotypal

Individuals scoring above the clinical cut off point for schizotypal often present with a cognitively dysfunctional and interpersonally detached orientation. They tend to prefer social isolation with minimal personal attachments or obligations.

3.2 Borderline

Borderline individuals tend to experience moods with recurring patterns of dejection and apathy often interspersed with spells of anger, anxiety or euphoria. This dysregulation of affect is most often seen in the individual's instability or lability of mood. Furthermore a borderline individual may have recurring thoughts of self-harm or suicide, appear preoccupied with securing affection, have difficulty maintaining a clear sense of identity and display cognitive-affective imbalance that is evident in conflicting feelings of rage, love and guilt towards others.

3.3 *Paranoid*

Paranoid individuals display a vigilant mistrust of others and an edgy defensiveness against anticipated criticism and deception. There is an abrasive irritability and a tendency to precipitate exasperation and anger in others. Paranoid individuals often express fear of losing independence, leading them to vigorously resist external influence and control.

4. **Axis I: Clinical Syndromes**

Clinical syndromes describe psychological difficulties that result as a response to interpersonal or situational factors and are therefore not enduring in nature. This is in contrast to the personality patterns described in Axis II disorders.

Client Z's scores indicate that he has the presence of Anxiety (87), Bipolar (81) and Drug Dependence (81).

4.1 *Anxiety*

Individuals with anxiety often report feeling either vaguely apprehensive or specifically phobic. They are typically tense, indecisive and restless, with somatic discomfort such as upset stomach and physical discomfort. Most anxious people evidence a generalized state of tension, manifested by an inability to relax, fidgety movements, and a readiness to react and be easily startled.

4.2 *Bipolar*

Bipolar patients evidence periods of superficial elation, inflated self-esteem, restless over-activity and distractibility, pressured speech, impulsiveness and irritability. Also evident is unselective enthusiasm, excessive planning for unrealistic goals, an intrusive if not domineering and demanding quality to interpersonal relations, decreased need for sleep, flights of ideas and rapid and labile shifts of mood. Very high scores may signify psychotic processes, including delusions or hallucinations.

4.3 Drug Dependence

An elevated drug dependence score indicates that the patient probably has a recurrent or recent history of drug abuse, tends to find it difficult to restrain impulses or keep them within conventional social limits, and is unable to manage the personal consequences of this behavior. Like the Alcohol Dependence scale, the Drug Dependence scale is composed of many subtle and indirect items and may be useful in identifying individuals who are not readily disposed to admit their drug problems.

5. Summary

Client Z's profile on the MCMI indicates that he has several prominent traits, particularly within the severe personality pathology and clinical syndrome range. He has conflicting results in the Debasement Index and Disclosure Index, suggesting that he is secretive about his history but simultaneously having a tendency to put forward some more personal difficulties than he may truly has. Although his desirability scale results demonstrated that he was not inclined to respond in a socially desirable manner, his response style more likely reflects his own feelings about himself and being secretive and less revealing may help him hide the characteristics he personally dislikes about himself and may protect himself from feeling bad.

Therefore, interpretation of this MCMI should be done with caution bearing this in mind. The MCMI is not a diagnostic tool and therefore should only be used as a guide for identifying personality traits and clinical syndromes.

Appendix 18. Intervention Part 1: Understanding Personality Psychoeducation Session PlansSession 1. – What is Personality?

- Introduction exercise - Rebel foot
- Current thinking about personality and personality functioning
- Individual differences and patterns of behaviour
- Self-Reflection exercise
- Between-session work: What makes you 'you'? – identify strengths, qualities and characteristics about self

Session 2 – How does a Personality develop

- Introduction exercise – Marooned on an island
- Between-session work review
- So how does personality develop?
- Applying the bio-psychosocial model
- Self-Reflection exercise
- Between-session work - My Life worksheet

Session 3 - What makes a Personality Disordered?

- Introduction– Who would you invite to dinner and why?
- Between-session work - My Life worksheet review
- What makes a personality disordered?
- Personality as a continuum – case study examples
- Self- reflection exercise
- Between-session work – add to My Life worksheet linking any life events to development of maladaptive personality traits.

Session 4 – Attachment and Personality?

