HELENA VARNASERI BSc. (Hons), MSc.

MAJOR RESEARCH PROJECT

SPECIFICITY OF AUTOBIOGRAPHICAL MEMORY: A MEDIATOR IN THE RELATIONSHIP BETWEEN INTERPERSONAL EXPERIENCE AND FUNCTIONING

Section A: The interpersonal correlates of overgeneral autobiographical memory: A scoping review

(Word count: 7896 plus 264 words)

Section B: An investigation of the mediating factors in the relationship between early childhood adversity and borderline personality characteristics in forensic inpatients

(Word count: 7865 plus 319 words)

Section C: Appendix of supporting material

TOTAL WORD COUNT: 15,761 (583) WORDS

A thesis submitted in partial fulfilment of the requirements of Canterbury Christ Church University for the degree of Doctor in Clinical Psychology

APRIL 2014

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Doctorate in Clinical Psychology (D.Clin.Psychol.)

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Summary of the Portfolio

Section A reviews literature pertaining to the interpersonal factors associated with overgeneral autobiographical memory (OGM). The review considers the evidence for a relationship between childhood abuse and OGM in adulthood and OGM and impaired social problem-solving ability in adults. Other factors implicated in these relationships are considered. The review suggests that firm conclusions about these relationships cannot be reached as the identified studies are compromised by threats to statistical validity. The review discusses the theoretical and empirical issues and limitations associated with the literature, outlining implications for clinical practice and identifying further research questions.

Section B sought to investigate whether Early Maladaptive Schema (EMS) and autobiographical memory specificity mediated the relationship between abuse and attachment in childhood with BPD characteristics among forensic inpatients. This empirical paper employed a quantitative cross-sectional design. Data were collected through self-report measures and analysed with correlational and mediational analysis. The study's results suggest that two types of EMS and autobiographical memory specificity were differential mediators of the relationship between emotional and physical abuse and neglect and parental care and overprotection with BPD characteristics. Clinical implications and future research directions are discussed.

Section C contains an appendix of supporting documentation.

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MAJOR RESEARCH PROJECT

SECTION A:

LITERATURE REVIEW

The interpersonal correlates of overgeneral autobiographical memory:

A scoping review.

WORD COUNT: 7896 (264) WORDS

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Abstract

The phenomenon of overgeneral autobiographical memory (OGM) has potential value for clinical formulation, intervention and psychotherapeutic outcomes. This scoping review sought to investigate the interpersonal correlates of OGM using three research questions: What is the relationship between childhood interpersonal experience and OGM in adulthood? How does OGM affect interpersonal and social functioning in adulthood?
What other factors are implicated in the association between childhood interpersonal experiences, OGM, and social/interpersonal functioning in adulthood? Thirty one papers were identified. A checklist from the Critical Appraisal Skills Programme (CASP; 2013) guided a quality assessment of each study. The review suggests a relationship between sexual, physical and emotional abuse in childhood and OGM in adulthood. In addition, the review suggests a relationship between OGM and impaired social problem-solving ability in adults. A review cannot reach firm conclusions about the suggested relationships because the quality of the identified studies are compromised by threats to statistical validity. Future research questions consider the role of confounding variables and improved methodological designs and procedures. The clinical, theoretical and ethical implications of the review and future research questions are discussed.

Keywords: Overgeneral autobiographical memory, interpersonal, social, relationship, functioning

Autobiographical Memory

Autobiographical memory, also known as episodic memory, refers to the recollection of personal life experiences (Rubin, 2005). Distinguishable from semantic memory (the knowledge of facts) by a self-knowing characteristic termed autonoetic awareness (Tulving, 1985), autobiographical memory facilitates the capacity for self-reflection, self-agency, self-ownership and personal temporality (Klein, German, Cosmides, & Gabriel, 2004).

The Self-Memory System. Conway and Pleydell-Pearce (2000) propose that autobiographical memory operates within a Self-Memory System (SMS). The SMS describes autobiographical memories as "transitory dynamic mental constructions generated from an underlying knowledge base" (Conway & Pleydell-Pearce, 2000, p. 261).[1] Within this knowledge base, three stages of memory specificity are described: lifetime periods, general events and event-specific knowledge. Lifetime periods refer to general themes characteristic of a period in life. General events refer to repeated or single lifetime episodes. Event-specific knowledge refers to the highly specific details of past events. Figure 1. illustrates these stages.

According to the SMS, event-specific knowledge is accessed via one of two retrieval processes. Generative retrieval involves a "top-down" memory search triggered by a general or abstract cue. This cue instigates a memory search across the network through verbal association, starting from lifetime periods and general events to the eventual activation of event-specific knowledge (e.g. cue for "childhood": "living in London" → "walking to Hyde Park"→ "the day Nicola twisted her ankle"). Direct retrieval involves the direct activation of an event-specific knowledge from an internal or environmental cue.

[1] For a full review of the SMS model please refer to Conway and Pleydell-Pearce (2000).

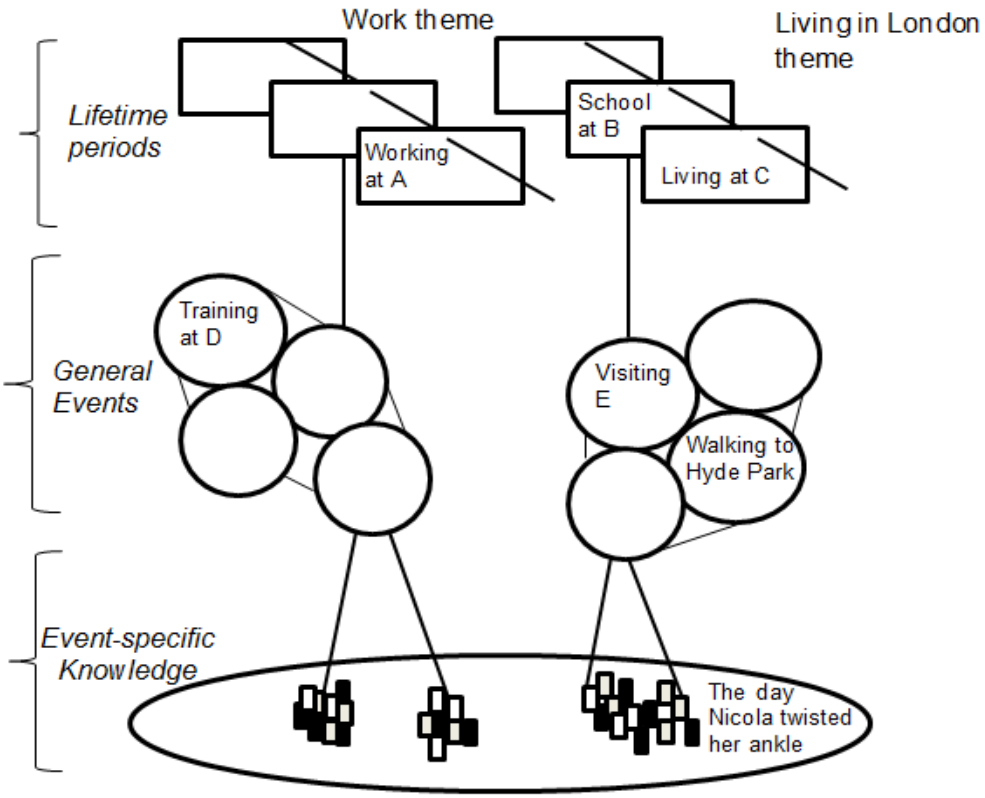

Figure 1. The Autobiographical Knowledge Memory Base. Adapted from "Autobiographical memories and autobiographical knowledge," by M. A. Conway, 1996, in D. C Rubin (Ed.), Remembering Our Past: Studies in Autobiographical Memory (p. 68), Cambridge, England: Cambridge University Press. Copyright 1996 by Cambridge University Press. Reprinted with permission.

The working self, describes an interactive process between the general and lifetime periods of the autobiographical knowledge memory base and one's abstract beliefs, attitudes and goals. The working self ensures that the encoding and accessibility of event-specific knowledge is consistent with one's beliefs and goals, maintaining a coherent sense of self (Conway, 2005).

Over the last few decades, impairment in the retrieval of event-specific knowledge has received increasing theoretical and empirical attention within the field of psychology. The phenomenon of overgeneral autobiographical memory (OGM) has been of particular interest.

Overgeneral Autobiographical Memory (OGM)

Overgeneral autobiographical memory (OGM) refers to an impaired ability to retrieve specific autobiographical memories (event-specific knowledge). Williams and Broadbent (1986) first documented OGM among participants who had attempted suicide. The researchers found that this population took longer to recall autobiographical memories compared to a control group. They also noted that these memories were less specific in their content compared to the control group. Williams and Broadbent assessed memory specificity using a cued recall test called the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986). The AMT remains the most commonly used measure of OGM.

The Autobiographical Memory Test (AMT). In line with standard AMT procedures, five positive and negative cue words are presented to participants one at a time, in an alternate fashion – e.g. "proud", "ugly". Participants are asked to provide a specific memory that comes to mind when presented with each cue word and they are given one minute to do so. A specific memory is defined as one that occurs in a particular context and within a day e.g. "when I went to John's wedding". A general memory is categorised as either categorical or extended. Categorical refers to events that share common elements e.g., "when I go to weddings". Extended refers to an event that lasts more than one day e.g. "when I went on holiday to France". The differences between these types of memories are explained to participants and should they provide a general memory during the task, they are prompted to produce a specific memory by being asked, "can you think of a specific time – one particular episode?" (p. 145). The outcome of the AMT is the number of specific

memories retrieved by the participant. Since 1986, studies have adapted and modified AMT procedures. Moore and Zoellner (2007) identify variations including the differential methods of cue-word presentation, choice of cue-words and the methods of scoring responses including the issue of how to handle omissions.[2]

Theory and mechanisms of OGM. The CaR-FA-X model (Williams et al., 2007) provides a theoretical framework in which three mechanisms of OGM are proposed – capture and rumination (CaR), functional avoidance (FA) and impaired executive control (X). When there is a predominant focus on conceptual self-relevant information in the early stages of a memory search, such as that during rumination, individuals are described as being "captured" on a general or conceptual level of memory retrieval. The capture and rumination mechanism proposes that this can lead to the inaccessibility of specific autobiographical memories. The functional avoidance mechanism serves to ward off distressing emotions that might arise with access to specific memories. Finally, the executive control mechanism refers to the inaccessibility of specific memories due to deficits in one's working memory capacity.

OGM: clinical implications. Both the SMS and Car-FA-X models imply that an inability to access specific autobiographical memories can compromise a coherent sense of self, the regulation of emotion and interpersonal goal-directed activity (Klein et al., 2004; Williams et al., 2007). Accordingly, OGM has significant clinical implications for psychological wellbeing and interpersonal functioning. As psychological therapies rely on anamnesis – the recalling and revisiting of events (Healy & Williams, 2005), OGM may hold further implication for clinical formulation and psychotherapeutic process and outcome.

[2] Omission refers to the instance when no memory is retrieved.

Rationale and Aims for the Current Review

For the concept of OGM to be useful in clinical settings, factors that are associated with its origins and effects need identifying. Previous evaluative reviews are limited to exploring OGM's association with affective psychopathology and its role as a vulnerability factor for depression (Moore & Zoellner, 2007; Williams et al., 2007). No review to date has considered the interpersonal correlates of OGM as a primary research question.

The current review sought to investigate the evidence for a relationship firstly between childhood interpersonal experience and OGM in adulthood, and secondly, between OGM and interpersonal/social functioning in adulthood. The review aimed to answer the following questions:

1. What is the relationship between childhood interpersonal experience and OGM in adulthood?

2. How does OGM affect interpersonal and social functioning in adulthood?

3. What other factors are implicated in the association between childhood interpersonal experiences, OGM, and social/interpersonal functioning in adulthood?

These questions were examined under the following framework;

Literature review. First, a review presents the current state of literature pertaining to research questions 1 and 2. The theoretical and empirical issues emerging from the literature are discussed. Question 3 will be then considered in light of the literature review for questions 1 and 2.

Summary. A summary for each question is provided which outlines the conclusions that can and cannot be drawn from the literature.

Implications for future research and clinical practice. Finally, future research questions are identified and the relevant clinical and ethical implications are discussed.

Method

Search Strategy

An advanced search was conducted using the following databases; ASSIA, CINAHL, PsycINFO, Web of Science, Google Scholar and the Cochrane Database of Systematic Reviews. Key search terms referred to MeSH subject headings (National Library of Medicine, 2013) and included "general" OR "specific" AND "autobiographical memory" with derivatives of "social" and "interpersonal" (see Appendix A for a full list of search terms). A search of published studies was conducted up until August 2013 – week 3. No start date was specified. Appendix A provides a detailed outline of the search strategies employed and the inclusion/exclusion criteria applied.

Inclusion and Exclusion Criteria

An inclusion and exclusion criteria were applied to each abstract. These were as follows:

1. What is the relationship between childhood interpersonal experience and OGM in adulthood? Articles were included if the participants were aged 18 years or older and if the childhood experience in question occurred at or before the age of 18. Articles were excluded if they were not published or available in the English language or if the study concerned events and experiences that were not interpersonal in nature – e.g. an accidental burn injury. Sixteen articles were identified.

2. How does OGM affect interpersonal and social functioning in adulthood? Articles were included if the participants were aged 18 years or older. Articles were excluded if the material used to measure overgeneral autobiographical memory was primed towards social-threat specific material. Articles were also excluded if not published or available in the English language. Fifteen articles were identified.

Assessing the Quality of Studies

Each article was read and summarised (see Table B1 and B2 in Appendix B). The case control checklist from the Critical Appraisal Skills Programme (CASP; CASP-UK, 2013) was employed as a tool in which to guide and prompt an evaluation of the studies (see Table C1 and Table C2 in Appendix C). The CASP checklist was identified as an assessment tool in light of guidance that discourages the use of scoring systems in assessing study validity (Booth, Papaioannou, & Sutton, 2012). The CASP checklist was thought appropriate as the CASP organisation has been credited for developing evidence-based approaches within health and social care for twenty years (CASP-UK, 2013).

Literature Review

A summary of each study's demographic and methodological features is provided in Table D1 and Table D2 (Appendix D). Each study utilised the AMT as a measure of OMG unless otherwise stated.

1. What is the Relationship Between Childhood Interpersonal Experience and OGM in Adulthood?

Incidence of childhood sexual abuse (CSA). The first study to consider the relationship between childhood interpersonal experience and OGM in adulthood was that of Kuyken and Brewin (1995). Their study focused on the incidence of childhood sexual abuse (CSA) which remains the most common childhood interpersonal experience documented in the literature. Kuyken and Brewin (1995) found that women reporting CSA retrieved significantly greater general memories on first recall to positive and negative cue words on the AMT compared to women who did not report CSA. Participants were inpatient and outpatients of a psychiatric hospital with a diagnosis of a major depressive episode.

Two studies applied the OGM paradigm to community samples. McNally et al. (2006) and Raymaekers, Smeets, Peters and Merckelbach (2010) found that participants with

repressed,[3] recovered[4] and continuous[5] memories of CSA had significantly greater difficulty retrieving specific autobiographical memories compared to controls without a history of CSA.

Two studies examined OGM and CSA among a community sample of women without prior knowledge of self-reported CSA prevalence. Aglan, Williams, Pickles and Hill (2010), and Henderson, Hargreaves, Gregory and Williams (2002) found similar prevalence rates of CSA in the community and among undergraduates of 22.2% and 28% respectively. Women who reported having experienced CSA were found to produce less specific memories than those who did not report CSA. Aglan et al. (2002) attempted to enrich this association by implying that CSA was a predictor of OGM. However, they do not report regression analysis to support this conclusion.

In contrast to an emerging trend, Ogle et al. (2013) found no significant association between CSA and reduced memory specificity among a sample of adults with and without a CSA history. There is a marked methodological difference in how OGM was assessed in this study compared to others. Ogle et al. utilised the Autobiographical Memory Interview (AMI; Kopelman et al., 1989) as opposed to the AMT. The authors describe the AMI as requiring participants to freely recall specific memories from three periods of their life. A score of 0-3 is provided based on the specificity details of the given memory, including whether a time

[3] People "who believed that they had been sexually abused as children…[who] inferred their abuse histories from various 'indicators' such as weight gain, sexual dysfunction, 'body memories' and depressed mood" (McNally et al., 2006, p. 528).

[4] "…people who claimed there was a period in their life in which they apparently had no memory of the abuse" (Raymaekers et al., 2010, p. 389).

[5] People who "…reported always having remembered their sexual abuse" (Raymaekers et al., 2010, p. 528).

and place were referenced. The authors identify the AMI as having good validity properties but do not provide a reference to support this claim. The differences in the methodology used to measure OGM by Ogle et al. (2013) compared to the aforementioned studies compromises a comparison of findings. Ogle et al. conclude that a relationship between CSA and OGM may be characteristic to the use of the standard AMT and cite Hauer, Wessel, Geraerts, Merckelbach and Dalgleish's (2008) study as evidence of this.

Hauer et al. (2008) found that community participants with a history of CSA retrieved significantly fewer specific memories than controls when using the standard AMT. When the same group of participants were administered a modified version of the AMT, this finding was absent. In the modified AMT, the presented cue words contained or were associated with image-based information e.g. "cuddle" and "funeral". The authors argue that the cue words in the standard AMT elicit general memory retrieval processes whereas the modified version prompts direct memory retrieval with the use of more vivid and concrete cue words. Hauer et al. (2008) and Ogle et al. (2013) expose a bias across the literature for utilising the AMT as a measure of OGM. Their conclusions suggest that the observed relationship between childhood sexual abuse and OGM may be due to the retrieval demands characteristic to the standard AMT.

Incidence of childhood physical abuse. In the aforementioned studies of Kuyken and Brewin (1995), and Aglan et al. (2010), no significant findings were reported between childhood physical abuse and OGM. Conversely, Hermans et al. (2004), found that increased incidences of childhood physical abuse were associated with overgeneral memory recall among an adult inpatient population all of whom had a diagnosis of Major Depressive Disorder. This finding was based on a highly significant correlation, of large effect size, which was supported by a simple t-test analysis. Using additional regression analyses, this

study was the first to suggest that abuse, specifically childhood physical abuse, held a predictive relationship with memory specificity.

Incidence of childhood emotional abuse. Raes, Hermans, Williams and Eelen (2005) divided female undergraduates into high and low memory specificity groups based on an initial written administration of the AMT in a group setting. The participants were then administered the AMT verbally and individually, around one month later. Correlational analysis with the low specificity group found a significant correlation of large effect size, which indicated that increased experiences of childhood emotional abuse[6] were associated with reduced first specific memory recall. This finding was supported by a significant randomisation test. In this study it not clear whether the participants' first and second AMT scores were compared for test-retest reliability. It is further unclear whether potential differences between the first and second AMT performance resulted in a reallocation between high and low specificity groups. Finally, allocation to either group was dependent on participants retrieving ten (high group), or six or less (low group) specific memories. The study's findings are therefore likely to be specific to participants who exhibit an extremity of OGM.

Incidence of CSA, childhood physical abuse, physical neglect, emotional abuse and emotional neglect. Wessel, Mareen, Peeters, Arntz and Merckelbach (2001) conducted a study comparing psychiatric hospital outpatients (with a diagnosis of Major Depressive Disorder) with a control group. Using linear regression they found that CSA, childhood physical abuse, physical neglect, emotional abuse and emotional neglect did not individually predict memory specificity. The authors did not use a combined or weighted abuse score in analyses. In discussion of the results, the authors note that their sample constituted a low

[6] Defined as "…constantly being belittled, teased, called names, threatened verbally or unjustly punished" (p. 135).

prevalence of abuse incidences, with participants scoring in the minimal to moderate range. These findings do not undermine a relationship between childhood abuse factors and OGM but question a predictive relationship between the two among participants with minimal to moderate abuse histories.

Incidence of childhood abuse (no type specified). Four studies sought to examine the association between childhood abuse and OGM using measures either without a specification of abuse type, or those that combine the abuse subscales to produce a weighted abuse score often referred to as a childhood trauma score. Dalgleish et al. (2003) found a highly significant positive correlation between parental abuse as measured by incidence of verbal, physical and sexual violence, and overgeneral first memory recall to negative cues among participants with a diagnosis of an eating disorder and controls.

Peeters, Merckelbach and Boon-Vermeeren (2002) found that higher weighted scores of CSA, childhood physical abuse, physical neglect, emotional abuse and emotional neglect significantly predicted memory specificity of negative cue words among outpatients of a mood disorder unit with a diagnosis of Major Depressive Disorder. The authors note that the findings produced by linear regression are limited by the study's small sample size (n=25). The range of abuse scores that constituted a weighted childhood trauma score were not provided. An understanding of each abuse variables' individual contribution to the observed relationship is therefore unclear.

The remaining two studies did not find evidence of a relationship between childhood abuse and OGM. Wilhelm, McNally, Baer and Florin's (1997) study using adults with and without a diagnosis of Obsessive Compulsive Disorder (OCD) found no relationship between OGM and the experience of either CSA or childhood physical abuse. This finding is limited in that it is supported only by correlational analysis based on four (OCD group) and eight (controls) participants reporting a history of abuse.

Mowlds et al. (2010) did not find a significant relationship between memory specificity and people with and without a history of childhood trauma among participants with a diagnosis of Bipolar Disorder. The authors' method of categorising incidences of abuse might account for these findings. Initially, they report a very high prevalence of abuse (94.2%) using the Trauma History Questionnaire (THQ; Green, 1996 as cited in Mowlds et al., 2010). For the analysis however, the participants appeared to have been split into 'childhood trauma' and 'no childhood trauma' groups based on a second measure – the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998). Participants were allocated to the "childhood trauma" group if they endorsed abuse experiences within a moderate to severe level on the CTQ. Subsequently, of the 49 participants reporting trauma initially, only 25 were included in the "childhood trauma" group in analyses. This feature of the study suggests that the reported findings are specific to severe incidences of childhood trauma.

Characteristics of abuse. A small group of studies have sought to consider the effect of the child's circumstances on OGM. Two studies found that an earlier age of CSA onset was significantly correlated with greater OGM in suicidal participants and community participant samples with small to medium effect size (Burnside, Startup, Byatt, Rollinson, & Hill, 2004; Crane & Duggan, 2009). Burnside et al. (2004) also found that an increased duration of CSA (in months) was associated with greater recall of general memories. In their study, a multiple regression analysis revealed that a model containing the reported age at abuse, the severity of the worst incidence of abuse, the duration of abuse (in months) and severity of current depression were marginal predictors of categoric memory recall. Among these variables, only the partial correlation of CSA with categoric memory recall remained significant.

T-tests conducted by the aforementioned study of Henderson et al. (2002) revealed that participants with a history of CSA who had been abused by close relatives (father or sibling) provided significantly fewer specific memories than those who had been abused by more distant relatives (grandfather, stepfather or uncle).

Considering events after the incidence of abuse, Raes et al. (2005) used randomised tests to compare group means and found that a lack of perceived support after emotional abuse was associated with the retrieval of fewer specific memories.

Theoretical and empirical issues.

Concepts of childhood abuse. The concept of childhood abuse is culturally bound (Buchanan, 1996) and has changed profoundly across time reflective of the differential construction of childhood by society. The concept of childhood abuse gleaned across the measures used in the literature is the self-reported exposure to a set of experiences defined as abusive by western society. The literature does not differentiate between the incidence of abuse and the individuals' appraisal of the abuse. For example, an individual might see the physical punishment they received as a child not as abusive but as a socially accepted parental behaviour characteristic of a specific culture and time. Accordingly, there may be a suggestion of a relationship between childhood abuse variables and OGM in the current literature but there is no distinction between subjective/objective perceptions of this abuse. Furthermore, without reference to cultural and generational contexts, the findings are specific to modern-day westernised definitions of abuse. Finally, the use of small, homogenous participant populations of mostly working age females reporting mood difficulties means that findings cannot be generalised to wider populations. An understanding of the relationship between childhood interpersonal experiences and OGM among men, older adults and individuals from non-western cultures is absent.

Measurement of childhood abuse. The measurement of childhood abuse varied across the studies (see Table D1, Appendix D). Eight studies used validated questionnaires and eight studies used interview procedures to identify inclusion/exclusion criteria e.g. "…physical abuse (is rated) where the child has been hit repeatedly with a fist or implement" (Aglan et al., 2010, p. 364). The use of questionnaires and inclusion/exclusion criteria each have their disadvantages but aspects of the latter carry the specific risk of discounting genuine incidences of abuse. This subsequently questions the allocation of participants to groups based on abuse history. For example, in some studies, for participants to be considered as having been sexually abused, the perpetrator of the abuse would have had to have been at least five or ten years older than the participant (Kuyken & Brewin, 1995, McNally et al., 2006; Raymaekers et al., 2010). With half of the studies utilising this method of measuring abuse, only a limited type of abuse has been investigated. This is further compounded by the common tendency to split participants into dichotomous groups of "abused" and "non-abused" based on exclusive sets of criteria or the endorsing of "minimal to mild" versus "moderate to severe" abuse experiences.

The studies reviewed are marked by pervasive use of small sample sizes, potential inconsistencies in abuse definition and dichotomous splitting. In reference to Shadish, Cook and Campbell's (2002) discussion of threats to the validity of statistical conclusion, these features present as threats of low statistical power, unreliability of measures and restriction of range.

2. How Does OGM Affect Interpersonal and Social Functioning in Adulthood?

Social problem-solving. Fourteen of the fifteen studies pertaining to the review's second question have explored the relationship between OGM and impaired social-problem solving across clinical and control populations. To measure social-problem solving ability, all but one of these studies have utilised the Means End Problem Solving Procedure (MEPS;

Platt & Spivack, 1975). Here, participants are presented with hypothetical interpersonal problems set within a story e.g. having to make new friends when moving to a new neighbourhood. The participant is provided with the beginning and then the end of the story, when the desired goal is reached. The participant is asked to make up the story in-between the beginning and the end (D'Zurilla, Nezu, & Maydeu-Olivares, 2004). The most commonly used outcome are MEPS "means" scores – a measure of the individual's ability to generate a set of sequences or "means" that are necessary to attain the specified goal. Other studies have utilised MEPS "effectiveness" scores based on Marx's (1987) criteria of subjectively rating the effectiveness of the said strategy using a three-stage Likert scale (0 = "not at all effective", 1= "effective", 2 = "very effective"). The range of Likert Scales differs among studies but is usually subjected to measures of inter-rater reliability.

Parasuicide/suicide/controls. The first study in this area was conducted with parasuicidial patients admitted to hospital and a control group. Evans, Williams, O'Loughlin and Howells (1992) found a significant positive correlation of medium effect size between low specificity scores and low MEPS effectiveness scores across both groups. Sidley, Whitaker, Calam and Wells (1997) replicated these findings among a parasuicidal participant group. Pollock and Williams' (2001) study produced similar results. They found a significant positive correlation between specificity of memory recall and MEPS effectiveness scores for a suicidal group, and specificity of memory recall and MEPS means for a control group. Effect sizes were large and medium respecitively. Kaviani, Rahimi and Naghavi (2004) replicated these findings in a Middle-Eastern sample. Highly significant positive correlations of medium effect size were found between memory specificity and MEPS means and relevancy ratio scores[7] among Iranian suicidal patients and controls.

[7] (Relevant means/number of means).

Depression/controls. Four studies explored the relationship between OGM and social-problem solving among participants who were depressed. Goddard, Dritschel and Burton published three consecutive studies[8] using a clinically depressed group, a non-clinically depressed group of students and non-depressed controls. Positive correlations of medium to large effect size were found between the number of specific memories retrieved on the cueing task and MEPS means (Goddard et al., 1996; 1997; 2001), and MEPS effectiveness scores (Goddard et al., 1997; 2001) among the depressed groups. Among controls, the retrieval of specific memories was positively correlated with MEPS means (Goddard et al., 1996) and effectiveness scores (Goddard et al., 2001) with the exception of the student sample (Goddard et al., 1997).

