Centre for Forensic & Family Psychology

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Module code: C84FRP

Student no: 4258727

Year 1 Doctorate in Forensic Psychology
MSc Forensic and Criminological Psychology

2016

Attachment Style, Psychotic Phenomena and the Relationship with Aggression: An Investigation in a Non-Clinical Sample

Katherine Whale

Journal the paper is written for: Personality and Individual Difference- The official journal of the International Society for the study of Individual Difference (ISSID).

PROJECT PROPOSAL- NOVEMBER 2015

Title of Study: Anger/Aggression, Psychotic Phenomena and the interaction with attachment style- an investigation in a non-clinical sample

Name of Researcher: Katherine Whale, Post Graduate Research Student, School of Medicine, University of Nottingham.

- Project Title

Anger/Aggression, Psychotic Phenomena and the interaction with attachment style- an investigation in a non-clinical sample

- Overview of the area of interest

~ Attachment

Bowlby (1982) was a pioneer of the theory of attachment, and since his seminal work, this theory has grown to show that these early influences continue to influence adult relationships, functioning and mental health, (Bartholomew & Horowitz, 1991; Platts, Tyson, & Mason, 2002).

Bowlby's theory suggests that a child's early experience with their main caregiver, usually the mother, creates an internal working model, on which a child bases their expectations of themselves and others. This internal working model is then carried through that child's life (Bowlby, 1969, 1973 & 1988)

Researchers have since investigated the presence of attachment styles in adults. Assessments such as the experiences in close relationships (Brennan et al. 1998) base their assessments on the underlying construct that two dimensions are present, categorised as "model of self" and "model of other", or also termed as "**anxiety** in attachment" and "**avoidance** of attachment" (Brennan, Clark & Shaver, 1998; Crowell, Fraley, & Shaver, 1999;).

Bartholomew and Horowitz (1991) developed a model of adult attachment styles, classifying them according to thoughts about self and thoughts about others.

Their model described four types of adult attachment; secure, pre-occupied, dismissing and fearful. This model is described in figure 1. below, adapted from Bartholomew and Horowitz, 1991, p. 227.

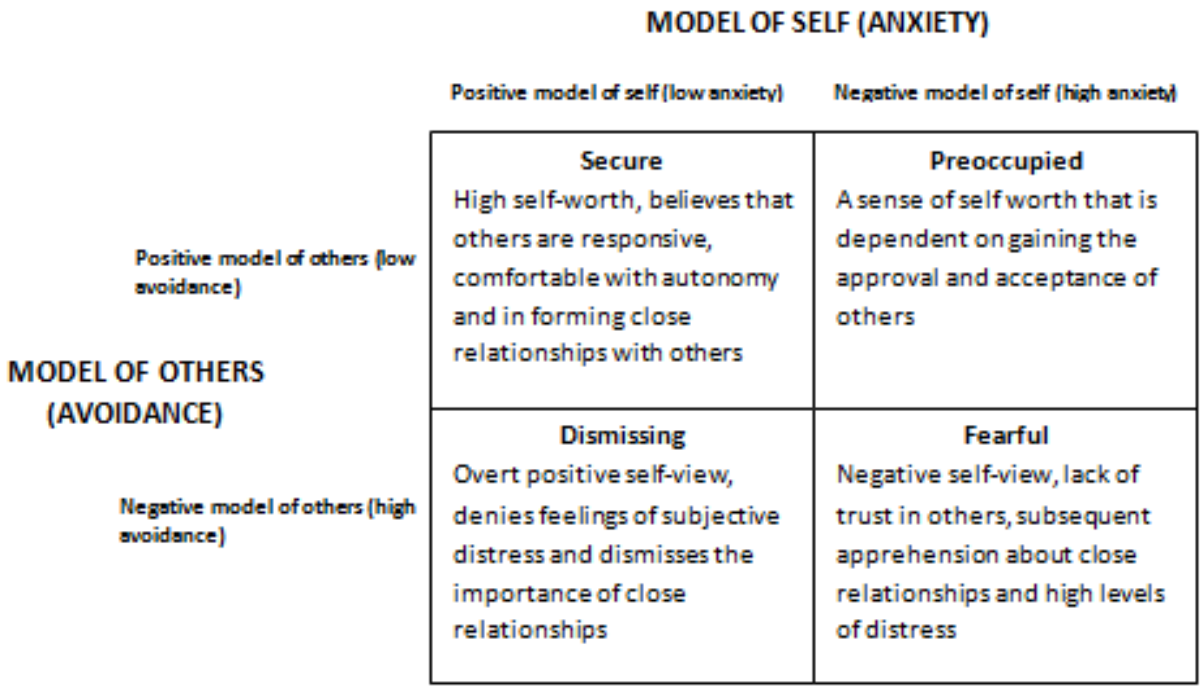


Figure 1. Summary of adult attachment model

~ Relationship between adult attachment styles and types of aggression

Ratip (2013) conducted a literature review of offenders and attachment style and found that insecure attachment was over-represented in a general offending population, with prevalence of insecure attachment ranging from 64% - 97%. In their review they found that some papers suggest no differences in attachment types across offenders, with others suggesting this relationship is stronger in offenders with sexual offences. In their study they suggest that further work needs to be conducted on modelling attachment and violent offending.

Further research (Bartholomew & Horowitz, 1991; Kobak & Sceery, 1988; Mallinckrodt, 2000) has suggested that each attachment style is related to different types of management of anger and aggression;

- Dismissing Attachment is linked with hostile behaviour, emotional detachment and interpersonal coldness.

- Pre-Occupied Attachment is linked with intrusive behaviour, dominance and aggression
- Fearful Attachment is linked with failures in assertive behaviour, inhibition and aggression.

Research conducted by Mikulincer and Shaver (2007) suggests that once an individual feels threatened, be it a perceived or real threat, their attachment style is activated. They suggest that individuals classified as having a dismissive attachment style are more likely to have a reactive expression of anger, are more likely to be critical and devaluing of others' emotional needs and are also more likely to use anger to control others' behaviour. They also suggest that individuals with a pre-occupied attachment style are likely to express irritation and anxiety and blame others, as well as finding it difficult to be soothed by others. In terms of individuals with fearful attachment, they suggest that these individuals would have an extreme expression of anger and be violent towards themselves and others.

Ratip (2013) found that individuals in a high secure hospital were more likely to have dismissing attachment style and that those with a secure attachment style had lower anger temperament scores (as measured by the STAXI-II) when compared to those with an insecure attachment style.

~ Relationship between Psychosis and Attachment

According to Bowlby's theory early childhood experiences, in relation to the primary care giver are hypothesised to have an impact on childhood attachment patterns. Adverse child experiences are likely to result in poor attachment styles, and this can continue until adulthood.

Research has shown that attachment style can be linked to mental health (Brennan & Shaver, 1998). They implied that individuals with a secure attachment base are less likely to experience mental health problems.

Research has consistently shown that childhood adverse events are related to psychosis in later life (Read, van Os, Morrison, & Ross, 2005). In their review of current research they found that of females with psychosis (from both inpatient and community samples) the majority has been subject to either sexual abuse or physical abuse (69%), and a similar finding was found in relation to males, with 59% having been subjected to sexual or physical abuse in childhood. Granville-Grossman (1966) found that individuals with psychosis are more likely to have experienced parental loss, and Morgan et al (2007) found individuals with first episode psychosis were more likely to have been separated from their parents for at least a year during their childhood (odds ratio of 2.4) and more

likely to have experienced maternal death (odd ratio of 3.1), even when controlling for parental history of mental illness.

Models of psychosis highlight that negative beliefs about the self and the world can create vulnerability and maintenance in psychosis (Penn et al. 1997). It suggests that previous experiences of relationships and traumas contribute to cycles of negative beliefs, and psychotic symptoms (Garety et al., 2001). Current experiences of relationships and functioning on an interpersonal level have also been related with illness and recovery. Mickleson et al. (1997) found that schizophrenia was a significant predictor of insecure attachment style. Warner & Atkinson (1988) found that patients who perceived their parents negatively, and had less contact with them had more relapses and a more severe course of schizophrenia.

Research into attachment style and psychosis has extended to look at non-clinical samples. Berry, Wearden, Barrowclough and Liversidge (2006) found significant relations between psychotic like events and insecure attachment, with positive symptoms being associated with anxious attachment and social anhedonia with avoidant attachment.

~Relationship between Psychosis and Aggression

There is a wealth of evidence that highlights the relationship between psychosis and aggression in clinical samples, although the extent of this relationship has remained unclear. A meta-analysis conducted by Douglas et al. (2009) indicates that psychosis was significantly associated with a 49%-68% increase in the odds of violence, but highlighted there was a substantial dispersion amongst effect sizes and challenges in the capturing of data due to methodological differences.

More recently however Jones, Van den Bree, Ferriter and Taylor (2010) suggest that individuals with schizophrenia have a higher rate of violence than those without mental illness.

This relationship has been explored with the use of community samples, with evidence suggesting that psychotic like experiences (PLE's) are present in community samples (Stefanis et al, 2002).

Nederlof, Muris and Hovens (2012) found in a relationship between psychotic like experiences and aggressive behaviour, with hallucinatory behaviour providing the strongest correlation.

Mojtabai (2006) also investigated the link between psychosis and aggression in a community sample and found that particular perceptual experiences and paranoid ideation were associated with aggressive behaviour. Kinoshita et al. (2011) also demonstrated this link, with most forms of PLE's being associated

with violent behaviour towards objects, and feelings of persecution and hearing voices were associated with violent behaviour towards other people.

Variables that could influence or account for this relationship have been investigated such as personality (Eysenck & Eysenck, 1970), dispositional anxiety and anger (Posner, Russell, & Peterson, 2005) and drug use (Allen, Moeller, Rhoades, & Cherek, 1997).

There appears to be a number of studies which support evidence that substance misuse accounts for a large proportion of violence in individuals with psychosis. Soyka (2000) for example found that substance use was a significant factor for violence. Fazel et al., (2009) also supports this, suggesting that substance use is a mediating factor in violence in schizophrenia. However, some research suggests that whilst substance use increases the risk of criminality in individuals with schizophrenia, it does not fully explain the increased risk of violent offending in individuals with schizophrenia (Short, Thomas, Mullen & Ogloff, 2012).

However there appears to be little research into the relationship of attachment style and violence in individuals with psychosis.

- Importance of the topic

Current recommended treatment for psychosis and schizophrenia according to NICE guidelines (NICE, 2009) include pharmacological and psychological treatment, in particular CBT. This appears to be focussed on addressing symptoms of these disorders, and in some ways does not address the causes and maintenance of these illnesses.

There is a need to explore why many individuals with psychosis or schizophrenia are not violent and are able to manage their illness within a community context. Understanding this risk will lead to more effective assessment of risk in individuals with psychosis, and more effective treatment recommendations which may support long term positive outcomes. Understanding risk through assessment is a valuable part of the psychologist's role. Assessing aetiology of a behaviour and its relationship with illness will allow clinicians to better understand current and future behaviour.

Understanding aetiology of behaviour and illness is particularly relevant to understanding attachment and psychosis alone, as research suggests (Gumley et al 2013) that the greater the attachment insecurity the poorer the engagement with services, more interpersonal problems, and more avoidant coping strategies.

- Research questions and hypotheses

Questions relating to Psychotic – like experiences, aggression and attachment

- Does the presence of insecure attachment and psychotic like experiences make it more likely that an individual will rate higher on scales of anger and aggression when compared to the presence of secure attachment and psychotic like experiences?
    - H_0 There is no relationship between attachment, presence of psychotic like experiences and subsequent scores of aggression
    - H_2 There is a relationship between attachment, presence of psychotic like experiences and subsequent scores of aggression
- Does this relationship change depending on either the type of attachment, type of psychotic like experiences or type of aggression?
    - H_0 There will be no change in the relationship depending on either type of attachment, type of psychotic like experiences or type of aggression
    - H_2 There will be a change in the relationship depending on either type of attachment, type of psychotic like experiences or type of aggression

- Proposed methodology

Sample;
This study will utilise a community sample. The sample will initially be selected using a 'convenience sampling approach'- a non-probability sampling technique where subjects will be selected due to their proximity to the researcher. This sample will be approached through the use of social media (sites such as facebook, instagram and linked in) and directly through email. Please refer to the appendix B for the template message which will be sent to the potential sample.

Exclusion criteria- those under the age of 18 will not be considered for analysis and this will be confirmed by asking participant age before completing the survey

Inclusion criteria- any individual over the age of 18 will be included in the study, providing they have given consent and fully completed the questionnaire.

A "snowball" chain sample will then be optimised, in that participants from the convenience sample will be encouraged to send out the questionnaire to their own contacts. Through this it is hoped that a better representation of the population should be generated.
It is recognised that there are limitations to convenience sampling, as some members of the community will be under represented and others over represented. Those without access to the internet will be excluded by this sampling technique. This potential for low external validity will be accounted for when interpreting and reporting results. Demographic data relating to participants will be captured to assess for external validity.

- Design and analytical techniques to be used

Linear Multiple Regression analysis will be used to answer the following research questions;

- Does the presence of insecure attachment and PLEs make it more likely that an individual will rate higher on scales of anger and aggression when compared to the presence of secure attachment and PLEs?
- Does this vary depending on the type of insecure attachment (pre-occupied, dismissing, fearful)?
- Does this vary depending on the type of PLE (positive, negative or depressive)?
- Does this vary depending on the type of aggression (Physical Aggression, Verbal Aggression, Anger and Hostility)?

Other analysis will be conducted to assess the relationship between variables. For these analyses a Pearson product-moment correlation coefficient will be used to assess correlation.

Power calculation

An a-priori power calculation was completed using g*power (Faul et al., 2009) to determine the necessary sample size to achieve 95% power for multiple regression including all primary variables (given that all measures yield continuous data).

G-power sample analysis: for a linear multiple regression; fixed model, R2 deviation from zero, for a moderate effect size (f2 0.15), power of 0.95, with 5 predictors requires 138 participants.

Procedure;
Individuals will be approached to complete an online questionnaire which will contain the following questions/ scales

- **Demographic questions (appendix F)**- questions regarding participant age, gender and level of education

- **Measures assessing substance use (appendix G)**

- **Community Assessment Psychic Experiences (CAPE) – 42; Stefanis et al. (2002) (Appendix C)**

    - The CAPE is a 42 itemed scale that has proved to be a stable, reliable and valid scale for self-reported symptoms of psychotic like

experiences (Mossaheb et al. 2012; Fonseca-Pedrero et al. 2012). Stefanis et al. (2002) showed the three dimensional scale is valid, and the dimensions of clinical psychosis are also distributed in the general population.
  - The instrument has 18 positive symptoms items, 14 negative symptom items and 8 depressive symptom items.

- **Psychosis Attachment Measure (PAM); Berry, Wearden, Barrowclough and Liversage (2006) (Appendix C)**

  - The PAM was validated and developed by Berry, Wearden, Barrowclough and Liversage (2006). It was developed for use both in clinical and non-clinical populations and was validated in non-clinical applications. Berry et al. (2008) analysis demonstrated good levels of internal reliability and good to acceptable test-retest reliability for the subscales.
  - Scores translate to two subscales, anxiety and avoidance.
  - The scale has 16 questions on a four point likert scale. Eight items assess attachment avoidance and eight items assess attachment anxiety

- **The Aggression Questionnaire- Buss & Perry (1992) (Appendix C)**
  - The questionnaire was developed and validated by Buss & Perry (1992). Their analysis demonstrates the scale shows internal consistency and stability over time. Gerevich, Bacskai & Czobor (2007) validated the scale for use in the general population. Harris, (1995, 1997) has shown the scale to have test-retest reliability and internal consistency, for both the subscales and the general questionnaire.
  - Their factor analysis of the scale provides four scales; Physical Aggression, Verbal Aggression, Anger and Hostility.
  - Their scale has 29 questions, answered on a five point likert scale

- <u>Ethical Considerations</u>

1) Asking about the frequency of use of illicit substance and the illegality of this. Due to the anonymous collection of the data it will not be possible to identify who is taking illegal substances and when. It will therefore not be possible to record this crime with any relevant agencies. Participants will be informed that data collection is anonymous. Participants will also be informed of support services available if they feel they would like to talk about their substance use.

Www.addaction.org.uk (UK)
Www.drinkaware.co.uk (UK)
Www.talktofrank.com (UK)
www.nami.org (USA)
www.centreforglobalmentalhealth.org (International links)

2) Participants will be asked questions relating to psychotic experiences. These questions were designed to be used in a community sample and should cause minimum distress to participants. Participants will be informed and debriefed about this at the end of the survey. They will also be informed that they are welcome to stop the survey at any time without giving a reason. Participants will be informed that their responses are anonymous and their data will be confidential and held securely. At the end of the survey participants will be given some ideas for support services.

Www.nhs.uk (UK)
Www.mind.org.uk (UK)
www.nami.org (USA)
www.centreforglobalmentalhealth.org (International links)

3) Participants will also be asked about anger and aggression, and also about how they relate to others. These questions should not cause any distress, however participants will be informed that they are able to withdraw from the study at any time, and that their data is protected and confidential and anonymous. At the end of the survey participants will receive a debrief and offered support services.

www.mind.org.uk (UK)
www.nhs.uk (UK)
www.nami.org (USA)
www.centreforglobalmentalhealth.org (International links)

4) Participants will not be told the aim of the questionnaire until the end of the questionnaire. It is hoped that this will reduce experimental bias and demand characteristics. Participants will have a debrief at the end of the survey and will still have the option to remove their data at this point

- Staffing issues / equipment / timetabling

I will receive regular supervision from two University professors

I will also complete a regular diary of work

A Gantt chart will be completed with expected deadlines and shared with supervisors.