- Introduction exercise – who are your role models and why?
- Between-session work – Maladaptive personality traits
- What is attachment
- How it develops – using case study examples
- Self-reflection exercise- My attachments (important relationships)
- Between-session work – Identifying attachment my pattern

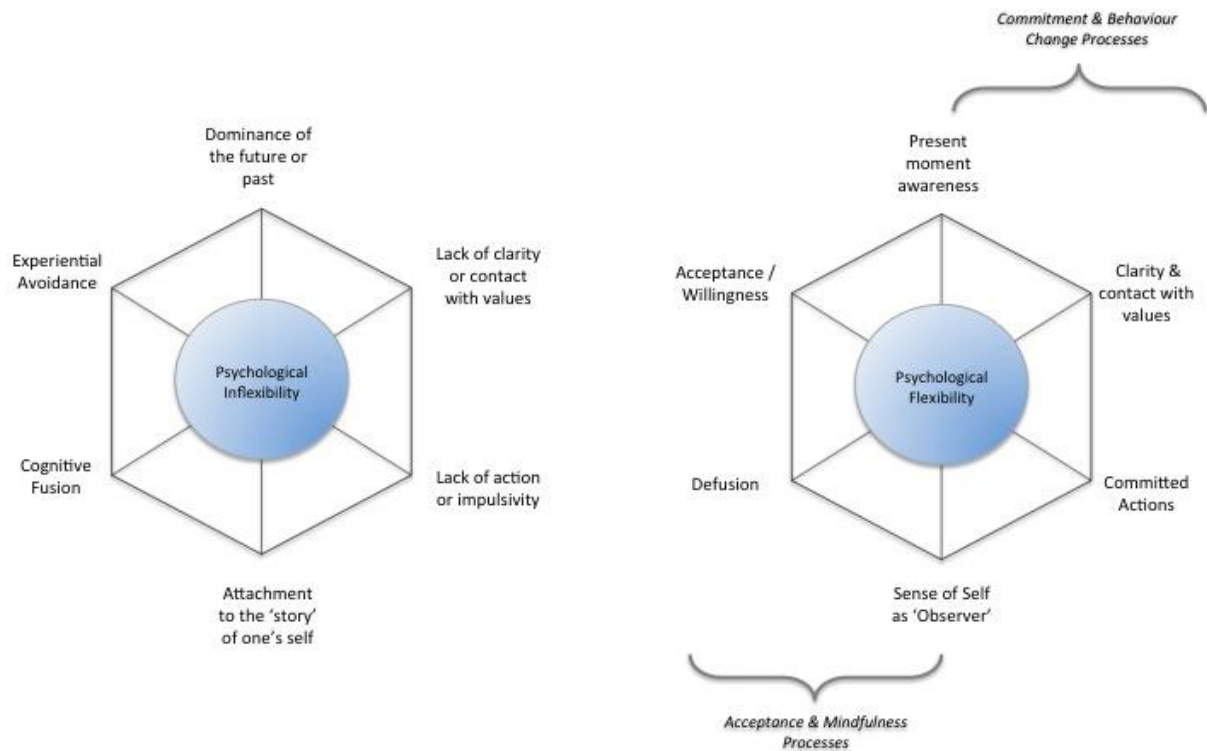
Session 5 – The Environment and Personality?

- Introduction exercise – Magic Wand
- Between-session work Review – My attachment patterns
- How the environment impacts on our behaviour

- Exploring situational factors – vicious circle introduction.
- Reflection exercise – when my environment does not feel safe- safe space visualisation
- Between-session work – My Environment worksheet

Session 6 – Moving Forward: What my personality means for me?

- Introduction and warm-up exercise - Change
- Between-session work review– My Environment
- Merge famous characters to create your ideal characteristics, traits and strengths.
- How certain characteristics can help with environmental and relational challenges
- Reflection exercise on strength and resilience.
- Setting goals for moving forward.

Appendix 19. ACT Hexaflex, Harris 2009

Appendix 20. Intervention Part 2: Acceptance and Commitment Therapy (ACT)

Session Plans

Session 1. – What is ACT, and Why for me?

- Introduction of ACT core processes – The ACT “Triflex”
- Contacting the Present Moment (Be Here Now) and Self-as Context (Pure Awareness) – You’re here and now experience (verbal and non-verbal)
- Acceptance /Willingness (Open up) and Defusion (Watch your thinking) - Seeing your thoughts and feelings for what they truly are and making room for them.
- Values (Know what matters) and Committed Action (Do what it takes) – taking action guided by your values
- Primary aim of ACT – to increase psychological flexibility
- The ACT Acronym

A = Accept your thoughts feelings and be present

C = Choose a valued direction

T = Take action

Session 2. – What is Anger and Aggression? Why can ACT help?