By providing evidence for OGM as a mediator between rumination and ineffective problem-solving, Raes et al. (2005) found memory specificity to be a significant predictor of MEPS effectiveness scores among patients with a diagnosis of Major Depressive Disorder.

Complicated grief/bereavement. Maccallum and Bryant (2010) reported significant positive correlations of large effect size between specific memory recall of positive cues and relevant MEPS means and effectiveness scores across bereaved participants with and without complicated grief (CG).

Post traumatic stress disorder/trauma-exposed controls. Sutherland and Bryant (2008) found a significant positive correlation of medium effect size between specificity of memory recall and MEPS means and effectiveness scores among trauma-exposed participants with and without a diagnosis of PTSD.

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[8] These studies do not specifically cite the use of the AMT, instead citing the use of an "Autobiographical Memory Cueing Test" (no reference provided). The methodological process described is however, that outlined in the AMT according to Williams and Broadbent (1986).

Borderline personality disorder (BPD). Kremers, Spinhoven, Van der Does and Van Dyck (2006) adapted MEPS methodolody in their study with outpatients participants with BPD. They used "active", "passive" and "inappropriate" MEPS scores and introspection/reflective scores.[9] In addition to the AMT, they used the autobiographical future cueing task (Williams et al., 1996), a variant of the AMT which asks participants to imagine a future event in which they experience the cue-word in presentation (as opposed to a previously experienced event). In the future cueing task, a significant positive correlation, of medium effect size, was found between the percentage of specific future events after negative cues and increased MEPS introspection/reflection scores. A comparison of the findings to other studies is limited by the use of non-traditional MEPS scoring methods and the absence of the standard AMT results which are not reported.

Reverting to more traditional scoring methods, Maurex et al. (2010) found positive correlations of medium effect size between specificity of memories on the AMT and MEPS mean scores among female participants with a diagnosis of BPD.

Social perfectionism. Rasmussen, O'Connor and Brodie (2008) define social perfectionism as "…the belief that others hold unrealistic and exagerrated expectations of us that must be met in order to gain acceptance or approval" (p. 65). In this study, suicidal behaviour was understood to be an indicator of one's ineffective problem-solving ability. Using regression analyses and post-hoc testing, they found that higher levels of social perfectionism interacted with higher levels of OGM (to positive cues) to predict high levels

[9] "Active" defined as "effective step towards solving a problem initiated by the protagonist". "Passive" is defined as "action initiated by another person which progresses the story towards a given ending". "Inappropriate" was defined as "all maladaptive behaviours…" and "introspection/reflection" as "cognitive processes on part of the protagonist such as thinking, deciding…" (p. 133).

of suicidal ideation. In discussion, the authors propose that a high level of OGM prevents access to specific, and effective problem-solving strategies which leads to a perceived inability to bring about change when experiencing a difficult situation. This, it is proposed, interacts with feelings of defeat, which are brought on by high levels of social perfectionism. Subsequently, these interactions are said to predict suicidal behaviour.

Lifespan. Moving a focus away from clinical groups, Beaman, Pushkar, Etezadi, Bye and Conway (2007) attempted to explore the direction of OGM in its relationship with social-problem solving among younger (aged 19-25) and older adults (aged 61-83). Regression analyses revealed that the number of specific memories was a significant predictor for relevant MEPS means across both age groups.

Social phobia. One study sought to examine the direct link between OGM and social-related pathology. Heidenreich, Junghanns-Royack and Stangier (2007) did not report any significant differences in OGM retrieval between participants with a diagnosis of social phobia and co-morbid depression and participants with social phobia and a control group.

Theoretical and empirical issues.

Concept and the measurement of social problem-solving. The application of the MEPS varied across studies (see Appendix D). Some studies selected five scenarios, others four, and some three, of the traditional ten. Sutherland and Bryant (2008) further adapted stories to include themes of trauma for relevance to their trauma-exposed participant group. Kaviani et al. (2004) adapted these stories to suit a Middle-Eastern participant group but did not comment on what these changes constituted. As with the AMT, outcomes are products of subjective ratings based on one or two raters' opinions. Issues relating to use of differential stories, adaptation and potential bias/priming effects are not discussed in the literature. An understanding of MEPS reliability and construct validity is therefore limited. Moreover, with

the exception of one Iranian participant sample, MEPS scenarios are likely to be culturally specific to European, North American and Australian populations.

An investigation of how OGM affects interpersonal and social functioning in adults shows an overwhelming focus on impaired social-problem solving as measured by the MEPS. It is not clear how reduced MEPS means and effectiveness scores translate into real life patterns of interpersonal and social functioning. This compromises the generalisability of findings and limits the understanding of OGM's relationship with interpersonal and social functioning to artificially constructed scenarios. These limitations are compounded by the use of small sample sizes and correlational analyses across the literature.

Similarly to question one, the studies reviewed are marked by pervasive use of small sample sizes and variation in administration of the MEPS, constituting the following threats to the validity of the findings - low statistical power and unreliability of measures (Shadish et al., 2002).

3. What Other Factors are Implicated in the Association Between Childhood Interpersonal Experiences, OGM and Social/Interpersonal Functioning in Adulthood?

The association between childhood interpersonal experience, OGM and interpersonal/social functioning is likely to be marked by a number of complex confounding variables. Without identifying these variables and understanding their role in these relationships, the reported findings could be spurious.

Developmental and ecological factors. Studies investigating the relationship between childhood interpersonal experience and OGM have focussed on childhood abuse. Where more implicit, non-abusive experiences are considered, a substantial gap in the literature is unveiled. Only one study sought to identify more implicit social factors as associates of OGM, finding that greater paternal indifference was associated with less specific memory recall (Kuyken & Brewin, 1995). Valentino's (2011) conclusions following

a review of the etiological models of OGM supports this point by identifying a need to consider developmental factors that affect the encoding, storage and retrieval of autobiographical memory at multiple levels of ecology. Valentino's (2011) developmental psychopathology framework of OGM draws upon research on typical and atypical autobiographical memory development in children. Valentino's framework considers factors at the macrosystem, exosystem, and microsystem level.

At the macrosystem level, cultural practices, values and beliefs are proposed to influence memory specificity. Citing autobiographical memory research cross-culturally, Valentino proposes that observed biases in retrieval reflect socio-cultural difference. For example, it is posited that Euro-American culture with an individualistic emphasis is encouraging of memory processing that is more analytical. Asian cultures, with an emphasis on collectivism and relatedness, are said to encourage more holistic levels of memory processing.

Valentino's account of the exosystem highlights the potential influence of the immediate community context in which children reside. Four of the studies in the review found higher levels of education to be correlated with, and significant predictors of, memory specificity (Beaman et al., 2007; Heidenreich et al., 2007; Maurex et al., 2010; Wessel et al., 2001). Education might be considered one exosystem factor.

The microsystem is "represented by the family environment, and includes family dynamics as well as the parents' developmental histories, psychological resources and parenting styles" (Belsky, 1980 as cited in Valentino, 2011, p. 40). Valentino identifies verbal and non-verbal parent-child interactions as potential influences on memory specificity. Research is referenced which suggests that mothers who talk of past events in rich and detailed ways with their children (and not low elaborative and repetitive ways) have children

who are able to discuss the past in a more elaborative style (Fivush & Fromhoff, 1988; Reese, Hayden, & Fivush, 1993).

Valentino's framework also considers ontogenic factors - several stage-salient developmental tasks that if not resolved, may leave the individual vulnerable to developing OGM. The importance of developing a secure attachment with a caregiver is included as an ontogenic factor. This attachment is said to provide a template in which the child creates representational models of themselves and others – a frame which guides interpersonal relations. Valentino highlights the importance of representational models in autobiographical memory development, specifically how the development of the self-concept organises schemata that allows information about the self to be better remembered. In line with this hypothesis, Henderson et al. (2002) found that participants with CSA histories not only displayed greater difficulty in retrieving specific memories, they also held more dysfunctional attitudes than controls. What these dysfunctional attitudes are and how they relate to OGM is however unclear.

Although Valentino's model may be considered somewhat simplistic, it raises two issues. First, the literature reviewed does not consider wider systemic and contextual childhood interpersonal experiences in the relationship with OGM. Second, the literature fails to incorporate theoretical and empirical findings from the wider autobiographical memory literature, including reference to the neuropsychological literature concerning memory networks. Certainly, in the current review, OGM is considered largely as a separate entity to autobiographical memory.

Psychiatric diagnosis. Psychiatric and clinical pathology commonly forms the basis for participant selection or group comparison across the studies. Depression is the most popular diagnosis/disorder investigated in the literature. Central to common diagnostic systems' descriptions of Major Depressive Disorder, are changes to self-specific mood and

functioning e.g. depressed mood, loss of interest or pleasure (The Diagnostic and Statistical Manual of Mental Disorders; DSM –IV TR; First and Tasman, 2004). Clinical diagnoses and difficulties that centre on interpersonal functioning as primary diagnostic or descriptive criteria have not received such attention. These diagnoses would include that of Borderline Personality Disorder (BPD; DSM-IV-TR; First and Tasman, 2004) which has been associated with a high prevalence of childhood trauma (Ball & Links, 2009). Where BPD has been considered in the current literature, it has formed only the basis for participant selection (Kremers et al., 2006; Maurex et al., 2010). The relationship between BPD (as measured on a continuum) and social problem-solving has not been investigated within the OGM paradigm.

A shift from self-specific mood disturbance towards interpersonal pathology would hold further relevance to a previous critique of the MEPS by shedding light on the "real-life" associates of OGM bias.

Representations of the self and other. Theoretical and empirical findings from the review imply a potential role for representational models of the self and other in the relationship between childhood interpersonal experiences, OGM, and social/interpersonal functioning. Theoretical findings have included the role of the working self within the SMS (Conway & Pleydell-Pearce, 2000), the capture and rumination mechanism of the CarFaX model (Williams et al., 2007), the consideration of ontogenic ecological factors (Valentino, 2011) and the idea that successful interpersonal problem-solving strategies rely on access to, and instances of, successful interpersonal problem-solving (Rasmussen, O'Connor, & Brodie, 2008). Empirically, these have included the findings that abuse victims' relationships to perpetrators, and the level of support offered to them are associated with OGM (Henderson et al., 2002; Raes et al., 2005).

Despite the implication of representational models in the relationships in question, these have not been the direct subject of empirical investigation. Early Maladaptive Schema (EMS) is defined as "broad and pervasive themes or patterns made up of memories, feelings, sensations, and thoughts regarding oneself and one's relationships with others" (Young, 1999, p. 7). EMS and measures thereof may provide a means to investigate self-representation.

Cognitive functioning. In light of the verbal presentation of the AMT and the proposed role of executive functioning in the CarFaX model of OGM, it would seem self-evident that verbal memory, working memory and verbal fluency could be considered as factors which affect the relationships in question. This idea is supported by the finding that higher levels of education are positively correlated with memory specificity recall.

Seven studies considered memory and fluency factors (Beaman et al., 2007; Crane & Duggan, 2009; Maccallum & Bryant, 2010; Maurex et al., 2008; McNally et al., 2006; Ogle et al., 2013; Raes et al., 2005) but only four included these variables in analyses with measures of memory specificity. The results were mixed. Maurex et al. (2001) found a positive correlation between working memory ability and increased memory specificity. Ogle et al. (2013) found that working memory predicted memory specificity based on the AMI. The remaining studies found no significant relationship (Beaman et al., 2007; Raes et al., 2005). Evidently, there is a lack of understanding about the role of cognitive functioning in the relationships in question. This issue is further reflective of a previous critique which highlights the gap between OGM and the neuropsychological literature.

The AMT. The findings that emerge from the literature are in all but one study (Ogle et al., 2013) based on the use of the AMT. The AMT is considered the "gold standard" methodology in which to measure OGM (Griffith et al., 2011, p. 5). The AMT has not however been applied widely among normative populations and no attempt has been made for it to be standardised. This is interesting because the concept of OGM was created and

understood to be a phenomenon of pathology. Without normative distributions for comparison, the conclusion that one might have an autobiographical memory recall that is "over" general is problematic.

The absence of attempts to standardise the AMT might be in part, reflective of the varied practice in which it is administered. As recognised by Moore and Zollener (2007), variations across the current studies included differences in the use of cue-words, the method in which cue-words were presented (written, verbally or both), use of time limits, methods of establishing inter-rater reliability and the choice of AMT outcome (see Appendix D). This can have an effect on AMT findings. As discussed, Hauer et al. (2008) found that the use of more vivid and concrete cue words increased participant's AMT performance. Furthermore, not all of the studies provide details regarding the sequential procedure in which each measure was presented. In some studies it is specifically stated that the AMT was administered after the use of mood measures, raising the possibility of priming effects.

The AMT requires participants to disclose sensitive information and the context and way the measure is administered raises ethical dilemmas and issues. In one study, participants were recruited from hospital within only 15 to 36 hours of admission following a parasuicidal incident (Evans et al., 1992). Without knowledge as to how sensitive issues were handled by researchers, it cannot be assumed that participants were provided with a contained and "safe" environment in which to foster self-disclosure, raising the possibility that the features of the testing environment may impede on the accuracy of data obtained. Beaman et al. (2007) provide support for this point. In their study, a regression analysis reported that the presence of the eldest researcher was a significant predictor of the number of specific memories retrieved. They conclude that factors such as attentiveness of the researcher may have an impact on memory recall.

The discussed methodological issues related to the AMT are characteristic of two threats to statistical conclusion validity - unreliability of measure and extraneous variance in the experimental setting (Shadish et al., 2002). These validity threats imply that the administration of the AMT itself may have affected the findings reported in this review.

Summary

A summary and discussion of the review's findings in relation to each research question is provided below and illustrated in Figure 2.

Summary: What is the Relationship Between Childhood Interpersonal Experience and OGM in Adulthood?

The literature examining the relationship between childhood interpersonal experience and OGM in adulthood has solely focussed on factors of childhood abuse. A review of this literature is suggestive of a relationship between the experience of CSA, childhood physical abuse and childhood emotional abuse with OGM in adulthood. These abusive childhood experiences are associated with increased difficulty retrieving specific autobiographical memories. There is also an indication that a younger age of onset of CSA, a greater duration of CSA, having a close relative as a CSA perpetrator and a lack of support after the experience of emotional abuse are associated with increased difficulty retrieving specific autobiographical memories.

These suggestions are however limited, with the findings based on only 14 studies, all of which use small sample sizes of majority working-age females from western cultures in clinical and community contexts. Most of the studies examine CSA with the use of the standard AMT; a method marked by threats to statistical validity. There is a lack of consideration as to the theoretical and empirical similarities and differences between CSA with other abuse types (including weighted abuse scores), and the AMT compared with modified autobiographical memory tests and the AMI. Further, not all of the studies report

abuse prevalence rates and AMT related data (e.g. the mean number of specific memories retrieved) which limits a comparison of findings and undermines subsequent conclusions.

Compounding these limitations are the statistics used to generate findings which do not provide a rich understanding of the suggested relationships. With the exception of regression analyses which identified childhood physical abuse and severe experiences of childhood trauma as predictors of OGM, the literature utilises mainly t-test, ANOVA and correlational analyses.

In consideration of the above limitations, the review is tentative in concluding whether there is evidence for the suggested relationships.

Summary: How Does OGM Affect Interpersonal and Social Functioning in Adulthood?

Interpersonal and social functioning encompasses a breadth of factors. Despite this, a review of the literature revealed an overwhelming focus on the relationship between OGM and social problem-solving as measured by the MEPS. The literature suggests that OGM in adulthood is associated with an impaired ability to generate necessary and effective step-by-step solutions to artificially constructed interpersonal dilemmas across clinical and control populations. The literature is not suggestive of an association between OGM and social phobia, although this finding is based on one study.

Mirroring the summary drawn from an exploration of childhood interpersonal experiences, the AMT method in which these findings are generated are marked by threats to statistical validity. Similarly, these findings are based on only 14 studies, all of which report small sample sizes with most using only correlational analyses. These characteristics limit statistical validity and provide only basic information about the nature of the association between OGM and social problem-solving. A lack of reported MEPS and AMT scores limits a comparison of studies and the strength of each study's conclusions. In generalising the

findings, it is unclear what the "real-life" psychological or behavioural markers of impaired social problem-solving ability are, as measured by the MEPS.

In light of the above limitations, a review is tentative in concluding whether there is evidence for the association between OGM and impaired social-problem solving. Accordingly, it is not clear whether these findings are usefulness for clinical contexts at present.

Summary: What Other Factors are Implicated in the Association Between Childhood Interpersonal Experiences, OGM and Social/Interpersonal Functioning in Adulthood?

A critique of the literature suggests that it may be useful to consider five groups of factors when investigating the relationship between childhood interpersonal experiences, OGM and interpersonal and social functioning. These have received little attention in the literature.

First, developmental and ecological factors concerned with culture, language and parent-child interaction, including attachment are proposed to affect the development of OGM. Second, psychological difficulties that are marked by compromised interpersonal functioning, such as BPD, have been implicated in the relationship between OGM and social problem-solving and with childhood trauma. Third, theoretical and empirical findings indicate that EMS might be an appropriate concept to investigate the potential role of representational models of the self and others. Fourth, the verbal method in which OGM is measured implies that cognitive functioning, specifically that of verbal ability, may affect memory recall. Fifth, concerns regarding the validity of the AMT imply that the relationships observed may be inadvertently affected by variation in its administration.

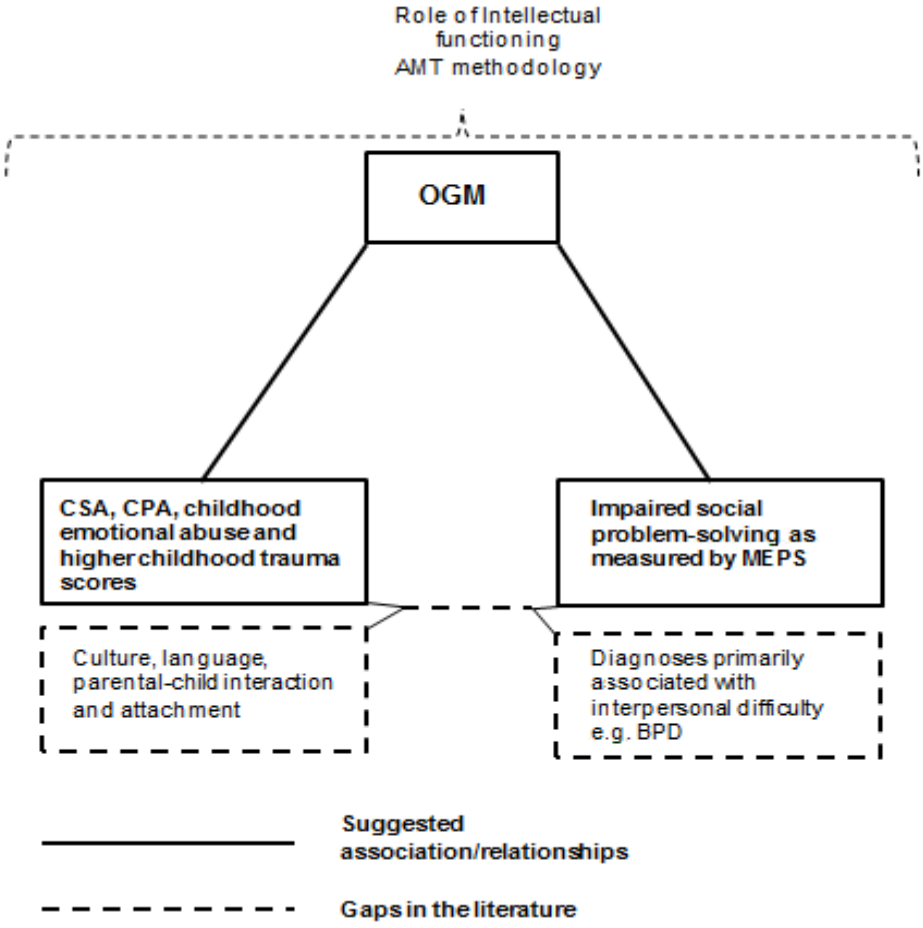

Figure 2. Illustration of the literature review's findings.

Figure 2 illustrates the findings relating to the review's research questions, and the subsequent gaps identified.

Implications for Future Research

Based on a review of the literature the following research questions emerge:

What is the relationship between systemic and contextual childhood experiences such as culture, language, parent-child interaction and attachment, as measured on a continuum, and OGM?

Is OGM related to psychological diagnoses marked by interpersonal functioning difficulties such as BPD?

What relationships exist between childhood interpersonal experiences and impaired interpersonal/social functioning in adulthood? What implications does this have for OGM – will this mark OGM as a potential third variable, mediator or moderator in these relationships?

Is the AMT a valid and reliable measure of OGM?

What relationship do intellectual functioning, EMS and AMT administration have with autobiographical memory specificity recall?

Implications for Clinical Practice

The scoping review suggests that the origins and effects of OGM are associated with early and current interpersonal experiences/functioning. OGM is likely therefore to constitute an important feature of clinical formulation across therapeutic modalities. There are two particular implications for intervention.

First, from a pro-active, preventative perspective, the encouragement of specific autobiographical memory retrieval in childhood may prove useful. This may include the promotion of rich and detailed story telling between carer and child, as suggested by Valentino (2011).

Second, with autobiographical memory specificity associated with improved interpersonal and social functioning compared to OGM, interventions that increase specific autobiographical memory retrieval for people with OGM may be of benefit. Mindfulness is one such intervention found to improve the specificity of autobiographical memory among adults (Hereen, Van Broeck, & Philippot, 2009; Williams, Teasdale, Segal, Zindel, & Soulsby, 2000).

If OGM is to be considered a target for intervention in clinical contexts, this will raise ethical issues. The functional avoidance mechanism of the CaRFaX model (Williams et al., 2007) implies that OGM develops as a mechanism in which to ward off distressing

memories and regulate emotion. The functional avoidance mechanism implies that at some point during an individual's life, OGM might be adaptive. Intervening with this coping mechanism at specific contexts of an individual's life might be harmful. The implementation of interventions that seek to increase autobiographical memory specificity should be based on a comprehensive psychological assessment with reference to this issue.

Conclusions

This scoping review sought to investigate the evidence for a relationship firstly between childhood interpersonal experience and OGM in adulthood, and secondly, between OGM and interpersonal/social functioning in adulthood. The review provides some evidence but not conclusive evidence for the relationships and effects in question. Future research recommendations include the need to widen the investigation of the interpersonal correlates of OGM and to improve the credibility of the methods and analyses utilised in the area. In conclusion, if OGM is to move from a phenomenon of interest into a useful and informative aspect of clinical formulation and intervention, its theoretical potential needs greater empirical support.

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MAJOR RESEARCH PROJECT

SECTION B:

EMPIRICAL PAPER

An investigation of the mediating factors in the relationship between early childhood adversity and borderline personality characteristics in forensic inpatients

WORD COUNT: 7865 (319) WORDS

For submission to the British Journal of Clinical Psychology

A thesis submitted in partial fulfilment of the requirements of Canterbury Christ Church University for the degree of Doctor in Clinical Psychology

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SALOMONS

CANTERBURY CHRIST CHURCH UNIVERSITY

Abstract

Objectives: This study sought to investigate whether three forms of Early Maladaptive Schema (EMS) and autobiographical memory specificity mediate the relationship between abuse and attachment in childhood with BPD characteristics among forensic inpatients. **Design:** The study adopted a quantitative cross-sectional design. **Methods:** Thirty-four male adults residing in medium secure facilities completed self-report measures. Data were analysed using bootstrapped mediation procedures. **Results:** The study's hypotheses received partial support. The EMS of "mistrust/abuse", "entitlement/grandiosity" and autobiographical memory specificity differentially mediated the relationship between emotional and physical abuse and neglect and parental care and overprotection with BPD characteristics. **Conclusions:** In line with attachment theory and the functional avoidance mechanism (Williams et al., 2007), the proposed mediators are conceptualised as adaptive responses to early adversity with potential maladaptive consequences for later interpersonal functioning. Clinical implications encourage the incorporation of these mediators into clinical formulation, intervention and ward practices. It is recommended that future research replicates the study's design with a larger sample and investigates the role of other mediators and moderators in this complex relationship.

Keywords: Forensic inpatients, adversity, attachment, autobiographical memory, early maladaptive schema, borderline personality disorder

Background and Context

The term 'forensic inpatient' broadly refers to individuals who are in contact with the criminal justice system having committed or been suspected of committing a criminal offence, and who have acute or long-term mental health problems. Commonly detained under a section of the Mental Health Act 1983 (amended in 2007), forensic inpatients reside in secure psychiatric units. Among this population, diagnoses of Borderline Personality Disorder (BPD) are highly prevalent (Brady et al., n.d; British Psychological Society, 2006; Esbec & Echeburúa, 2005).

Borderline personality disorder. Borderline Personality Disorder (BPD) is characterised by three long-standing and pervasive features evident from early adulthood. First, patterns of unstable interpersonal relationships are associated with desperate efforts to avoid real or imagined abandonment from others (First & Tasman, 2004). Second, a sense of impending separation or rejection is associated with affective instability and impulsive behaviours. Indicators of these are erratic mood and episodes of inappropriate and intense anger that are difficult to control (Craig, 2005; Millon, Millon, Davis, & Grossman, 1994; Tasman & First, 2004). Third, an uncertain and unstable self-image is associated with the need to seek approval, attention and reaffirmation from others (Craig, 2005).

Childhood abuse, insecure attachment and borderline personality disorder. Previous research has identified an association between abuse and disrupted attachment with caregivers in childhood and diagnoses of BPD in adulthood (Berenz et al., 2013; British Psychological Society & Royal College of Psychiatrists, 2009; Keinänen, Johnson, Richards & Courtney, 2012). Research with forensic inpatients has similarly shown that a high proportion have experienced childhood abuse and/or report absent or poor relationships with their parents as children (Greenall & Jellicoe-Jones, 2007; Iqbal, Dolan & Monteir, 2004; Lewis, Yeager, Swica, Pincus, & Lewis, 1997; Silberman, 2009; Spitzer, Chevalier, Gillner,

Freyberger, & Barlow., 2006; Tyler & Gannon, 2012). Given the overlap between these two groups, it is important to explore the relational patterns that might contribute to these difficulties.

Bowlby's (1969) formulation of attachment offers one theoretical explanation. Central to attachment theory is the concept of representational or working models; "…an individual developing within himself one or more working models representing principal features of the world about him and himself as an agent in it. Such working models determine his expectations…forecasts and…tools for constructing plans of action" (Bowlby, 1969, p. 117). Embedded in Bowlby's notion of working models includes one's expectation and way of relating to others - understood to develop as a result of experiences throughout childhood (Bowlby, 1969).

Bowlby (1969) hypothesised that the experience of prolonged and dominant childhood abuse, neglect and/or the loss and separation of a parent can lead an individual to deny the prolonged and unexpressed distress of not having a caregiver to attach to and love. This process manifests in avoidant, ambivalent or dismissive affective states associated with separation and loss. These affective states can be conceptualised as one of two insecure attachment styles representative of internal models of relationships that direct attention, memory and cognition from infancy to middle childhood (Main, Kaplan & Cassidy, 1985). These attachment styles are outlined in Main, Kaplan and Cassidy's (1985) longitudinal study with children at one and then six years of age. Following a brief separation and reunion with their parents, six-year-old children with insecure-avoidant styles in infancy actively avoided the parent at reunion– attending to environmental stimuli and becoming "ill at ease" (p. 96) when asked to discuss their feelings about the separation. Children who were understood to be disorganised-disoriented in infancy were punishing or "inappropriately role reversing (caregiving)" (p. 96) upon the parents return. When asked of their feelings about the

separation, these children became distressed, irritable and some, self-destructive. The former attachment style is attributed to a fear that seeking comfort from the caregiver will lead the child to be rejected and the latter is attributed to contradictory relationship patterns with caregivers that create a sense of unresolved fear in the child (Shemmings & Shemmings, 2011).