References- Project Proposal

Allen, T. J., Moeller, F. G., Rhoades, H. M., & Cherek, D. R. (1998). Impulsivity and history of drug dependence. *Drug and alcohol dependence, 50*(2), 137-145.

Amador, X. F., & David, A. S. (1998). *Insight and psychosis.* Oxford University Press, USA.

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: a test of a four-category model. *Journal of personality and social psychology 61*(2), 226.

Berry, K., Barrowclough, C., & Wearden, A. (2008). Attachment theory: a framework for understanding symptoms and interpersonal relationships in psychosis. *Behaviour research and therapy, 46*(12), 1275-1282.

Berry, K., Wearden, A., Barrowclough, C., & Liversidge, T. (2006). Attachment styles, interpersonal relationships and psychotic phenomena in a non-clinical student sample. *Personality and Individual Differences, 41*(4), 707-718.

Bowlby, J. (1988). Attachment, communication, and the therapeutic process. *A secure base: Parent-child attachment and healthy human development.* 137-157.

Bowlby, J. (1982). Attachment and loss: Retrospective and prospect. *American Journal of Orthopsychiatry,* 52 (4), 664-678.

Bowlby, J. (1973). Attachment and Loss. Vol 2*: Separation: Anxiety and Anger.* New York: Basic Books.

Bowlby, J. (1969). Attachment: Attachment and loss. Vol 1. *London: Hogarth.*

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. *Attachment theory and close relationships,* 46-76.

Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of personality and social psychology 63*(3), 452.

Crowell, F., Fraley, C., & Shaver (1999). Measurement of individual differences in adolescent and adult attachment. *Cassidy Shaver (Eds), Handbook of Attachment:* 434-465.

Douglas, K. S., Guy, L. S., & Hart, S. D. (2009). Psychosis as a risk factor for violence to others: a meta-analysis. *Psychological bulletin, 135*(5), 679.

Eysenck, S. B., & Eysenck, H. J. (1970). Crime and personality: an empirical study of the three-factor theory. *The British Journal of Criminology,* 225-239.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41, 1149-1160.

Fazel, S., Langstrom, N., Hjeru, A., Grann, M., & Lichtenstein, P. (2009). Schizophrenia, substance abuse, and violent crime. *Jama, 301*(19), 2016-2023.

Freeman, D., Garety, P. A., Bebbington, P. E., Smith, B., Rollinson, R., Fowler, D., ... et al. (2005). Psychological investigation of the structure of paranoia in a non-clinical sample. *British Journal of Psychiatry, 186*, 427-435.

Fonseca Pedrero, E., Paino Pineiro, M. D. L. M., Lemos Giraldez, S., & Muiz Fernandez, J. (2012). Validation of the Community Assessment Psychic Experiences-42 (CAPE-42) in Spanish college students and patients with psychosis. *Actas espanolas de psiquiatria.*

Garety, P. A., Kuipers, E., Fowler, D., Freeman, D., & Bebbington, P. E. (2001). A cognitive model of the positive symptoms of psychosis. *Psychological medicine, 31*(02), 189-195.

Gerevich, J., Bacskai, E., & Czobor, P, (2007). The generalizability of the Buss-Perry Aggression Questionnaire. *International Journal of Methods in Psychiatric Research, 16*(3), 124-136.

Granville-Grossman, K. L. (1966). Early bereavement and schizophrenia. *The British Journal of Psychiatry 112*(491), 1027-1034.

Gumley, A. I., Taylor, H. E. F., Schwanner, M., & MacBeth, A. (2014). A systematic review of attachment and psychosis: measurement, construct validity and outcomes. *Acta Psychiatrica Scandinavica, 129*(4), 257-274.

Harris, J. A. (1995). Confirmatory factor analysis of the Aggression Questionnaire. *Behaviour Research and Therapy, 33*(8), 991-993.

Jones, R. M., Van den Bree, M., Ferriter, M., & Taylor, P. J. (2010). Childhood risk factors for offending before first psychiatric admission for people with schizophrenia: a case-control study of high security hospital admissions. *Behavioural sciences & the law, 28*(3), 351-365.

Kinoshita, Y., Shimodera, S., Nishida, A., Kinoshita, K., Watanabe, N., Oshima, N., ... & Okazaki, Y. (2011). Psychotic-like experiences are

associated with violent behaviour in adolescents. *Schizophrenia research, 126*(1), 245-251.

Kobak, R. R., Sceery, A. (1988) Attachment in late adolescence: Working models, affect regulation and representations of self and others. *Child Development, 59,* 135-146.

Lincoln, T. M., Lullmann, E., & Rief, W. (2007). Correlates and long-term consequences of poor insight in patients with schizophrenia. A systematic review. *Schizophrenia bulletin, 33*(6), 1324-1342.

Mallinckrodt, B. (2000). Attachment, social competencies, social support, and interpersonal process in psychotherapy. *Psychotherapy research, 10*(3), 239-266.

Mickelson, K. D., Kessler, R. C., & Shaver, P. R. (1997). Adult attachment in a nationally representative sample. *Journal of personality and social psychology, 73*(5), 1092.

Mikulincer, M., & Shaver, P. R. (2007). Boosting attachment security to promote mental health, prosocial values, and inter-group tolerance. *Psychological Inquiry, 18*(3), 139-156.

Mojtabai, R. (2006). Psychotic-like experiences and interpersonal violence in the general population. *Social Psychiatry and Psychiatric Epidemiology, 41*(3), 183-190.

Morgan, C., Kirkbride, J., Leff, J., Craig, T., Hutchinson, G., McJenzie, K. W, Morgan, K., Dazzan, P., Doody, G. A., Jones, P., & Murray, R. (2007). Parental separation, loss and psychosis in different ethnic groups: a case-control study. *Psychological medicine, 37*(04), 495-503.

Mossaheb, N., Becker, J., Schaefer, M. R., Klier, C. M., Schloegelhofer, M., Papageorgiou, K., & Amminger, G. P. (2012). The community assessment of psychic experience (CAPE) questionnaire as a screening-instrument in the detection of individuals at ultra-high risk for psychosis. *Schizophrenia research, 141*(2), 210-214.

Nederlof, A. F., Muris, P., & Hovens, J. E. (2012). Psychotic-like experiences and aggressive behaviour in a non-clinical sample. *Personality and Individual Differences, 53*(1), 33-37.

NICE (2009). *Psychosis and schizophrenia: management.* Retrieved from http://www.nice.org,uk/guidance/cg82

Penn, D. L., Corrigan, P. W., Bentall, R. P., Racenstein, J., 7 Newman, L. (1997). Social cognition in schizophrenia. *Psychological bulletin, 121*(1), 114.

Platts, H., Tyson, M., & Mason, O. (2002). Adult attachment style and core beliefs: are they linked? *Clinical Psychology & Psychotherapy, 9*(5), 332-348.

Posner, J., Russell, J. A., 7 Peterson, B, S. (2005). The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology. *Development and psychopathology, 17*(03), 715-734.

Ratip, D. E. (2013). *The role of attachment in violent offending and violence in institutions* Doctoral dissertation, University of Birmingham).

Read, J., Os, J. V., Morrison, A. P., & Ross, C. A. (2005). Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatrica Scandinavica, 112*(5), 330-350.

Short, T., Thomas, S., Mullen, P., & Ogloff, J. R. (2013). Comparing violence in schizophrenia patients with and without comorbid substance-use disorders to community controls. *Acta Psychiatrica Scandinavica, 128*(4), 306-313.

Soyka, M. (2000). Substance misuse, psychiatric disorder and violent and disturbed behaviour. *The British Journal of Psychiatry, 176*(4), 345-350.

Stefanis, N. C., Hanssen, M., Smirnis, N. K., Avramopoulos, D, A., Evdokimidis, I. K., Stafanis, C. N., ... & Van Os, J. (2002). Evidence that three dimensions of psychosis have a distributions in the general population. *Psychological medicine, 32*(02), 347-358.

Warner, R., & Atkinson, M. (1988). The relationship between schizophrenic patients' perceptions of their parents and the course of their illness. *The British Journal of Psychiatry, 153*(3), 344-353.

APPENDIX A (FOR PROJECT PROPOSAL): ATTACHMENT STYLE SUMMARIES

TO BE PRESENTED AT THE END OF THE QUESTIONNAIRE

Title of Study: Anger/Aggression, Psychotic Phenomena and the interaction with attachment style- an investigation in a non-clinical sample

Name of Researcher: Katherine Whale, Post Graduate Research Student, School of Medicine, University of Nottingham.

Secure attachment (low scores on anxiety and avoidance scales)
People with a secure attachment style are likely to feel secure in their relationships and they feel connected to these people. They are happy to let the individuals who they are close with to be independent and let them move freely. They are able to seek and accept comfort and support from others. Secure individuals generally experience their relationships as happy, friendly and trusting.

Avoidant attachment style
People who have an avoidant attachment style generally are more fearful of relationships. They are less likely to believe in "head over heels" love and tend to believe that it would be rare to find just one person to fall in love with. They are more likely to experience more emotional highs and lows in their relationships, and at times may be jealous in their romantic relationships.

Anxious attachment style
People who are more anxious in their attachment style are more likely to need a stronger reciprocation from others and feel a need for a union. Having relationships is very important for individuals who are anxious in their attachment style and love can sometimes feel like more of an obsession. people with an anxious attachment style believe that it is easy to fall in love, and may be more likely to feel that they are 'falling' in love, but when reflecting back believe they have not experienced true love.

Based on a paper by Cindy & Philip (1987); Romantic love conceptualised as an attachment process.

APPENDIX B (FOR PROJECT PROPOSAL): SAMPLE PARAGRAPHS FOR APPROACHING SAMPLE

Title of Study: Anger/Aggression, Psychotic Phenomena and the interaction with attachment style- an investigation in a non-clinical sample

Name of Researcher: Katherine Whale, Post Graduate Research Student, School of Medicine, University of Nottingham.

Sample Paragraph to be used on social media when approaching sample

Hi All,

Please click on this link for a questionnaire where you can find out what your attachment style is. Attachment style will show you how you relate to others and what this means for your relationships. This is part of a research project which I have developed as part of my doctorate and I would be very grateful for your responses!

Sample paragraph for approaching sample through direct contact such as email

Hi _____

Please could you click on the link and help me to collect information for my doctorate research. I would be really grateful for your help in getting a large amount of people so that my results are useful and accurate.

If you are interested the study looks at attachment style, which tells you about how you relate to other people in relationships, and at the end of the questionnaire you will be able to see your results, and an explanation of what this means!

I am interesting in getting as many different people's views as possible, so I would really appreciate it if you could send this questionnaire on to at least 5 people who you think would complete this questionnaire. And then ask them to pass it on themselves. The more people I can get, the better the research will be.

Thank you for your help,

Let me know if you have any questions!

Kay

APPENDIX C (FOR PROJECT PROPOSAL): QUESTIONS FOR ONLINE QUESTIONNAIRE

Title of Study: Anger/Aggression, Psychotic Phenomena and the interaction with attachment style- an investigation in a non-clinical sample

Name of Researcher: Katherine Whale, Post Graduate Research Student, School of Medicine, University of Nottingham.

Part 1: Questions about how you relate to others (P.A.M., Berry et al. (2006)

We all differ in how we relate to other people. This questionnaire lists different thoughts' feelings and ways of behaving in relationships with others. Thinking generally about how you relate to other key people in your life, please use a tick to show how much each statement is like you. Key people could include family members, friends, partner or colleagues.

Scale: Not at all (0), A little (1), Quite a bit (2), Very much (3)

1. I prefer not to let other people know my 'true' thoughts and feelings
2. I find it easy to depend on other people for support with problems or difficult situations
3. I tend to get upset, anxious or angry if other people are not there when I need them
4. I usually discuss my problems and concerns with other people
5. I worry that key people in my life won't be around in the future
6. I ask other people to reassure me that they care about me
7. If other people disapprove of something I do, I get very upset
8. I find it difficult to accept help from other people when I have problems or difficulties
9. It helps to turn to other people when I'm stressed
10. I worry that if other people get to know me better, they won't like me

11. When I'm feeling stressed, I prefer being on my own to being in the company of other people
12. I worry a lot about my relationships with other people
13. I try to cope with stressful situations on my own
14. I worry that if I displease other people, they won't want to know me anymore
15. I worry about having to cope with problems and difficult situations on my own
16. I feel uncomfortable when other people want to get to know me better

Part 2- Questions about your experiences (C.A.P.E assessment , Stefanis et al., 2002)

Part a) of each question asks participants to tick the frequency ("never", "sometimes", "often", "nearly always") of which they experience each statement.

Part b) of each question is only relevant to those who respond with either "sometimes", "often" or "nearly always". Individuals who respond to part a) of the question with "never" are prompted to go to the next question.

Part b) assesses how distressed the individual was by this experience by asking individuals to tick the most relevant answer to their experiences ("not distressed", "a bit distressed", "quite distressed" or "very distressed"

See below for sample of the questions as it will appear in the online questionnaire;

1. Do you ever feel sad? (Please tick)

Never Sometimes Often Nearly Always

If you ticked "never" please go to question 2)

If you ticked "sometimes", "often", "nearly always" please indicate how distressed you are by this experience: (please tick)

Not distressed A bit distressed Quite distressed Very Distressed

---

The statements are as follows;

1. Do you ever feel sad?
2. Do you ever feel as if people seem to drop hints about you or say things with a double meaning?
3. Do you ever feel that you are not a very animated person?
4. Do you ever feel that you are not much of a talker when you are conversing with other people? (Please tick)
5. Do you ever feel as if things in magazines or on TV were written especially for you?
6. Do you ever feel as if some people are not what they seem to be?
7. Do you ever feel as if you are being persecuted in some way?
8. Do you ever feel that you experience few or no emotions at important events?
9. Do you ever feel pessimistic about everything?
10. Do you ever feel as if there is a conspiracy against you?
11. Do you ever feel as if you are destined to be someone very important?
12. Do you ever feel as if there is no future for you?
13. Do you ever feel that you are a very special or unusual person?
14. Do you ever feel as if you do not want to live anymore?
15. Do you ever think that people can communicate telepathically?
16. Do you ever feel that you have no interest to be with other people?
17. Do you ever feel as if electrical devices such as computers can influence the way you think?
18. Do you ever feel that you are lacking in motivation to do things?
19. Do you ever cry about nothing?
20. Do you believe in the power of witchcraft, voodoo or the occult?
21. Do you ever feel that you are lacking in energy?
22. Do you ever feel that people look at you oddly because of your appearance?
23. Do you ever feel that your mind is empty?
24. Do you ever feel as if the thoughts in your head are being taken away from you?
25. Do you ever feel that you are spending all your days doing nothing?
26. Do you ever feel as if the thoughts in your head are not your own?
27. Do you ever feel that your feelings are lacking in intensity?
28. Have your thoughts ever been so vivid that you were worried other people would hear them?
29. Do you ever feel that you are lacking in spontaneity?
30. Do you ever hear your own thoughts being echoed back to you?
31. Do you ever feel as if you are under the control of some force or power other than yourself?
32. Do you ever feel that your emotions are blunted?
33. Do you ever hear voices when you are alone?
34. Do you ever hear voices talking to each other when you are alone?

35. Do you ever feel that you are neglecting your appearance or personal hygiene?
36. Do you ever feel that you can never get things done?
37. Do you ever feel that you have only few hobbies or interests?
38. Do you ever feel guilty?
39. Do you ever feel like a failure?
40. Do you ever feel tense?
41. Do you ever feel as if a double has taken the place of a family member, friend or acquaintance?
42. Do you ever see objects, people or animals that other people cannot see?

Part 3- Questions about your feelings – (The Aggression Questionnaire, Buss & Perry, 1992)

The following questions are statements, for each one please indicate how characteristic the description is of you from the scale of 1 – extremely uncharacteristic of me (if you think the statement does not describe you at all) to 5 – extremely characteristic of me (if you think the statement describes you very well).

Scale

1: Extremely uncharacteristic of me

2. Somewhat uncharacteristic of me
3. Neither uncharacteristic or non characteristic of me
4. Somewhat characteristic of me
5. Extremely characteristic of me

Statements

1) Once in a while I can't control the urge to strike another person
2) Given enough provocation, I may hit another person.
3) If somebody hits me, I hit back.
4) I get into fights a little more than the average person.
5) If I have to resort to violence to protect my rights, I will.
6) There are people who pushed me so far that we came to blows.
7) I can think of no good reason for ever hitting a person.
8) I have threatened people I know.
9) I have become so mad that I have broken things.
10) I tell my friends openly when I disagree with them.
11) I often find myself disagreeing with people.
12) When people annoy me, I may tell them what I think of them.
13) I can't help getting into arguments when people disagree with me.