- Check in
- Fight or Flight Response
- Function of Anger (ABC example)
- How ACT is different to anger management (focuses on changing behaviour and life for the better, rather than focusing on changing the emotions and thoughts – which can be hard to change)
- Anger Myths
- Name one thing in your life that would be better without your anger?

Session 3. – Contacting the Present Moment and ‘Make room’

- Check in
- Present moment exercise – Body Scan
- Where has your ‘Anger’ thoughts and feelings come from?
- Link to personality (Head silhouette to write thoughts inside head - internal, and write where developed from ‘external’, continue to link to development of personality and past experiences.
- How have you reacted – identify Acting out or Suppress strategies
- Demonstrate how this is either trying to control it or avoid experiencing it – this helps short-term
- Why trying to control is unhelpful and does not work: Chocolate cake - thought, or walking of type rope 100ft in air – feeling. – it can add to the suffering.
- Make room for these painful emotions, allow them to be just as they are, don’t fight them

- Visualisation – Place in memory box – leave them, do not try to change them or rid of them.

Session 4. – Contacting the Present Moment and 'Defuse'

- Check in
- Present moment exercise – Mindful observation of thoughts
- The importance of anger – survival, awareness of danger, keeps us safe – Link to personality and past experiences, when this has been important to help you survive or keep you safe?
- How our minds can create anger when no danger or threat.
- Identify trigger thoughts e.g. you have been harmed, deliberately wronged, unfairly treated. "people are selfish", "people have it easier than me" "people ignore me, or don't care about me", "people shame and criticise me"
- Relate these thoughts to past
- Assume, blame and judge worksheet – how to stop trying to figure out cause and effect.
- Defusion as an alternative (Disengage with the angry thought)
 - Practice not responding (Take a step back)
 - Say it out loud over and over again – may help lose its meaning
 - Categorise thoughts
 - Label the thought as "only a thought IN YOUR MIND"
 - Separate yourself from your mind – you do not have to agree.
- Check out exercise: Practice turning your hand – "Let it go".

Session 5. – The Cost of Anger and Aggression on Others

- Check in: Different relationships in my life – Family, Friends, Professionals (Genogram)
- What I want more of, and what I expect from others?
- What can I control, What can't I control?
- Why trying to control others is problematic
- Assumptions, Blame and Judgements of others (Scenarios)
- Statement exercise - Accepting others for who they are, faults and all.
- ABC – show behaviour and reaction from others (conflicts with the aim of the behaviour – the desire to be close, but encourages person to distance themselves)
- ABC example using technology – Text messages with family
- Homework – Anger log including incidents of texting and contact with Family, and anger relating to comparisons with others – Accept, make room for, take a step back and defuse – practice skills such as mindful observation and turn your hand.

Session 6. – Introducing Values: What really matters to me

- Check in: Gallery of assets
- Review Log
- Introduce different values
- Complete the 'Wheel of life'
- Life Directions – Map/ Guide of where to head (increase values)
- Peak Moments – remember a moment in your life that you felt most connected and content with a value. What was that moment like?
- Check out: Which route will you focus on this week?

Session 7. – Values and Action as an Alternative

- Check in: Visualisation – Your Garden
- Review log
- Values as a motivator to choose actions other than being angry (scenarios let values guide your decisions):
 - Wealth (inherit a fortune), what would you do with it?
 - Magic Wand to make anything happen, what would you make happen?
 - You could be invisible – what would you do with this power?
 - How about when you feel anger – use example from log? What options do you have that fit in line with your values
- When values are in conflict – e.g. Family Vs. Friend or Health Vs. Freedom
- Check out exercise: Hand of Five alternatives – name 5 value alternatives to anger towards family (e.g. to change behaviour of reacting aggressively using mobile phone)

Session 8. – Back to Acceptance: As an Alternative

- Check in: Mindful Eating: piece of chocolate
- Review log
- Tug of War exercise – use example from log. (Is the tug of war with the situation, or with the anger? What happened if you accept the anger, does the struggle over the situation end?)
- Acceptance is NOT – resignation, giving up, defeat, failure
- Acceptance IS – Experiencing anger on your terms, tolerating the feeling, not letting anger control you.
- Practice Acceptance mindfully : paying attention, on purpose, in the present moment and non-judgementally – mindful script.
- Check out: Mindful acceptance on daily basis
 - **S: Stop** what you are saying and doing
 - **T: Take a breath** to allow you a gap, a moment
 - **O: Observe** what you are thinking and feeling
 - **P: Pick a behaviour** in line with value (often opposite to the anger urge – smile, relax, empathise)