In some contexts, insecure attachment might be adaptive, allowing the child to avoid attachment behaviours that might otherwise cause the caregiver to reject them (West & Sheldon-Keller, 1994). With the transition into adulthood, the opportunity for close and possibly intimate relationships threaten an insecure attachment style giving rise to the previously denied feelings of distress and an internal working model dominated by the feared loss of the attachment and security of a relationship (West & Sheldon-Keller, 1994). West and Sheldon-Keller (1994) describe this scenario being familiar to individuals with a diagnosis of BPD where a lack of belief in the reliability of an attachment relationship may lead to an anxious enmeshment or doubts about the relationship's desirability. Research supports this by showing the most characteristic attachment feature of adults diagnosed with BPD is the feared loss of an attachment figure (Minzenberg, Poole & Vinogradov, 2006; West, Keller, Links & Patrick, 1993). Consistent with attachment theory and reports of high levels of childhood abuse, research has found insecure and dismissive childhood attachment styles to be common among forensic inpatients (Frodi, Dernevik, Sepa, Philipson & Bragesjo, 2001; Van IJendoorn et al. 1997).

The relationship between abuse and insecure attachment in childhood and BPD characteristics in adulthood is not simply linear. Not all children with a history of abuse or insecure attachment go on to develop BPD characteristics in adulthood or become forensic inpatients. The evidence suggests that a number of factors mediate this association. The

literature suggests that two potential mediators are early maladaptive schema (EMS; Young, 1999) and overgeneral autobiographical memory (OGM; Williams & Broadbent, 1986).

Early Maladaptive Schema (EMS)

Early maladaptive schema (EMS) refers to an unconditional, rigid and dysfunctional belief and feeling about oneself in relation to the environment (Young, 1999). EMS develops in childhood as a response to ongoing patterns of adverse interpersonal experiences with family or peers. EMS is understood to be core to an individual's self-concept and will affect cognitive processing; where incoming information is shaped by the EMS leading to dysfunctional and destructive relationships (Young, 1999). Young identifies 18 EMS under five schema domains[10].

Early maladaptive schema and attachment theory share theoretical roots. Both posit that prolonged interpersonal patterns in childhood affect an individual's representational models of the self and other which guide interpersonal functioning. This is supported by research that has found interpersonal-based cognition to mediate the relationship between childhood abuse and BPD characteristics. Arntz, Dietzel and Dressen's study (1999) found that a series of cognitive assumptions[11] characteristic of BPD mediated the relationship between childhood sexual and physical/emotional abuse and BPD symptom severity. Further, Specht, Chapman and Cellucci (2009) specifically found EMS domains of

[10] For a full list of EMS, corresponding domains and the meaning of these please refer to Young (1999, p. 12)

[11] Based on the Personality Disorder Beliefs Questionnaire (PDBQ; Dreessen & Arntz, 1995 as cited in Arntz, Dietzel & Dressen, 1999). A single score reflective of twenty assumptions thought to be specific to BPD are outlined in the paper e.g. "I need to have complete control of my feelings otherwise things go completely wrong" (p. 555).

disconnection/rejection"[12] and "impaired limits"[13] to mediate the relationship between childhood maltreatment and BPD symptom severity.

Among forensic inpatients, the EMS of "mistrust/abuse"[14], "entitlement/grandiosity" [15] and "insufficient self-control/self-discipline" [16] seem relevant mediators; previous research investigating violent offenders' beliefs (Polaschek, Calvert & Gannon, 2009) identify themes that relate to these types of EMS.

Overgeneral Autobiographical Memory (OGM)

Autobiographical memory concerns a person's recollection of their life experiences. Overgeneral autobiographical memory (OGM) refers to an impaired ability to retrieve specific autobiographical memories – events that occur within a particular time and place and over less than a day (Williams & Broadbent, 1986). The CaR-FA-X model (Williams et al., 2007) outlines three mechanisms of OGM – capture and rumination (CaR), functional avoidance (FA) and impaired executive control (X). Individuals are described as being "captured" on a general, conceptual level of memory when there is a predominant focus on conceptual self-relevant information in the early stages of a memory search, such as that

[12] " Expectation that one's needs for security, safety, stability…will not be met in a predictable manner" (Young, 1999, p.12)

[13] "Deficiency in internal limits, responsibility to others, or long-term goal orientation." (Young, 1999, p. 14)

[14] "The expectation that others will hurt, abuse…manipulate or take advantage…the perception that harm is intentional" (Young 1999, p.12)

[15] "The belief that one is superior to other people: entitled to special rights…or not bound by the rules of reciprocity that guide social interaction" (Young, 1999, p.12)

[16] "Pervasive difficulty or refusal to exercise sufficient self-control…or to restrain excessive expression of one's emotions and impulses" (Young, 1999, p. 12).

during rumination. The capture and rumination mechanism proposes that this can lead to the inaccessibility of specific autobiographical memories.

The functional avoidance mechanism suggests that OGM provides as a way of avoiding difficult emotions that would otherwise arise with access to specific autobiographical memories. This may include distressing memories of abuse or attachment experiences. Finally, the executive control mechanism suggests that because specific memory retrieval requires the use of limited cognitive resources, capacity deficits in working memory might further compromise this ability.

The evidence is supportive of a functional avoidance mechanism, suggesting that childhood sexual, physical and emotional abuse are associated with OGM in adulthood (Aglan, Williams, Pickles & Hill, 2010; Dalgleish et al, 2003; Hauer, Wessel, Geraerts, Merckelbach & Dalgleish, 2008; Henderson, Hargreaves, Gregory & Williams, 2002; Kuyken & Brewin, 1995; McNally et al., 2006; Raes, Hermans, Williams & Eelen, 2005; Raymaekers, Smeets, Peters & Merckelbach, 2010). Some studies have identified childhood physical abuse and weighted childhood abuse scores as predictors of autobiographical memory specificity (Hermans et al., 2004; Peeters, Merckelbach & Boon-Vermeeren, 2002). Kuyken and Brewin (1995) reported paternal indifference as an additional associate of OGM.

An inability to access specific autobiographical memories is associated with impaired interpersonal goal-directed activity, emotion dysregulation and an incoherent sense of self (Klein et al., 2004; Williams et al., 2007). These difficulties mirror characteristics associated with a diagnosis of BPD. It is perhaps not surprising that participants with a diagnosis of BPD, either with or without a co-morbid diagnosis of depression, have been shown to retrieve fewer specific autobiographical memories than controls (Jones et al., 1999; Kremers, Spinhoven & Van der Does, 2004; Reid & Startup, 2010). Moreover, interpersonal functioning is understood to be dependent on access to specific and successful instances of

social-problem solving (Rasmussen, O'Connor & Brodie, 2008). Accordingly, specificity of autobiographical memory retrieval has also been found to be positively associated with social-problem solving ability among participants with BPD diagnoses (Maurex et al., 2010).

The theoretical foundations underlying the functional avoidance and interpersonal implications of OGM position OGM as a mediating variable between abuse and insecure attachment in childhood and BPD diagnosis in adulthood.

Current Study

Research concerning forensic inpatients has largely addressed their status as service-users of the criminal justice system. This is reflected in a relatively recent systematic review of outcome measures used in forensic mental health research which identified a predominant focus on recidivism and a lack of attention to measures of quality of life, social functioning and psychological adjustment (Fitzpatrick et al., 2010). In order to develop a wider understanding of forensic inpatients' psychosocial needs it is important to consider early and current patterns of relationship experiences. A discussion has identified an overlap of life-time experiences between forensic inpatients and individuals diagnosed with BPD.

Accordingly, among forensic inpatients, an investigation of the relationship between abuse and insecure attachment in childhood and BPD and anger in adulthood may contribute to a wider understanding of their psychosocial needs with implications for clinical formulation, intervention and intervention efficacy. Anger was included as an additional outcome variable in light of the aforementioned reference to episodes of inappropriate and intense anger being indicators of the affective instability and impulsive behaviour commonly associated with a diagnosis of BPD (Craig, 2005; Millon, Millon, Davis, & Grossman, 1994; Tasman & First, 2004). Moreover, the relevance of considering anger within the current context was supported by the most recent report on offender statistics among forensic

inpatients, which identified ‘violence against the person’ as the most common offence at admission (Rutherford & Duggan, 2007, p.16).

Study Aims

This study aimed to investigate whether EMS and OGM mediate the relationship between the experience of abuse and insecure attachment in childhood with BPD characteristics and high levels of anger among forensic inpatients.

Hypotheses

1. The EMS of “mistrust/abuse” “entitlement/grandiosity”, “insufficient self-control/self-discipline” and the specificity of autobiographical memory retrieval will mediate the relationship between high levels of self-reported childhood abuse and increased BPD characteristics.

2. The EMS of “mistrust/abuse” “entitlement/grandiosity”, “insufficient self-control/self-discipline” and the specificity of autobiographical memory retrieval will mediate the relationship between high levels of insecure attachment (low parental care and high overprotection) and increased BPD characteristics.

3. The EMS of “mistrust/abuse” “entitlement/grandiosity”, “insufficient self-control/self-discipline” and the specificity of autobiographical memory retrieval will mediate the relationship between high levels of self-reported childhood abuse and increased anger traits and frequent expression of aggressive behaviour.

4. The EMS of “mistrust/abuse” “entitlement/grandiosity”, “insufficient self-control/self-discipline” and the specificity of autobiographical memory retrieval will mediate the relationship between the high levels of insecure attachment (low parental care and high overprotection) and increased anger traits and frequent expression of aggressive behaviour).

Method

Design and participants

The study adopted a cross-sectional design. Thirty four participants were recruited from two medium secure units in urban and semi-rural areas over a 10-month period. Participants were included in the study if male, over 18 years of age, fluent in English with no diagnosis of learning disability or cognitive impairment. Participants who did not have the capacity to provide informed consent or those considered inappropriate to interview due to issues of risk were excluded.

Ethical Approval

Ethical approval for the study was granted by an NHS ethics panel in January 2013.[17] Research and Development (R&D) approval was granted for the two NHS recruitment sites in February and April 2013. The researcher adhered to the Health and Care Professions Council's (HCPC) ethics regulation for students (2012) and the British Psychological Society's ethical code (British Psychological Society, 2010) throughout the study.

Measures

Copies of the measures are available in Appendix F.

Measures taken from participants' clinical records. Measures taken from records were less than three years old.

Millon Clinical Multiaxial Inventory III (MCMI-III; Millon et al., 1994). The MCMI-III consists of 175 true-false questions designed to measure personality and clinical 'syndrome' scales. The borderline scale (C) was used to measure severity of BPD characteristics. This is a 16 item measure of unstable mood, guilt, anger impulsive behaviour, dependency seeking and erratic mood (Craig, 2005). A base-rate score was used as the outcome variable.

[17] Documentation of NHS ethics and R&D approval are included in Appendix E.

The MCMI-III has consistently shown good reliability and test-retest capabilities. Wise, Streiner and Walfish (2010) report all scales above α =.67 and r_{tt} = .84 and α = .85 and r_{tt} = .93 for the borderline scale. Millon et al. (1994) report acceptable convergent validity with other assessment measures of BPD. All of the scores obtained indicated valid score profiles.

Measures collected by the researcher

State Trait Anger Inventory – 2 (STAXI 2; Spielberger, 1999). The STAXI 2 is 57 self-report questionnaire used to measure state and trait anger, and anger expression. Participants were presented with self-related statements e.g. "I have a fiery temper" and asked to identify how true the statement was of them or how often they experienced it. These responses were recorded on a 4-point Likert scale from "never" to "almost always". Two scales - "angry temperament" and "anger-expression out" (referred to as "the outward expression of anger") were used to measure trait anger – the disposition to angry feelings without specific provocation and frequent expression of aggressive behaviour (verbally or physically). Both scales produced a t score – a linear transformation of raw scores based on a male psychiatric sample (Spielberger, 1999).

The STAXI-2 subscales are reported to have good internal reliability in clinical and non-clinical populations with coefficients ranging from α= .73 to α=.95 (Spielberger, Reheiser, & Sydeman, 2004). The trait scale is reported to be highly correlated with other measures of hostility (Speilberger, 1999). In the current study, Cronbach's alpha for the trait anger scale was α = .82 and α = .74 for the anger-expression out scale suggesting good[18] reliability of the measure.

The Childhood Trauma Questionnaire (CTQ; Bernstein et al., 1998). The CTQ is a self-report questionnaire. Twenty eight childhood events relating to emotional, physical and

[18] Interpretations of Cronbach's alpha follow Kline's (1993) guidance.

sexual abuse and emotional and physical neglect are presented e.g. “When I was growing up…someone molested me”. Participants were asked to rate one of five responses indicating how true these events were of their childhood from “never true” to “very often true”. CTQ outcome variables constitute a scale score for each maltreatment category.

Confirmatory factor analysis supports the CTQ’s construct validity (Bernstein & Fink, 1998). Each CTQ scale has displayed good internal consistency and high test-retest capabilities across clinical and non-clinical populations (ranging from $\alpha = .66$ to $\alpha = .92$, $r = .86$; Bernstein & Fink, 1998). The CTQ reached a good to excellent level of reliability in the current study (emotional abuse: $\alpha = .84$, physical abuse: $\alpha = .95$, sexual abuse: .99, emotional neglect: $\alpha = .94$ and physical neglect: $\alpha = .77$).

The Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979). The PBI is a 25 item retrospective self-report questionnaire designed to measure early attachment relationships with caregivers from the child’s viewpoint. Twelve items measure care and 13 items measure over-protection. Care items measure the extent to which the parent was empathic as opposed to cold and indifferent and the overprotection scale measures the extent to which the parent was experienced as intrusive as opposed to encouraging of independence (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). Participants are presented with a number of statements e.g. “…did not praise me” and are asked to indicate how representative the statement was of each parent on a 4 point Likert item from “very like” to “very unlike”. Results provide a scale for care and overprotective parental styles for each parent.

Low levels of care and high levels of overprotection were used as indicators of insecure attachment. Uncaring parenting is characteristic to descriptions of insecure attachment styles (Manassis, Owens, Adam, West & Sheldon-Keller, 1999; Shemmings & Shemmings, 2011). Manassis, Owens, Adam, West and Sheldon-Keller (1999) report PBI scale scores to differentiate between attachment classifications and correlate with the relevant

scales on the Adult Attachment Interview experience scale. Parker et al. (1979) found good internal consistency with reliability levels reported as α= .83 (mother and father overprotection scale), α= .92 (mother care scale) and α= .93 (father care protection scale). Wilhelm, Niven, Parker and Hadzi-Pavlovic (2005) report that parental care and overprotection scales remained stable over a twenty year period in their study with a non-clinical sample. The current study found good to excellent levels of reliability (mother care: α=.92, mother overprotection α=.84, father care: α=.95 and father overprotection; α=.86).

***Young's Schema Questionnaire: Short form (YSQ*-S: Young, 1998).** The YSQ-S is a self-report questionnaire. The EMS of "mistrust/abuse", "entitlement/grandiosity" and "insufficient self-control/self-discipline" were each assessed using five items totalling 15 statements relating to the self - e.g. "I have a lot of trouble accepting 'no' for an answer when I want something from other people". Participants responded to each item by rating how "true" the statement was of them on a 6 point Likert scale ranging from "completely untrue of me" to "describes me perfectly". The YSQ-S produces a scale score for each EMS with higher scores indicating increased maladaptive core beliefs.

The YSQ-S has displayed a good level of construct validity with measures of self-esteem (Schmidt et al., 1995). Cronbach's alpha for each domain is reported to range from α = .76 to α= .93 (Welburn, Dagg, Pontefract, & Jordan, 2002), with a good to excellent level of internal reliability for "mistrust/abuse" (α= .92) "entitlement/grandiosity" (α= .76) and "insufficient self-control/discipline" (α=.84; Thimm, 2013). The current study found a good level of internal reliability for "mistrust/abuse" (α= .88) and "insufficient self-control/discipline" (α= .79). For the "entitlement/grandiosity" scale, question 66[19] was removed from analysis to improve the scale's reliability (from α=.68 to α=.77).

[19] "I have a lot of trouble accepting 'no' when I want something from other people".

The Autobiographical Memory Test (AMT; Williams & Broadbent, 1986). The AMT measured overgeneral autobiographical memory. Instructions and scoring from the standard administration of the AMT were followed (J.M.G Williams, personal communication, February 22, 2012). Participants were presented with a cue-word and asked to provide a specific memory from their life triggered by that word. Specific memory was defined as "an event that lasted less than a day, and occurred a particular time and place". When participants did not provide a specific memory, they were prompted by asking "can you think of a particular time?" Two neutral cue-words were practiced to ensure that the instructions had been understood.

Verbal and visual presentation of cue-words has increased the validity of the AMT (Griffith et al., 2011). Accordingly, six positive, six negative and six neutral cue-words were read aloud and presented on 5cm x 11cm cards. Positive, negative and neutral words were shown one after another in the same order. Cue-words were chosen from a sample used by Brittlebank, Scott, Williams and Ferrier (1993) for their high linguistic frequency e.g. "happy", "failure", "bread". Participants were given 60 seconds to provide an answer. AMT outcomes were the number of specific memories recalled by each participant.

Confirmatory factor analysis and item response theory report positive and negative cue words as sharing a one-factor structure across clinical and non-clinical populations (Griffiths, Kleim, Sumner, & Ehlers, 2012; Griffiths et al., 2009). For standard AMT administration, good internal reliability point estimates of .79[20] with a 95% confidence level of .74-.84, and .α= .72 have been reported (Griffith et al., 2011; Griffith et al., 2012). An independent rater coded a random 10% percent (61) of memories. The agreement between raters for specificity of memories was 100% suggesting excellent inter-rater reliability.

[20] A statistical unit of measurement was not specified in the study.

Procedure

Responsible Clinicians (RC) identified potential participants based on the study's inclusion criteria. Identified patients were approached by the researcher and with their consent, the project information sheet and consent form (Appendix G) were provided and discussed in private. The patient was informed that the researcher would return to the ward at a named date and time.

On return, participants were asked whether they wished to engage. If so, an appointment was booked in a private setting. During this appointment the information and consent form were explained and completed. Demographic information was collected and measures were completed in the following order: AMT, YSQ-S, PBI, CTQ and STAXI 2. The appointment took up to 50 minutes and participants were debriefed afterwards.

Participants were invited to a feedback meeting scheduled to take place on their ward ten months later where they would be provided with a summary of the study's findings.[21]

Data Analysis

The data were analysed using IBM SPSS statistics software package - version 19.0. Preliminary analyses identified most of the study's variables to be non-parametric. Accordingly, analysis followed Hayes (2013) method of mediational analysis using the PROCESS (AF Hayes, 2014) computational tool as applied to the SPSS database. PROCESS uses bootstrapping procedures, applicable for non-normally distributed data and small sample sizes (Fox, 2008).

For a two tailed, two predictor linear regression pathway, Gpower 3.1.3 software (Faul, Erdfelder, Buchner, & Lang, 2009) identified that a large effect size (.35) would

[21] A summary of the study sent to the NHS ethics committee and R&D departments is included in Appendix H.

require a sample of 31 participants. Thirty four participants completed the study suggesting sufficient power was achieved.

Results

Demographics

In total, 94 forensic inpatients met the inclusion criteria and of these, 34 were considered inappropriate to approach at the time of data collection, five had since moved and 21 declined to participate. The final sample consisted of 34 male participants, with a mean age of 40.32 years (SD=12.53, median = 39, range 20-65). All participants had a violent index offence. Further demographic information is displayed in Table 1.

Table 1.

Demographic Features of the Participant Sample

Variable	N	Percentage of sample (%)
Ethnicity		
White British/Irish	21	61.7
Black British	9	26.5
African/Caribbean	2	5.8
Asian British	2	5.8
Indian/Pakistani		
Mixed		
Marital status		
Single	22	64.7
Married	7	20.6
Divorced/widowed	5	14.7
Level of education		
No formal qualification	10	29.4
Lower secondary (GCSE)	7	20.6
Upper secondary (A-level)	13	38.2
Bachelor's degree	4	11.8
Type of ward		
Acute/sub-acute	23	67.6
Rehabilitation/open	11	32.4

Descriptive Statistics

An initial examination of the data sought to determine the distribution of each variable. Table I1 (Appendix I) displays explorative data with reference to kurtosis and skewness statistics, the Shapiro-Wilk test[22] and corresponding boxplot, histograms and Q-plots. All data with the exception of the following scales were significantly different from a

[22] A procedure designed to test for normality. It is the preferred test for sample sizes of less than fifty and has good power properties (Razali & Wah, 2011).

normal distribution: STAXI 2 anger-expression out, PBI mother and father overprotection, the EMS of "mistrust/abuse" and "insufficient self-control/self-discipline" and the number of specific autobiographical memories (AMT). Outliers were identified and confirmed as genuine data points – accordingly they were not removed. Table 2 displays the descriptive statistics for each variable.

The mean scores obtained from measures of MCMI-III, EMS and specificity of autobiographical memory are similar to those recorded in previous studies with psychiatric inpatients (Hermans et al., 2004; Piersma & Boes, 1997; Pollock & Williams, 2001; Thimm, 2013). Mean scores on the PBI were on the borderline of low/high classification for both care and overprotection scales replicating a previous study's finding with forensic inpatients (Mackenzie, Mullen, Ogloff, McEwan, & James, 2008). The mean STAXI-2 trait anger and outward expression of anger scores fell within the 32nd and 39th percentile based on norms from a male psychiatric sample. The CTQ scores fell within the low (to moderate) range of abuse (Bernstein & Fink, 1999). The mean emotional and sexual abuse scales in the current study were less severe than those previously reported among forensic inpatients (Spitzer, Chevalier, Gillner, Freyberger & Barnlow, 2007).

Table 2.

Descriptive Statistics of Variables

Variable	N	Mean	SD	Median	Range
MCMI-III					
Base rate	32	59.69[a]	23.96	64.5	0-89
STAXI 2					
Trait anger	30	43.60	10.86	40	32-62
Anger expression out	30	45.07	9.52	46	28-70
CTQ					
Emotional abuse	33	9.06[b]	5.13	7	5-22
Physical abuse	33	8.21	5.68	5	5-23
Sexual abuse	33	6.67	4.88	5	5-23
Emotional neglect	33	10.72	5.94	10	5-23
Physical neglect	33	9.58	5.04	9	5-23
PBI					
Mother care	30	26.87 [c]	8.83	29.5	0-36
Father care	28	23.54	11.4	30	0-36
Mother overprotection	30	11.27 [d]	7.76	11	0-29
Father overprotection	28	11.11	7.34	10.5	0-28
EMS					
Mistrust/abuse	33	13.94	6.38	14	5-25
Entitlement/grandiosity	33	10.03	5.03	10	4-24
Insufficient self-control/self-disciple	33	12.64	5.81	12	5-25
AMT					
Number of specific memories	34	7[f]	3.98	7	0-17

[a]Scores of > 75 are indicative of BPD traits. [b]All mean CTQ scores were within a low (to moderate) range. [c]Care scores are classified as high if >27 (mother) and > 24 (father). [d]Overprotection scores are classed as high if over 13.5 (mother) and 12.5 (father). [e]Of a total 18 memories.

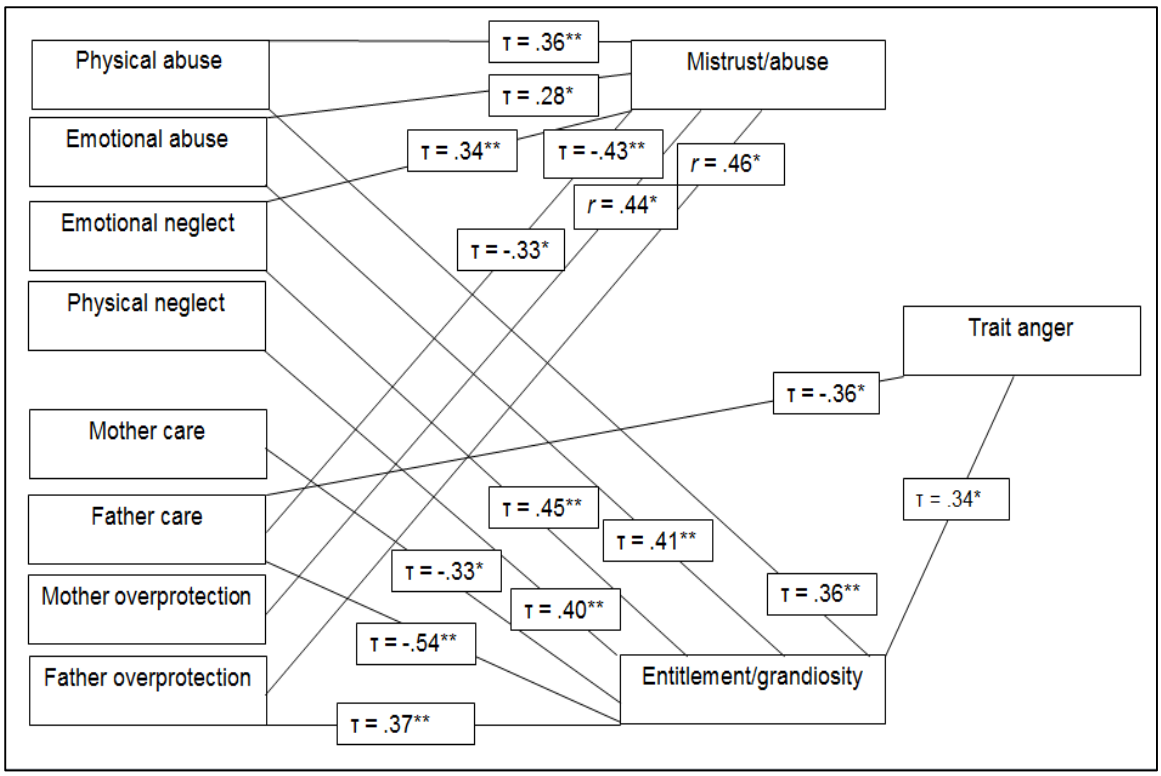
Bivariate Analysis

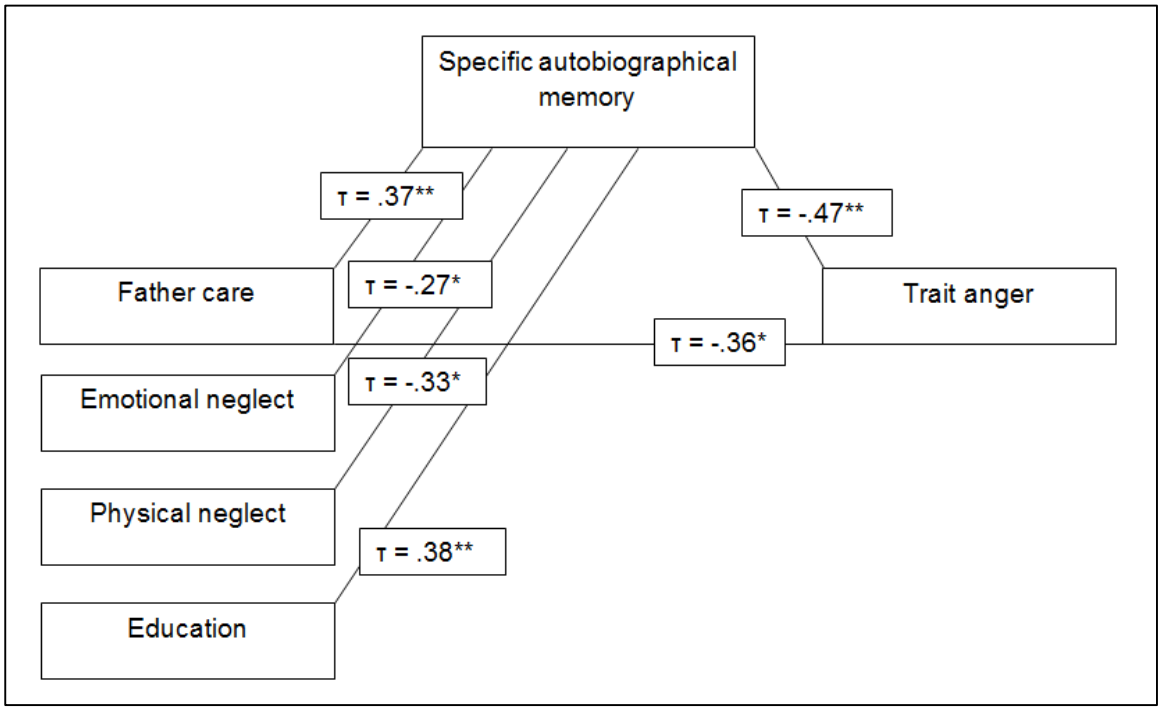
Correlation analyses investigated preliminary relationships between the variables (see Table J1, Appendix J). Correlations were performed with Kendall's tau (τ) as opposed to Spearman's rho due to its preferential use for smaller sample sizes (Field, 2013). Pearson's r examined correlations between the parametric variables.