14) My friends say that I'm somewhat argumentative.
15) I flare up quickly but get over it quickly.
16) When frustrated, I let my irritation show.
17) I sometimes feel like a powder keg ready to explode.
18) I am an even-tempered person.
19) Some of my friends think I'm a hothead.
20) Sometimes I fly off the handle for no good reason.
21) I have trouble controlling my temper.
22) I am sometimes eaten up with jealousy.
23) At times I feel I have gotten a raw deal out of life.
24) Other people always seem to get the breaks.
25) I wonder why sometimes I feel so bitter about things.
26) I know that "friends" talk about me behind my back.
27) I am suspicious of overly friendly strangers.
28) I sometimes feel that people are laughing at me behind me back.
29) When people are especially nice, I wonder what they want.

APPENDIX D (FOR PROJECT PROPOSAL): INFORMATION PAGE FOR AN ONLINE SURVEY/QUESTIONNAIRE

Title of Study: Anger/Aggression, Psychotic Phenomena and the interaction with attachment style- an investigation in a non-clinical sample

Name of Researcher: Katherine Whale, Post Graduate Research Student, School of Medicine, University of Nottingham.

Thank you for taking the time to complete this research study. This study is being done by Katherine Whale (student in Doctorate of Forensic Psychology) from the University of Nottingham. This research is being supervised by Dr Kathleen Green (Assistant Professor in Forensic Psychology) and Professor Kevin Browne (Professor in Forensic Psychology).

The information we get from this study will contribute to MSc level research, and may be submitted to a peer review journal for publication.

The purpose of this research study is to look at the relationship between your recent experiences, feelings and how you relate to other people.

The study consists of 87 questions, and should take about 45 minutes to complete. Your participation in this study is entirely voluntary and you can withdraw at any time by clicking the browser exit button. The data will only be uploaded on completion of the questionnaire by clicking the SUBMIT button. You are free to omit any question.

We believe there are no known risks associated with this research study and the study has been reviewed and given a favourable opinion by the University of Nottingham's ethics committee. If this research does give you any concerns there are links for support at the end of the study.

We will do everything possible to ensure your answers in this study will remain anonymous. As with any online related activity the risk of breach is always possible. We will minimise the risk by ensuring that your results are recorded anonymously and you own results will be collated alongside other participants and your results will not be analysed separately at any point. Your data will be stored anonymously on a password protected computer for a period of seven years.

Data will be reported anonymously, with any identifying information removed.

If you have any questions about this project, you may contact the Lead Researcher Katherine Whale (msxkw4@nottingham.ac.uk) or if you have any concerns about any aspect of this study please contact the Research

Supervisors: Dr Kathleen Green (mszkg@exmail.nottingham.ac.uk) or Professor Kevin Browne (lwzkdb@exmail.nottingham.ac.uk).

Please answer all the questions as honestly as possible to achieve the most accurate results at the end of the questionnaire. Please remember that your answers will not be linked to you.

I have read and understood the above information and consent form, I confirm that I am 18 years old or older and by clicking the NEXT button to begin the online questionnaire, I indicate my willingness to voluntarily take part in the study.

NEXT – I consent to take part EXIT - I do not give consent

Thank you for participating!

APPENDIX E (FOR PROJECT PROPOSAL): CONSENT FORM

Title of Study: Anger/Aggression, Psychotic Phenomena and the interaction with attachment style- an investigation in a non-clinical sample

Name of Researcher: Katherine Whale, Post Graduate Research Student, School of Medicine, University of Nottingham.

In order to complete the questionnaire please respond to the following;

1) I voluntarily agree to take part in this study ☐

2) I can confirm that I have been given an explanation by the researcher and that I have read and understood the information given to me ☐

3) I give permission for the researcher to use my results but not to use my name or any identifying information ☐

4) I understand that my information will be kept on a secure database anonymously. Data will be kept for 7 years after the results of the study have been published ☐

5) I understand that I can ask for further information about the nature of this study at any time ☐

6) I understand that I can stop completing the questionnaire at any point, but questions that I have completed will be stored and used for analysis. ☐

7) I confirm that I am aged 18 or over ☐

Contact details

Katherine Whale: msxkw4@nottingham.ac.uk

Dr Kathleen Green: mszkg@exmail.nottingham.ac.uk

Professor Kevin Browne: lwzkdb@exmail.nottingham.ac.uk

APPENDIX F (FOR PROJECT PROPOSAL): DEMOGRAPHIC QUESTIONS

Title of Study: Anger/Aggression, Psychotic Phenomena and the interaction with attachment style- an investigation in a non-clinical sample

Name of Researcher: Katherine Whale, Post Graduate Research Student, School of Medicine, University of Nottingham.

Please select your gender

Male Female Prefer not to say

Please enter your age in years

Please select your highest level of qualification

GSCE's/ O Levels
AS/ A Levels
Undergraduate Degree
Post graduate degree i.e. masters
Doctorate
PhD

Please select your ethnicity

A. White
    a. British
    b. Irish
    c. Any other white background
B. Mixed
    a. White and Black Caribbean
    b. White and Black African
    c. White and Asian
    d. Any other mixed background
C. Asian or Asian British
    a. Indian
    b. Pakistani
    c. Bangladeshi
    d. Any other Asian Background
D. Black or Black British
    a. Caribbean
    b. African
    c. Any other Black Background
E. Chinese or other ethnic group
    a. Chinese
    b. Any other

F. Not Stated
G. I do not wish to say

Please enter your nationality

APPENDIX G (FOR PROJECT PROPOSAL): SUBSTANCE USE QUESTIONS

Title of Study: Anger/Aggression, Psychotic Phenomena and the interaction with attachment style- an investigation in a non-clinical sample

Name of Researcher: Katherine Whale, Post Graduate Research Student, School of Medicine, University of Nottingham.

Thinking generally how often do you drink one or more alcoholic drinks each week?
Never
Once
Twice
3-4 times
5-6 times
Every day

Thinking generally how often do you drink three or more alcoholic drinks on one day each week?
Never
Once
Twice
3-4 times
5-6 times
Every day

Thinking generally how often do you use cannabis each week?
Never
Once
Twice
3-4 times
5-6 times
Every day

Thinking generally how often do you use other drugs (including legal highs) each week?
Never
Once
Twice
3-4 times
5-6 times
Every day

APPENDIX H (FOR PROJECT PROPOSAL): DEBRIEF FORM

Title of Study: Anger/Aggression, Psychotic Phenomena and the interaction with attachment style- an investigation in a non-clinical sample

Name of Researcher: Katherine Whale, Post Graduate Research Student, School of Medicine, University of Nottingham.

Thank you for completing the questionnaire. Your summary of results, if you wish to see them, will be available for you to see on the next screen.

Your results have been recorded anonymously.

The purpose of this research was to look into the types of attachment individuals have, and whether this impacts on their experience of anger and/or whether it impacts on their experiences of psychotic like events.

You were asked about your experience of what are known as 'psychotic like events' such as having unusual beliefs, or experiences. The majority of the population have experienced similar things, and experiencing them does not necessarily indicate the presence of illness.

These experiences usually have little effect on our lives and future experiences, however if you are concerned by some of the experiences you have had there are useful contacts where you could find out more and get advice.

Www.nhs.uk (UK)
Www.mind.org.uk (UK)

www.nami.org (USA)

www.centreforglobalmentalhealth.org (International links)

You were also asked about your anger and how you cope with this. Each individual manages their emotions in very different ways, and different situations can lead us to react differently. A lot of people will have experience of wishing they managed their anger differently. However if you are concerned that you manage your anger and other emotions in a difficult way, then there are helpful links where you can get more information and advice.

www.mind.org.uk (UK)

www.nhs.uk (UK)

www.nami.org (USA)

www.centreforglobalmentalhealth.org (International links)

You were also asked about how you manage in your relationships with others. These questions look at the type of attachment style. Attachment style is developed during our childhood and is linked to our experiences. The summary of your results can be found on the following page. If you are worried about how you relate to others, or have more questions about attachment styles, here are some useful links.

www.mind.org.uk (UK)

www.nhs.uk (UK)

www.nami.org (USA)

www.centreforglobalmentalhealth.org (International links)

You were asked about your substance use as this can impact on the likelihood of experiencing unusual events, as well as impacting how individuals manage their anger. This information has been recorded anonymously and cannot be traced to you.

Www.addaction.org.uk (UK)
Www.drinkaware.co.uk (UK)
Www.talktofrank.com (UK)

www.nami.org (USA)

www.centreforglobalmentalhealth.org (International links)

Thank you again for taking part in this research, your time is greatly appreciated.

Katherine Whale

The University of Nottingham

Faculty of Medicine and Health Sciences

Research Ethics Committee
School of Medicine Education Centre
B Floor, Medical School
Queen's Medical Centre Campus
Nottingham University Hospitals
Nottingham
NG7 2UH

Direct line/e-mail
+44 (0) 115 8232561
Louise.Sabir@nottingham.ac.uk

17th March 2016

Katherine Whale

Dear Katherine

FMHS Ethics Reference No: R16022016 SoM **– please always quote**
Study Title: Anger/Agression, Psychotic Phenomena and the interaction with attachment style-an investigation in a non-clinical sample.
Chief Investigator/Supervisor: Professor Kevin Browne, Head of Institute and Chair of Forensic Psychology and Child Health, Director of Professional Doctorate Program in Forensic Psychology and the Research Centre for Forensic and Child Psychology, School of Medicine.
Lead Investigators/student: Katherine Whale, Professional Doctorate Program in Forensic Psychology, Psychiatry and Applied Psychology, School of Medicine
Other Key Investigators: Dr Kathleen Green Assistant Professor in Forensic Psychology, Psychiatry and Applied Psychology, School of Medicine
Type of Study: Questionnaire PhD Student project
Proposed Start Date: 02/2016 **Proposed End Date:** 31st August 2016 6 mths
No of Subjects: 138 **Age:** +18years

Thank you for submitting the above application which was considered by the Committee on 16th February 2016 and the following documents were received:

Short Title: Aggression, Psychotic Phenomena and Attachment version 1.0 Date 25.01.2016:

- FMHS Research Ethics Committee application form
- Appendix A:Attachment Style Summaries
- Appendix B: Sample Paragraphs for approaching sample
- Appendix C: Questions for online questionnaire
- Appendix D: Information page for an online survey/questionnaire
- Appendix E: Consent Form
- Appendix F: Demographic Questions
- Appendix G: Substance use Questions
- Appendix H: Debrief Form
- Appendix I Full Research Proposal

These have been reviewed and are satisfactory and the study has been given a favourable opinion.

The University of Nottingham

A favourable opinion is given according to the following conditions:

1. You must follow the protocol agreed and inform the Committee of any changes using a notification of amendment form (please request a form).

2. You must notify the Chair of any serious or unexpected event.

3. This study is approved for the period of active recruitment requested. The Committee also provides a further 5 year approval for any necessary work to be performed on the study which may arise in the process of publication and peer review.

4. An End of Project Progress Report is completed and returned when the study has finished (Please request a form).

Yours sincerely

pp Lamagni

Professor Ravi Mahajan
Chair, Faculty of Medicine & Health Sciences Research Ethics Committee

Attachment Style, Psychotic Phenomena and the Relationship with Aggression: An Investigation in a Non-Clinical Sample

Katherine Whale, Kathleen Green, Kevin Browne.

The Centre for Forensic and Family Psychology, University of Nottingham, Yang Fujia Building, Jubilee Campus, Triumph Road, Nottingham NG7 2TU, United Kingdom

---

Abstract

Research has long suggested that there is a link between psychosis and aggression, but we continue to not fully understand that relationship. This paper aims to explore whether attachment, which is empirically linked to both psychosis and aggression, could be an important factor in understanding this relationship. Using a community sample, 213 participants participated in an online questionnaire and responded to measures of adult attachment, aggression and psychotic like events (PLE). Results suggest that there is a strong relationship between variables, and that attachment and PLE provide a statistically significant model for aggression. PLE are a stronger predictive factor than attachment, however a two factor model (attachment and PLE) provides a stronger predictive model compared to a single factor more (PLE alone) when looking at hostility and verbal aggression. There are differences in the relationship between symptoms of PLE, types of insecure attachment and types of aggression, hostility provides the strongest relationships with variables, and

verbal aggression the weakest. Results are discussed with a view for future research and applications to models of psychosis.

Keywords: Adult Attachment; Psychosis; Aggression; Interpersonal

1. Introduction

Psychosis and Attachment

Across research designs, several reviews have suggested that adverse events in childhood significantly increase the likelihood of an individual experiencing symptoms of psychosis in adulthood. In their literature review Read, van Os, Morrison and Ross (2005) found that of females with psychosis (both from inpatient and community samples) that 69% had been subject to either sexual or physical abuse, and 59% of men had also experienced abuse in their childhood. This research supports Granville-Grossman (1966), who found that individuals with psychosis are more likely to have experienced parental loss, and Morgan et al. (2007) who found that individuals with first episode psychosis were more likely to have been separated from their parents for at least a year during their childhood and more likely to have experienced maternal death, even when controlling for parental history of mental illness.

These adverse childhood events could be suggested to have had an adverse effect on attachment style. Bowlby's (1982) seminal work on attachment suggests that a child's early experiences influence their internal working models of how they view themselves and others throughout their lives. Models of

psychosis highlight that negative beliefs about the self and the world can create vulnerability and maintenance in psychosis (Penn, Corrigan, Bentall, Racenstein & Newman, 1997). It suggests that previous experiences of relationships and traumas contribute to cycles of negative beliefs, and psychotic symptoms (Garety, Kuipers, Fowler, Freeman & Bebbington, 2001). Current experiences of relationships and functioning on an interpersonal level have also been related with illness and recovery. Warner and Atkinson (1988), for example, found that patients who perceived their parents negatively and had less contact with them had more relapses and a more severe course of schizophrenia.

Adult models of attachment develop Bowlby's (1969, 1973 & 1988) theory of the internal working model, and view attachment based on constructs of "model of self" and "model of other", or ***anxiety*** in attachment, and ***avoidance*** in attachment (Brennan, Clark & Shaver, 1998; Crowell, Fraley & Shaver, 1999). These dimensions create four types of adult attachment: secure, pre-occupied, dismissing, and fearful (Bartholomew & Horowitz, 1991). This model was used in research conducted by Berry, Wearden, Barrowclough and Liversage (2006), who found significant relations between psychotic like events and insecure attachment, with positive symptoms being associated with anxious attachment and social anhedonia with avoidant attachment.. Their community work exploring adult attachment and psychosis draws on literature which supports the hypothesis that symptoms of psychosis are represented across a spectrum, rather than being a distinct illness not found in the wider community (Stefanis et al., 2002). This research supports evidence that psychosis can be understood from an attachment perspective, and this fundamental approach is the basis of this research.

Attachment and Aggression

Adult attachment has been used to explore individual differences in behaviour regarding offenders and aggressive behaviour. Ratip (2013) conducted a literature review of offenders and attachment style and found that insecure attachment was over-represented in a general offending population, with prevalence of insecure attachment ranging from 64-97%. In the review of literature they suggest that some research suggests no differences in attachment type across offenders, with other research suggesting this relationship is stronger in perpetrators of sexual offences. Ratip (2013) suggest that further work is needed to investigate the model of attachment and violent offending. Other research (Bartholomew & Horowitz, 1991; Kobak & Sceery, 1988; Mallinckrodt, 2000) suggests that each attachment style is related to different types of management of anger and aggression, for example dismissing attachment is linked with hostile behaviour, emotional detachment and interpersonal coldness. Pre-Occupied attachment is linked with intrusive behaviour, dominance and aggression and fearful attachment is linked with failures in assertive behaviour, inhibition and aggression.

Mikulincer and Shaver (2007) support the idea that aggression differs in relation to attachment style, with individuals with a dismissive attachment style being more likely to reactively express anger, as well as being more likely to be critical an devaluing of other's emotional needs and controlling through their anger. Individuals with pre-occupied attachment style were more likely to express irritation and anxiety and blame others, as well as finding it difficult to be soothed by others. Individuals with a fearful attachment style would have

extreme expressions of anger and be violent towards themselves and others. Ratip (2013) also found of those in a secure psychiatric hospital, those with a secure attachment style had a lower anger temperament score compared to those with insecure attachment styles.

Violence and Psychosis

The link between violence and psychosis is well researched, with a wealth of evidence suggesting a link between psychosis and aggression within clinical samples. A meta-analysis conducted by Douglas, Guy and Hart (2009) indicates that psychosis is significantly associated with a 49-68% increase in the odds of violence, but highlighted that there was a substantial dispersion amongst effect sizes and challenges in the capturing of data due to methodological differences. More recent research continues to support however that individuals with schizophrenia have a higher rate of violence than those without mental illness (Jones, Van den Bree, Ferriter & Taylor, 2010). This relationship has been explored with the use of community samples, with evidence suggesting that psychotic like experiences (PLE) are present in community samples (Stefanis et al., 2002). Nederflof, Muris and Hovens (2012) found a relationship between PLEs and aggressive behaviour, with hallucinatory behaviour providing the strongest correlation.

Mojitabai (2006) explored this relationship further and found that particular perceptual experiences and paranoid ideation were associated with aggressive behaviour. Kinoshita et al. (2011) also demonstrated this link, with most forms of PLEs being associated with violent behaviour towards objects, and feelings of

persecution and hearing voices were associated with violent behaviour towards other people.