Session 9. – Letting go and Forgiveness

- Check in: Present moment exercise: Holding the Facts against the wall. Who does this action impact the most?
- Review log
- Forgiveness - What is it?
- Forgiveness as a gift to yourself worksheet = Peace
- Fishing hook metaphor: "letting the person off the hook, so you can get off the hook yourself".
- What is on your Hook worksheet? – link to personality work. Have a particular focus on family and vengeful thoughts.
- Let it go so you can move on with your life: Visualisation script – Leaves on a stream

Session 10. – Taking off your Armour

- Check in: Driving your bus up the mountain - visualisation
- Review final log
- Setting Goals (using SMART) for committed action
- Choose your own Direction: Revisit the Life Directions – Guide
- The ACT "Triflex" – You were stuck, not broken – observe your increased psychological flexibility
- How you became unstuck – review of key skills
- Check out: Present Moment exercise - Taking off your armour – Body Scan from Head to toe. – "I am who I am, you are who you are"

Appendix 21. Example of Client Z's ACT 'in session' work

 Away Moves (Actions that move me away from what hurts) ⇐ Isolation ⇐ Intimidating others ⇐ Being aggressive face to face or over phone calls or text messages. ⇐ Substance and alcohol misuse ⇐ Disengagement ⇐ Pushing people away ⇐ Being violent ⇐ Comparing myself to others	 Toward Moves (Actions that move me towards what matters) ⇒ Socialise with others ⇒ Go to the gym ⇒ Go for a walk ⇒ Ask for a supportive 1:1 with staff ⇒ Take a 'step back', think about values, before taking action ⇒ Leave mobile phone in room when involved in social activities ⇒ Attend MDT meetings ⇒ Baking
 What Hurts ○ Emotional Pain including Anger ○ Memories ○ Loneliness ○ Abandonment ○ Neglect and Abuse	What Matters  ✓ Me ✓ Being liked by others ✓ Being generous, kind and nice to be around ✓ The gym ✓ Working ✓ Supporting my Family and Friends ✓ Helping others ✓ Making a difference in society ✓ Meeting a partner and having a Family

Appendix 22. Mid-Intervention START (June 2017)**Changes in green italic*

START Item	Strength	Vulnerability	Comments
Social Skills	Partial	Partial	Strengths: Engages in social activities and wants to be social with others Vulnerabilities: Becomes suspicious and paranoid about others in social situations and pre-occupied with their intentions.
Relationships	Partial	Partial	Strengths: Wants close relationships with others. Building therapeutic relationships. <i>Increase in ability to maintain certain peer relationships without incidences of conflict. Regained contact with family members using mobile phone.</i> Vulnerabilities: Misunderstands other's interactions and becomes defensive. If other patients appear to be doing well can become pre-occupied with this and either distance self or react aggressively. <i>Arguments and aggression directed at family members using his mobile phone.</i>
Mental State	Partial	Partial	Strengths: Psychosis stable. Vulnerabilities: Affected by paranoia. Personality traits problematic in interactions with others, and in progress in own recovery.
Emotional State	Partial	Partial	Strengths: can be in good spirits and humorous at times. <i>Improvement in managing irritability seen in reduction of blaming and accusatory outbursts towards staff and patients.</i> Vulnerabilities: Quick to anger, can project his anger about himself onto others, becoming blaming and accusatorial. <i>This is also now observed in interaction with family via mobile phone use.</i>
Impulse Control	Partial	Partial	Strengths: Can be calm and relaxed. <i>No incidence of kicking or punching walls in past 3 months.</i>

			Vulnerabilities: Can react to anger suddenly making threats and being verbally abusive. <i>Has made threats and been verbally abusive when in text messages and phone calls to family and friends.</i>
External Triggers	Partial	Partial	Strengths: Uses support from staff. Expresses desire to reduce the impact external triggers has on his anger. <i>Improvement in managing external triggers on the ward, questioning his interpretation of situations before reacting.</i> Vulnerabilities: <i>At times can be</i> affected by the progress of other patients, and makes comparisons perceiving himself to be unfairly treated compared with them. <i>Recent contact with family via mobile phone can trigger anger, feelings of rejection and lead to verbal aggression towards them.</i>
Attitudes	Partial	Partial	Strengths: Apologises when aggressive or abusive. Vulnerabilities: <i>At times can</i> shows hostility towards staff when needs not met immediately. Can become accusatory towards staff members.
Coping	Partial	Yes	Strengths: Uses some coping skills such as listening to music. <i>Recognises the need to develop his coping strategies.</i> Vulnerabilities: Poor problem solving, uses maladaptive ways to respond to difficulties such as making threats. Response with aggression to perceived criticism.
Overall Specific Risk Estimate	Risk to Others = MODERATE		