Higher levels of father care were negatively correlated with trait anger scores, $\tau = -.36$, $p = .018$. In regards to the first mediator, the EMS of "mistrust/abuse" and "entitlement/ grandiosity" were negatively correlated with father care $\tau = -.43$, $p = .002$, $\tau = -.54$, $p < .001$, and of these, entitlement/ grandiosity was positively correlated with trait anger, $\tau = .34$, $p = .015$. In regards to the second mediator, the number of specific memories was positively correlated with father care, $\tau = .37$, $p = .008$ and negatively correlated with trait anger, $\tau = -.47$, $p = .001$.

In addition, "mistrust/abuse" was positively correlated with emotional abuse $\tau = .28$, $p = .035$, physical abuse, $\tau = .36$, $p = .008$ and emotional neglect, $\tau = .34$, $p = .009$, mother overprotection $r = .44$ $p = .016$ and father overprotection, $r = .46$, $p = .015$. "Entitlement/grandiosity" was also positively correlated with emotional abuse $\tau = .41$, $p = .002$, physical abuse, $\tau = .36$, $p = .009$, emotional neglect, $\tau = .45$, $p = .001$ and in addition, physical neglect, $\tau = .40$, $p = .003$. Entitlement/grandiosity was negatively associated with mother care $\tau = -.33$, $p = .015$ and father care $\tau = -.54$, $p < .001$ and positively associated with father overprotection, $\tau = .37$, $p = .009$.

The number of specific memories was negatively associated with emotional and physical neglect $\tau = -.27$, $p = .043$, $\tau = -.33$, $p = .015$. Significant correlations for EMS and specificity of memory mediators are displayed in figure 3.





** Correlation is significant at the 0.01 level (two-tailed), * Correlation is significant at the 0.05 level (two-tailed).

Figure 3. Significant correlations between predictor, mediating and outcome variables.

Mediational Analysis

A statistical model of single mediation is presented in Figure 4. Simple mediation proposes a causal system in which at least one antecedent (X) is proposed to cause influence on an outcome (Y) through the mediator (M). The relationship between X and Y (pathway c) is termed the 'total effect' while controlling for the mediator, and the 'direct effect' (pathway *c'*) when the mediator is included in the model. The relationship between X on M (pathway a) and M on Y (pathway b) is called the indirect effect (pathway ab).

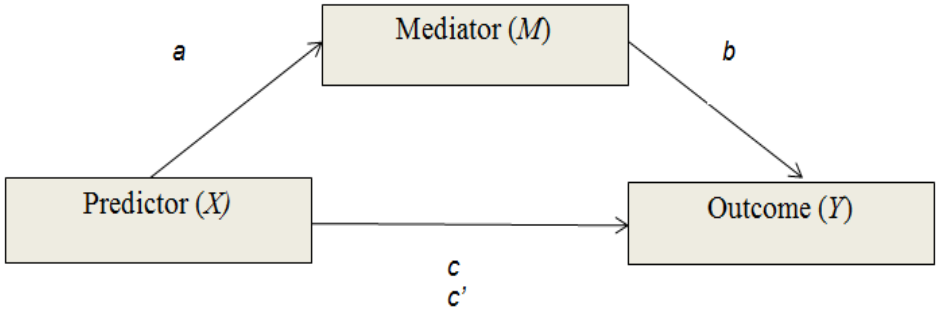


Figure 4. Basic mediation model

Baron and Kenny's (1986) 'causal approach' is a widely used method of establishing mediation in the field of social sciences. This approach specifies that for mediation to be established, the pathways of a and b must be statistically significant, with the effect of *c'* nearer zero than c. More recent approaches to mediational analysis suggest that M can be causally located between X and Y, even if X and Y are not associated (Hayes, 2013).[23] The PROCESS macro (AF Hayes, 2014) is one such computational tool used to investigate mediation using bootstrapping procedures. Bootstrapping does not require data to be normally distributed (Hayes 2009), rendering this approach a relevant choice for this current study. The bootstrapping procedure takes samples from the original dataset and resamples them one thousand times to produce a larger empirically constructed dataset and sampling

[23] See Hayes (2009) for a discussion.

distribution - termed the bootstrap sample. The indirect effect (ab regression coefficient) of the bootstrap sample is then estimated and resampled one thousand times. The ab coefficients are recorded each time and ordered lowest to highest, forming lower and upper bound percentile based confidence intervals at 95% (Hayes, 2013). The true coefficient of the indirect effect is estimated to lie within the range of the lower and upper bound confidence intervals. An indirect effect coefficient of zero is indicative of no effect. Accordingly, mediation is established when the confidence intervals do not contain zero (Hayes, 2009; Field, 2013).

All of the hypothesised variables were entered into PROCESS. Bias-corrected confidence intervals were used to correct for bootstrapping procedures. The results from all mediational analyses are detailed in Appendix K. Figure L1 (Appendix L) displays the significant mediation models, with the corresponding regression coefficients.

Hypothesis 1. The EMS of "mistrust/abuse" "entitlement/grandiosity", "insufficient self-control/self-discipline" and the specificity of autobiographical memory retrieval will mediate the relationship between high levels of self-reported childhood abuse and increased BPD characteristics. The EMS of "entitlement/grandiosity" was a mediator of the relationship between childhood emotional abuse, emotional neglect and physical neglect and BPD characteristics b = 1.11, 95% BCa CI [0.107, 3.169], b = 1.02, 95% BCa CI [0.222, 2.583], b = 0.89, 95% BCa CI [0.078, 2.88]. These were of small to relatively large effect size,[24] in the hypothesised direction κ^2 = .21, 95% BCa [0.107, 0.459], κ^2 = .24, 95% BCa [0.033, 0.436], κ^2 = .17, 95% BCa [0.030, 0.387].

Hypothesis 2: The EMS of "mistrust/abuse" "entitlement/grandiosity", "insufficient self-control/self-discipline" and the specificity of autobiographical memory retrieval will mediate the relationship between high levels of insecure attachment (low

[24] Judgements of effect size and reporting of statistics follow Field (2013).

care and high overprotection) and increased BPD characteristics. Significant indirect effects of mother and father care on BPD characteristics through the EMS of "entitlement/grandiosity" were found, b = -0.46, 95% BCa CI [-1.166, -0.098], b = -0.48, 95% BCa CI [-1.153, -.0005]. These represented medium effect sizes κ^2 = .22, 95% BCa [0.055, 0.405], κ^2 = .21, 95% BCa [0.058, 0.373]. The relationship between mother overprotection and BPD characteristics was also significantly mediated by the EMS of "entitlement/grandiosity" b = 0.47, 95% BCa CI [0.047, 1.226]. This represented a medium effect size, κ^2 = .18, 95% BCa [0.028, 0.357]. All relationships were in the anticipated direction.

Hypothesis 3: The EMS of "mistrust/abuse" "entitlement/grandiosity", "insufficient self-control/self-discipline" and the specificity of autobiographical memory retrieval will mediate the relationship between high levels of self-reported childhood abuse and increased anger traits and frequent expression of aggressive behaviour. The EMS of "entitlement/grandiosity" was a significant mediator in the relationship between childhood emotional abuse (b = 0.43, 95% BCa CI [0.081, 1.027]), physical abuse (b = 0.39, 95% BCa CI [0.060, 0.987]), emotional neglect (b = 0.33, 95% BCa CI [0.097, 0.753]) and physical neglect (b = 0.38, 95% BCa CI [0.064, 0.964]) with trait anger. Effect sizes were medium (κ^2 = .22, 95% BCa [0.045, 0.470], κ^2 = .23, 95% BCa [0.035, 0.478], κ^2 = .20, 95% BCa [0.055, 0.404], κ^2 = .20, 95% BCa [0.049, 0.458] respectively), and in the anticipated direction.

A significant indirect effect was found between childhood physical abuse and emotional and physical neglect on trait anger via retrieval of specific autobiographical memories, b = 0.26, 95% BCa CI [0.004, 0.698], b = 0.31, 95% BCa CI [0.035, 0.820], b = 0.50, 95% BCa CI [0.168, 1.00]. These results were in the anticipated direction and were of

medium to large effect size respectively κ^2 = .19, 95% BCa [0.019, 0.426], κ^2 = .23, 95% BCa [0.038, 0.497], κ^2 = .31, 95% BCa [0.112, 0.522].

There was a significant indirect effect between physical abuse and emotional and physical neglect with the outward expression on anger through the EMS of "mistrust/abuse" b = 0.22, 95% BCa CI [0.008, 0.780], b = 0.23, 95% BCa CI [0.006, 0.674], b = 0.31, 95% BCa CI [0.032, 0.830]. These represented medium effect sizes κ^2 = .13, 95% BCa [0.023, 0.350], κ^2 = .15, 95% BCa [0.021, 0.416] and κ^2 = .18, 95% BCa [0.029, 0.388], in the hypothesised direction.

A significant indirect effect was found of childhood physical neglect on outward expression of anger via retrieval of specific autobiographical memories, b = 0.45, 95% BCa CI [0.028, 1.165], this was of large effect size κ^2 = .27, 95% BCa [0.034, 0.515] and in the hypothesised direction.

Hypothesis 4: The EMS of "mistrust/abuse" "entitlement/grandiosity", "insufficient self-control/self-discipline" and the specificity of autobiographical memory retrieval will mediate the relationship between the high levels of insecure attachment (low care and high overprotection) and increased anger traits and frequent expression of aggressive behaviour. The EMS of "grandiosity" mediated the relationship between mother and father overprotection and trait anger in the hypothesised direction b = 0.10, 95% BCa CI [0.002. 0.282], b = 0.28, 95% BCa CI [0.047, 0.691]. These effect sizes both medium, κ^2 = .09, 95% BCa [0.011, 0.229], κ^2 = .19, 95% BCa [0.029, 0.425].

A significant indirect effect was found of mother and father care and mother overprotection on trait anger via the retrieval of specific autobiographical memories, b = -0.20, 95% BCa CI [-0.538, -0.027], b = -0.29, 95% BCa CI [-0.563, -0.096], b = 0.29, 95% BCa CI [0.014, 0.767]. These effect sizes were medium to large (κ^2 = .23, 95% BCa [0.036,

0.487], κ^2 = .36, 95% BCa [0.118, 0.615], κ^2 = .28, 95% BCa [0.038, 0.580] respectively) and in the anticipated direction.

The EMS of "mistrust/abuse" mediated the relationship between mother care and the outward expression of anger b = -0.17, 95% BCa CI [-0.518, -0.028]. This was a medium effect size κ^2 = .16, 95% BCa [0.029, 0.399]. Five conceptual diagrams illustrating the above findings are displayed in Figure 5.

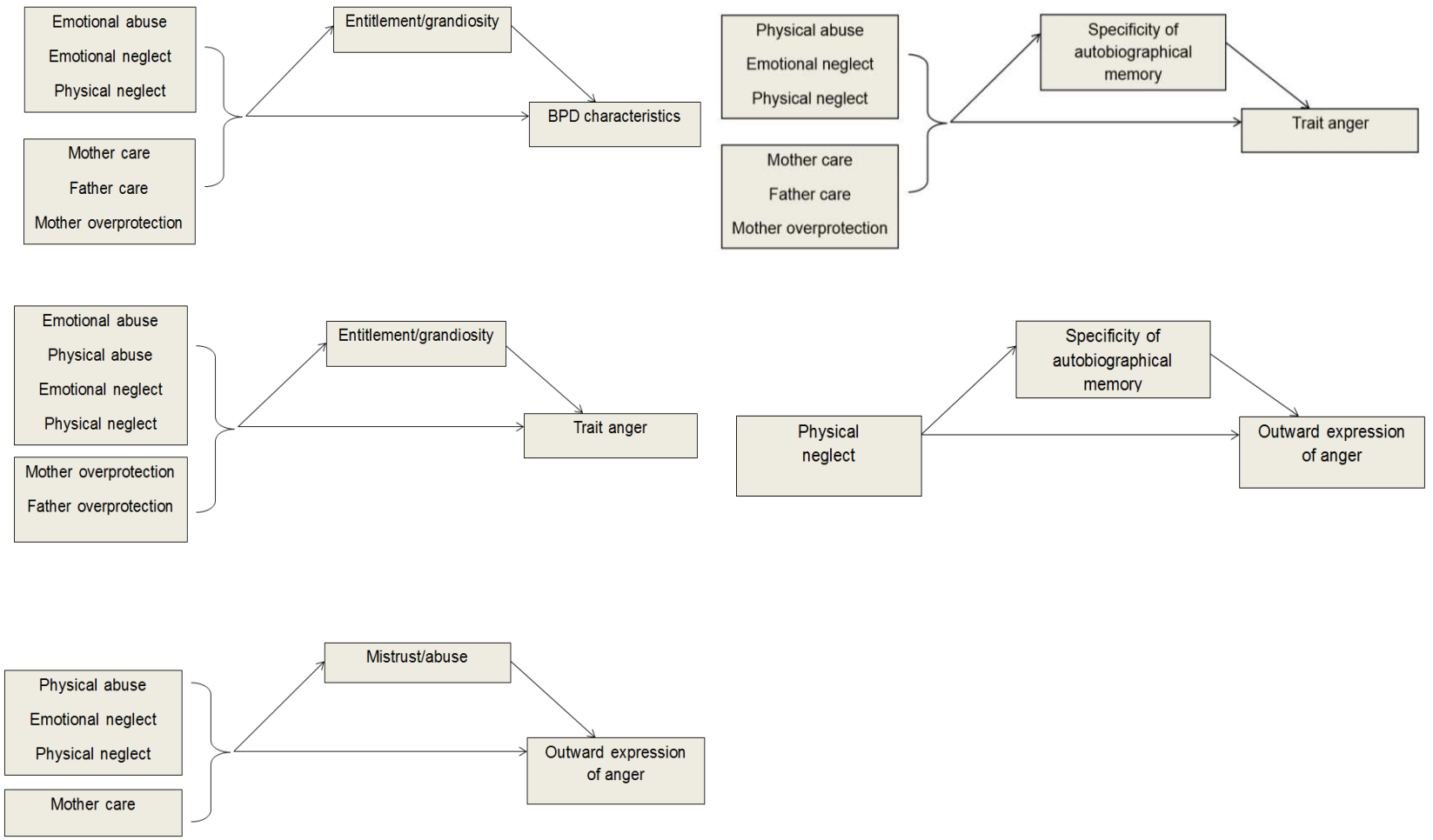


Figure 5. A set of conceptual diagrams illustrating the study's significant mediation findings.

Discussion

Among forensic inpatients, the EMS of "entitlement/grandiosity", "mistrust/abuse", and specificity of autobiographical memory differentially mediated the relationships between childhood adversity and BPD characteristics. The study's hypotheses received partial support. The findings relating to each hypothesis are discussed with reference to theoretical implications. The study's limitations and clinical and research implications will then be considered.

Main Findings and Theoretical Implications

The EMS of "entitlement/grandiosity" refers to the belief that one is entitled to make demands or take action regardless of others or what is reasonable or practical (Shah & Waller, 2000, Young, 1999). Extending on research from Specht et al. (2009), the current study's findings are the first to incorporate the EMS of "entitlement/grandiosity" as a mediator of the relationship between childhood adversity and BPD characteristics. Beliefs of entitlement and grandiosity mediated the relationship between childhood emotional abuse, emotional and physical neglect, parental care and mother overprotection with BPD characteristics. These beliefs also mediated the relationship between emotional and physical abuse and neglect, and mother and father overprotection with anger traits. These findings partially support each of the study's hypotheses.

These findings propose that there are two potential pathways connecting childhood adversity and BPD characteristics. The first appears plausible - high levels of overprotective parenting can lead an individual to develop a sense that he or she is deserving of treatment that is special or different to that received by others. Reduced socialisation, a lack of experience in reciprocal co-operation with peers and limited opportunities to take responsibility are potential factors that contribute to this association (Young, 1999; Zafiropoulou, Avagianou, & Vassiliadou, 2014). In line with Bowlby's (1969) formulation

of attachment, these factors imply that high levels of parental overprotection permit a child to avoid affective states associated with separation, loss and perhaps disappointment or failure.

The second pathway implies that emotional and physical abuse and neglect, and a lack of parental care lead to beliefs of entitlement. Of course, experiences of early trauma and separation may suppress feelings of entitlement. It is reasonable to consider that these experiences may also lead to an inflated sense of entitlement. In a review of psychoanalytic approaches to entitlement, Tolmacz and Mikulincer (2011) associate an excessive sense of entitlement with childhood deprivation, abuse and unresponsive parenting. The authors reflect on Freud's theory of "exceptions" – patients who "…felt they deserved special treatment or reparation following wrongs done to them in the past" (p. 76). In line with the current hypothesis therefore, beliefs of entitlement may be conceptualised as an exaggerated form of Bowlby's (1969) dismissive and avoidant affective states associated with loss, separation and/or in this context, the insensitivity or lack of emotional responsiveness from others.

Ultimately, these pathways lead to beliefs of entitlement. Because an excessive sense of entitlement occurs without rationale, realistic means or reference to others' needs, it is inevitable that relationships will fail to meet these demands. If excessive entitlement serves as a defence, relationships will initiate affective states associated with loss, separation, failure or the insensitivity of others. This affective and interpersonal instability is what characterises BPD and anger traits.

Providing partial support for hypothesis three and four, the EMS of "mistrust/abuse" mediated the relationship between physical abuse, emotional and physical neglect, and mother care with frequent aggression. These findings support Young's (1999) theory that "mistrust/abuse" schema develop in social environments that are lacking in care and those that are unpredictable and volatile. In reference to working models, it reasonable to expect

that these experiences may lead an individual to suspect that others are inherently "against" them. This working model or schema increases the chances that an individual will view others' actions as intentionally harmful, increasing the likelihood that they may utilise protective or defensive strategies such as that of aggression.

A final finding was that specificity of autobiographical memory mediated the relationship between physical abuse, emotional and physical neglect, parental care and mother overprotection with anger traits. Specificity of autobiographical memory was a further mediator of the relationship between physical abuse and frequent expression of aggressive behaviour, providing partial support for hypothesis three and four.

These findings replicate those of previous studies that report the incidence of childhood physical and emotional abuse, neglect and paternal indifference to be associated with impaired autobiographical memory retrieval (Hermans et al., 2004; Kuyken & Brewin, 1995; Peeters et al., 2002; Raes, Hermans, Williams & Eelen., 2005). The functional avoidance mechanism (Williams et al., 2007) accounts for this finding by proposing that the inability to access specific autobiographical memories permits an individual to avoid the distress associated with memories of neglect or attachment relationships. This process mirrors the avoidance of affective states associated with loss and separation as proposed by Bowbly (1969) and discussed above.

This is the first study to allude to an association between specific autobiographical memory retrieval with anger traits and the frequent expression of aggression. This observation may be accounted for with reference to previous research which supports an association between OGM and poor social-problem solving in clinical populations (Goddard, Dritschel, & Burton, 1996; 1997; 2001; Maurex et al., 2010; Raes et al., 2005). The absence of, or the inability to access previous successful incidences of social problem-solving may leave an individual without a template or working model of how to navigate and manage

interpersonal scenarios. Without this template, the individual may become to accustom to feelings of frustration, developing a general disposition to anger. Novaco (1975) claims anger is a more desirable defence to feelings of anxiety, providing an individual with a sense of control rather than vulnerability in a given situation. The learned association between feelings of anger and aggressive acts (Novaco, 1975) may account for the specific finding that autobiographical memory specificity mediated the relationship between experiences of physical abuse and frequent aggressive behaviour.

Furthermore, without access to specific memories, an individual's ability to think about and consider other people's thoughts and feelings is compromised. The "capture and rumination" mechanism of OGM (Williams et al., 2007) would suggest that a focus on self-relevant material (such as that characteristic of excessive entitlement) impairs access to specific memories. Accordingly, OGM may contribute to, or compound the interpersonal and affective difficulties associated with the aforementioned EMS of "entitlement/grandiosity" by preventing access to this reflective function

In summary, the current study conceptualises beliefs of entitlement and mistrust in others, and impaired access to specific autobiographical memories as functional responses to adverse interpersonal childhood experiences. As a child develops into adolescence and adulthood however, the limitations of these protective mechanisms are exposed and lead to significant interpersonal and affective difficulties identified by a common theme – the difficulty in understanding the perspective of others.

Limitations

A major limitation of the study is the small sample size obtained. A small sample size reduces the likelihood that the current sample accurately represents the target population and this limits the generalisation of findings. The reliability of findings and the validity of the study's inferences are thus tentative.

The bootstrapping technique used in the current study has further implications for the reliability of findings as the current statistical analyses are based on a larger empirically constructed dataset rather than an original dataset. Further, the bootstrapping technique does not offer protection from the likelihood of making a Type 1 error; the incorrect rejecting of the null hypothesis. In the current study, this risk is inflated given the use of multiple measures and statistical analyses.

In reference to the prevalence of childhood sexual abuse reported in this study compared to previous research with forensic inpatients, there is a possibility that the experience of sexual abuse was underreported in the current sample. This may have limited an understanding of the role of sexual abuse in the aforementioned relationships.

A further prevalence limitation is that the current sample scored relatively low on the measure of BPD. With reference to literature that suggests a high prevalence of BPD traits in the current population, this observation might indicate a further incidence of under-reporting. In addition, it limits the current findings to samples with low levels of BPD traits.

Although the AMT scores obtained in the current study were in-line with those recorded among psychiatric inpatients previously, the AMT has not been standardised and this study did not utilise a control population for comparison. Accordingly, in the current study, findings that make reference to impaired specific autobiographical memory retrieval represent only relative rather than normative difficulties.

Clinical Implications

The study has two main clinical implications. Firstly, findings suggest that for forensic inpatients with a history of adversity, interventions working directly with EMS and specific autobiographical memory may be valuable. These interventions would develop an individual's awareness of how these factors may affect their interpersonal functioning and their relationships. Accordingly, schema therapy (Young & Carlson, 2007) may be an

appropriate intervention. Moreover, interventions that seek to encourage the capacity for mentalisation - the ability to understand and attend to the mental states of oneself and others (Bateman & Fonagy 2010) are further options. These may include mentalisation-based therapy (Bateman & Fonagy 2010) and mindfulness, which has been found to improve memory specificity (Hereen, Van Broeck, & Philippot, 2009; Williams, Teasdale, Segal, Zindel, & Soulsby, 2000). Incorporating these mediators into clinical work need not be restricted to one-to-one or group therapy but introduced into clinical formulation with ward staff to aide understanding and management of behaviour that challenges.

Secondly, the aforementioned interventions are likely to lead an individual to engage with adverse experiences from their childhood. There may be a place in therapy for the processing of this material previously denied or avoided. This would entail ethical consideration, informed consent and thought as to how difficult emotions emerging from such work could be contained and managed in an inpatient setting.

Further Research

The results of the current study suggest that it would be useful to repeat this design with a larger sample. This may include using alternative forms of measuring childhood abuse, attachment and BPD characteristics. The theoretical narrative of the current study implies that the EMS of "entitlement/grandiosity" and "mistrust/abuse" work in two ways. On one hand they provide a proximal distancing effect - an adaptive function in response to adversity. On the other hand, they initiate a provocative cognitive process leading to BPD characteristics and/or high levels of anger or aggression. These provisional accounts will require further exploration with specific investigation of the relationship between EMS and autobiographical memory specificity.

A discussion has implied that factors such as the capacity for mentalisation, social problem-solving capabilities, social support, and adult attachment styles are potential

mediators, or moderators of the relationship between childhood adversity and BPD characteristics among forensic inpatients. Research that investigates the role of these factors would enhance an understanding of this complex relationship.

Conclusions

This study is the first to identify the EMS of "entitlement/grandiosity", "mistrust/abuse", and specific autobiographical memory as differential mediators in the relationship between childhood abuse and neglect, poor parental care and high overprotection with BPD characteristics. These mediators have been conceptualised as adaptive responses to early adversity but with maladaptive consequences for later interpersonal functioning. Clinical recommendations encourage the incorporation of these working models into individual and group therapy, and ward practices. The results of the current study suggest that it would be useful for further research to repeat this design with a larger sample and to investigate the role of further mediators and moderators of this relationship among forensic inpatients.

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MAJOR RESEARCH PROJECT

SECTION C:

Appendix of supporting material

All identifiable information had been removed

A thesis submitted in partial fulfilment of the requirements of Canterbury Christ Church University for the degree of Doctor in Clinical Psychology

APRIL 2014

SALOMONS

CANTERBURY CHRIST CHURCH UNIVERSITY

Appendix A. Literature search terms and strategies for Section A

Q1.What is the relationship between childhood interpersonal experience and OGM in adulthood?

List of Search Terms

Q1.What is the relationship between childhood trauma and OGM in adulthood? *Terms in 1 were combined with terms from 2.	
1. General Specific AND Autobiographical memory	2. Child AND Social OR Interpersonal Relational/relationship(s) Attachment Socio

Inclusion Criteria

Articles were included if the participants were aged 18 years or older and the childhood event/factor in question occurred before the age of 18.

Exclusion criteria

Articles were excluded if the event/factor in question was not interpersonal in nature – e.g. an accidental burn injury suffered as a child, or not published/accessible in English.

Search Strategy Q1.

1. The following databases were searched using the above search terms;

ASSIA, CINAHL, PsycINFO, Web of Science, Google Scholar and the Cochrane Database of Systematic Reviews

Total search results of 1,150 articles.

Duplications removed and inclusion/exclusion criteria applied to abstracts.

After screening, 13 articles were identified.

The articles references were manually checked and 3 further articles were identified.

16 articles identified for review

2. How does OGM affect interpersonal and social functioning in adulthood?

*Terms in 1 were combined terms from 2.	
1. General Specific AND Autobiographical memory	2. Interpersonal OR Social Relational/Relationship(s) Attachment Functioning

Inclusion Criteria

Articles were included if the participants were aged 18 years or older and the functioning factor in question was interpersonal/social in nature.