Research exploring this link suggest that variables such as personality (Eysenck & Eysenck, 1970), dispositional anxiety and anger (Posner, Russell & Peterson, 2005) and drug use (Allen, Moeller, Rhoades, & Cherek, 1997) play an important role. A number of studies have investigated substance use as accounting for a large proportion of violence in individuals with psychosis (Soyka, 2000; Fazel, Langstrom, Hjeru, Grann & Lichtenstein, 2009). However, some research suggests that whilst substance use increases the risk of criminality in individuals with psychosis, it does not fully explain the increased risk of violent offending (Short, Thomas, Mullen & Ogloff, 2012).

Given the established links between attachment, violence and psychosis, the primary aim of this study is to investigate whether attachment style explains some of the variance in aggression associated with symptoms of psychosis (psychotic like experiences- PLE). The secondary aim is to establish whether this relationship changes depending on either the type of attachment, type of PLE or type of aggression.

This study seeks to explore the following hypotheses;

- There is a statistically significant association between scores on psychotic like experiences (PLE), and (a) Attachment and (b) Aggression
- Individuals with (a) insecure attachment and (b) psychotic like experiences will score higher on scales of anger and aggression

2. Method and Materials

2.1. *Participants and procedure*

An a-priori power calculation was completed using g*power (Faul et al., 2009) to determine sample size to achieve 95% power for fixed model, linear multiple regression with 5 variables which estimated 138 participants. In total 213 participants responded to either direct, social media or snowball sampling requests for participation through an online study. This sample was initially selected via a convenience sampling approach, a non-probability approach. The only exclusion criterion was for individuals under the age of 18. Participants were informed that they would be participating in a study exploring 'attachment, experiences and emotions'. The median age of the participants was 32.64 years (range 18- 64), 42 were male and 169 were female. 82.9% of the sample identified themselves as British, and the majority of participants were at Undergraduate level of education (1 PhD, 9 Doctorate, 47 postgraduate degree, 102 undergraduate degree, 34 A- Levels, 18 GSCEs). Participants were required to respond to the following measures:

2.2. *Measures*

2.2.1. *Measure of Psychosis- Community Assessment Psychic Experience (CAPE)-42; Stefanis et al. (2002)*

The CAPE-42 is a 42 item scale that has proved to be a stable, reliable and valid scale for self-reported symptoms of psychotic like experiences (Mossaheb et al. 2012; Pedrero, Pineiro,Giraldez & Fernandez, 2012). Stefanis et al. (2002) showed the three dimension scale is valid, and the dimensions of clinical psychosis are also distributed in the population. The instrument has 18 positive

symptom items (Pos.Psy), 14 negative symptom items (Neg.Psy) and 8 depressive symptom items (Dep.Psy). The scale has two separate symptom and distress scales, for the purpose of this research, only the symptom scale was utilised. Cronbach's alpha for internal consistency of all questions for this scale within this research was .925, demonstrating a high level of internal consistency.

2.2.2. *Measure of Adult Attachment- Psychosis Attachment Measure (PAM); Berry, Wearden, Barrowclough and Liversage (2006).*

The PAM was validated and developed by Berry et al. (2006). It was developed for use in both clinical and non-clinical populations and was validated in non-clinical populations. Berry et al. (2008) analysis demonstrated good levels of internal reliability and good to acceptable test-retest reliability subscales. Scores translate into two subscales, anxiety and avoidance. The scale has 16 items on a four point likert scale. Eight items assess attachment avoidance (Avo.Att) and eight items assess attachment anxiety (Anx.Att). Cronbach's alpha for internal consistency across all questions for this scale within this research was .814, demonstrating a high level of internal consistency.

2.2.3. *Measure of Aggression- The Aggression Questionnaire, Buss and Perry (1992)*

This questionnaire was developed and validated by Buss and Perry (1992). Their work found that the scale shows internal consistency and stability over time. Gerevich, Bacskai and Czobor (2007) and Harris (1995, 1997), showed the scale to have good test-retest reliability and internal consistency, for both subscales

and general questionnaire. The scale provides four scales, physical aggression (P.A), verbal aggression (V.A), anger (A) and hostility (H). The scale has 29 items, answered on a five point likert scale. Cronbach's alpha for internal consistency for all questions for this scale within this research was .915, demonstrating a high level of internal consistency.

2.2.4.*Measure of Substance Use*

Questions regarding the frequency of substance use (including cannabis, legal high and alcohol use). This included frequency of alcohol, cannabis and other illicit substances use each week, and how often an individual would drink more than three drinks on one occasion.

2.2.5.*Data Analysis*

In total 213 participants completed the questionnaire. Missing data were replaced by mean scores from each individual. Mean imputation was used to maintain the sample size, and power of statistical analysis. No data were excluded from analysis, as no individual missed more than 1 question per scale.

Data results were positively skewed but unimodal. A 1-sample K-test was conducted on each scale, all of which were significant at the *p.01* level, suggesting distribution was significantly different from normal. Correlational data was therefore analysed using non-parametric analysis. Data were reviewed for assumptions of linear multiple regression, and outliers via distance (more than 3std deviations from the norm) and influence were removed from analysis. All analysis was conducted using IDM SPSS Statistics 22.

The research was given a favourable opinion by the University of Nottingham's Faculty of Medicine & Health Sciences Research Ethics Committee.

3. Results

Descriptive statistics for all scales can be seen in Table 1.

Table 1. Descriptive Statistics for All Scales (N= 213)

Scale	Min	Max	Mean	Std. Dev
Total Attachment	4	41	20.11	7.69
Anxious Attachment	2	23	10.27	4.58
Avoidant Attachment	0	21	9.84	4.25
Total PLE	46	151	67.12	14.79
Positive Scale	20	72	26.81	6,31
Depressive Scale	9	32	15.46	4.33
Negative Scale	15	47	24.85	6.33
Total Aggression	29	110	56.64	16.69
Physical Aggression	9	35	15.64	5.36
Verbal Aggression	5	23	11.23	3.84
Anger	7	33	13.91	5.80
Hostility	8	36	15.85	6.55

Spearman's Correlation Coefficients

A Spearman's non parametric correlation was used to assess the bivariate relationships between variables. Correlations between Total scores can be seen in Table 2, and the full correlation table describing relationships between sub-domains can be found in Appendix A.

Table 2
Correlations between Total Attachment, Total PLE and Total Aggression Scales (N=213)

Scale	Total Attachment		Total PLE		Total Aggression	
	r.	*p.*	*r.*	*p.*	*r.*	*p.*
Total Attachment			.643	<.001	.346	<.001
Total PLE					.546	<.001
Total Aggression						

The analysis revealed a number of statistically significant relationships between a number of variables. Positive, statistically significant relationships were found between all total measure scores, suggesting that as total PLE scores increased there was an increase in total aggression scores; $r(211)= .546$, $p= <.001$, as total attachment scores (total attachment score refers to the total of anxious and avoidant attachment scores) increased there was an increase in aggression scores; $r(211)=.346$, $p=<.001$, and as total attachment scores increased, there was an increase in total PLE scores; $r(211)=.643$, $p=<.001$. Therefore, Hypothesis 1(a), 1(b) and 2(a), 2(b) were accepted.

Further analysis showed differing relationships between sub-domain variables. All PLE domains showed strong, positive, statistically significant at the $p=.001$ level of significance correlations with aggression scores. PLE domains (positive, depressive and negative) showed the strongest relationship with hostility scores ($r(211)=.441$, $p=<.001.$; $r(211)=.576$, $p=<.001.$; $r(211)=.504$, $p=<.001.$) respectively. Physical aggression was most strongly correlated with positive symptom domain; $r(211)=.319$, $p=<.001$.Verbal aggression was most strongly correlated with negative symptoms; $r(211)=.206$, $p=<.002$. Anger scores were most strongly correlated with depressive symptom scores;

r(211)=.429, *p*=<.001. Hostility scores were also most strongly correlated with depressive symptom scores; *r*(211)=.576, *p*=<.001.

Anxious and Avoidant attachment were both most strongly correlated with hostility, with positive, statistically significant relationships; *r*(211)=.486, *p*=<.001; *r*(211)=.417, *p*=<.001 respectively. *Physical aggression* was most strongly correlated with *avoidant attachment* scores, with a weak, positive relationship; *r*(211)=.184, *p*=.007. *Verbal Aggression* was not significantly related to either Avoidant or Anxious attachment. *Anger* and *Hostility Scores* were both positively, statistically significantly related to *Anxious Attachment* (*r*(211)=.265, *p*=<.001; *r*(211)=.486, *p*=<.001. respectively).

There were strong, positive, statistically significant relationships between all the sub-domains of PLE and Attachment. Positive symptoms were most strongly correlated with avoidant attachment (*r*(211)=.451, *p*=<.001), depressive symptoms were most strongly correlated with anxious attachment (*r*(211)=.554, *p*=<.001), and negative symptoms are most strongly correlated with avoidant attachment (*r*(211)=.480, *p*=<.001).

Multiple Linear Regression

Multiple Linear Regression was carried out to determine the effect of attachment (and sub-domains) and PLE's (and sub-domains) on Aggression (and sub-domains). Assumptions for multiple linear regression were met, and data was assessed for multi-collinearity and data removed if applicable. An initial multiple linear regression was carried out on total PLE scores and Total attachment scores, as a two factor model with total aggression score as the criterion variable. Results of which can be seen in table 2. Factors were entered into the model using the enter method.

Table 3
Two factor Regression model with Total Aggression Score as the Criterion variable (n=213)

	Unstandardised coefficients	Standardised Coefficients	T	Sig
Constant	7.718		1.553	.122
Total.PLE	.722	.573	7.579	.000
Total.Att	-.003	-.002	-.020	.984

Adjusted R2= 32.7 percent; F(2, 211)=46.864; p<.001

The adjusted R^2 model indicates that 32.7% of variance in aggression scores can be explained by the two predictor model. Analysis suggests that PLE score (beta=.573) was the most influential factor, which is the only significant factor in the model.

The model became slightly stronger when measures of legal high and cannabis use were included in the model, as seen in Table 3. However, cannabis and legal high use were not significant variables in the model, and cannabis use was the weakest predictor in the 4 factor model.

Table 4
Four factor Regression model with Total Aggression Score as the Criterion variable (N=213)

	Unstandardised coefficients	Standardised Coefficients	t	Sig
Constant	9.620		2.372	.019
Cannabis Weekly	.125	.007	.126	.900
Legal High Weekly	5.492	.070	1.259	.210
Total.Att	.109	.052	.737	.462
Total.PLE	.659	.604	8.595	.000

Adjusted R2= 41.2 percent; F(4,209)= 35.87; p=<.001

The two factor total PLE and Attachment model were also conducted on the separate Aggression domains to more fully understand the relationship.

This model was statistically significant for Physical aggression; F(2,209)=22.51, *p*=<.001. Adjusted R^2 indicates that 17.8% of variance could be explained by

the two predictor mode. Total PLE score was the only significant factor in the model (beta=.434).

The two factor model was also significant for Verbal Aggression; F(2,209)= 7.15, *p*=.001. Adjusted R^2 indicates that 6.4% of variance could be explained by the two factor model. PLE score remains the strongest predictor variable.

The two factor model of Total PLE and total Attachment score was also significant for anger scores; F(2,210)=39.11, *p*=<.001. Adjusted R^2 indicates that 27.2% of variance could be explained by this two factor model.

This two factor model provided the strongest model for hostility; F(2,210)=109.05, *p*=<.001. The R^2 model indicates that 50.8% of variance can be explained by this two factor model. Both attachment and PLE scores provide significant contributors to the model at the *p<.001* level of significance.

Analysis was then conducted to look at the individual sub-groups and their impact on aggression, results of which can be seen in table 3.

Table 5
Five factor Regression model with Total Aggression Score as the Criterion variable (N=213)

	Unstandardised coefficients	Standardised Coefficients	t	Sig
Constant	10.224		2.503	.013
Anx.Att	102	.029	.425	.671
Avo.Att	.079	.021	.302	.763
Pos.Psy	.568	.223	.3.070	.002
Dep.Psy	946	.253	2.996	.003
Neg.Psy	.575	.226	2.805	.006

Adjusted R2= 41.1 percent; F(5,208)=28.55; p<.001

This five factor model was statistically significant (F5,209)= 28.55, *p*=<.001. The analysis suggests that the positive symptom domain was the

most influential predictor, and avoidant attachment was the least significant predictor. All PLE subscales were significant at the *p=.01* level of significance. Adjusted R^2 indicates that this model could explain 41.1% of variance in total aggression scores.

The five factor regression model was also carried out on the aggression sub-domains. These results are summarised in Table 4, full tables can be found in Appendix B.

Table 6
Five factor Regression models with Physical Aggression, Verbal Aggression, Anger and Hostility Scores as the Criterion variables (N=213)

Criterion Variable	F Value	Sig.	R^2 Variance
P.Agg	F(5,209)= 9.25	.000	18.4%
V.Agg	F(5,210)= 2.94	.014	6.7%
Ang.	F(5,210)= 16.40	.000	28.5%
Hos.	F(5,210)= 44.71	.000	52.0%

The five factor model provides the strongest model for hostility, and the weakest model for verbal aggression. Across all models, PLE sub-domains provide the strongest variables within the models, and attachment the least.

Linear Regression models were also calculated to support the correlational analysis between variables. Some single models of aggression were more powerful than multiple models. Therefore, Hypothesis 3 was partially rejected. These results can be seen in Appendix D.

Interactional analysis was completed for total PLE and total Attachment scores and their interaction on total aggression scores and the aggression sub-domains. Scores were centred to account for collinearity. Full tables of results can be

found in Appendix E, results of total PLE and Attachment scores on total Aggression scores can be seen in Table 7.

Table 7. Multiple Linear Regression Interaction Analysis with Centrerd Scores. (N=213)

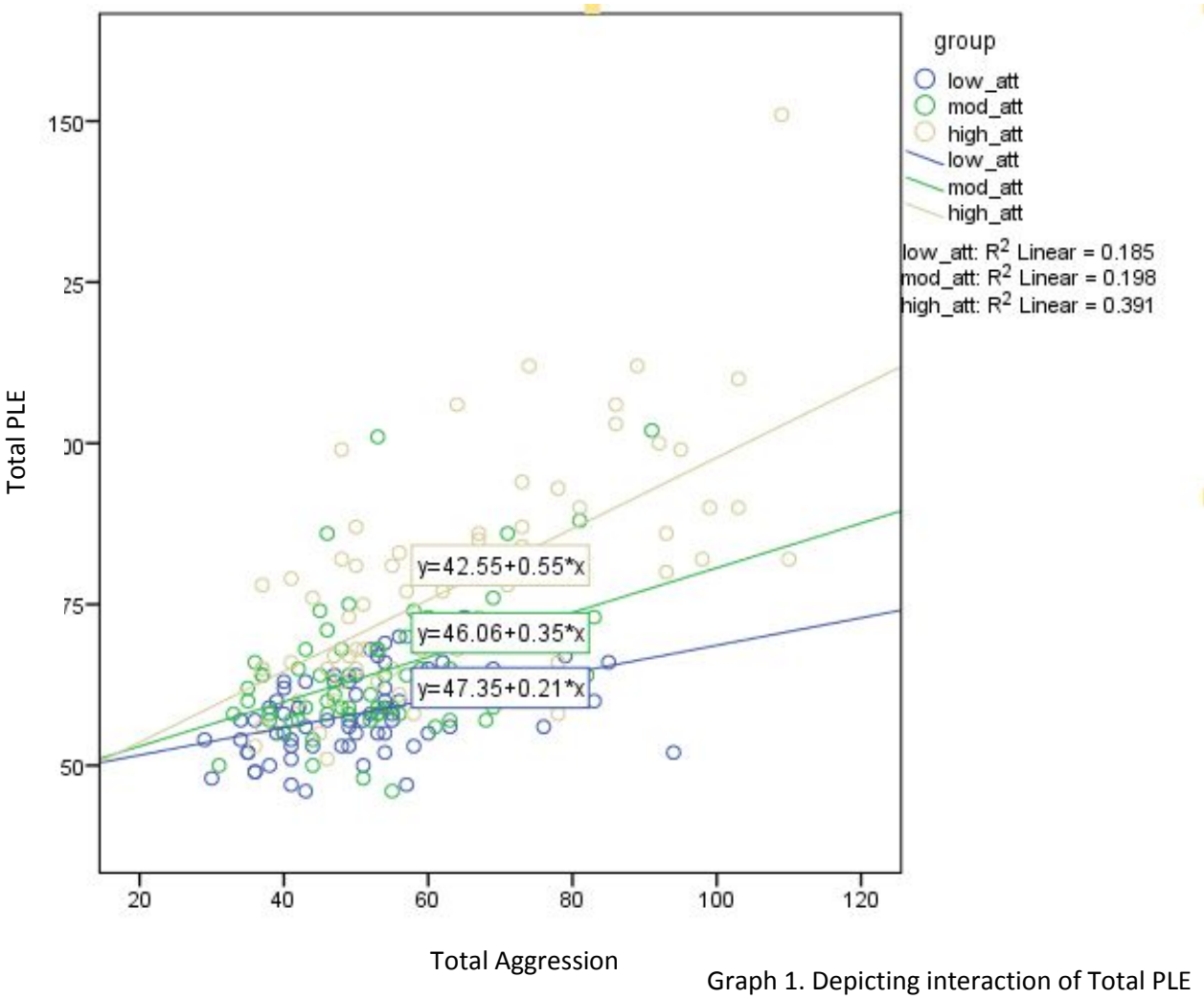
Model	Unstandardised Coefficients		Standardised Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	56.409	1.023		55.140	.000
Centred _ATT	.113	.156	.052	.724	.470
Centred _PLE	.634	.094	.562	6.708	.000
Centred_PLE*ATT	.003	.006	.033	.483	.630

Adjusted R^2= 37.2 percent; F (3,209)= 42.80; p<.001

The results show that adding the interaction term does not significantly improve the model of total aggression scores. This remains true of all sub-domains of aggression.