Appendix 23. Post-Intervention START (September 2017)**Changes in blue italic*

START Item	Strength	Vulnerability	Comments
Social Skills	Partial	Partial	Strengths: Engages in social activities and wants to be social with others. <i>Is mostly polite and pleasant in interactions.</i> Vulnerabilities: <i>At times of stress can be suspicious and paranoid about others.</i>
Relationships	Partial	Partial	Strengths: Building therapeutic relationships <i>and able to maintain certain peer relationships with minimal conflict. Regained contact with family members using mobile phone. Improving in developing healthier interactions using his mobile phone to contact mother, stepfather and friend. Has a home visit booked to meet mother after 2 years of no contact.</i> Vulnerabilities: <i>Can</i> misunderstand other's interactions and become defensive, and <i>occasionally has conflict with peers over perceptions they may be laughing at him or attempting to damage his progress. Occasional arguments and aggression directed at family members using his mobile phone.</i>
Mental State	Partial	Partial	Strengths: Psychosis stable. <i>More open about psychosis and personality difficulties.</i> Vulnerabilities: Paranoia and Personality traits <i>can be</i> problematic in interactions with others, and in progress in own recovery.
Emotional State	Partial	Partial	Strengths: can be in good spirits and humorous at times. <i>Improvement in managing irritability. Much reduction in projection of own anger onto others around him, and recognition that this is a problem for him.</i> Vulnerabilities: Quick to anger, <i>some problems with</i> projecting anger about self by <i>becoming frustrated with others.</i>

			<i>Occasional aggression in interaction with family via mobile phone use.</i>
Impulse Control	Partial	Partial	Strengths: Can be calm and <i>can contain intense emotions. No incidences of making threats in the past 3 months.</i> Vulnerabilities: <i>Can occasionally</i> react to anger suddenly becoming verbally abusive to staff and peers. <i>Can become verbally abusive towards family via his mobile phone contact, for example sending an angry text message that he regrets after.</i>
External Triggers	Partial	Partial	Strengths: Uses support from staff. <i>Is engaging in psychology sessions to develop skills to</i> reduce the impact external triggers have on <i>his aggressive behaviour.</i> <i>Improvement in managing external triggers on the ward, questioning his interpretation of situations before reacting.</i> Vulnerabilities: <i>Rarely</i> affected by the progress of other patients, <i>but this can distract him from his own recovery pathway at times. Contact with family via mobile phone can trigger feelings of anger and rejection, however less likely to lead to abusive behaviour towards them.</i>
Attitudes	Partial	Partial	Strengths: Apologises when aggressive or abusive. <i>Expresses he respects and values Staff Members.</i> Vulnerabilities: <i>Occasionally</i> shows hostility towards staff when needs not met immediately.
Coping	Partial	Partial	Strengths: Uses some coping skills such as listening to music. <i>Recognises the need to develop his coping strategies. Engaging in psychological work to develop coping strategies.</i> Vulnerabilities: <i>Can demonstrate</i> poor problem solving, <i>and which lead to frustration and occasional aggression particularly to perceived criticism.</i>
Overall Specific Risk Estimate	Risk to Others = MODERATE		

Case Study Appendix 24. Client Z Consent Form

Case Study Consent Form

I, [REDACTED], understand that Lucy Sumarno, Forensic Psychologist in Training, will be submitting a case study report for the purpose of her DForenPsy research based on the assessment and intervention work I am completing with her.

I understand that:

- My participation is voluntary.
- The case study report will be anonymised and no identifying information will be included in the report.
- The case study report will be seen by Lucy Sumarno, her supervisor, and will be viewed by authorised individuals at the University of Nottingham.
- I can withdraw my consent at any time up to the completion of the case study work by contacting Lucy Sumarno in the Psychology Department at Farmfield Hospital.

If I have any questions or concerns about this agreement I will contact Lucy Sumarno or Kate Law at Farmfield Hospital (01293 787500).

Participant

Name .. [REDACTED]

Signed .. [REDACTED] Date 7/6/17

Researcher

Name Lucy Sumarno

Signed [Signature] Date 07.06.17