Exclusion criteria

Articles were excluded if the measurement of overgeneral autobiographical memory specifically concerned social-threat specific material, as opposed to general memories. They were also excluded if the article was not published/available in English.

Search Strategy Q2.

1. The following databases were searched using the above search terms;

ASSIA, CINAHL, PsycINFO, Web of Science, Google Scholar and the Cochrane Database of Systematic Reviews

Total search results of 640 articles.

Duplications removed and inclusion/exclusion criteria applied to abstracts.

After screening, 12 articles were identified.

The articles references were manually checked and 3 further articles were identified.

15 articles identified for review.

Appendix B. Summary of studies

Table B1
Summary of studies identified for Question 1 (in alphabetical order).

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured[25]	Method of analysis * pertaining to review question	Summary of findings
Neglect, Physical abuse, Institutional care, Sexual abuse	Aglan, Williams, Pickles & Hill (2010). British Journal of Clinical Psychology	N=103 Women, aged 25-37. Divided into No depression – CSA (N=49), no depression and CSA (N=8), depression and no CSA (N= 20) and depression and CSA (N=26). UK	Between -subjects	Parental Bonding Instrument (PBI; Parker, et al., 1979). The childhood experience of care and abuse (Bilfulco, Sham, Minnie, Lee & Murray, 1998). The retrospective recall of childhood psychopathology (RECAP; Holmshaw & Simonoff, 1996). The schedule for affective disorder and schizophrenia (Spitzer & Endicott, 1975). AMT[26]	*Not specifically stated CSA, CPA and depression examined for prediction of categoric responses. Negative and positive cues contrasted with CSA and age of onset of depression.	Recalled CSA was associated with overgeneral memory recall (and not other childhood adversities). Adult-onset depression was associated with overgeneral memories for positive cue words following CSA. Comment on results: P values are statistically significant. **Authors' interpretation of findings** Adult onset depression following CSA is suggested to be the result of the failure of the protective mechanism associated with OGM and the vulnerability arising from difficulty in accessing specific memories of positive events. Affect regulation of OGM may be helpful in childhood but overwhelmed once sexual relationships start – therefore elevated OGM is hypothesised to be seen in adult-onset depression with CSA.

[25] The references for the measures cited in this table can be found in the original article.
[26] AMT (Williams & Broadbent, 1986)

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to review question	Summary of findings
CSA; -Age of abuse -Duration of abuse -Severity of abuse	Burnside, Startup, Byatt, Rollinson & Hill (2004) British Journal of Clinical Psychology	N=41 women, mean age = 36.75 (SD=2.93). Community sample recruited through previous study. 53 "screened out" due to previous AMT experience. UK.	Between subjects/ within subjects.	Taken from previous study: Childhood experience of Care and Abuse schedule (CECA;Bilfulco, Brown & Harris, 1994). The Schedule for Affective Disorders and Schizophrenia – Lifetime versions (SADS-L; Spitzer & Endicott, 1975). Used in follow-up: AMT Beck Depression Inventory (BDI; Beck, Rial & Rickets, 1974).	Repeated ANOVAS between PMD (previously depressed) and NPMD (never depressed) and categoric responses to positive and negative cue words. Correlational analyses between categoric responses (to positive and negative cue words) and abuse variables (age at abuse, abuse duration). Multiple regression to assess categoric memories recalled (positive and negative combined) with abuse variables and BDI.	Those people who experienced abuse at a younger age or over a longer period of time produced greater numbers of categoric responses across cue words. Duration of abuse predicted number of categoric responses. Comment on results: Statistically significant results and correlations are of medium effect size. **Authors' interpretation of findings** Among a high-risk sample, OGM may serve as a protective factor against distressing memories rather than a vulnerability factor for depression. A longer duration of abuse may mean a reliance on OGM overtime resulting in arrested memory development remaining at a stage characteristic of younger children under 4 years of age. A manifestation model: Intrusive memories that occur during depression are a manifestation of unprocessed material which need assimilation into existing schema. OGM may avoid this material unless assimilation takes place – perhaps through psychotherapy. OGM is thus modifiable.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to review question	Summary of findings
CSA Incidence Age of onset	Crane & Duggan, 2009. British Journal of Clinical Psychology	N=49 (32 women) inpatients admitted for and with a history of suicidal behaviour – meeting WHO definition for parasuicide. Mean age of 36.6 (SD= 12.22) Participants reporting CSA (N = 26) and without (N = 23) UK.	Between subjects	Mini International Neuropsychiatric Interview (MINI; Sheehan et al, 1998). Sexual abuse: Questions taken from Welch and Fairburn (1994) interview for a study of risk factors for eating disorders. BDI. AMT: Word fluency: Word Fluency Task (Lezak, 1976).	A comparison between participants with and without CSA for specific and categoric memory recall. Correlations between age of onset of CS and specific/categoric al memory recall. Correlations between age of onset and BDI to explore confounding variable effects of CSA and specific/categoric al memory recall findings.	Earlier age of onset of CSA is significantly associated with increased OGM which was not accounted for by depression or verbal fluency. Comment on results: Highly significant P values of medium to large effect size **Authors' interpretation of findings** Findings are consistent with idea that OGM develops as a functional avoidance where other coping strategies are not available (based on the assumption that these develop gradually in childhood). Where abuse occurs later on in childhood, the use of this avoidance diminishes. The authors subsequently call for further research into mediating factors between early abuse and OGM.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to review question	Summary of findings
Parental indifference and parental abuse.	Dalgleish, Tchanturia, Serpell, Hems, Yiend, de Silva and Treasure (2003) Emotion	N=39 patients with a primary diagnosis of an eating disorder (ED) according to DSM-IV) recruited from inpatient and outpatient unit of the Maudsley. Mean age 27.26, SD = 8.75. N= 21 healthy controls recruited through existing participant pool. Mean age 27.1, SD = 5.76. UK.	Between subjects	AMT Measure of Parenting Style (MOPS; Parker et al., 1997). Hospital and Anxiety Scale (HADS; Zigmond & Snaith, 1983).	Correlational analyses between variables in question. A final correlation partialed out HADS scores.	A trend was observed between self-reported abuse and tendency to retrieve fewer specific memories to negative cues (also when controlling for depressed mood). Comments on results: significant to highly significant correlations of medium effect size. **Authors' interpretation of findings** OGM as a functional avoidance mechanism is discussed tentatively and with reference to the limitations of the theory. The authors consider the role of self-schema in OGM.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to review question	Summary of findings
CSA	Hauer, Wessel, Geraerts, Merckelbach & Dalgleish (2008) Journal of Abnormal Psychology	N70 CSA community participants (50 females, mean age 41.37, SD=11.59) 63 Community controls (41 women, mean age 39.06, SD = 12.57). Holland.	Between subjects	History of child sexual abuse – semi-structured interview using definition. AMT – two versions BDI Impact of Event Scale (IES; Horowitz et al., 1979).	Group differences in AMT scores between groups and versions of AMT. Group differences in IES scores .	The CSA group provided significantly fewer specific memories than the non-CSA group using standard AMT but not the more concrete cue-word version (version 2). Comment on results: Significant p values. **Authors' interpretation of findings** OGM may be explained by retrieval demands of AMT.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to review question	Summary of findings
CSA (including characteristics of abuse)	Henderson, Hargreaves, Gregory & Williams (2002). British Journal of Clinical Psychology	N=79 women (undergraduates), 22 reporting a history of CSA. Mean age of CSA group 30.23 (SD = 9.83) and non CSA group 22.23 (SD = 6.83) UK.	Between subjects	History of child sexual abuse (adapted from Ussher & Dewsbury, 1995). Profile of Mood States (POMS Short version; McNair, Lorr & Droppelman, 1981). AMT Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1978). Impact of Event Scale (IES; Horowitz, Wilner & Alvarez, 1979).	Pearson correlation between AMT scores of groups, and abuse characteristics. Group differences in IES scores (high and low) and AMT scores.	The CSA group provided significantly fewer specific memories and were more anxious, depressed and held more dysfunctional attitudes than controls. Lack of specificity associated with those abused by close relatives. Comment on results: Significant p values of high effect size. **Authors' interpretation of findings** OGM may be explained by a person's history of abuse experiences and not current circumstances.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to review question	Summary of findings
Emotional neglect, Emotional abuse, Physical abuse, Sexual approach, Sexual abuse	Hermans, Van den Broeck, Belis, Raes, Pieters & Eelen. Behaviour Research and Therapy (2004).	N=18 (13 women), mean age = 37.3 (range 18-59, SD= 12.3). Inpatients of psychiatric hospital, all met diagnosis for Major Depressive Disorder according to DSM-IV criteria. Holland.	Between subjects	AMT: Dutch version. The Trauma Questionnaire (TQ; Nijenhuis, Van der Hart & Vanderlinden, 1996). Impact of Event Scale (IES). BDI Hamilton Rating Scale for Depression (HRSD; Hamilton, 1967). Dysfunctional Attitude Scale (DAS; Weisman & Beck, 1978) Neuroticism Extraversion Openness-Five Factor Inventory (NEO-FFI; Costa &McCrae, 1992).	Correlational analyses between traumatic experiences and their relation to memory specificity. T-test between mean no. of specific memories retrieved and trauma categories. Correlations between subjective impact of trauma events, age of onset of trauma and specific memory retrieval.	Physical abuse is related to reduced memory specificity. The younger a person was at the onset of abuse, and the more distressing this was perceived and correlated with, reduced specificity. Comment on results: Highly significant p values of large effect size for correlations. Other results all significant. **Authors' interpretation of findings** The mere presence of physical trauma is not enough to lead to a development of OGM retrieval. Further research should consider ways in which trauma is processed. OGM, when flexible and not "fixed" may offer a functional and adaptive method of mood regulation.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *Pertaining to research question	Summary of findings
CSA CPA	Kuyken and Brewin (1995) Journal of Abnormal Psychology	N=56 women, mean age = 37.07 (SD= 10.02) Inpatient and outpatients of psychiatric hospital. All participants had a DSM diagnosis (third revised) of Major depressive episode. Split into four groups (N); No abuse – 19 CSA – 9 CPA – 10 CSA and CPA – 18 UK.	Between subjects	AMT Application of Severe Violence Index. Application of sexual abuse definition (with exclusion of peer perpetration of age gap of <5 years). Childhood interview also considered parental neglect, indifference and antipathy as variables. The Impact of event scale (IES). BDI.	Two-way ANCOVAs of general memories with CSA (yes/no) and CPA (yes/no) for positive and negative cues.	Overgeneral retrieval on AMT to positive and negative cues was significantly related to reports of CSA. Overgeneral retrieval on AMT is significantly related to high levels of avoidance of memories of CSA and CPA in the past week. Greater parental indifference was associated with longer retrieval of memories to negative cues and more overgeneral memory retrieval to both positive and negative cues. Comment on results: Results are of significant p value. **Authors' interpretation of findings** Reports of early adversity are related to performance on information-processing tasks for depressed participants. High levels of adversity increase the importance of processing to both negative and positive events (with positive event memories representing an escape or alternative to negative outcomes). These events are "schematized" (p. 589) thus increasing the likelihood of general rather than specific retrieval. Intrusive memories interfere with participants' understanding and ability to carry out the task due to subsequent reduced working memory capacity.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to research question	Summary of findings
CSA	McNally, Clancy, Barrett, Parker, Ristuccia & Perlman (2006) Cognition and Emotion	N=112. Divided into; 1. Continuous memories of abuse (N = 71, 53 women) mean age – 37.8 years, SD = 10.6). 2. Recovered memory group (N = 29, 17 women), mean age – 41.4 years, SD= 14.8). 3. Repressed group (N = 39, 33 women) mean age - 42.3, SD = 11.4) 4. Control group – no abuse history (N = 25, 16 women] mean age – 37.6, SD= 14.1). USA .	Between subjects	Dissociative Experiences Scale (DES) Absorption Scale (Tellegen & Atkinson, 1974 – measure of fantasy proneness) BDI Short form of the Manifest Anxiety Scale (MAS; Bendig, 1956). Marlowe-Crowne Social Desirability Scale (MC; Crowne & Marlowe, 1960). Shipley verbal and nonverbal measures of cognitive ability (Zachary, 1991). AMT.	Proportion of specific memories retrieved and proportion of first memories retrieved that were specific using examined using a 4 (group: control, continuous, recovered, repressed) X 2 time period (childhood, adulthood) ANOVA.	The repressed memory group experienced the most difficulty retrieving specific memories compared to controls (but not significantly compared to continuous or recovered groups). Comment on results: All results are of significant p value. **Authors' interpretation of findings** Findings are spoken of tentatively in light of not being able to "corroborate" accounts of abuse in the recovered group.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to research question	Summary of findings
Emotional neglect, Emotional abuse, Physical abuse, Physical neglect, Sexual abuse Exposure to crime, General trauma Physical sexual.	Mowlds, Shannon, McCusker, Meenagh, Robinson, Wilson & Mullholland. British Journal of Clinical Psychology.	N= 52 (31 women), mean age = 50.94 (SD= 12.76) all with a diagnosis of Bipolar Disorder (BD) in catchment area. Northern Ireland.	Between subjects	Bipolar Affective Disorder Dimension Scale (BADDS; Craddock, Jones, Kirov & Jones, 2004). Beck Depression Inventory II (BDI-II; Beck, 1996). The Trauma History Questionnaire (THQ; Green, 1996) and the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998) AMT.	T-tests used to examine influence of childhood trauma on AM specificity. Hierarchal Multiple regression used to examine hypothesis that AM specificity moderates childhood trauma and inter-episode depressive mood and BD severity.	AM specificity is not associated with a history of trauma. Diagnosis of BD associated with less specific memory retrieval than controls (from comparison study). Associations found between childhood trauma, BD and current inter-episode depressive mood. Comment on results: No significant results with association in question. **Authors' interpretation of findings** The authors question the association between childhood trauma and OGM.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to research question	Summary of findings
CSA	Ogle, Block, Harris, Goodman, Pineda, Timmer, Urquiza & Saywitz (2013). Development and Psychopathology	N=85, 73 Women, including 49 adolescents (M age = 15.12, SD = 0.95) and 36 adults (M age = 21.94, SD = 5.10). Divided into adolescents with CSA history (N=25) and without CSA (controls, N=24). Adults with CSA history (N=19) and without (controls; N=17). USA	Between subjects	Autobiographical Memory Interview (AMI; Kopelman et al, 1989). Wechsler Adult Intelligence Scale (WAIS III; Wechsler, 1997) and Wechsler Intelligence Scale for children (WISC-III; Wechsler, 1991), working memory and vocabulary subscales. DRM memory task (no reference provided). Dissociative Experiences Scales (DES; Bernstein & Putnam, 1986) and Adolescent Dissociative Experiences Scale (ADES; Armstrong, Carlson, Putnam,	A 2 (Age group: adults vs. adolescents) X 2 (CSA history: with vs. without) X 3 (time period: preschool, elementary school and sixth grade) repeated-measures analysis of covariance. TSC-40, TSC-C, and digit span scores were co-varied. A further analysis took place replacing CSA with a mean split of CTQ scores. Correlations between key variables. Hierarchal linear regression analysis using depression scores on step one, and age, digit span, and number of	Reduced memory specificity among adults with CSA history compared to adult controls was not observed (this effect was seen however, among adolescents with a CSA history compared to adolescent controls). Comment on results: No significant results for association in question. **Authors' interpretation of findings** As people grow older, childhood trauma memories become increasingly distant, so that the need to rely on functional avoidance might diminish.

	Libero & Smith, 1997).	PTSD criteria met in second step as predictors of memory specificity.
	Post-Traumatic Stress Disorder Scales (PDS; Foa, 1995; Foa, Cashman, Jaycox & Perry, 1997) and Child Post-Traumatic Stress Disorder Symptom Scale (CPSS; Foa, Johnson, Feeny & Treadwell, 2001).	
	Trauma Symptom Checklist (TSC-40; Briere & Runtz, 1989) and Trauma Symptom Checklist – Child Version (TSC-C; Briere, 1996).	
	CTQ	

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to research question	Summary of findings
CT (Weighted concept of CSA, CPA, physical neglect, emotional abuse and emotional neglect)	Peeters, Wessel, Merckelbach, Boon-Vermeeren. (2002) Comprehensive Psychiatry	N=25 (15 women), mean age = 41.5 (range 27-58). Outpatients of mood-disorder unit with diagnosis of Major Depressive DIsorder(single episode or recurrent) according to structured clinical interview for DSM-IV. Holland.	Within subjects/longitudinal at baseline, 3 months and 7 months follow up.	AMT - translated into Dutch language. Childhood Trauma Questionnaire (CTQ) Self-rating depression scale (SDS; Zung, 1965). Patients only. Montgomery-Asberg Depression rating scale (MADRS; Montgomery & Asperg, 1979).	Correlation coefficients between variables at baseline and follow-up. Linear regression analysis for childhood traumatisation (weighted score) with AMT performance, and over time.	AMT performance is stable across time, although clinical symptoms of sample improved over time. Childhood trauma related to higher specificity of negative cue words. Comment on results: P values were of significance levels. **Authors' interpretation of findings** The current sample had a low level of trauma – this might have altered results. The sample might have had a low level of intrusive memories (shown to affect results in previous study). A further unanticipated finding – specificity to negative cues related to a better prognosis of depression. Attributed to possibility that as OGM might hinder problem-solving ability, specificity to negative cues might promote access to successful coping strategies. Hypothesis that intrusions might reduce capacity of working memory was also identified as a reason to further explore the inter-relations between problem-solving strategies, intrusive cognitions and OGM.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to research question	Summary of findings
Emotional neglect, emotional abuse, physical abuse/bodily threat, sexual approach, sexual abuse	Raes, Hermans, Williams, Eelen (2005). British Journal of Clinical Psychology	N=52 women divided into high (N= 27) and low (N=25) specificity groups based on AMT screening. Mean age of 18.06, SD = 0.50. Location is not clear.	Between subjects	OGM: Dutch version. Traumatic Experiences Checklist (TEC; Nijenhuis, et al, 1999). The Centre for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977).	Pearson correlation for trauma and specificity scores followed by randomisation tests. Randomisation tests for specificity and level of support offered after abuse occurred.	An association is reported between reduced memory specificity and emotional abuse in childhood on a non-clinical sample. Supported individuals displayed less specific memories than unsupported individuals. Comment on results: Correlations are of medium effect size and significant p value. **Authors' interpretation of findings** OGM acts as a functional avoidance strategy, perhaps protective in the short-term but in the long-term it might present as a risk factor for emotional disorder.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to research question	Summary of findings
CSA	Raymeakers, Smeets, Peters & Merckelbach (2010). Journal of Behaviour Therapy	N=112. Divided into 1. Continuous memories of abuse (42 [30 women] mean age – 47.5 years, SD=1.7). 2. Recovered memory group spontaneous recovery – 28, recovery in treatment – 16 (42 women, mean age – 49.7 years, SD= 1.6). 3. Control group – no abuse history (26, [18 women] mean age – 43.2 years, SD= 2.9). Holland.	Between subjects	AMT: Dutch version BDI. Post-traumatic stress disorder Symptom Scale-Self Report (PSS-SR; Foa, Riggs, Dancu, & Rothbaum, 1993).	Exploratory analysis on AMT scores for different types of recovered memories. Post-hoc analysis for differences between control group and recovered memory group for specificity retrieval.	People reporting CSA memories showed reduced memory specificity compared to controls (regardless of whether recovered or continuous with no difference between these latter groups). Comment on results: Results were of significant p value. **Authors' interpretation of findings** Findings are suggested to be consistent with the "affect-regulation hypothesis" – avoidance of memories wards off distress and emotional affect. Author's note psychophysiological reactions to events perceived to happen (which have not) can adopt similar patterns to those with PTSD (in the case of querying validation of recovered memory group's claims of CSA).

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to research question	Summary of findings
CSA, CPA, Physical neglect, emotional abuse, emotional neglect.	Wessel, Meeren, Peeters, Arntz, Merckelbach. (2001) Behaviour Research and Therapy	Patients: N=93 (51 women), mean age = 36.06 (range 20-58) outpatients of psychiatric hospital with primary diagnosis of Major Depressive Disorder or Anxiety Disorder according to DSM diagnostic criteria (third revised). Split into four groups; (1)AD without history of MDD (n= 31) (2) AD and MDD in remission (n = 20) (3) AD and MDD (n= 25) (4) MDD (n = 17). Controls: N = 12 women, paid volunteers. Mean age = 35.01 (SD = 10.4) Holland	Within subjects	AMT: Translated into Dutch language. Childhood Trauma Questionnaire (CTQ) Self-rating depression scale (SDS).	Hierarchal multiple regression analyses – no. of specific memories as DV. Step 1: Ps characteristics, demographics and medication Step 2: Childhood trauma variables; CSA CPA Physical neglect Emotional abuse Emotional neglect Step 3: MDD, AD and remitted MDD. MDD and CTQ were standardised and five variables created representing their interaction. These were entered into a hierarchal regression.	Higher levels of education accounted for a large set of variance in predicting memory specificity. Including childhood trauma in the regression model did not make a significant contribution. Adding diagnostics sets accounted for an additional 11% of variance which held a medium effect size. Standardized MDD and CT scores held additional 14% of variance. Comment on results: No significant findings of association in question.

Childhood social factor variable(s)	Study and journal	Population	Design	How variable measured	Method of analysis *pertaining to research question	Summary of findings
CSA, CPA.	Wilhelm, McNally, Baer & Florin (1997) British Journal of Clinical Psychology	N=60, of which 36 were OCD outpatients, (20 men, mean age 36.4, SD = 11.0) who met DSM-III-R criteria for OCD. Also, a control group of 24 (14 men mean age 36.1 years, SD = 10.7). Control group were recruited through advertisements. USA.	Between subjects	Beck Anxiety Inventory (BAI; Beck, Epstein, Brown & Steer, 1988). BDI Maudsley Obsessional Compulsive Inventory (MOCI; Hodgson & Rachman, 1977). The Shipley Institute of Living Scale (Zachary, 1991) The Trauma History Questionnaire (Green, cited as unpublished). AMT.	Biserial correlation between abuse history and memory specificity.	Retrieval of specific memories was not related to sexual or physical childhood abuse. Comment on results: No significant findings. **Authors' interpretation of findings** The difficulties for people with OCD to recall specific memories might relate to reduced cognitive capacity in light of intrusive thoughts associated with depression.

Table B2.
Summary of studies identified for Question 2(in alphabetical order).

Study purpose	Study and journal	Population	Design	How variable measured[27]	Method of analysis * Pertaining to research question	Summary of findings
- To investigate whether autobiographical memory specificity is related to social problem solving among older and younger adults.	Beaman, Pushkar, Etezadi, Bye & Conway MSc dissertation (2010)	40 older adults (mean age of 61.91, SD = 5.59) and 40 undergraduates (mean age of 22.85, SD = 1.92). 34 males and 46 females. Canada	Between-subjects including primed and unprimed conditions	Autobiographical cue Task (described as AMT but not referenced as such). Digit-symbol Substitution Task from WAIS III digit-symbol task (reference not provided). Stroop Inference Test (Trenerry, Crosson, DeBoe, & Leber, 1989). Alphabet Span (Craik, 1986) Means-End Problem Solving Procedure	Correlations between variables. ANOVA/MANOVA to assess group differences Hierarchal multiple regressions to explore predictors of specific memories, general memories and relevant means provided during MEPS task.	Specificity of autobiographical memory predicted social problem solving performance in older adults and younger adults. Experimenter effects suggest that experimenter characteristics predict specificity of memories. Education predicted specificity of memory among younger adults and general memories among younger and older adults. Comment on results: P values are significant. **Authors' interpretation of findings** Semantic memory may be less useful than specific autobiographical memories in guiding social problem solving. This may have treatment implications for older adults, suggesting that practicing the retrieval of specific memories may facilitate psychoeducation/social problem solving aspects of psychological work.

[27] The references for measures cited in this table can be found in the original article.

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
				(MEPS; Platt & Spivack, 1975).		
- To investigate autobiographical memory specificity among parasuicidal individuals. - To investigate the relationship between OGM, problem-solving, hopelessness and anger among this population.	Evans, Williams, O'Loughlin & Howells. Psychological Medicine (1992) UK	12 patients (6 females, average age of 38) interviewed within 15-36 hours of admission to general hospital following parasuicidal behaviour. 12 control participants (average age 37) recruited from surgical ward and matched to parasucidal participants.	Between-subjects	Trait Anger Scale (STAXI-T; Spielberger et al, 1979). Hopelessness scale (Beck et al, 1974). AMT[28] Means-End Problem Solving Procedure (MEPS)	ANOVA analyses To explore group differences in specific retrieval, latency and problem-solving. Correlational analyses for the relationship in question.	Specificity of memory was positively correlated with effective problem-solving for both groups. Comment on results: Correlations were of large effect size and P values were significant. **Authors' interpretation of findings** An inability to search beyond immediate descriptions to problems is an important barrier to effective problem-solving. This could be because memory effects the production of effective solutions and that the same mechanism used to retrieve past information is used to imagine future events.

[28] Autobiographical memory test (Williams & Broadbent, 1986).

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To investigate whether autobiographical memory specificity is related to social problem solving.	Goodard, Dritschel & Burton Journal of Abnormal Psychology (1996)	16 outpatients from hospital with a diagnosis of a depressive disorder. 12 women and 4 men (mean age 46.6 years, SD=6.66). 16 physiotherapy outpatients. 12 women and 4 men (mean age 41.9, SD = 9.7) UK	Between-subjects	Autobiographical cueing Task (described as AMT but not referenced as such). Beck Depression Inventory (BDI; Beck et al, 1961) Means-End Problem Solving Procedure (MEPS)	Correlations analyses to assess group differences across cueing task, MEPS task and interactions between the two. ANOVA analyses used to group differences on cueing and MEPS task. . .	Specificity of autobiographical memory was significantly correlated with effective MEPS performance for both depressed and control participants and MEPS means for the control group. Comment on results: Correlations were of medium to large effect size and range from significant to highly significant (in control group) P values. **Authors' interpretation of findings** Specific-categoric memory retrieval is important in SPS skills.

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To investigate whether autobiographical memory specificity is related to social problem solving.	Goodard, Dritschel & Burton British Journal of Clinical Psychology (1997)	Depressed group - 16 undergraduate students with BDI scores equal or over 15. 11 males, mean age of 23.6. Non-depressed group - 16 undergraduates with BDI scores equal or below 7. Eight females/males, mean age of 24.9. UK	Between-subjects	Autobiographical cueing Task (described as AMT but not referenced as such). BDI Means-End Problem Solving Procedure (MEPS)	Correlations analyses to assess group differences across cueing task, MEPS task and interactions between the two ANOVA analyses used to group differences on cueing and MEPS task. . .	Specificity of autobiographical memory was significantly correlated with MEPS mean and effectiveness performance among the depressed group. Comment on results: Correlations are of large effect size and significant to P value. **Authors' interpretation of findings** Autobiographical memory recall strategies are important in the relationship between depression and poor social problem solving.