However, when using the Aiken and West (1991) moderation approach it can be seen that higher attachment scores (i.e. the more insecure the attachment) the stronger the relationship between PLE and aggression, and low attachment scores appear to weaken it. This can be seen in Graph 1. Further graphs for aggression sub-domains can be found in Appendix F.

Correlation between Total PLE and Total Aggression are 0.62 for individuals classified as having high attachment scores, 0.45 for individuals classified as having moderate attachment scores, and 0.43 for those classified as having low attachment scores.



Graph 1. Depicting interaction of Total PLE and Total Aggression scores when grouped by attachment.

4. Discussion

This study has found that, as predicted, there are strong and significant relationships between measures of attachment, PLE's and aggression.

Whilst the predominant interest of this paper was regarding the influence of attachment and PLE's on aggression, it is relevant to first mention that this research supports the link between Attachment and PLE, with strong, statistically significant relationships. This research highlights that attachment is a viable model for understanding psychosis (Penn et al, 1997; Mickleson et al, 1997). It

particularly supports research conducted by Berry et al. (2006), that there are significant relationships between Attachment and PLE's within community samples. However, Berry et al. (2006) reported that positive symptoms were related to anxious attachment and anhedonia most related to avoidant attachment, whereas this research found that positive symptoms were slightly more correlated with avoidant attachment, and depressive symptoms most related to anxious. Berry et al. (2006) used the same measure of attachment as this research, and therefore the discrepancy in the results may have occurred from differing measures of symptoms, or from the different sample group (Berry et al., 2006, used only students). Further research may be required to provide clarity on this discrepancy.

With regards to the influence of attachment on aggression, the correlational analysis suggested that as attachment scores increased there was an increase in aggression scores, and supports the previous work conducted in this field (Ratip, 2013; Bartholemew & Horowitz, 1991; Kobak & Screery, 1988; Mallinkrcrodt, 2000). When this was broken down the analysis suggested that this was only true for physical aggression, anger and hostility and not for verbal aggression. This lack of relationship with verbal aggression (in fact the data suggested a non-significant small, but negative relationship) may hypothetically be due to verbal aggression being more influenced by other factors, but this is beyond the scope of this research to comment on, and would warrant further exploration. Hostility showed the greatest relationship with the attachment variables, but was most strongly related to anxious attachment. Physical aggression is only significantly related to avoidant attachment, but this correlation was relatively weak.

Buss and Perry (1992) consider anger expression to fall into either cognitive, affective or instrumental. Verbal and physical aggression are both considered to be types of instrumental aggression and as such their similar relationship with other variables could be expected. It appears therefore that instrumental aggression has weaker relationships with attachment (and PLE's) than cognitive (hostility) or affective (anger) aggression. Further work would be beneficial to explore why instrumental aggression would be weaker in its relationship to attachment, as it contradicts previous work that has repeatedly demonstrated a link between physical aggression and psychosis (Ratip, 2003).

Total attachment scores (total of avoidant and anxious attachment scores, which research suggests is fearful attachment, Bartholomew & Horowitz, 1991) interestingly was a stronger predictor of aggression than either anxious or avoidant attachment problems alone, and that remains true of all sub-domains of aggression.

PLE scores had a stronger relationship with violence than attachment scores. Similarly to attachment, all PLE scores and symptoms showed the strongest relationship with hostility and least with physical and particularly verbal aggression, although this relationship remained significant. Each aggression domain was linked most significantly with different PLE symptoms; physical aggression with positive symptoms, verbal aggression with negative symptoms and anger and hostility with depressive symptoms.

These results support research that suggests a link between psychosis and aggression (Douglas et al, 2009; Jones et al, 2010). It particularly supports research within community samples, (Nederlof et al, 2012; Mojtabai, 2006; Kinoshita et al, 2011), although direct comparison is limited due to differing

methodology. However, overall these findings do suggest that symptoms experienced within psychosis may relate to different expressions of aggression, however, this methodology can only suggest relationship not causality, but it would warrant further exploration.

Multiple linear regression analysis suggests that attachment and PLE provide a statistically significant model for aggression, with PLE being the significant contributor to the criterion variable. This stronger role of PLE over attachment may be accounted for due to the higher correlation between PLE and aggression than attachment and aggression. It does however strengthen the models of verbal aggression and hostility, suggesting that attachment plays a more influential role in these dimensions of aggression.

The five factor model of aggression (Attachment domains and PLE domains) also provided a statistically significant model for aggression scores. This was a particularly strong model for hostility, accounting for over half of variance in scores. Hostility appears to be the key aspect of aggression within this research with relation to attachment and PLE. Future work could assess whether hostile aggression is seen more frequently in individuals with psychosis and attachment problems over other types of aggression, and work should be conducted in managing hostility using both a symptom and attachment viewpoint to underpin management strategy.

The interaction analysis suggests that attachment does not significantly interact with PLE to influence aggression. The Aiken and West (1991) analysis, however, suggests that PLEs have a stronger influence on aggression if attachment scores are higher. This is a valuable avenue to explore further in future work as this hypothetically suggests that the presence of PLE's moderates

the relationship between attachment and aggression, so those with an insecure attachment style and experiencing PLE's are at higher risk of aggression. This has implications for how we assess, formulate and address risk within these client groups.

When drawing conclusions from the data it is necessary to recognise the limitations of the research and apply appropriate caution when interpreting the results. An important limitation of this study is the sample group, there is an inherent bias when using a convenience sample, as the sample is not necessarily reflective of the wider population. Also all approached participants self-selected themselves for the study, and evidence has previously suggested that those individuals who self-select are more likely to be experiencing psychological difficulties (Freeman *et al.* 2005).

There is also a reliance on self-reporting within this study, leaving the results subject to responder bias and social desirability. Individuals may also not be able to reflect accurately on their experiences and feelings, and those who are more unwell, particularly with symptoms of psychosis may have less insight into their difficulties (Amador & David, 2004; Lincoln, Lullman & Rief, 2007).

This data has also been collected via a cross-sectional design, and therefore can only account for a specific period of time, and therefore conclusions about inference and causality cannot be drawn. This is a key avenue for future work building on this research, to develop methodology that can start to explore the direction of influence of the variables.

Further exploration with the data could also assess more fully the impact of substance abuse on the sub-variable relationships, which is again beyond the remit of this current work. Whilst substance use appeared to be a contributing

factor to a model alongside attachment and PLE's for total aggression scores, its contribution was the smallest amongst the variables. Its influence may differ amongst types of aggression, attachment and symptoms. Its relative underrepresentation as a contributing factor in the multiple-regression analysis may relate to the small number of the sample who responded to using substances, and therefore this should be reviewed further in light of previous research consistently suggesting that substance use has a strong influence on aggression for individuals with psychosis (Soyka, 2000; Fazel et al. 2009). It does however support the research by Short et al. (2013) which suggested that substance use does not fully explain the increased risk in offending, and this research suggests that other factors influence the risk more greatly.

This research provides strong evidence in support of the relationship between attachment, PLE and aggression. The large participant pool meets requirements for power, and the high levels of statistical significance provides strong evidence. This research contributes to the idea that attachment is a contributing factor to aggression seen in PLE, and although it is beyond the ability to apply this with clinical populations, it suggests that this is a viable avenue of future research. It tentatively supports the idea that addressing risk with individuals with PLE should go beyond symptom focussed work, and work on underlying attachment problems in addition. This work supports that risk assessments should adapt to consider that separate symptoms and problems with attachment can contribute to aggression, in particular hostility. This work is also particularly relevant to challenge the symptom focussed, pharmacological and CBT approach to psychosis and schizophrenia (NICE 2009) and additionally consider attachment problems as part of the aetiology and subsequent behaviour associated with the illness. We already know through research that

insecure attachment in psychosis leads to poor engagement and poorer outcomes for individuals with psychosis (Gumley, Taylor, Schwanner & MacBeth, 2013), and this research adds to the body of research that attachment is an important clinical feature that needs to be considered when formulating and working with individuals with psychosis.

Word count: 4823

References

Aiken, L. S., & West, S. G. (1991). Multiple regression: Testing and interpreting interactions. Newbury Park, London. Sage.

Allen, T. J., Moeller, F. G., Rhoades, H. M., & Cherek, D. R. (1998). Impulsivity and history of drug dependence*. Drug and alcohol dependence*, *50(2),* 137-145.

Amador, X. F., & David, A. S. (1998). Insight and psychosis. Oxford University Press, USA.

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: a test of a four-category model. *Journal of personality and social psychology 61(2),* 226-244

Berry, K., Barrowclough, C., & Wearden, A. (2008). Attachment theory: a framework for understanding symptoms and interpersonal relationships in psychosis. *Behaviour research and therapy, 46(12)*, 1275-1282.

Berry, K., Wearden, A., Barrowclough, C., & Liversidge, T. (2006). Attachment styles, interpersonal relationships and psychotic phenomena in a non-clinical student sample*. Personality and Individual Differences, 41(4),* 707-718.

Bowlby, J. (1969). Attachment: Attachment and loss. Vol 1. London: Hogarth.

Bowlby, J. (1973). Attachment and Loss. Vol 2: Separation: Anxiety and Anger. New York: Basic Books.

Bowlby, J. (1982). Attachment and loss: Retrospect and prospect. *American Journal of Orthopsychiatry, 52 (4),* 664-678.

Bowlby, J. (1988). Attachment, communication, and the therapeutic process. In J. Bowlby, *A secure base* (pp. 137-157). New York: Basic Books.

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In Simpson, J. A., & Rholes, W. S. E. (Eds) *Attachment theory and close relationships* (pp. 46-76). New York, US: Guildford Press.

Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of personality and social psychology 63(3),* 452.

Crowell, F., Fraley, C., & Shaver (1999). Measurement of individual differences in adolescent and adult attachment. In Cassidy Shaver (Eds), *Handbook of Attachment*: *Theory, research, and clinical applications* (pp. 434-465). New York: Guilford Press.

Douglas, K. S., Guy, L. S., & Hart, S. D. (2009). Psychosis as a risk factor for violence to others: a meta-analysis. *Psychological bulletin, 135(5),* 679.

Eysenck, S. B., & Eysenck, H. J. (1970). Crime and personality: an empirical study of the three-factor theory. *The British Journal of Criminology,10*(3), 225-239.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149-1160.

Fazel, S., Langstrom, N., Hjeru, A., Grann, M., & Lichtenstein, P. (2009). Schizophrenia, substance abuse, and violent crime. *Jama*, 301(19), 2016-2023.

Freeman, D., Garety, P. A., Bebbington, P. E., Smith, B., Rollinson, R., Fowler, D., ... et al. (2005). Psychological investigation of the structure of paranoia in a non-clinical sample. *British Journal of Psychiatry, 186*, 427-435.

Fonseca Pedrero, E., Paino Pineiro, M. D. L. M., Lemos Giraldez, S., & Muiz Fernandez, J. (2012). Validation of the Community Assessment Psychic Experiences-42 (CAPE-42) in Spanish college students and patients with psychosis. *Actas espanolas de psiquiatria. 40*(4), 169-176

Garety, P. A., Kuipers, E., Fowler, D., Freeman, D., & Bebbington, P. E. (2001). A cognitive model of the positive symptoms of psychosis. *Psychological medicine, 31*(02), 189-195.

Gerevich, J., Bacskai, E., & Czobor, P, (2007). The generalizability of the Buss-Perry Aggression Questionnaire. *International Journal of Methods in Psychiatric Research, 16*(3), 124-136.

Granville-Grossman, K. L. (1966). Early bereavement and schizophrenia. *The British Journal of Psychiatry 112*(491), 1027-1034.

Gumley, A. I., Taylor, H. E. F., Schwanner, M., & MacBeth, A. (2014). A systematic review of attachment and psychosis: measurement, construct validity and outcomes*. Acta Psychiatrica Scandinavica, 129*(4), 257-274.

Harris, J. A. (1995). Confirmatory factor analysis of the Aggression Questionnaire. *Behaviour Research and Therapy, 33*(8), 991-993.

Jones, R. M., Van den Bree, M., Ferriter, M., & Taylor, P. J. (2010). Childhood risk factors for offending before first psychiatric admission for people with

schizophrenia: a case-control study of high security hospital admissions. *Behavioural sciences & the law, 28*(3), 351-365.

Kinoshita, Y., Shimodera, S., Nishida, A., Kinoshita, K., Watanabe, N., Oshima, N., ... & Okazaki, Y. (2011). Psychotic-like experiences are associated with violent behaviour in adolescents*. Schizophrenia research, 126*(1), 245-251.

Kobak, R. R., Sceery, A. (1988) Attachment in late adolescence: Working models, affect regulation and representations of self and others. *Child Development, 59*, 135-146.

Lincoln, T. M., Lullmann, E., & Rief, W. (2007). Correlates and long-term consequences of poor insight in patients with schizophrenia. A systematic review. *Schizophrenia bulletin, 33*(6), 1324-1342.

Mallinckrodt, B. (2000). Attachment, social competencies, social support, and interpersonal process in psychotherapy. *Psychotherapy research, 10*(3), 239-266.

Mickelson, K. D., Kessler, R. C., & Shaver, P. R. (1997). Adult attachment in a nationally representative sample. *Journal of personality and social psychology, 73*(5), 1092-1106.

Mikulincer, M., & Shaver, P. R. (2007). Boosting attachment security to promote mental health, prosocial values, and inter-group tolerance. *Psychological Inquiry, 18*(3), 139-156.

Mojtabai, R. (2006). Psychotic-like experiences and interpersonal violence in the general population. Social *Psychiatry and Psychiatric Epidemiology, 41*(3), 183-190.

Morgan, C., Kirkbride, J., Leff, J., Craig, T., Hutchinson, G., McJenzie, K. W, Morgan, K., Dazzan, P., Doody, G. A., Jones, P., & Murray, R. (2007). Parental separation, loss and psychosis in different ethnic groups: a case-control study. *Psychological medicine, 37*(04), 495-503.

Mossaheb, N., Becker, J., Schaefer, M. R., Klier, C. M., Schloegelhofer, M., Papageorgiou, K., & Amminger, G. P. (2012). The community assessment of psychic experience (CAPE) questionnaire as a screening-instrument in the detection of individuals at ultra-high risk for psychosis. *Schizophrenia research, 141*(2), 210-214.

Nederlof, A. F., Muris, P., & Hovens, J. E. (2012). Psychotic-like experiences and aggressive behaviour in a non-clinical sample. *Personality and Individual Differences, 53*(1), 33-37.

NICE (2009). Psychosis and schizophrenia: management. Retrieved from http://www.nice.org,uk/guidance/cg82

Penn, D. L., Corrigan, P. W., Bentall, R. P., Racenstein, J., 7 Newman, L. (1997). Social cognition in schizophrenia. *Psychological bulletin, 121*(1), 114-132

Platts, H., Tyson, M., & Mason, O. (2002). Adult attachment style and core beliefs: are they linked? *Clinical Psychology & Psychotherapy, 9*(5), 332-348.

Posner, J., Russell, J. A., 7 Peterson, B, S. (2005). The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology. *Development and psychopathology, 17(*03), 715-734.

Ratip, D. E. (2013). The role of attachment in violent offending and violence in institutions Doctoral dissertation, University of Birmingham).

Read, J., Os, J. V., Morrison, A. P., & Ross, C. A. (2005). Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatrica Scandinavica, 112*(5), 330-350.

Short, T., Thomas, S., Mullen, P., & Ogloff, J. R. (2013). Comparing violence in schizophrenia patients with and without comorbid substance-use disorders to community controls. *Acta Psychiatrica Scandinavica, 128*(4), 306-313.

Soyka, M. (2000). Substance misuse, psychiatric disorder and violent and disturbed behaviour. *The British Journal of Psychiatry, 176(*4), 345-350.

Stefanis, N. C., Hanssen, M., Smirnis, N. K., Avramopoulos, D, A., Evdokimidis, I. K., Stafanis, C. N., ... & Van Os, J. (2002). Evidence that three dimensions of psychosis have a distributions in the general population. *Psychological medicine, 32*(02), 347-358.

Warner, R., & Atkinson, M. (1988). The relationship between schizophrenic patients' perceptions of their parents and the course of their illness. *The British Journal of Psychiatry, 153*(3), 344-353.