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To investigate whether autobiographical memory specificity is related to social problem solving. - To explore whether the retrieval of specific autobiographical memories improve social problem solving	Goodard, Dritschel & Burton British Journal of Clinical Psychology (2001)	Depressed group: 30 outpatients of a mental health unit with BDI scores of 20 or more and a diagnosis of depressive disorder. 25 females, mean age of 42.3 years, SD=6.780. Non-depressed group: Thirty mature university students with BDI scores of 12 or below. 25 females, mean age - 33.7 years, (SD = 7.61). *Half of each group assigned to primed and unprimed conditions.	Between-subjects	bdi Means-End Problem Solving Procedure (MEPS)). Modified Card Sorting Task . Modified from the Wisconsin Card Sorting Test (ECST; Grant & Berg, 1948). Autobiographical cueing Task (described as AMT but not referenced as such). AMT was administered last.	ANOVA analyses used to group differences on cueing and MEPS task. Correlations analyses to assess group differences across cueing task, MEPS task and interactions between the two. .	Specificity of autobiographical memory was positively correlated with MEPS mean and effectiveness performance across all participants and conditions with the exception of non-depressed participants when considering MEPS mean scores. Comment on results: Correlations are of medium to large effect size and significant to highly significant P values. **Authors' interpretation of findings** Specificity of memory is not by itself a sufficient retrieval aim of social problem solving but it might be of potential use in helping those with depression gain confidence in regard to interpersonal goals, and problem-solving.

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To explore autobiographical memory specificity among groups of social phobic, depressed and healthy control participants.	Heidenreich, Junghanns-Royack & Stangler British Journal of Clinical Psychology (2007)	Depressed group: 18 participants, 10 women. Mean age 39.9, SD = 10.46. Social phobia group: 18 participants, 10 women. Mean age 32.2, SD = 7.69. Healthy controls: 18 participants, 10 women. Mean age 32.3, SD = 6.82 Germany.	Between-subjects	AMT Ratings of think-aloud test. Structured clinical interview for DMM-IV. The German version of the SCID-1; (Wittchen et al, 1997). BDI Social Phobia Inventory (SPIN; Connor et al, 2000). German version. Visual analogue scales (VAS; no reference provided).	ANOVA analyses used to explore group differences including ANCOVAS to take into account cofounding variables. .	No significant differences between groups. Higher levels of education were significantly associated with specific retrieval. Comment on results: P values specified were significant. **Authors' interpretation of findings** Despite other biases in information processing, those with social phobia do not display a tendency to retrieve over – general memories

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To extend memory and problem-solving research among suicide attempters with depression.	Kaviani, Rahimi & Naghavi Archives of Iranian Medicine (2004). Iran.	28 (12 women, mean age = 28). with Major Depression according to DSM-IV criteria and who were admitted to hospital following suicide attempt. 20 healthy controls.	Between-subjects	AMT Beck Depression Inventory (BDI-II; Beck & Sterr, 1987) and Beck Hopelessness Scale (Beck, Weissman, Lester & Trexler, 1974). Means-End Problem Solving Procedure (MEPS) Semantic Memory Task.	ANOVA analyses to assess group differences. Correlations between variables and hypotheses in question.	Higher memory specificity was positively correlated with MEPS means and MEPS ratio scores across both groups. Comment on results: Results were of medium effect size and highly significant. **Authors' interpretation of findings** Suggestion that impaired access to specific memories leads to dysfunctional problem-solving. The implication for therapy (keeping diaries) is discussed.

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To explore memory specificity, social problem solving and imagined future events among participants with BPD, depression and controls. -To investigate whether autobiographical memory specificity is related to social problem solving among people with BPD.	Kremers, Spinhoven, Van der Does & Van Dyck Clinical Psychology and Psychotherapy (2006)	Patients with a diagnosis of BPD and various other Axis I and II disorders based on DSM –IV. Divided into a depressed (N=44, mean age 30.1) and non-depressed group (N=34, mean age 31.7). Control group: All female, mean age (34.7). Netherlands	Between-subjects	SCID 1 and II Mini Neuropsychiatric Interview. Borderline Personality Disorder Severity Index (BPDSI; Artnzel al, 2003) AMT Autobiographical future cueing task (Williams et al, 1996). Means-End Problem Solving Procedure (MEPS; Platt & Spivack, 1975).	Correlations between variables and hypotheses in question. ANOVA/MANOVA to assess group differences	Specificity of future events after negative cues was significantly correlated with MEPS "introspection/reflection" scale in controls and non-depressed patients with BPD. Comment on results: P values are significant. **Authors' interpretation of findings** Social problem solving difficulties in BPD might be influenced by difficulties in emotional regulation rather than specificity of memory.

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To investigate autobiographical memory specificity among participants with complicated grief (CG) compared to those bereaved without CG. - To investigate the relationship between OGM and problem-solving among this population.	Maccallum and Bryant British Journal of Clinical Psychology (2010)	22 people with CG (20 females, mean age of 50.54, SD = 13.28) 21 non CG group, (18 females, mean age 50.76, SD = 15.97) Australia	Between-subjects	Complicated Grief Assessment (CGA; Zhang, El-Jawarhi & Prigerson, 2006) Clinical administered PTSD scale 2 (CAPS; Blake et al, 2005). Structured Clinical Interview for DMS-IV (SCID; Spitzer, Gibbon & Williams, 2002). BDI WAIS III – Letter Number sequencing task (LNS; Weschler, 1997). National Adult Reading Test (Nart; Nelson, 1991). AMT MEPS	ANOVA analyses To explore group differences ins specific retrieval, latency and problem-solving. Correlational analyses for the relationship in question. Hierarchal regression to explore relationship between depression, PTSD, memory specificity and CG to MEPS effectiveness and mean scores.	Categoric recall was negatively correlated with MEPS means and effectiveness scored for positive cues across all participants. Positive cue specificity was positively correlated with MEPS means and effectiveness across all participants. Comment on results: Correlations were of medium effect size and P values were significant to highly significant. **Authors' interpretation of findings** Rumination of the loss of someone might potentially contribute to the failure in adopting restoration type behaviours by encouraging categoric retrieval which impairs problem-solving. Depression and PTSD did not solely account for the observed effects

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To explore memory specificity, social problem solving and various clinical characteristics among participants with BPD with and without concurrent diagnoses of depression and PTSD.	Maurex, Lekander, Nilsonne, Andersson, Asberg & Ohman British Journal of Clinical Psychology (2010)	Forty seven female patients with a diagnosis of BPD who had made at least two suicide attempts in the last six months. Mean age of 30.5 years (SD = 8.1). 30 female controls. Mean age of 25.5 years SD = 10). Sweden	Between-subjects	AMT MEPS The Karolinska Affective and Borderline Symptom Scale (KABOSS; Andersson, Forslund, Gustavsson & Asberg, 2009). Digit span test from WAIS-R; Weschler, 1981). SCID-1 and the Suicide Attempt Self-Injury Interview (SASIIL Linehan, Comtois, Brown, Heard & Wagner, 2006). The Karolinska Interpersonal Violence Rating (KIC; Forslund & Ahnemark, 2009).	Correlations between variables and hypotheses in question. ANOVA analyses to assess group differences.	There was a positive correlation between AMT specificity scores and MEPS total number of means among the BPD group. Comment on results: P values are significant and correlations are of medium effect size. **Authors' interpretation of findings** The results are largely attributed to the suicidality of the current sample. Theories of impaired executive control and regulation hypotheses are applied.

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To explore memory specificity, and social problem among suicidal participants . -To investigate the relationship between autobiographical memory specificity and social problem solving	Pollock and Williams Suicide and Life-threatening Behaviour (2001)	24 adults (24 females) first-time suicidal attempters 24 adults psychiatric group 24 adults control group. *no further information UK	Between-subjects	Scale for Suicidal Ideation (SSI; Beck, Kovacs & Weisman, 1979). BDI. Beck Hopelesness Scale (BHI; Beck Weissman, Lester & Trexler, 1974). Means-End Problem Solving Procedure (MEPS) AMT	MANOVA analyses to assess group differences. Correlations between variables and hypotheses in question.	A significant positive correlation for the MEPS effectiveness measure and specific memory recall among the suicidal group. A significant positive correlation for the MEPS means score and specific memory recall among controls. Comment on results: Correlations were of medium to large effect size and P values were significant. **Authors' interpretation of findings** Effective problem-solving relies on specific memory retrieval among suicide attempters. Clinical implications include the need to support the usefulness of problem-solving strategies in treatment by taking into account the specificity of memory.

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To investigate autobiographical memory specificity and rumination in major depression. - To investigate whether OGM, mediates the relationship between rumination and problem-solving in this population.	Raes, Hermans, Williams, Demyttenaere, Sabbe, Pieters and Eelen Journal of Affective Disorders (2005) Unknown location	24 patients (15 women) with a diagnosis of Major Depressive Disorder on the Structured Clinical Interview for DSM-IV Axis I Disorders. Mean age was 39.04 (SD = 11.04).	Between-subjects	BDI. AMT Ruminative Response Scale (RRS; Nolen-Hoeksema & Morrow, 1991) Rumination of Sadness Scale (RSS). LNS from WAIS-III. Means-End Problem Solving Procedure (MEPS)	Correlational analyses across variables. Three regression analyses to test mediation hypotheses.	Specificity of memory was significantly related to rumination. MEPS effectiveness scores were significantly related to rumination. Memory specificity was still a predictor of MEPS effectiveness scores when controlling for rumination confirming the mediational hypotheses. *and could not be accounted for by working memory capacity. Comment on results: Results were significant. **Authors' interpretation of findings** Reduced memory specificity mediates the pathway in which rumination affects problem-solving capability in major depression.

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To examine the relationship between socially prescribed perfectionism, psychological distress and OGM among a parasuicidal population. - To explore the relationship between OGM and trait perfectionism between first and repetitive self-harmers.	Rasmussen, O'Connor and Brodie. Crisis (2008) UK	40 self-harm patients after admission to general hospital. 23 women (mean age of 38 years SD = 10.6).	Between-subjects	AMT Suicide Probability Scale (SPS; Cull & Gill, 1998). The Beck Hopelessness Scale (BHS; Beck, Weissman, Lester &~ Trexler, 1974). The Hospital and Anxiety Scale (HADS; Zigmond & Snaith, 1983). The Multidimensional Perfectionism Scale (MPS-II; Hewitt & Flett, 1991).	T test to explore differences between groups. To test for moderating effects, a series of hierarchal regression analyses were performed.	Evidence was found to support a moderating role of OGM in the relationship between socially prescribed perfectionism and suicidal ideation and depression. Comment on results: Results were significant. **Authors' interpretation of findings** Socially prescribed perfectionists who are overgeneral in recall of positive memories reported greater suicidal ideation. This suggests that recalling specific events from the past is an effective escape mechanism for this group.

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
-Explore the robustness of the relationship between ineffective problem-solving and OGM.	Sidley, Witaker, Calam & Wells Behavioural and Cognitive Psychotherapy (1997).	35 parasuicidal patients (14 females) average age 32.1 years, range 19-51). UK.	Between-subjects	Beck Depression Inventory (BDI-II; Beck & Sterr, 1987) and Beck Hopelessness Scale (Beck, Weissman, Lester & Trexler, 1974). AMT Means-End Problem Solving Procedure (MEPS) AMT	Correlational analyses.	Specificity of memory and effectiveness of problem-solving were positively correlated. Comment on results: Effect size were medium and p value significant. **Authors' interpretation of findings** A stronger association between the variables is hypothesised for people of whom the perceived insolvability of problems is a prime and current difficulty. Supports the use of clinical interventions that "go beyond" general descriptions of past suicide attempts or problems.

Study purpose	Study and journal	Population	Design	How variable measured	Method of analysis * Pertaining to research question	Summary of findings
- To investigate the role the relationship between problem-solving and OGM in PTSD. .	Sutherland and Bryant Behaviour Research and Therapy (2008).	20 PTSD participants (11 female, mean age 39.05, SD = 13.10). 21 trauma exposed no PTSD participants (13 female, mean age of 26.10, SD = 9.38). Australia	Between-subjects	Clinician Administered PTSD Scale-2 (CAPS-2; Blake et al, 1995). Beck Depression Inventory (BDI-II; Beck & Sterr, 1987). The Beck Anxiety Inventory (BAI; Beck & STerr, 1990). AMT Means-End Problem Solving Procedure (MEPS).	ANOVA analyses to assess group differences. Correlations between variables and hypotheses in question.	Higher memory specificity was positively correlated with MEPS means and MEPS effectiveness. Overgeneral recall was negatively correlated with MEPS means. Comment on results: Results were significant and of medium effect size. **Authors' interpretation of findings** OGM is suggested to hinder the generation of alternative solutions to problems. The authors noted that a focus on traumatic events might provide a template for past problem-solving failure and this may be further hindered by related intrusions, reduced motivation and negative orientation.

Appendix C. CASP checklists

Table C1.

Application of the CASP case control checklist to studies identified for Question 1.

Issues to consider			*Aglan…*	*Burnside…*	*Crane…*	*Dalgleish…*	*Hauer…*	*Henderson…*	*Hermans…*	*Kuyken…*	*McNally…*	*Mowlds…*	*Ogle…*	*Peeters…*	*Raes…*	*Raymaekers*	*Wessel…*	*Wilhelm…*
A.) Are the results of the study valid?	1. Did the study address a clearly focussed issue?	*Yes*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		No																
		Can't tell																
	2. Did the authors use an appropriate method to answer their question?	*Yes*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
		No													✓			
		Can't tell																
	3. Were the cases recruited in an acceptable way?	*Yes*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		No																
		Can't tell																
	4. Were the controls selected in an appropriate way?	*Yes*	✓	N/A	N/A	✓	✓	✓	N/A	N/A	✓	N/A	N/A	N/A	N/A	✓	✓	
		No																✓
		Can't tell																
	5. Was the exposure* accurately measured to minimise bias? **Childhood social factors*	*Yes*							✓			✓	✓	✓	✓		✓	
		No	✓	✓	✓		✓	✓	✓	✓	✓					✓		✓
		Can't tell				✓												
	6a. What cofounding variables have the authors accounted for?		*See Summary table "How variables were measured" column (Appendix B)*															
	6b. Have the authors taken account of 6a. in design	*Yes*		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		No	✓					✓		✓	✓			✓		✓		✓

	and/or analysis?	*Can't tell*																	
	7. What are the results?		*See summary table "what are the findings" column (Appendix B)*																
b.) What are the results?	8. How precise are the results? (including estimate of risk)		*See summary table "what are the findings" column (Appendix B)*																
	9. Do you have doubts about the results?	*Yes*										✓[29]							✓
		No																	
c.) Will the results help locally?	10.Can the results be applied to the local population?	*Yes*	✓	✓			✓												
		No			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Can't tell																	
	11. Do the results of the study fit with other available evidence?	*Yes*	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓			
		No										✓	✓	✓			✓	✓	
		Can't tell											✓						

Note: Question 3 and 4. Whether recruitment and selection were deemed "appropriate" did not include references to ethical issues. Question 6b. "Have the authors taken account of 6a. in design and/or analysis?" was interpreted as whether the confounding variable was analysed independently, and as a covariate of the association between the childhood social factor in question and OGM. This will account for why both "yes" and "no" have been marked in some instances. Question 9 has been altered. The original question "Do you believe the results?" was considered too simplistic - where an answer would not reflect a critique of the study.

[29] In comparison with other study's findings.

Table C2.
Application of the CASP case control checklist to studies identified for Question 2.

Issues to consider			*Beaman*	*Evans*	*Goddard '96*	*Goddard '97...*	*Goddard '01*	*Heidenreich*	*Kavaiani*	*Kremers*	*Maccallum*	*Maurex*	*Pollock*	*Raes*	*Rasmussen*	*Sidley*	*Sutherland*
A.) Are the results of the study valid?	1. Did the study address a clearly focussed issue?	*Yes*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		No															
		Can't tell															
	2. Did the authors use an appropriate method to answer their question?	*Yes*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		No															
		Can't tell															
	3. Were the cases recruited in an acceptable way?	*Yes*						✓	✓	✓	✓		✓		✓	✓	✓
		No															
		Can't tell	✓	✓	✓	✓	✓					✓		✓			
	4. Were the controls selected in an appropriate way?	*Yes*	N/A					✓		✓	✓			N/A	N/A	N/A	✓
		No															
		Can't tell		✓	✓	✓	✓		✓			✓	✓				
	5. Was the exposure* accurately measured to minimise bias? **Childhood social factors*	*Yes*						✓									
		No															
		Can't tell	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
	6a. What cofounding variables have the authors accounted for?		*See Summary table "How variables were measured" column (Appendix B)*														
	6b. Have the authors taken account of 6a. in design and/or analysis?	*Yes*	✓	✓				✓	✓	✓		✓	✓	✓	✓	✓	✓
		No			✓	✓	✓			✓	✓	✓	✓				✓
		Can't tell															

	7. What are the results?		*See Summary table "What are the findings" column (Appendix B)*															
b.) What are the results?	8. How precise are the results? (including estimate of risk)		*See summary table "What are the findings" column (Appendix B)*															
	9. Do you have doubts about the results?	*Yes*																
		No	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
c.) Will the results help locally?	10.Can the results be applied to the local population?	*Yes*	✓	✓	✓	✓	✓			✓	✓		✓	✓				
		No		✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓
		Can't tell							✓									
	11. Do the results of the study fit with other available evidence?	*Yes*	✓	✓	✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓
		No								✓								
		Can't tell						✓										

Notes: Question 3 and 4 - Whether recruitment and selection were deemed "appropriate" did not include references to ethical issues. Question 6b. "Have the authors taken account of 6a. in design and/or analysis?" was interpreted as whether the confounding variable was analysed independently, and as a covariate of the association between the childhood social factor in question and OGM. This will account for why both "yes" and "no" have been marked in some instances. Question 9 has been altered. The original question "Do you believe the results?" was considered too simplistic - where an answer would not reflect a critique of the study.

Appendix D. Main features of the studies.

Table D1.

Main features of the identified studies – Question 1.

Study	Sample	Mood-related characteristics considered	AMT characteristics (a)Presentation method (b) cue words (c) time limit (d) scoring outcome (e) reliability	Assessment of Childhood Trauma Prevalence
Aglan et al. (2010)	103 women in community; • Depression, no CSA[30] (N=20, mean age of 32.8, SD[31]= 1.8). • Depression/CSA (N= 26, mean age 33.1, SD=3.0). • No depression, CSA (N=8, mean age 31.8, SD = 2.0). • No depression, no CSA (N=49, mean age 31.1, SD = 3.2).	Childhood depression Adult depression	(a) -[32] (b) 10 cue words; five positive, five neutral and five negative. (c) 30 second limit. (d) No. of **categoric** memories as outcomes. (e) Two raters assessed 20 participant samples (of a total 300 responses). Intra-class coefficient for total categoric memories was .89 (.87 to positive cues and .91 to negative	PBI[33] CECA[34] (CSA assessed as touching of genitals or breasts, or attempted or actual intercourse before 16 years of age). Prevalence: CSA (22.2%), CPA[35] (21.7%) and neglect (18.7%).

[30] Childhood Sexual abuse.
[31] Standard Deviation.
[32] - indicates no information provided.
[33] Parental Bonding Instrument (PBI; Parker, Tupling & Brown, 1979).
[34] Childhood Experience of Care and Abuse Interview Schedule (Bifulco, Brown, Lillie & Jarvis, 1994).
[35] Childhood Physical Abuse.

			cues).	
Burnside et al. (2004)	41 women in community with a known history of childhood abuse; Mean age of 36.74, SD = 2.93.	Adult depression	(a) - (b) 10 cue words ;five positive, five neutral and five negative arranged randomly but presented in the same order. (c) Time limit of 30 seconds. (d) no. of **categoric** memories as outcomes. (e) Complete responses for 10 participants were scored by a second rater for specific versus non-specific memories (K = .84).	CECA No data on prevalence statistics.
Crane and Duggan (2009)	49 (17 men, 32 women) presenting at hospital following an episode of suicidal behaviour;	Depression	(a) - (b) 18 cue words; six positive, six neutral and six negative.	Previous interview[36] – CSA defined as "unwanted sexual touching, oral sex, sexual

[36] Taken from Welch and Fairburn (1994), the interview was used in a study of risk factors for eating disorders.

	Mean age 36.6 (SD = 12.22).		(c) Time limit of 30 seconds. (d) no. of **categoric** and **specific** memories as outcomes. (e) -	intercourse or other unwanted sexual contact occurring for the first time prior to 16 years of age" (p.95). 26 participants reported CSA, mean age of onset 9.72 (SD = 3.77).
Dalgleish et al. (2003)	60 participants (56 women); • Diagnosis of eating disorder (mean age of 27.26, SD = 8.75). • Controls (21, mean age of 27.71, SD = 5.76).	Depression Anxiety	(a) Presented on 12.5cm x 7.5cm cards. (b) 10 cue words; five positive, five negative. (c) Time limit of 60 seconds. (d) no. of **general** and **specific** memories as outcomes. (e) Inter-rater agreement on 50% of responses – K = .78.	MOPS[37] Eating Disorder group: mean score on abuse subscale - 7.22, SD = 5.93. Control group: mean score on abuse subscale – 2.05, SD = 3.57. *Significantly different (t = 4.53) at p < 0.001.
Hauer et al. (2008)	• 70 CSA community participants (50 females, mean age 41.37, SD=11.59) • 63 Community controls (41 women, mean age 39.06, SD = 12.57).	Depression Post-traumatic Stress	<u>Version 1;</u> (a) Orally and visually presented (b) 5 positive and negative cue words. (c) Time limit of 60 seconds. (d) no. of **specific**	CSA defined as "sexual contact ranging from sexual related fondling to penetrative acts before the age of 12" (p. 446)

[37] Measure of Parenting Style (Parker, Roussos, Hadzi-Pavlovic, Mitchell, Wilhelm, & Austin, 1997).

			memories as outcomes. (e) Inter-rater agreement on 20% of responses – K = .70. <u>Version 2;</u> (a) Orally and visually presented (b) 5 positive and negative cue words (concrete words used in prior pilot used). (c) Time limit of 60 seconds. (d) no. of **specific** memories as outcomes. (e) Inter-rater agreement on 20% of responses – K = .70.	
Henderson et al. (2002)	79 female undergraduates; • CSA (22, mean age of 30.23, SD = 9.83)) • No CSA (57, mean age of 22.23, SD = 6.83).	History of psychological problems	(a) Written on questionnaire. (b) 18 cue words; six positive, six negative and six neutral. (c) - (d) no. of **general** and **specific** memories as outcomes. (e) Inter-rater reliability of .93 based on agreement of a 10%	Participants were asked to indicate whether they had experienced a number of abuses (e.g. "when you were a child did someone…make you touch them in a sexual way" p. 133). 22 of 79 (28%) reported a history of CSA

			sample (144) responses	
Hermans et al. (2004)	28 inpatients (19 women) with depression. Mean age of 37.3 years, SD = 12.3).	Depression Neuroticism	(a) – (Dutch version). (b) 10 cue words; five positive, five negative. (c) 30 second time limit. (d) no. of **specific** memories as outcome. (e) -	TQ[38] Total composed score mean of 11.56, SD = 12.43 (of range 0-60).
Kuyken and Brewin (1995)	56 women, inpatients and outpatients of psychiatric hospital with a diagnosis of Major Depressive Disorder. Mean age of 37.07, SD = 10.2	Depression	(a) On 5 x 3 inch cards. (b) 10 cue words; five positive, five negative in pseudo random order with positive/negative alternating. (c) 60 second time limit. (d) no. of **specific** memories as outcome. (e) Distinguish between specific and general memories for sample of 100 memories by a second rater - reported as 90%.	Interview with criteria applied for definition of CSA and CPA[39]. Example: …"unwanted direct contact between perpetrator and sexual parts of the responder…" (p. 587). No abuse (19), CSA only (9) , CPA only (10), CSA and CPA (18).
McNally et al (2006)	112 participants recruited from the community. Divided into;	Depression Anxiety	(a) Presented on 5 x 3 inch cards and read aloud. (b) 10 cue words; five	Interview used to classify participants into groups. CSA criteria defined as "sexual contact with

[38] Trauma Questionnaire (Nijenhuis, Van der Hart, & Vanderlinden, 1996).
[39] From Straus, Gelles, & Steinmetz, 1980)

	• Continuous memories of abuse (N = 71, 53 women) mean age – 37.8 years, SD = 10.6). • Recovered memory group (N = 29, 17 women), mean age – 41.4 years, SD= 14.8). • Repressed group (N = 39, 33 women) mean age - 42.3, SD = 11.4). • Control group – no abuse history (N = 25, 16 women] mean age – 37.6, SD= 14.1).		positive, five negative. (c) 60 second limit. (d) no. of **specific** memories as outcome. (e) First author blindly rated 10 randomly selected participants and rated specific/non-specific. K = .92	participant (e.g. fondling, rape) by a perpetrator at least five years older than the participant" (p.528). No further prevalence information reported.
Mowlds et al. (2010).	52 participants (31 women) recruited from the community, all with a diagnosis of Biploar Disorder. Mean age = 50.94 (SD= 12.76).	Depression Bipolar disorder	(a) Presented on flash cards and read aloud. (b) 12 cue words; six positive, six negative. (c) 60 second limit. (d) **N**o. of **specific** memories as outcome. (e) One-third of the sample was randomly	THQ[40] CTQ[41] 94.2 % of sample reported a history of childhood trauma (according to THQ). CTQ scores used to divide group into

[40] Trauma History Questionnaire (Green, 1996).
[41] The Childhood Trauma Questionnaire (Bernstein & Fink, 1998).

			selected and independently rated by trained rater. K = .91.	childhood trauma (N= 25) and no childhood trauma (N= 27) groups.
Ogle et al. (2013)	85 participants (73 women); • 49 adolescents (mean age = 15.12, SD = 0.95) • 36 adults (M age = 21.94, SD = 5.10).	PTSD	N/A – use of AMI.	CTQ Adults with CSA history (N= 19) and without (N= 17).
Peeters et al. (2002)	25 outpatients of mood-disorder unit with diagnosis of Major Depressive Disorder (15 women); Mean age = 41.5 (range 27-58).	Depression	(a) Printed on booklet (Dutch version) (b) 10 cue words; five positive, five negative. (c) - (d) no. **specific** memories as outcome. (e) Two raters recorded first session responses for specificity. Kappa ranged from .62 and .86.	CTQ (weighted scores) Mean CTQ weighted score of 8.99, SD = 2.18 of possible 1-25.
Raes et al. (2005).	52 female undergraduate; • High specificity group (N= 27) based on AMT screening. • Low specificity group	Depression	(a) Verbally presented (Dutch version) (b) 10 cue words; five positive, five negative. (c) 60 second limit. (d) no. **specific** memories	TEC[42] Emotional neglect (N= 8, 15%), emotional abuse (N= 11, 21%), physical abuse/bodily threat

[42] Traumatic Experiences Questionnaire (Nijenhuis, Van der Hart & Vanderlinden, 1999).

	(N=25) based on AMT screening. Mean age of 18.06, SD = 0.50.		as outcome. (e) -	(N= 9, 17%), sexual approach (N = 3, 6%) and sexual abuse (N= 2, 4%).
Raymaekers et al. (2010)	112 participants (90 women) recruited from the community; • Continuous memories of abuse (N= 42 [30 women] mean age – 47.5 years, SD=1.7). • Recovered memory group spontaneous recovery – N= 28, recovery in treatment – N=16 (42 women, mean age – 49.7 years, SD= 1.6). • Control group – no abuse history (N=26, [18 women] mean age – 43.2 years, SD= 2.9).	Depression PTSD	(a) Printed on 10 X 25 cm card and read aloud (Dutch version) (b) 10 cue words; five positive, five negative. (c) 60 second time limit. (d) no. **specific** memories as outcome. (e) A subset of 40 cases were scored by second rater. Intra-class coefficent of 0.88.	Semi-structured interview to classify participants into groups. No further information on prevalence.

Wessel et al. 2001	105 participants; 93 outpatients of psychiatric hospital with primary diagnosis of Major Depressive Disorder or Anxiety Disorder (51 women). 12 controls (all women). Mean age of controls = 35.01 (SD = 10.4). Mean age of outpatients = 36.06 (range 20-58) divided into; • Anxiety disorder (AD) without history of major depression disorder (MDD; N= 31). • AD and MDD in remission (N = 20). • AD and MDD (N= 25). • MDD (N = 17).	Depression	(a) Printed on booklet (Dutch version). (b) 10 cue words; five positive, five negative. Half presented in reverse order to first set. (c) - (d) no. **specific** memories as outcome. (e) Agreement for specificity between two raters ranged from K = 0.62 to K= 0.86 for individual words and total number of specific memories (ICC; r=0.90).	CTQ *"Scores reveals tha*t these predominately fell in the minimal to *moderate range" (p.419).*

Wilhelm et al. (1997).	• 36 patients with Obsessive Compulsive Disorder (OCD) - (16 women, mean age 36.4, SD = 11.0) • 24 controls (10 women, mean age 36.1 years, SD = 10.7). Control group were recruited through advertisements.	Depression OCD Anxiety	(a) Printed on cards (b) 10 cue words; five positive, five negative. Half presented in reverse order to first set. (c) 60 second limit. (d) no. **specific** memories as outcome. (e) Second author listened to eight (four from OCD and four from control group) and recorded specificity versus generality. 91% agreement reported.	THQ 13% of OCD patients reported CPA, CSA or both compared to 33% of controls.

Table D2.

Main features of the identified studies – Question 2.

Study	**Sample**	**Mood-related characteristics considered**	**AMT characteristics** **(a)Presentation method** **(b) cue words** **(c) time limit** **(d) scoring outcome** **(e) reliability**	**MEPS characteristics** **(a)No. and type of stories** **(b) MEPS scoring outcomes** **(c) Reliability**
Beaman et al. (unknown year)	80 participants (46 women). • 40 older adults: mean age of older adults: 61.91, SD = 5.59. • 40 undergraduates (mean age of 22.85, SD = 1.92).	N/A	(a) -[43] (b) 10 cue words; five positive, five neutral and five negative. (c) 60 second limit. (d) No. of **specific** memories as outcomes. (e) Two raters assessed memories for specificity versus generality (average K = .86, ranging from .68 to 1.0.	(a) Five stories selected for relevance to population. (b) Relevant MEPS means (c) Inter-rater reliability ranged from K= .14 to K = 1.0 with an average of K = .77 between the coders.
Evans et al. (1992).	• 12 patients (6 females) interviewed within 15-36 hours of admission to general hospital following parasuicidal	Anger Hopelessness	(a) Read to participant (b) 10 cue words ;five positive, five neutral and five negative with positive and negative alternating.	(a) Five stories selected – no further details. (b) MEPS effectiveness scores (c) Correlation between first and second rater was

[43] - indicates no information provided.

	behaviour. Average age of 38. • 12 control participants (6 females) recruited from surgical ward and matched to parasucidal participants. Average age 37.		(c) Time limit of 60 seconds. (d) no. of **specific** memories as outcome. (e) Correlation between first and second rater was .89.	.87.
Goodard et al. (1996).	• 16 outpatients from hospital with a diagnosis of a depressive disorder. (12 women). Mean age of 46.6 years, SD=6.66. • 16 physiotherapy outpatients (12 women). Mean age 41.9, SD = 9.7.	N/A	(a) Oral presentation (b) 10 cue words; five positive, five negative. (c) Time limit of 60 seconds. (d) no. **specific** memories as outcome. (e) Inter-rater reliability was based on categorising into specific, extended or categoric general memories and was reported as ±.98 (Cohen's ×)	(a) Four stories selected ; break –up of a relationship, falling out with a friend, problem with a boss and meeting acquaintances in a new neighbourhood. (b) MEPS means and effectiveness scores. (c) Correlation between first and second rater was .84 for MEPS means and .87 for MEPS effectiveness scores.
Goddard et al. (1997)	• Depressed group: 16 undergraduate students (5 women) with BDI scores equal or over 15.	Depression	(a) - (b) - (c) Number of **specific** and **general** memories (e) -	(a) - (b) MEPS means and effectiveness scores. (c) -

	Mean age of 23.6. • Non-depressed group: 16 undergraduates (8 women) with BDI scores equal or below 7. Mean age of 24.9.			
Goddard et al. (2001)	• Depressed group: 30 outpatients of a mental health unit (25 females) with BDI scores of 20 or more and a diagnosis of depressive disorder. Mean age of 42.3 years, SD=6.780. • Non-depressed group: 30 mature university students (25 females) with BDI scores of 12 or below. Mean age - 33.7 years, SD = 7.61.	Depression	(a) - (b) 10 cue words; five positive, five negative. (c) 60 second limit. (d) no. of **specific** memories as outcome. (e)-	a) Four studies as in Goddard et al. (1996). (b) MEPS means and effectiveness scores. (c) Correlation between first and second rater was .84 for MEPS means and .79 for MEPS effectiveness scores.
Heidenreich et al.	• Depressed group: 18	Depression	(a) –	a) Four studies as in

(2007).	participants (10 women). Mean age 39.9, SD = 10.46. • Social phobia group: 18 participants (10 women). Mean age 32.2, SD = 7.69. • Healthy controls: 18 participants (10 women). Mean age 32.3, SD = 6.82	Social Phobia	(b) 10 cue words; five positive, five negative. (c) 60 second time limit. (d) no. of **specific** memories as outcome. (e) Two raters recorded specificity of memories – K = .808	Goddard et al. (1996). (b) MEPS means and effectiveness scores. (c) Correlation between first and second rater was .84 for MEPS means and .79 for MEPS effectiveness scores
Kaviani et al. (2004)	• 28 (12 women) with Major Depression who were admitted to hospital following suicide attempt. Mean age = 28. • 20 healthy controls (no further information).	Depression	(a) Orally presented in Farsi. (b) 15 cue words; five positive, five negative and five neutral words (c) 60 second time limit. (d) **Specific-generality** rated on 10 point scale from 0 (very overgeneral) to 11 (very specific). (e) Inter-rater correlation r = .83.	a) Five stories "culturally modifiable tasks" (p.114). (b) MEPS means, MEPS ratio and effectiveness scores. (c) Correlation between first and second rater was 0.81.
Kremers et al. (2006)	Patients with a diagnosis of BPD and various other Axis I and II disorders	BPD[44]	(a) - (b) - (c) 60 second limit.	a) Three stories (moving to new neighbourhood, boyfriend/girlfriend

[44] Borderline Personality Disorder

	(based on DSM –IV). Divided into; • Depressed group: N=44. Mean age 30.1 • Non-depressed group (N=34, mean age 31.7). • Control group: All female, mean age - 34.7.		(d) no. of **specific** memories as outcome. (e) Inter-rater reliability for a random 20% sample was 0.89.	leaving and friends avoiding you). (b) Active means, passive means, inappropriate means and introspection/reflection. (c) Inter-rater reliability for a random 20% sample was 0.64.
Maccallum and Bryant (2012)	• 22 people with complicated grief (CG;20 females). mean age of 50.54, SD = 13.28. • 21 non CG group, (18 females). mean age 50.76, SD = 15.97.	Depression	(a) - (b) 10 cue words; five positive, five negative - alternating. (c) 60 second limit. (d) No. of **categoric** and **specific** memories as outcome. (e) Inter-rater reliability for a random 20% sample was 0.89 for specificity.	(a) Three stories selected from six (including; making friends in a new neighbourhood, meeting a future partner at a party and dispute with boss). (b) MEPS means and effectiveness scores. (c) Inter-rater reliability for a random 20% sample – r = 0.90 for both sets.
Maurex et al. (2010)	• 47 female patients with a diagnosis of BPD who had made	Depression Anxiety OCD	(a)- (b) 36 cue words; equal number of positive,	(a) Five stories: no further details. (b) MEPS means and

	at least two suicide attempts in the last six months. Mean age of 30.5 years (SD = 8.1). • 30 female controls. Mean age of 25.5 years (SD = 10).	BPD	negative and neutral words alternating. (c) 30 second limit. (d) no. **specific** memories as outcome. (e) 10% of the sample was subjected to inter-rater reliability checks with an independent rater. Intra-class coefficient was .99.	effectiveness scores. (c) Inter-rater reliability for 10% sample yielded intra-class coefficients of .98 for total number of relevant means and .77 for effectiveness.
Pollock and Williams (2001)	• 24 adults (24 females) first-time suicidal attempters • 24 adults non-suicidal psychiatric group • 24 adults control group. *no further information	Depression Suicidal ideation.	(a) Cue words read aloud by experimenter. (b) 18 cue words; six positive, six negative and six neutral. (c) 30 second time limit. (d) no. **specific** memories as outcome. (e) -	(a) Five stories: A couple who had many arguments, a man who lost his watch, moving to new neighbourhood, a couple meeting for the first time and having work difficulties. (b) MEPS means and effectiveness scores. (c) -
Raes et al. (2005).	24 patients (15 women) with a diagnosis of Major Depressive Disorder. Mean age of 39.04 (SD = 11.04).	Depression	(a) - (b) 18 cue words; six positive, six negative and six neutral. (c) 60 second time limit. (d) no. **specific** memories	(a) Four stories: no further information. (b) MEPS means and effectiveness scores. (c) Second rater rated 12 random samples

			as outcome. (e) -	producing a correlation of .86.
Rasmussen et al. (2008).	40 self-harm patients admitted to General hospital. 23 women. Mean age of 38 years (SD = 10.6).	Depression/anxiety Self-harm	(a) - (b) - (c) - (d) no. **overgeneral** memories as outcome. (e) Inter-rater reliability between r= .74 and r= .95 by two raters for different cue words.	N/A
Sidley et al. (1997)	35 parasuicidal patients (14 females). Average age 32.1 years (range 19-51).	Depression	(a) Cue words were read aloud. (b) 10 cue words; five positive, five negative. (c) 60 second time limit. (d) no. **specific** memories as outcome. (e) -	a) Five stories: no further information. (b) MEPS means and effectiveness scores. (c) Second rater rated 12 random samples producing a correlation of .92.
Sutherland and Bryant (2008)	• 20 PTSD participants (11 female) Mean age 39.05, (SD = 13.10). • 21 trauma exposed, no PTSD participants (13 female).	Depression	(a) Cue words presented on 5 x 3 inch card. (b) 10 cue words; five positive, five negative. (c) 60 second time limit. (d) no. **specific** and **categoric** memories as outcome.	a) Four stories: adapted for trauma-aftermath (e.g. a man who survived a motor cycle accident). (b) MEPS means and effectiveness scores. (c) Second rater rated a random sample of 20%

	Mean age of 26.10, (SD = 9.38).	(e) Random 20% of sample was coded by another rater yielding K coefficient of .84.	producing K coefficients from .83 to .88.

Appendix E. NHS REC and Research and Development approval documentation

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Appendix F. Measures

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Appendix G. Participant Information Sheet and Consent Form

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Participant Information sheet

Cognitive vulnerability among people who have violently offended

Hello. My name is Helena Varnaseri and I am a trainee clinical psychologist at Canterbury Christ Church University.

I would like to invite you to take part in a research study. Before you decide if you would like to take part it is important that you understand why the research is being done and what it would involve for you.

What is the purpose of the study?

The research will focus on a person's recollection of memories about their life and the beliefs they have about themselves and others.

We are interested in how memory and beliefs develop from our early experiences and how they might affect us in our adult life. Some examples of these effects would be difficulties managing mood (including anger) and making/maintaining relationships with others.

We hope that this study will help identify factors that may contribute and maintain psychological distress and help us think about how this may affect treatment programmes.

Why have I been invited?

This topic has not been explored with people who have committed a violent offence, who are experiencing difficulties with mental wellbeing and who reside in a forensic unit. You have been considered for this project as we understand that these factors are familiar to you. Other people on the ward have also been invited. I have spoken to your named clinician [insert name] who suggested that you may be able to take part.

Do I have to take part?

No. It is up to you whether you wish to take part in the study. I will visit the ward in the near future and meet with you and answer any questions you may have about the study. If you would like to take part, we can then book a time to meet.

If you agree to take part, I will then ask you to sign a consent form. You are free to withdraw at any time, without giving a reason. This will not affect the standard of care you receive.

What will happen to me if I take part?

If you agree to take part, I would like to invite you to one meeting with myself. This would take place in a confidential space on the ward and will last approximately one and a half hours.

At this meeting we would complete the following:

1.) A short memory task:

• I would ask you to briefly recall a number of memories from your life in response to different words. You do not have to share anything you feel uncomfortable with.

• I would audio tape the session so I can write your responses accurately. This recording will not refer to you personally and will be deleted once a written record is made.

You will be asked whether you are comfortable with me using an audio device. If not, this will not be used.

2.) Next, I would ask you to fill in three questionnaires;

• The first questionnaire will ask you how much you agree/disagree with various beliefs about yourself and others.

• The second will ask you about the relationship you had with your mother and father as a child.

• The final questionnaire will ask you about your experiences of trauma as a child.

you will be asked whether you wish to complete these alone, or with my assistance

You will then be offered a 10-15 minute tea-break

3.) I will ask you to complete a questionnaire which will ask you whether a set of statements about anger are true of you.

What are the possible disadvantages and risks of taking part?

Some of the issues you will be asked to think about may be sensitive and upsetting. If you feel upset during our meeting, we can think about ways in which we could manage this eg. taking a break or re-scheduling for a different day.

If you feel unable to continue, I would remind you that you are free to withdraw participation at any time.

If you wish, [insert clinician name] can be informed of any upsetting experiences to ensure you feel supported once our meeting is over.

What are the possible benefits of taking part?

We cannot promise the study will help you directly but the information we get may help improve our understanding and treatment of people who are experiencing mental health problems, of whom have committed a violent offence.

Will my taking part in this study be kept confidential?

Yes. When you take part in the study, you will be given a participant number. This means that any data collected will not identify you personally. It will be anonymous. No information identifying you personally will be taken away from [insert unit name].

The audio recording of the memory task will be treated as confidential and deleted once a written record is accurately noted.

The memory task and questionnaires will provide numerical data which will be used for the study's statistical analysis. This data is anonymous and will be stored on an NHS encrypted password-protected USB stick. This means that only myself will have access to the data directly. For the purposes of the study, this data may be looked at by two psychologists who are supervising the project and one other trainee clinical psychologist.

The University funding this study requires that the anonymous data from the study be kept on a password protected CD in the university office, in a locked cabinet for 10 years after the study is completed.

What will happen if I don't what to carry on with the study?

If you decide to withdraw from the study you may be asked whether the data collected up until your withdrawal can be used. If you do not wish for it to be used your decision will be respected.

What will happen to the results of the research study?

At a later date you will be invited to attend a session at which I will give a brief summary of the main findings and answer any questions you may have. You do not have to come to this session if you do not wish to.

I will write up results for my research at Canterbury Christ Church University. This may be written up and submitted to a national psychology journal. No participant will be identified in any part of the write-up or article. If I wish to include an anonymous quote in a write-up, your permission will be sought directly.

Who is organising and funding the research?

Canterbury Christ Church University is funding and facilitating this project.

Who has reviewed the study?

All research in the NHS is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by IRAS (NHS) Research Ethics Committee.

What if there is a problem?

Your nursing team will be your first point of contact should you feel there is a problem.

Further information:

If you would like to speak to me and find out more about the study or if you have questions, you can leave a message for me on a 24-hour voicemail phone line at 01892 507673. Please say that the message is for Helena Varnaseri and leave a contact number so that I can get back to you.

Complaints:

Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. If you would like to make a complaint you can do so by leaving a message for Professor Tony Lavender on a 24-hour voicemail phone line at 01892 507673. Please leave a contact number so that he can contact you.

If you remain unhappy and wish to complain formally, the National Health Service complaints procedure is available to you. The Independent Complaints Advocacy Service can give advice about using the NHS complaints system (0845 337 3061). You may also wish to seek advice from the Patient Advice and Liaison Service (0800 917 7159).

If you decide to take part in the research study, you shall be given a copy of this information and a signed consent form to keep.

[INSERT TRUST LOGO]

Centre Number:

Study Number:

Participant Identification Number for this study:

CONSENT FORM

Title of Project: Cognitive vulnerability among people who have violently offended

Please tick	
1. I confirm that I have read and understand the information sheet dated 03/01/13 Information and consent form V2.2, for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.	
3. I understand that the memory task will be tape recorded.	
4. I give permission for information relevant to the study to be taken from my medical records. These can be accessed by the lead researcher (Helena Varnaseri) or a member of my care team.	
5. I understand that any information collected from me and my medical records will be made anonymous before transfer to the central database.	
6. I understand that my clinical team will be aware of my participation in this study.	
7. If, during the course of this research I lose the capacity to consent to participate, the researchers can use any data already collected as part of this study.	
8. I would like a summary of the results once the research has finished.	

9. I give permission for anonymous quotes from my interview to be used in published reports of the study findings.	
10. I understand that if I disclose information that suggests that I am a risk to myself or others the lead researcher must inform my clinical team immediately and follow this up in writing.	
11. I understand that if tell the researcher anything that suggests hospital security is at risk, about breaches of hospital rules, or any intentions of absconding, the lead researcher must inform my clinical team immediately and follow this up in writing.	
12. I agree to take part in the above study	

_____ _____

NAME OF PATIENT NAME OF RESEARCHER

_____ _____

SIGNATURE DATE SIGNATURE DATE

Appendix H. Summaries and letters for NHS ethics and R&D panels

*Copies of this letter were sent to the NHS ethics committee and R&D departments.

Helena Varnaseri
Salomons Centre of Applied Psychology
Canterbury Christ Church University
Salomons Campus
Broomhill Road, Tunbridge Wells
Kent, TN3 0TG

[Address]

[Date]

Dear [Personnel],

RE: Study entitled "Cognitive vulnerability among people who have violently offended" [reference no.]

Following completion of the above study, please find enclosed a summary of the study and a completed NHS end of study form, for your records.

Yours sincerely,

Helena Varnaseri
Trainee Clinical Psychologist

Summary of the study: "Cognitive vulnerability among people who have violently offended"

Study aims

This study aimed to investigate whether Early Maladaptive Schema (EMS) and overgeneral autobiographical memory (OGM) mediate the relationship between the experience of abuse and insecure attachment in childhood with BPD characteristics and high levels of anger among forensic inpatients. Early maladaptive schema refer to an unconditional, rigid and dysfunctional belief and feeling about oneself in relation to the environment. Overgeneral autobiographical memory (OGM) refers to an impaired ability to retrieve specific autobiographical memories. It was intended that the study would contribute to a wider understanding of forensic inpatients' psychosocial needs with implications for clinical formulation, treatment and treatment efficacy. Thirty four male participants from two medium secure units participated in the study.

Results

The study's hypotheses were partially supported. The EMS of "entitlement/grandiosity" mediated the relationship between childhood emotional abuse, emotional and physical neglect, parental care and mother overprotection with BPD characteristics. These beliefs also mediated the relationship between emotional and physical abuse and neglect, and mother and father overprotection with anger traits.

The EMS of "mistrust/abuse" mediated the relationship between physical abuse, emotional and physical neglect, and mother care with the frequent expression of aggression.

Specificity of autobiographical memory mediated the relationship between physical abuse, emotional and physical neglect, parental care and mother overprotection with anger traits. This factor also mediated the relationship between physical abuse and frequent expression of aggressive behaviour. Results were in the hypothesised direction.

Conclusions: The current mediators were conceptualised as adaptive responses to early adversity but with potential maladaptive consequences for later interpersonal functioning. Clinical recommendations encourage the incorporation of these working models into individual and group therapy, and ward practices. The results of the current study suggest that it would be useful for further research to repeat this design with a larger sample and to investigate the role of further mediators and moderators of this relationship.

Dissemination

A manuscript will be submitted for publication in a peer-reviewed journal (to the British Journal of Clinical Psychology). Feedback of the study's findings will also be provided to the study's participants and the local services where recruitment took place.

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Appendix I. Explorative descriptive data

Table I1.

Variable Distribution Data

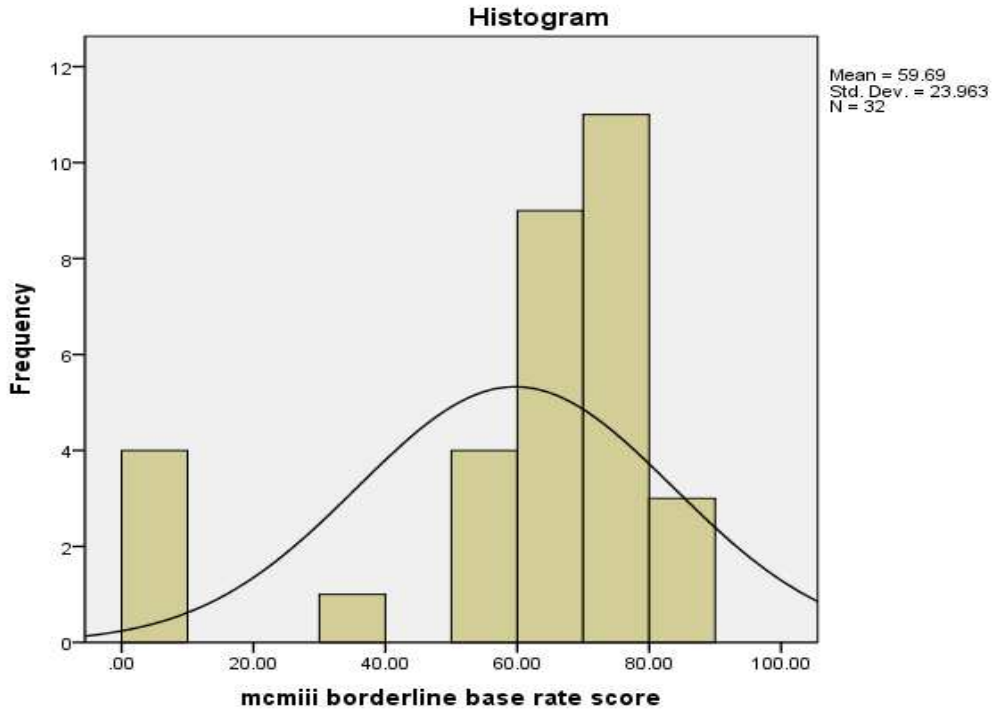
Variable	N	Mean (SD) Range	Skewness/ Kurtosis value	Kolmogorov-Smirnov Shapiro-Wilk value	Outliers Identified in boxplot	Distribution
MCMI-III	32	59.69	-1.64/1.88	D(32) = 0.24, p < .001	4	Non-parametric
Base rate scores		(23.96)		D(32) = 0.77, p < 0.001		
		0-89				
Base rate scores	28		-.59/1.33	D(28) = 0.11, p = .200	/	Parametric
with outliers		67.75 (10.86)		D(28) = 0.95, p = .194		
removed*		36-89				
STAXI 2						
Trait anger T	30	43.60 (9.22)	.77/-.43	D(30) = 0.22, p = .001	None	Non-parametric
score		32-62		D(30) = 0.90, p = .008		
Anger expression	30	45.07 (9.52)	.48/.90	D(30) = 0.13, p = .184	1	Parametric
out T score		40-70		D(30) = 0.98, p = .145		

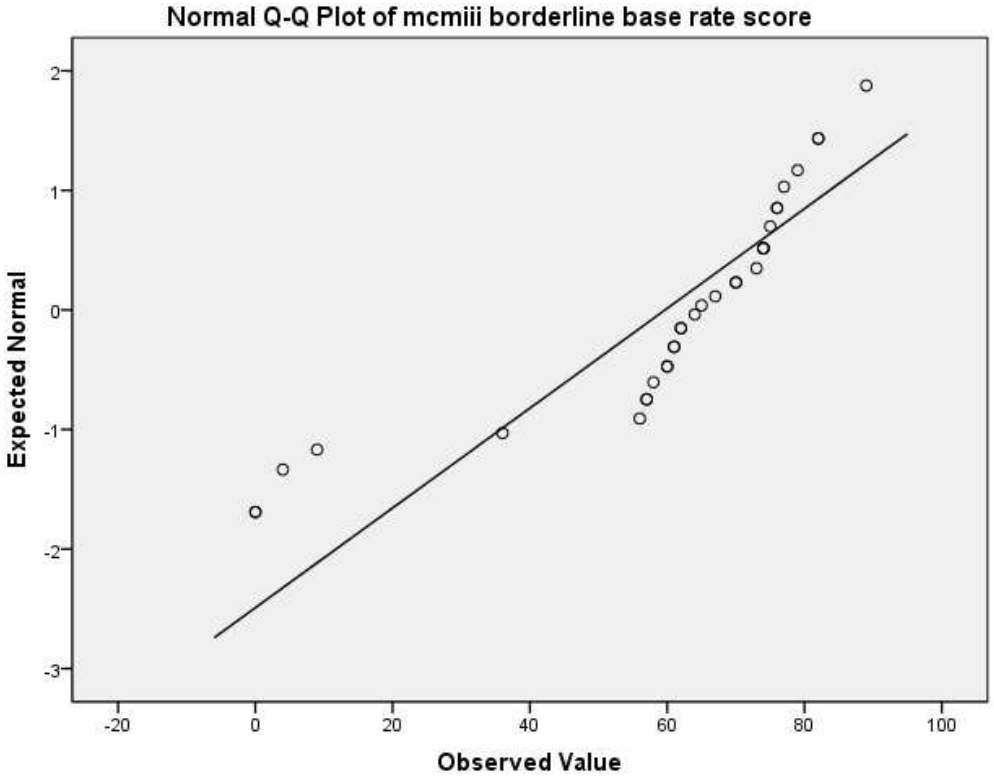
CTQ						
Emotional abuse	33	9.06 (5.13) 5-22	1.16/.44	D(33) = 0.21, p = .001 D(33) = 0.81, p < 0.001	None	Non-parametric
Physical abuse	33	8.21 (5.68) 5-23	1.85/2.22	D(33) = 0.32, p < 0.001 D(33) = 0.62, p < 0.001	4	
Physical abuse with outliers removed	28	6.36(2.44) 5-13	1.78/1.89	D(28) = 0.35, p < 0.001 D(28) = 0.62, p < 0.001	/	Non-parametric
Sexual abuse	33	6.67 (4.88)	2.90/7.08	D(33) = 0.48, p < 0.001 D(33) = 0.38, p < 0.001	5	Non-parametric
Sexual abuse without outliers	28	5 (0)	Removed as constant	Removed as constant	/	Removed as constant
Emotional neglect	33	10.72 (5.94)	.75/-.76	D(33) = 0.19, p = 0.004 D(33) = 0.86, p < 0.001	None	Non-parametric
Physical neglect	33	9.58 (5.04) 5-23	.816/-.175	D(33) = 0.24, p < 0.001 D(33) = 0.85, p < 0.001	None	Non-parametric