Appendix A of Report- Spearman's Correlation Analysis for All Scales

Table 8. Spearman's Correlation Co-Efficient for all variables. (N=213)

Scale	Total.Att		Anx.Att		Avo.Att		Total.Psy		Pos.Psy		Dep.Psy		Neg.Psy		Total.AA		P.Agg		V.Agg		Ang.		Hos.	
	r.	*p.*	*r.*	*p.*	*r.*	*p.*	*r.*	*p.*	*r.*	*p.*	*r.*	*p.*	*r.*	*p.*	*r.*	*p.*	*r.*	*p.*	*r.*	*p.*	*r.*	*p.*	*r.*	*p.*
Total.Att			**.859**	**<.001**	**.840**	**<.001**	**.643**	**<.001**	**.511**	**<.001**	**.612**	**<.001**	**.537**	**<.001**	**.346**	**<.001**	.171	.013	-.009	.891	**.278**	**<.001**	**.530**	**<.001**
Anx.Att					**.463**	**<.001**	**.543**	**<.001**	**.429**	**<.001**	**.554**	**<.001**	**.435**	**<.001**	**.299**	**<.001**	.124	.070	-.008	.906	**.265**	**<.001**	**.486**	**<.001**
Avo.Att							**.551**	**<.001**	**.451**	**<.001**	**.489**	**<.001**	**.480**	**<.001**	**.293**	**<.001**	**.184**	**.007**	-.010	.881	**.222**	**.001**	**.417**	**<.001**
Total.Psy									**.778**	**<.001**	**.805**	**<.001**	**.871**	**<.001**	**.546**	**<.001**	**.347**	**<.001**	**.214**	**.002**	**.445**	**<.001**	**.591**	**<.001**
Pos.Psy											**.506**	**<.001**	**.496**	**<.001**	**.449**	**<.001**	**.319**	**<.001**	.165	.016	**.370**	**<.001**	**.441**	**<.001**
Dep.Psy													**.622**	**<.001**	**.466**	**<.001**	**.239**	**<.001**	.100	.144	**.429**	**<.001**	**.576**	**<.001**
Neg.Psy															**.466**	**<.001**	**.314**	**<.001**	**.206**	**.002**	**.357**	**<.001**	**.504**	**<.001**
Total.AA																	**.743**	**<.001**	**.622**	**<.001**	**.878**	**<.001**	**.735**	**<.001**
P.Agg																			**.339**	**<.001**	**.549**	**<.001**	**.432**	**<.001**
V.Agg																					**.548**	**<.001**	**.188**	**.006**
Ang.																							**.531**	**<.001**
Hos.																								

Appendix B of Report- Multiple Linear Regression Five Factor Models with Aggression Subscales as Criterion Variables

- Regression Model with Physical Aggression Score as the Criterion Variable

	Unstandardised coefficients	Standardised Coefficients	t	Sig
Constant	5.821		3.816	.000
Anx.Att	-.069	-.062	-.779	.437
Avo.Att	.052	.044	.541	.589
Pos.Psy	.098	.121	1.420	.157
Dep.Psy	.146	.124	1.242	.216
Neg.Psy	.200	.248	2.620	.009

Adjusted R2= 18.4 percent; F(5,209)= 9.253 ;p<.001

- Regression Model with Verbal Aggression Score as the Criterion Variable

Graph 12 Histogram of frequency of Hostility Scores

	Unstandardised coefficients	Standardised Coefficients	t	Sig
Constant	7.351		6.164	.000
Anx.Att	-.064	-.077	-.906	.366
Avo.Att	-.123	-.140	-1.616	.108
Pos.Psy	.084	.142	1.553	.122
Dep.Psy	.049	.057	.534	.594
Neg.Psy	.108	.182	1.786	.076

Adjusted R2= 6.7 percent; F(5,210)= 2.937 ;p=.014

- Regression Model with Anger Score as the Criterion Variable

	Unstandardised coefficients	Standardised Coefficients	t	Sig
Constant	.603		.384	.702
Anx.Att	.042	.034	.447	.655
Avo.Att	-.037	-.028	-.368	.713
Pos.Psy	.204	.227	2.841	.005
Dep.Psy	.376	.287	3.035	.003
Neg.Psy	.076	.085	.952	.342

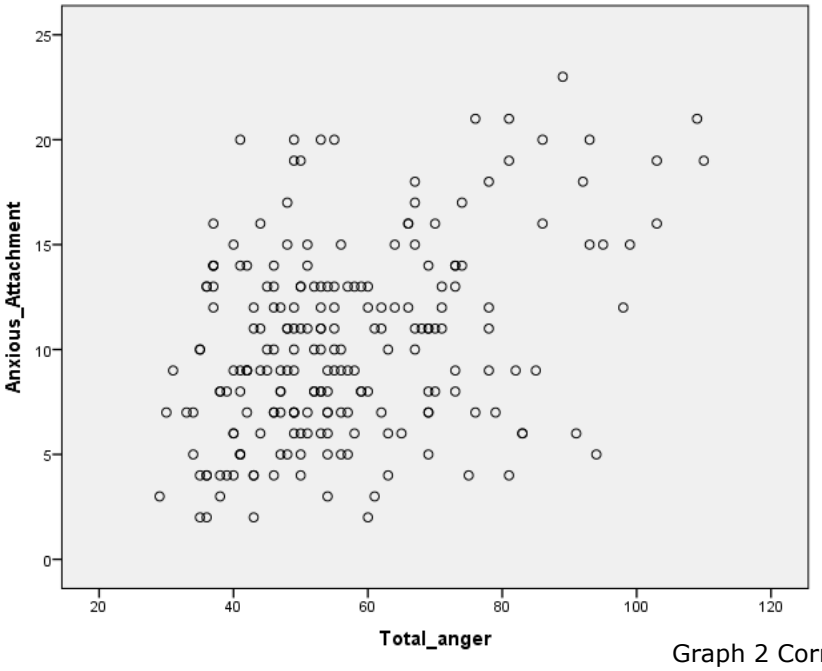
Adjusted R2= 28.5 percent; F(5,209)= 16.396 ;p<.001

- Regression Model with Hostility Score as the Criterion Variable

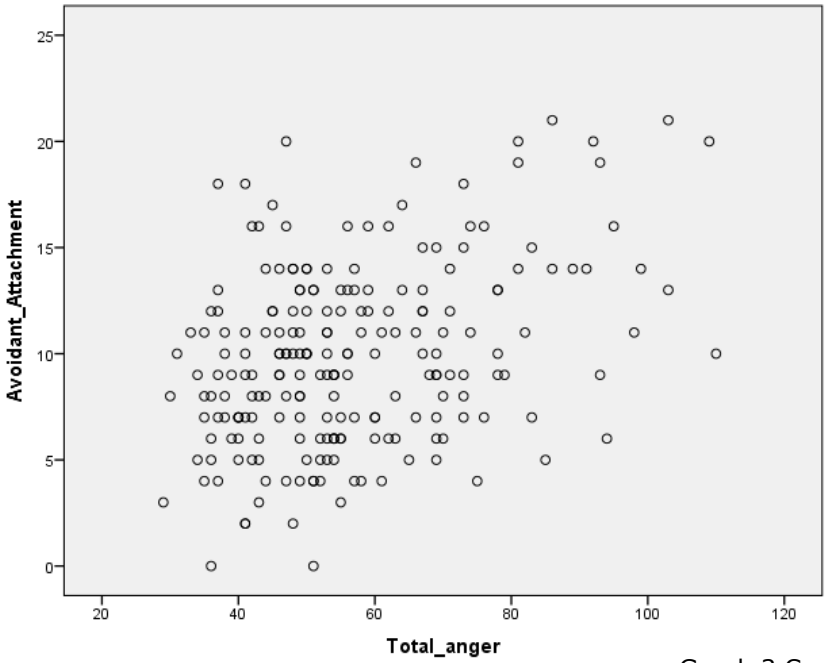
	Unstandardised coefficients	Standardised Coefficients	t	Sig
Constant	-4.013		-2.673	.008
Anx.Att	.254	.178	2.876	.004
Avo.Att	.091	.059	.951	.342
Pos.Psy	.190	.183	2.810	.005
Dep.Psy	.459	.295	3.804	.000
Neg.Psy	.171	.165	2.277	.024

Adjusted R2= 52.0 percent; F(5,209)= 44.707 ;p<.001

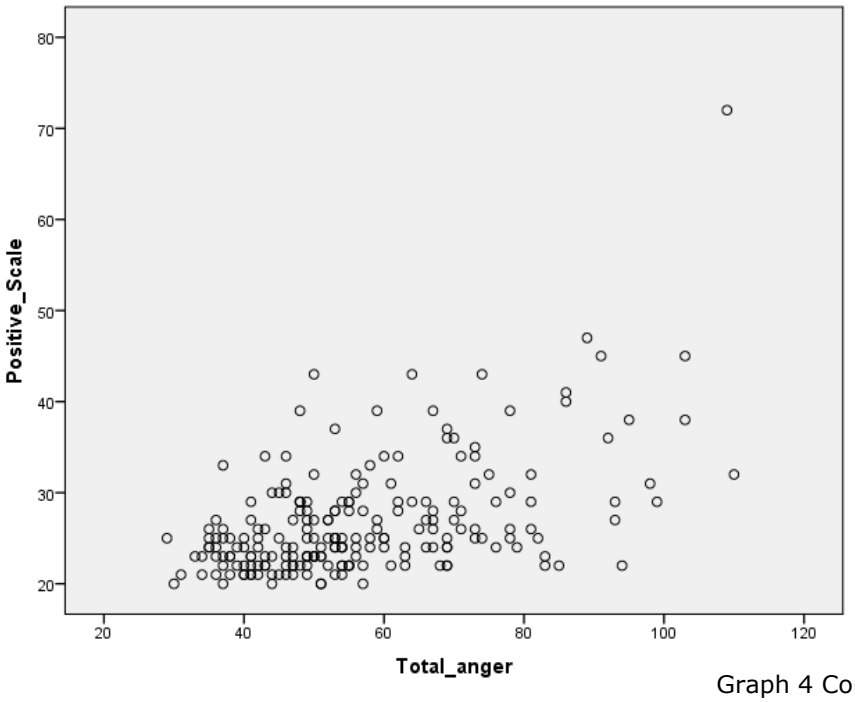
Appendix C – Correlation Graphs between Attachment, PLE's and Total Aggression Scores



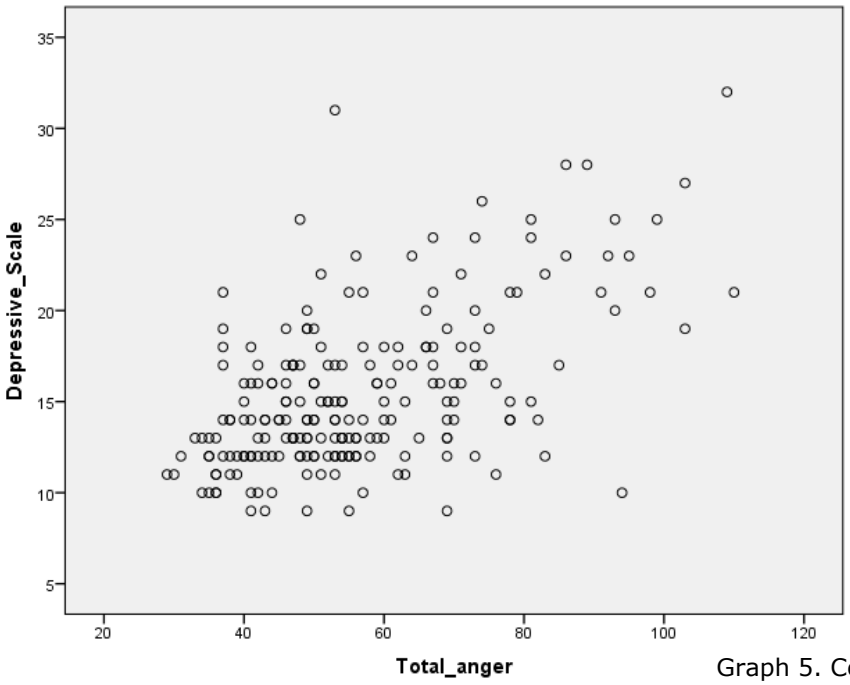
Graph 2 Correlation between Total Aggression Scores and Anxious Attachment



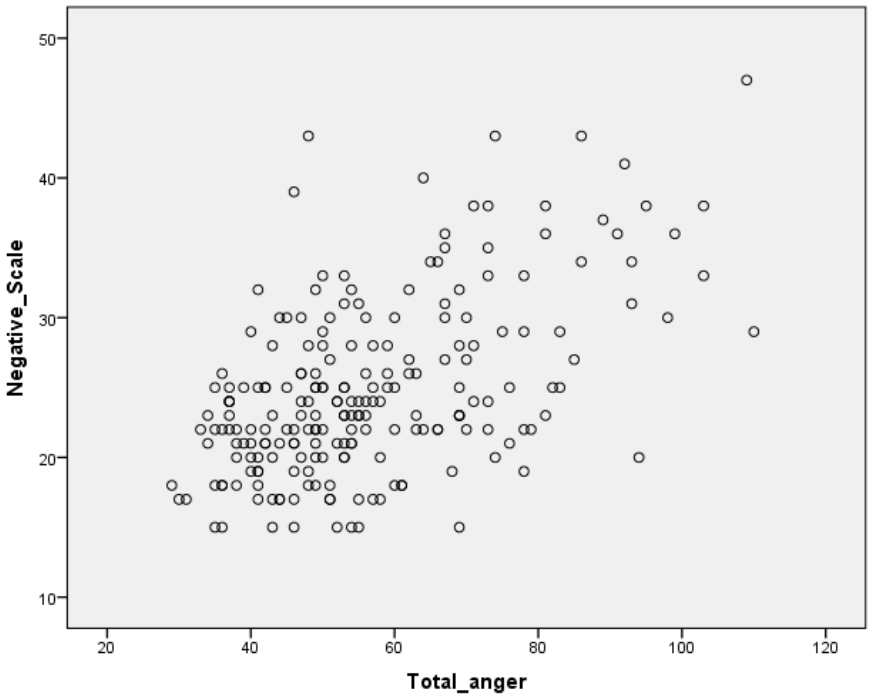
Graph 3 Correlation between Total Aggression Scores and Avoidant Attachment



Graph 4 Correlation between Total Aggression Scores and Positive Symptoms



Graph 5. Correlation between Total Aggression Scores and Depressive Symptoms



Graph 6. Correlation between Total Aggression Scores and Negative Symptoms

Appendix D: Linear Regression Analysis

Linear Regression models with Aggression Scores as the Criterion variables and Attachment Scores as the independent variable

		Total.Att	Anx.Att	Avo.Att
Total.AA	Unstd.Coefficient	.97	1.38	1.44
	Stnd.Coefficient	.45	.378	.38
	t-Score	7.27	5.94	5.89
	Sig.	.000	.000	.000
	Variance %	20.1	14.3	14.2
	F Value	F(1,210)= 52.86	F(1,211)= 35.26	F(1, 210)= 34.69
P.Agg	Unstd.Coefficient	.14	.18	.27
	Stnd.Coefficient	.22	.17	.22
	t-Score	3.29	2.43	3.26
	Sig.	.001	.02	.001
	Variance %	5.0	2.8	4.9
	F Value	F(1,207)= 10.83	F(1,208)= 5.89	F(1,207)= 10.62
V.Agg	Unstd.Coefficient	.01	.03	.01
	Stnd.Coefficient	.03	.03	.01
	t-Score	.37	.44	.20
	Sig.	.71	.66	.85
	Variance %	0.1	0.1	0.00
	F Value	F(1,210)= .14	F(1,210)= .19	F(1,210)= .04
Ang.	Unstd.Coefficient	.26	.39	.37
	Stnd.Coefficient	.37	.32	.29
	t-Score	5.74	4.86	4.32
	Sig.	.000	.000	.000
	Variance %	13.6	10.1	8.2
	F Value	F(1,209)= 32.96	F(1,209)= 23.59	F(1,209)= 18.66
Hos.	Unstd.Coefficient	.50	.77	.74
	Stnd.Coefficient	.59	.54	.49
	t-Score	10.50	9.20	8.17
	Sig.	.000	.000	.000
	Variance %	34.3	28.6	24.1
	F Value	F(1,211)= 110.26	F(1,211)= 84.64	F(1,210)= 66.70

Linear Regression models with Aggression Scores as the Criterion variables and PLE Scores as the independent variables

		Total.PLE	Pos.PLE	Dep.PLE	Neg.PLE
Total.AA	Unstd.Coefficient	.70	1.37	2.21	1.45
	Stnd.Coefficient	.64	.54	.58	.15
	t-Score	11.96	9.16	10.27	9.70
	Sig.	.000	.000	.000	.000
	Variance %	40.6	28.7	33.4	31.0
	F Value	F(1,209)= 142.97	F(1,209)= 83.98	F(1,210)= 105.43	F(1,209)= 94.07
P.Agg	Unstd.Coefficient	.15	.29	.45	.30
	Stnd.Coefficient	.42	.37	.39	.38
	t-Score	6.72	5.61	6.08	5.93
	Sig.	.000	.000	.000	.000
	Variance %	17.8	13.1	15.1	14.5
	F Value	F(1,209)= 45.16	F(1,209)= 31.43	F(1,208)= 36.95	F(1,208)= 35.20
V.Agg	Unstd.Coefficient	.05	.12	.14	.18
	Stnd.Coefficient	.21	.18	.16	.20
	t-Score	3.09	2.97	2.31	2.92
	Sig.	.002	.008	.022	.004
	Variance %	4.4	3.3	2.5	3.9
	F Value	F(1,210)= 9.57	F(1,211)= 7.28	F(1,211)= 5.33	F(1.211)= 8.54
Ang.	Unstd.Coefficient	.20	.41	.65	.38
	Stnd.Coefficient	.52	.48	.49	.43
	t-Score	8.86	7.90	8.22	6.81
	Sig.	.000	.000	.000	.000
	Variance %	27.2	23.1	24.3	18.1
	F Value	F(1,210)= 78.44	F(1,208)= 62.38	F(1.210)= 67.49	F(1,210)= 46.41
Hos.	Unstd.Coefficient	.31	.58	1.02	.61
	Stnd.Coefficient	.70	.56	.67	.60
	t-Score	14.17	9.79	13.00	10.82
	Sig.	.000	.000	.000	.000
	Variance %	49.0	31.2	44.7	35.8
	F Value	F(1,209)= 200.91	F(1,211)= 95.78	F(1,209)= 169.04	F(1,210)= 117.14

Appendix E: Interaction Models of Total PLE and Attachment Scores on Aggression Sub-domains

- Physical Aggression

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	15.651	.381		41.065	.000
Centred _ATT	-.021	.058	-.030	-.360	.719
Centred _PLE	.155	.035	.428	4.409	.000
Centred_ PLE*ATT	.000	.002	-.003	-.043	.965

Adjusted R^2=1.54 percent; F(3,209)= 13.88, sig <.001

- Verbal Aggression

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	11.333	.289		39.218	.000
Centred_ ATT	-.103	.044	-.207	-2.343	.020
Centred_ PLE	.095	.027	.368	3.574	.000
Centred _PLE*ATT	-.001	.002	-.061	-.732	.465

Adjusted R^2=0.51 percent; F(3,209)= 4.83, sig =.003

- Anger

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	13.709	.388		35.321	.000
Centred_ATT	.012	.059	.016	.204	.839
Centred_PLE	.176	.036	.449	4.915	.000
Centred_PLE*ATT	.003	.002	.081	1.094	.275

Adjusted R^2=25.2 percent; F(3,209)= 24.75, sig <.001

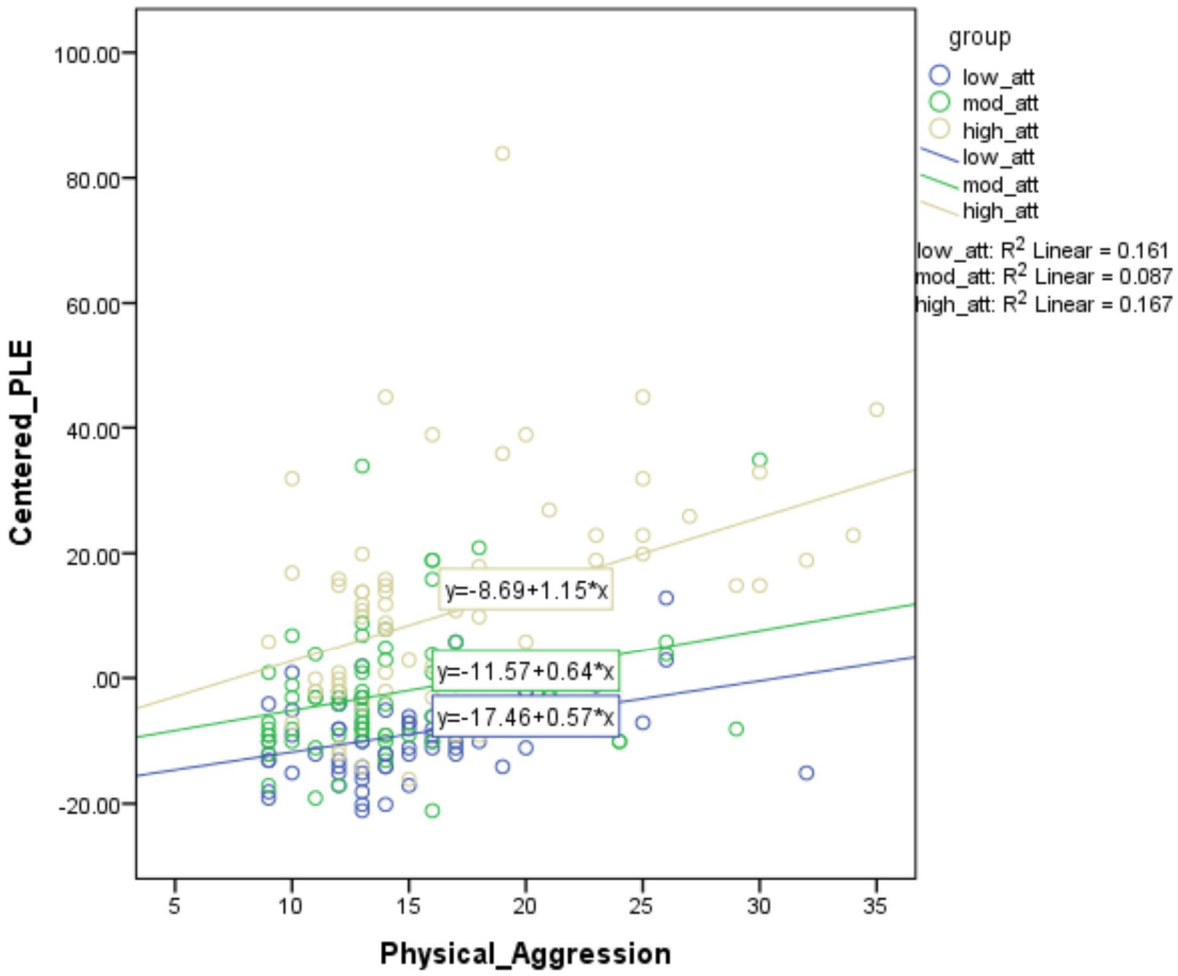
- Hostility

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	15.716	.365		43.088	.000
Centred_ATT	.225	.056	.264	4.045	.000
Centred_PLE	.207	.034	.468	6.147	.000
Centred_PLE*ATT	.002	.002	.050	.816	.415

Adjusted R^2=48.1 percent; F(3,209)= 66.62, sig <.001

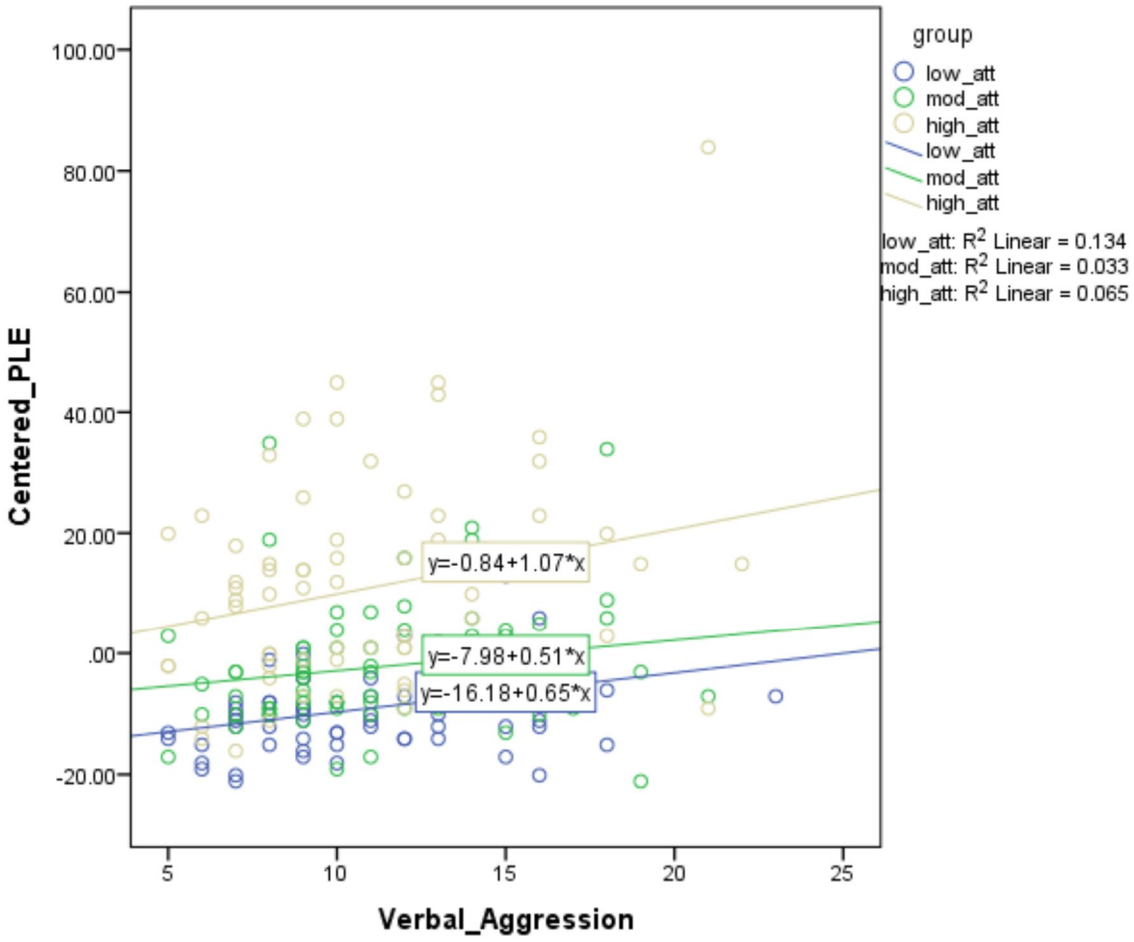
Appendix F, Interaction Graphs between Total PLE and Total Attachment scores on Aggression sub-domains

- Physical Aggression



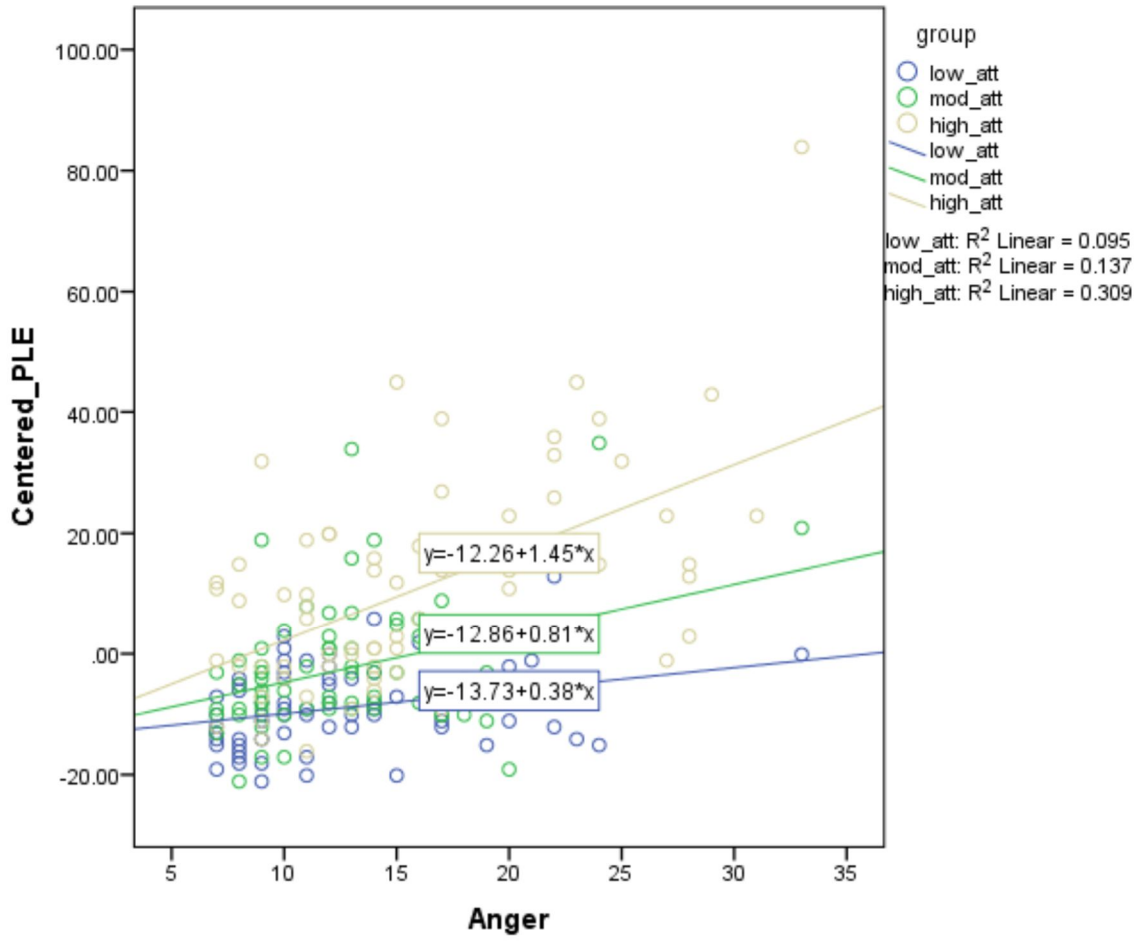
Graph 7. Correlation between Physical Aggression and PLE scores, when categorised by attachment scores

- Verbal Aggression



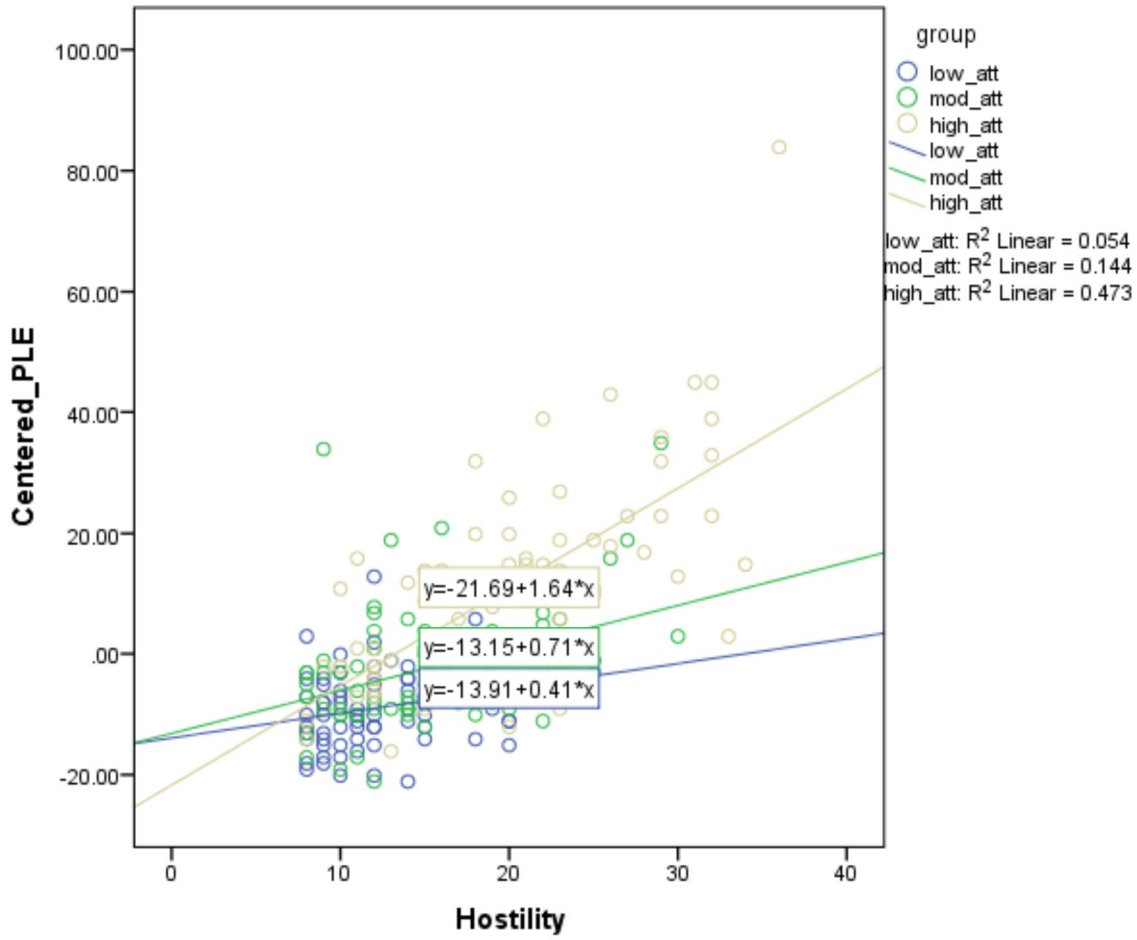
Graph 8. Correlation between Verbal Aggression and PLE scores, when categorised by attachment scores

- Anger



Graph 9. Correlation between Anger and PLE scores, when categorised by attachment scores

- Hostility



Graph 10. Correlation between Hostility and PLE scores, when categorised by attachment scores

Attachment Style, Psychotic Phenomena and the Relationship with Aggression: An investigation in a Non-Clinical sample.

Katherine Whale
(msxkw4@nottingham.ac.uk)
Supervised by Dr Kathleen Green and Prof. Kevin Browne

Aims of the Research

- This research aimed to explore the relationship between attachment, Psychotic Like Experiences (PLE) and aggression
  - ? Is there a statistically significant relationship between scores on PLE, attachment and aggression?
  - ? Does the presence of insecure attachment and PLE make it more likely that an individual will rate higher on scales of anger and aggression
  - ? Does this relationship change depending on either the type of attachment, type of PLE or type of Aggression?

Methodology

- Cross sectional design, 213 participants, from a convenience and then snow-ball sampling technique
- CAPE-42 (Stefanis et al. 2002)- measure of psychotic like experiences
- The Aggression Questionnaire (Buss & Perry, 1992)
- Psychosis Attachment Measure (Berry, Wearden, Barrowclough & Liversage, 2006)
- Questions regarding substance use
- All measures have been previously validated
- Non-parametric correlational analysis, Multiple Regression and interaction analysis (with regression assumptions met)

Results

- There were strong, positive correlations between the three scales, and between the sub-domains (with verbal aggression as an exception to this)
- Attachment and PLE provide a significant model for aggression – PLE is a more significant factor than Attachment
- This model is strongest for Hostility, and weakest for Verbal Aggression
- Interaction analysis suggests there isn't a significant interaction of attachment style on the relationship between PLE and Aggression
- Aiken and West (1991) approach suggests that the presence of high insecure attachment moderates the relationship between PLE and aggression.

Implications of the Research

- This study supports previous research findings
- It highlights that when assessing, formulating and intervening with client groups with PLE, to consider attachment as an additional factor for increased risk of violence
- Hypothetically individuals with insecure attachment and presence of PLE's are at risk of aggression, particularly hostility.
- This study is limited by cross-sectional design and it's sample.

Suggestions for future research

- Continue to explore the data and interaction analysis for the separate sub-domains
- Replicate the study using a more diverse sample, and also within a clinical sample
- Consider research methodology that isn't cross sectional in design to make more inferences about causality.

Attachment, Psychotic Phenomena and the Relationship with Aggression: An Investigation in a Non-Clinical sample

Executive Summary

Target Audience

The target audience for this research is multi-disciplinary teams working with clients with psychosis and challenging behaviour- this could range from secure psychiatric hospitals to community teams. Psychologists may find this work particularly valuable for use of risk assessments, formulation and development of intervention plans. However, other disciplines who utilise similar knowledge such as Psychiatrists, Occupational Therapy and Nursing groups may also find the information valuable.

Background to the research

Attachment theory is a pioneering theory that underpins our understanding of how childhood experiences influence adult relationships, behaviour and mental health. Understanding a child's experiences with their carers helps us to understand not only child attachment, but adult attachment. It is understood that children and adults can have secure positive attachment styles (usually from having positive experiences in early childhood), or problematic, insecure attachment styles (from negative experiences in early childhood).

Problems in attachment have been linked with aggression and offending behaviour. We know that there are different types of problems in attachment, in

adulthood this is known as either anxious attachment or avoidant attachment. We know that different types of adult attachment can lead to different types of aggression.

Attachment style has also been used to look at what might lead individuals to developing psychosis and schizophrenia. It is believed that negative experiences in early childhood lead individuals to develop negative beliefs about themselves and others, which can cause attachment problems, and also (for some people) develop into symptoms of psychosis.

This link has also been found in the general population. This is based on research that psychosis is a spectrum disorder, where people within the population may experience some symptoms to a lesser extent. These symptoms are described as psychotic like events (PLE).

With the established link between attachment and psychosis and attachment and aggression, it is suggested by this research that attachment could be an important factor when we understand psychosis and aggression. We know that psychosis is linked with aggression, and that different symptoms are related to different types of aggression, and this study is aiming to understand that link further.

Aims of the Research

This research aimed to explore the relationship between attachment, PLE's and aggression. It aimed to answer the following questions;

- Is there a relationship between psychotic like events, Attachment problems and Aggression
- Does the presence of attachment problems and psychotic like events make it more likely that an individual will be more aggressive
- Does the relationship with aggression change depending on either the type of problematic attachment (avoidant or anxious), or the different symptoms associated with psychotic like events.

Why is the research valuable?

There is a need to explore why many individuals with psychosis are violent, as this can be a barrier to individuals being able to live safely in the community, as well as posing a risk to individuals who care for these individuals. Understanding what influences the risk of aggression will influence how we assess, formulate, treat and manage these patients.

Data Collection

Participants were asked to participate in the study either through direct contact with the researchers, or through a 'snowball' technique, where participants to the study were asked to pass on the study to others who would be willing to take part.

In total 213 participants completed the survey. All participants were aged 18 or over, the median age of participants was 32.64 years (range 18-64), 42 were male and 169 were female. The majority of participants had completed an undergraduate level of education.

Participants were asked to respond to the following scales;

- Measure of PLE's: Community Assessment Psychic Experiences. This is a questionnaire which measures participants experience of psychotic like experiences. It has three scales- positive symptoms, depressive symptoms and negative symptoms.
- Measure of Attachment: Psychosis Attachment Measure (PAM). This is a scale which measures problems in attachment and is divided into two scales; anxious attachment and avoidant attachment.
- Measure of Aggression; The Aggression Questionnaire. This is a questionnaire, which has a total aggression score and four aggression sub-domains- physical aggression, verbal aggression, anger and hostility.

Participants were also asked questions on their substance use to look at whether this also has an impact on aggression.

Data Analysis

The analysis firstly looked at whether there was a significant relationship between a) attachment, b) psychotic like events, and c) aggression.

Then the analysis looked at whether attachment and psychotic like events together were likely to make someone more aggressive.

The results show that there are strong, statistically significant relationships between the three variables.

There were strong, statistically significant relationships between the sub-domains on each scale (i.e. between the different types of aggression, different types of attachment and different types of PLE symptoms). Although it appears that verbal aggression appears is the main exception to this, as it is not statistically related to attachment or depressive symptoms.

Statistical analysis showed us that a combination of PLE and Attachment scores does provide a statistically significant model for total aggression scores, meaning that the two factors together do predict aggression, but psychotic like events are a much stronger predictor than Attachment.

The results showed that symptoms of PLE, attachment style and type of aggression relate differently to each other.

The model of PLE and attachment is particularly strong when looking at Hostility. This model accounted for over half of the variance seen in Hostility scores, meaning that over half of the aggression seen in participants could be explained by PLE and attachment problems.

When looking at how PLE and attachment problems interact with each other there were varied results. The first analysis suggested that they do not interact with each other to influence aggression. However if the attachment problems are grouped into high attachment problems, moderate attachment problems or low attachment problems we do see that high attachment problems has a bigger influence on PLE's relationship with aggression (i.e. an individual with high problems in attachment and experiencing psychotic like events, are more likely to be aggressive, than someone with low attachment problems and PLE's).

Implications for the findings

This research provides evidence that establishes a link between a) PLE and attachment, b) PLE and Aggression and c) Aggression and attachment.

The findings suggest hypothetically that the presence of PLE's and problems in attachment are at higher risk of aggression, particularly hostility.

This tells us that attachment style, symptom type and type of aggression need to be considered when risk assessing, planning and developing interventions for this client group. It highlights that treatment of aggression within individuals with symptoms of psychosis should go beyond the treatment of symptoms alone, and also look at problems in attachment.

This research also demonstrates that the relationship between PLE and attachment influences different types of aggression differently. Therefore aggression should not be viewed as a whole set of behaviours, and future research, and clinical formulation and intervention should consider this more fully.

The analysis also showed that substance use was a contributing factor to a model of aggression; however, it was the least significant factor. It supports studies that substance use impacts on aggression in individuals with psychosis, but is not the only influencing factor, and this should be reflected in clinical work and assessment with clients.

It is important to recognise though that this research is limited in a couple of ways. Firstly the sample did not fully represent the true diversity that exists in the population. It is also not a sample of people who currently experience psychosis, and so making direct links to individuals with psychosis is limited. It also cannot tell us definitely that attachment and psychotic like events CAUSE aggression, only that there is a relationship with aggression. Future research will need to look at ways of testing whether this relationship causes or aggression.

Reflective Diary

October 2015

Date	Event
01.10.2015	Meeting with faculty to discuss research ideas
05.10.2015	Completion of Project Outline Form
19.10.2015	Allocated Supervisors and Psychosis, Attachment and Violence project
20.10.2015	E-mailed supervisors to arrange supervision
21.10.2015	Kate replied advising Kevin was on leave and suggested a meeting the following week
26.10.2015	Kevin emailed with requests for project preparation for supervision on 10th Nov. 2015
29.10.2015	Arranged supervision with Kate for 3rd Nov. 2015

I initially had developed the idea of my psychosis and attachment project whilst working in a rehabilitation hospital and observing problems in attachment amongst my patients. My initial idea of reviewing files for case histories, current symptoms and behaviours was discussed with Kate Green, who felt that this idea was valid, but not achievable within a year. We discussed alternatives, using community samples, and through this discussion and subsequent reading about psychosis in the community I developed my current project idea.

At the time I felt that basing a project on my current area of interest was motivating and personally interesting. However, on reflection, it may have been a greater learning experience to take on a project outside my current area of knowledge. However, with the anxiety and stress of completing a project, it felt appropriate to build on my current level of knowledge rather than take on something new.

November 2015

Date	Event
03.11.2015	Supervision with Kate. Discussed current reading, research, power analysis, project design, measures and sample
09.11.2015	Completed the tasks outlined by Kevin on 26.10.2015. Developed

	first draft of full project proposal
10.11.2015	Supervision with Kevin and Kate. Discussed need to look more at classification of attachment, research around the STAXI-II and attachment, include substance use scale.
23.11.2015	Sent over completed first draft of full project proposal to both Kevin and Kate, and concerns about using STAXI-II. Kate replied suggesting use of Buss-Perry Aggression Questionnaire.

This development period of the project was a useful insight into skills in developing projects. Developing power analysis, building on current research and creating a completed project proposal was an opportunity to develop new skills and build on my previous experience of research. During this time I change my scales, due to access problems with both my initial ideas for aggression and symptom questionnaires. Supervision was very useful at this time to structure my ideas, which at this time were slightly disorganised, and this was a vital part of my project development.

December 2015

Date	Event
10.12.2015	I contacted both Kevin and Kate for supervision. Arranged supervision for that afternoon. Discussed measures of aggression, to consider using domestic violence, pros and cons of online survey, how to get participants, length of questionnaire.
10.12.2015	Kate e-mailed my project proposal back with amendments regarding a clear analysis strategy (mediation vs. relationship), and clarifying information participants would receive during the research.

The supervision was a useful exploration of ideas around the aggression measure, and how to get participants. It was suggested to use domestic violence as a specific measure of aggression, but I felt uneasy about this, as it differed from the research I had looked at. I found it hard to address this directly at the time due to lack of confidence in my knowledge compared to my supervisors. My supervisors had opposing ideas around the use of online questionnaires, and

around the amount of variables I was choosing to look at. This discrepancy of advice from supervisors caused me some concern, and over the Christmas break I sought to do more research around the area to feel informed and able to make a clear decision.

I learnt that research should underpin and support decisions when developing a research project, and I should feel able to use this to argue for the research I had planned. Feedback on my proposal from Kate was also valuable in learning how to ensure that my project plan flowed and I was clear and specific about my aims.

January 2016

Date	Event
19.01.2016	Contacted Kate with amended proposal, discussed with her my concerns about not taking Kevin's advice re: domestic violence scale.
21.01.2016	Kate replied, encouraged me to use evidence to support my decisions and supported use of general aggression questionnaire. Sent back final proposal with minor amendments.
22.01.2016	Contacted Kevin re: final project, request for supervision and feedback on project.
25.01.2016	Contacted Lindsey to contact Kevin to meet deadline for ethics submission. Kevin advised small wording changes to my project.
26.01.2016	Submitted ethics application and full research project.

Waiting for feedback from both supervisors, and liaising with both of them to try and complete the project in time for the deadline was a stressful experience, and I was greatly concerned about not meeting the deadline, which would set me behind schedule.

During this time Kate also informed me that she would be leaving the university to work full time in her clinical role. Through this however I continued to develop my sense of independence in my work and discussed frequently with peers about managing deadlines. At this time I felt pleased with the comprehensiveness of my project proposal as this placed me at an advantage when completing the rest of my project, and I felt this was a strength.

February 2016

During this time I was waiting for ethical approval.

March 2016

Date	Event
Early march 2016	Kevin informed me during a lunch break that he was contacting the ethics department to encourage feedback.
17.03.2016	I received ethical approval
29.03.2016	I tried to organise supervision with Kate and Kevin.
31.03.2016	Contacted Kate re: plans to get project underway, but seeking supervision first.

Waiting for ethical approval delayed my initial timeline to create my project by about a month. During this time I developed my introduction and methodology, and focussed on other university work. However, the anxiety within the peer group was high, and I found this a difficult time.

I was pleased to gain a positive confirmation from ethics to go ahead, however, I was concerned about not being able to arrange group supervision before leaving university. The lack of time between receiving ethical approval and ending term made it difficult to arrange with both supervisors. On reflection however, I was seeking supervision for reassurance to start my project, however I was more than capable of starting the work based on my plans which had previously been approved by both supervisors. Again, it was an opportunity to develop my confidence in working independently.

April 2016

Date	Event
13.04.2016	Informed Kate that I had not heard back about supervision with Kevin yet. Asked for advice about removing distress scale from project. Completed online questionnaire set-up
20.04.2016	Kate replied supporting removal of distress scale, but suggested waiting for Kevin's approval. Cc'ed Kevin.
27.04.2016	Arranged supervision with Kate and Kevin. Kevin was not available,

	supervision re-arranged to 05.05.2016

During the time of uploading my scales to the online survey, I felt that the participant load of the questions was high, and complex. I read more around the scales, and decided to remove the distress scale from the CAPE-42, as this did not affect symptom scales, or the outcome of my research. I sought advice from my supervisors about removing this.

I was anxious at this point to progress with the project which was hindered by not being able to organise supervision with Kevin. I had gone past my initial timetable for gathering data and it was valuable at this time to manage stress through organisation of other work, to help me feel more in control of the project.

May 2016

Date	Event
05.05.2016	Arranged Skype supervision, however Kevin was unavailable. Supervision went ahead with Kate. Decision was taken to remove distress scale, release questionnaire. Minutes sent to Kevin.
09.05.2016	Disseminated my survey
20.05.2016	Contacted Kate to advise I had collected 159 participants (past power calculations suggested sample size).
25.05.2016	Kate replied suggested to look at outliers, normalcy, and assumptions of parametric.
27.05.2016	E-mailed Kate and Kevin with my introduction and method section for review.

I was pleased with the response rate to my questionnaire and it relieved my anxieties over data collection. I was confident in my data analysis section, as I felt that I could systematically work through independently, and this is my preferred working style.

June 2016

Date	Event
13.06.2016	Skype supervision with Kevin.

	Updated him about project developments, discussed analysis techniques. Requested his review of work previously sent to him. Minutes sent to Kate, asked additional statistics advice
20.06.2016	Kate contacted me with statistics advice.
25.06.2016	Contacted Kevin and Kate with my introduction, methods and results section for review.

I was unclear about using parametric or a non-parametric analysis, and based my decision on the analysis I completed and the justifications I could make. This process extended my data analysis time, as I decided to re-analyse to account for outliers and parametric assumptions; however I felt that the integrity of my work was important. It was a valuable lesson to make decisions about parametics and outliers early, and not get ahead in my analysis.

At times I found it hard to make sense of the amount of variables and data collected, and I found it difficult to address this within my results section.

July 2016

Date	Event
11.07.2016	Kate sent feedback regarding introduction, method and results section. Encouraged to highlight research aims, to help structure results. Consider analysis of relationship between psychosis and attachment in the multiple-linear model.
13.07.2016	Sent completed research project to Kate and Kevin for review. Asked Kate re; questions about additional analysis which I was unsure about.
25.07.2016	Deadline extended due to no feedback from Kevin
25.07.2016	Kate sent reviewed draft, suggested interaction analysis
29.07.2016	Sent amended work with interaction analysis added to Kate
30.07.2016	Kate sent final feedback, advised waiting for feedback from Kevin before submitting
01.08.2016	Chased Kevin for feedback.
02.08.2016	Feedback from Kevin

03.08.2016	Submitted paper

During this month I was beginning to feel the pressure of the deadline approaching, and I was a few days behind my schedule of sending off my final work for feedback. I felt that at the start I didn't understand the analysis that Kate suggested and felt anxious that time was running out However, I was able to conduct a higher level of analysis with support from Kate, and I felt that due to this I had created a more valuable piece of research, and I'm pleased that I challenged myself to complete it.

I felt very nervous at this time about the project as a whole. I felt that I didn't have the confidence that this was a high quality piece of work, and waiting for feedback to improve was stressful. Towards the deadline I was frustrated about the extended deadline, as I wanted to complete the work and move on. Feedback from Kevin was different to the previous feedback from Kate. I tried to balance feedback from both supervisors in my report, whilst trying to be confident in what I felt was appropriate for my work. At the end I felt that I had a viable piece of research.

Overall Reflection

This experience has been a steep learning curve. I had felt at the start that research was not a strength in my previous academic work, however with help from Kate, I developed more confidence in challenging myself and working through my research effectively.

At times I found the waiting for feedback, supervision and ethical approval very stressful. With one supervisor leaving the university for a full time role, and my other supervisor taking on a large research programme this year, it has been difficult to speak to them both, especially at the same time and it has at times been frustrating and stressful. It has, however, driven me to independently work and seek out my own answers to questions. It has taught me skills in stress management, time management and communication. I have learnt to ask for help with questions that I can't find my own answers to, and to try and be confident in my own skills and abilities.