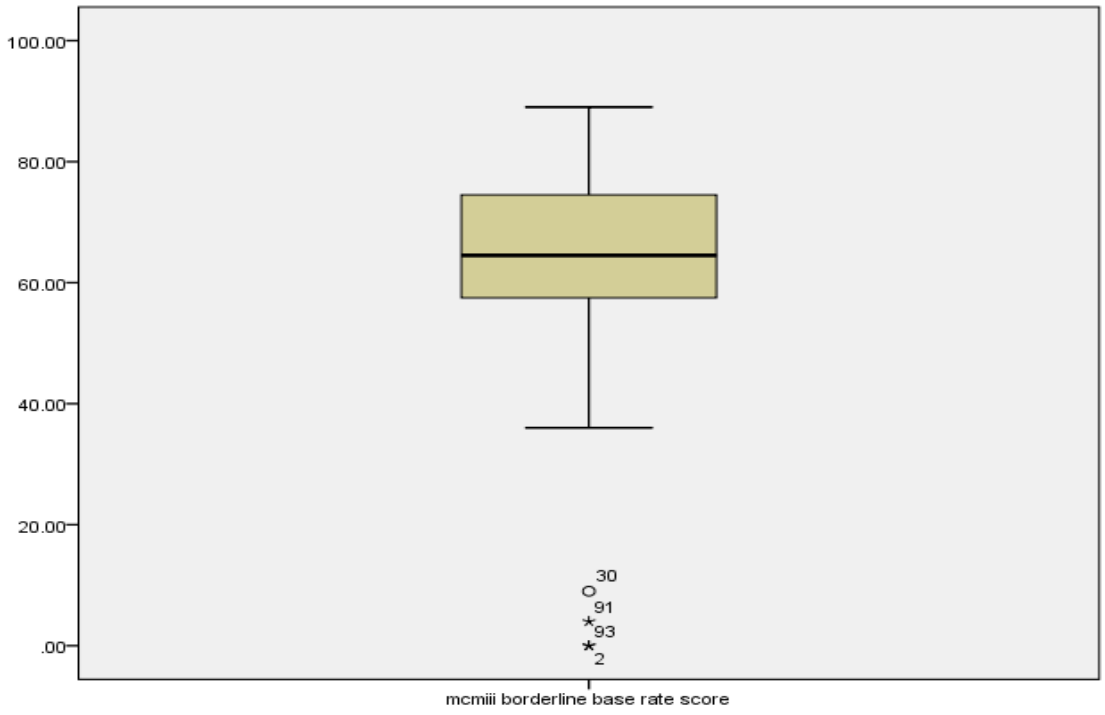
PBI							
	Mother care	30	26.87 (8.83) 0-36	-1.30/1.83	D(30) = 0.15, p = 0.081 D(30) = 0.88, p = .003	1	Parametric/Non-parametric
	Mother care without outlier	29	27.79 (7.36) 8-36	-.872/.366	D(29) = 0.14, p = 0.188 D(29) = 0.88, p = .023	/	Parametric/Non-parametric
	Mother overprotection	30	11.27 (7.76) 0-9	.25/-.64	D(30) = 0.10, p = 0.200 D(30) = 0.96, p = .331	None	Parametric
	Father care	28	23.54 (11.4) 0-36	-.73/-.65	D(28) = 0.18, p = 0.016 D(28) = 0.96, p = .008	None	Non-parametric
	Father overprotection	28	11.11 (7.34) 0-28	.35/-.65	D(28) = 0.11, p = .200 D(28) = 0.96, p = .311	None	Parametric
AMT	**Number of specific memories**	34	7 (3.98) 0-17	.47/.301	D(34) = 0.10, p = .200 D(34) = 0.96, p = .250	None	Parametric

EMS						
Mistrust/abuse	33	13.94 (6.38) 5-28	.12/-1.16	D(33) = 0.11, p = .200 D(33) = 0.94, p = .051	None	Parametric
Entitlement/ Grandiosity	33	10.03 (5.03) 4-28	.77/.68	D(33) = 0.12, p = .200 D(33) = 0.92, p = .015	None	Parametric/non parametric
Insufficient self-control/self-discipline	33	12.64 (5.81) 5-25	.57/-.44	D(33) = 0.13, p = .175 D(33) = 0.94, p = .064	None	Parametric

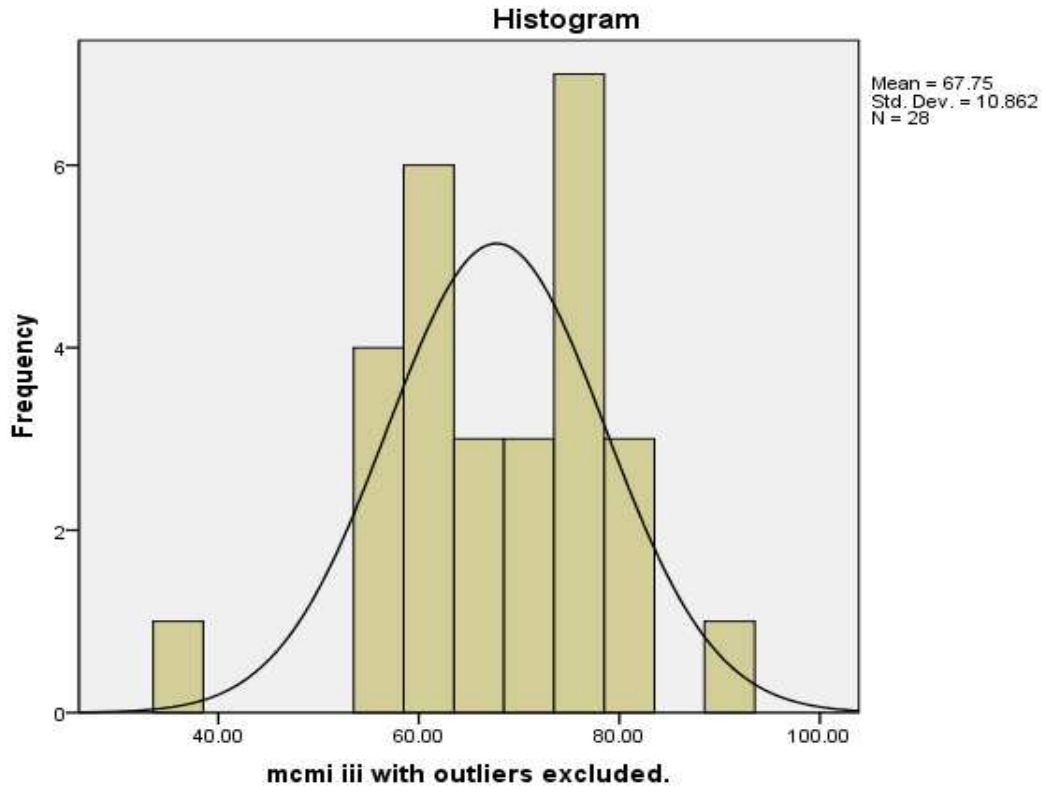
MCMI-III Graphs

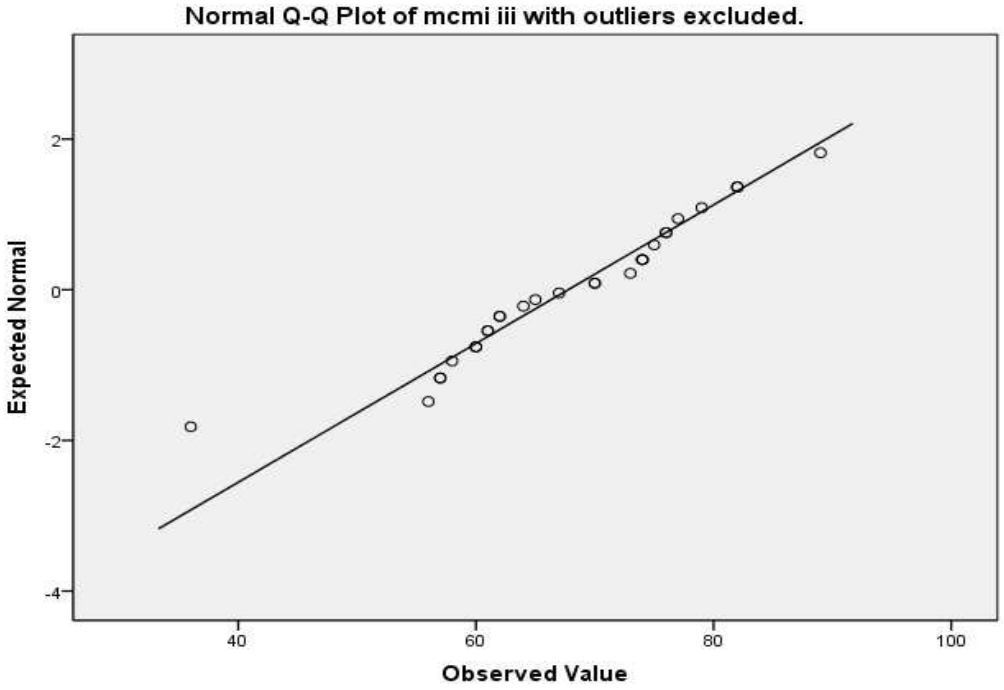


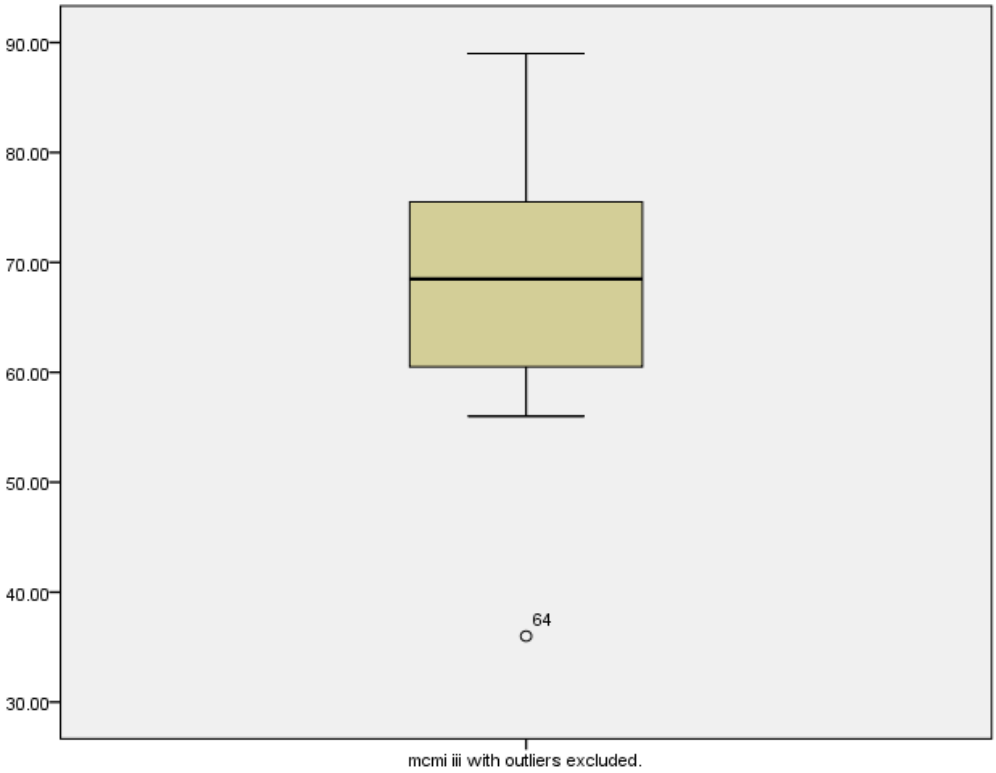



100.00
80.00
60.00
40.00
20.00
.00
30
91
93
2
mcmiii borderline base rate score

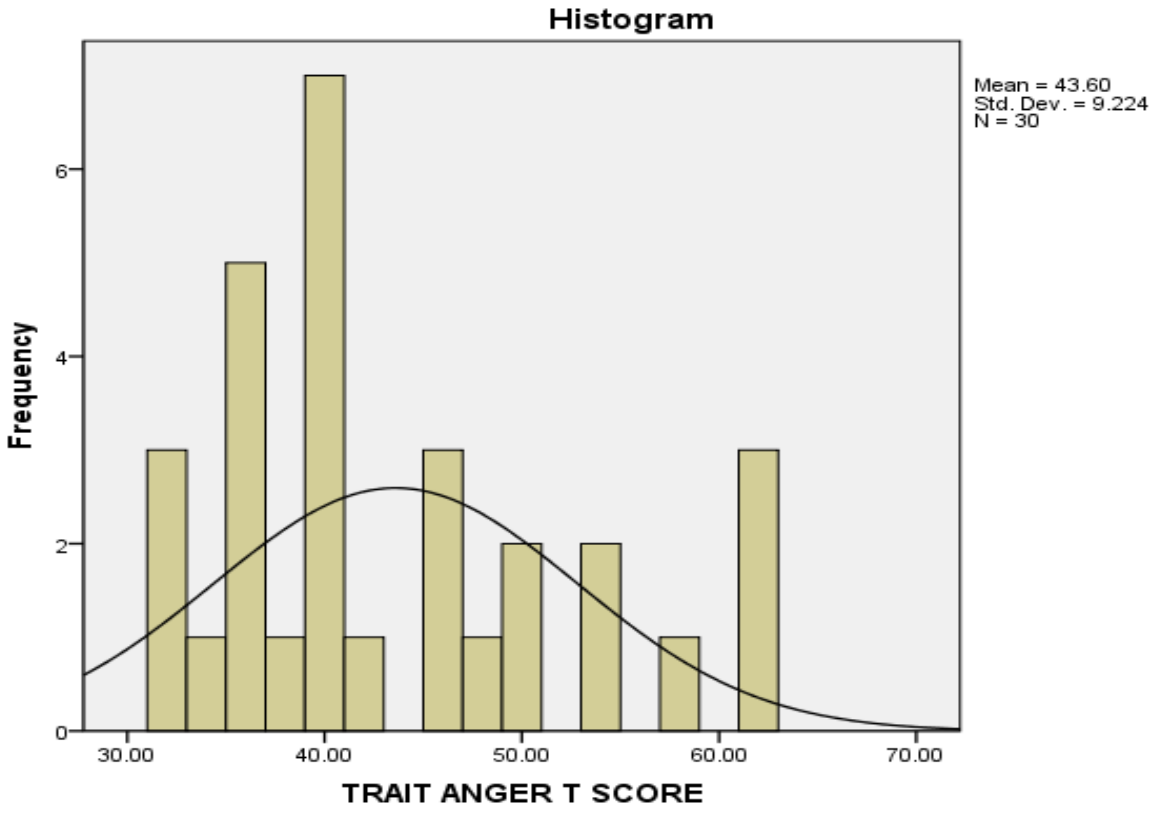
MCM-III graphs with outliers removed

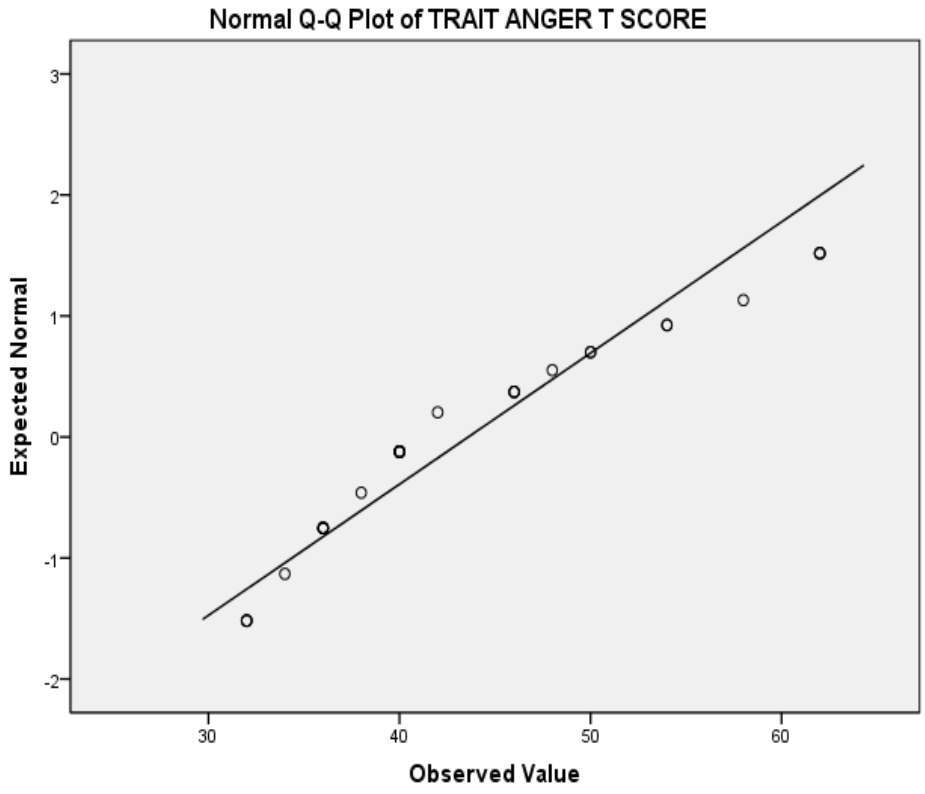


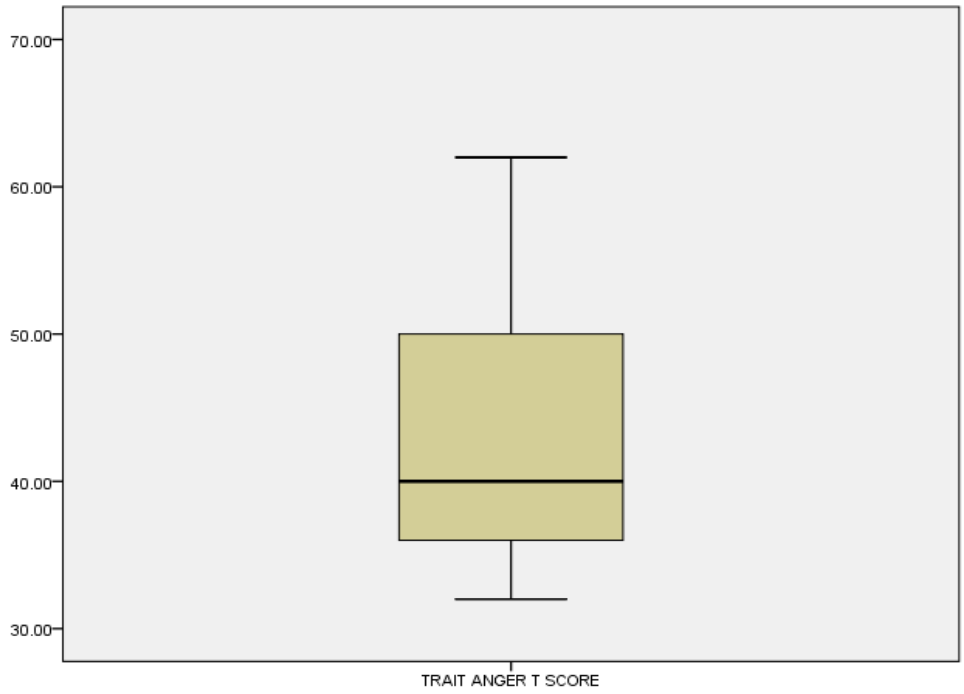




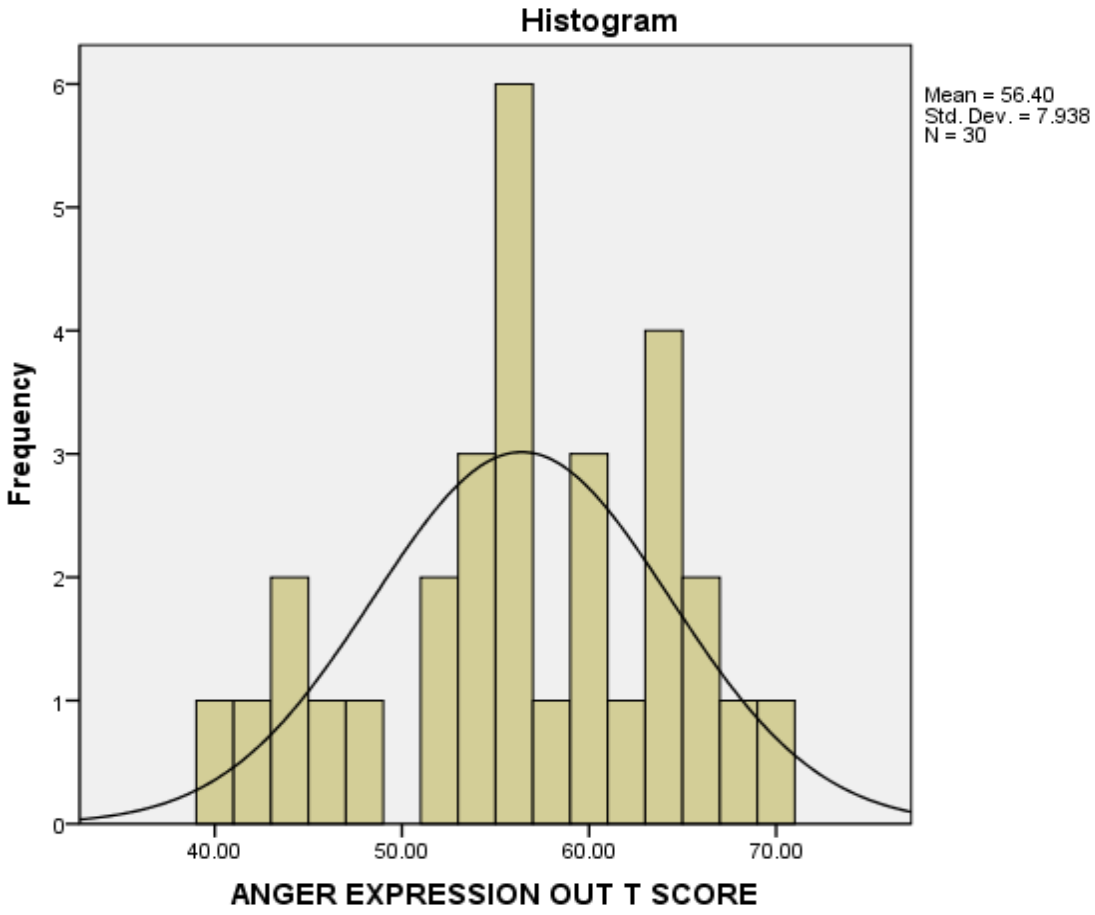
STAXI 2 Trait anger scale graphs

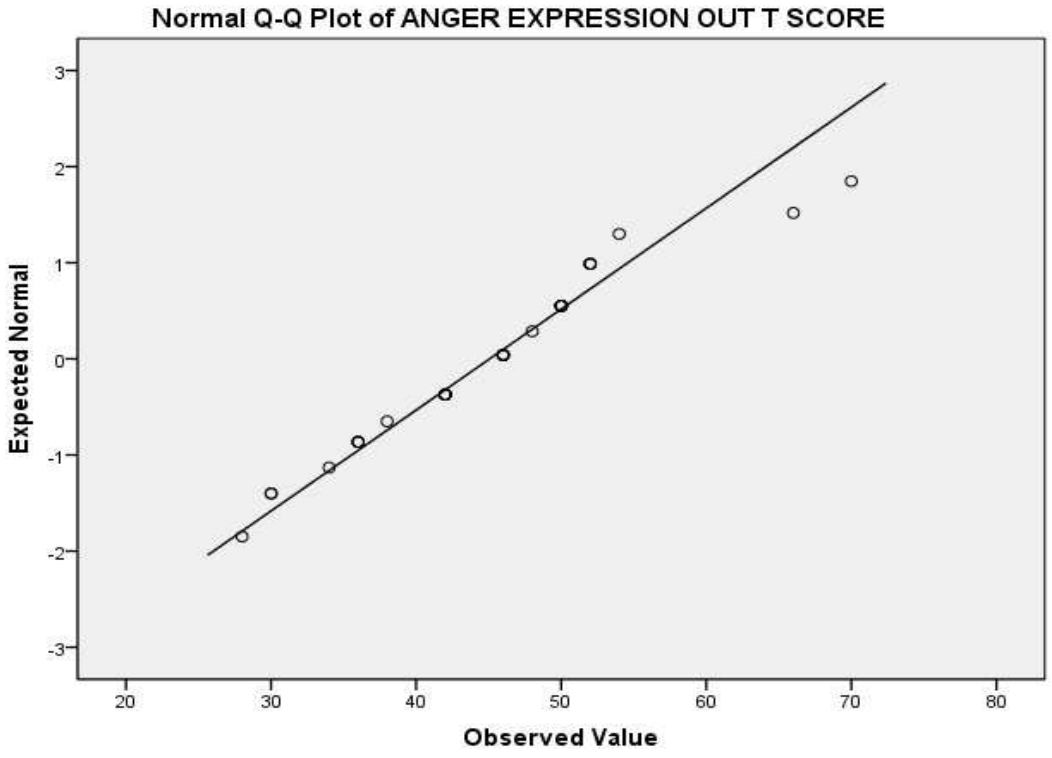


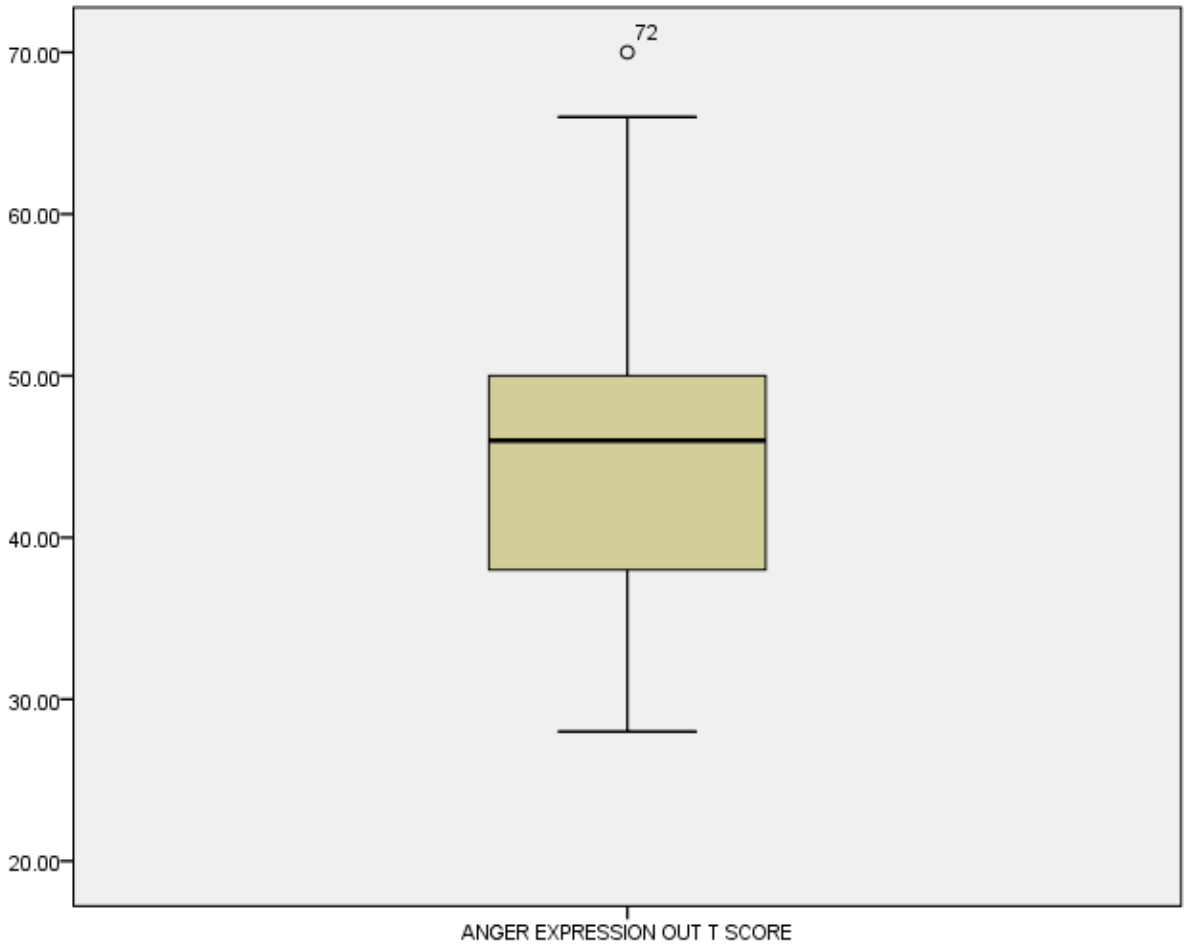

Normal Q-Q Plot of TRAIT ANGER T SCORE
Expected Normal
Observed Value
3
2
1
0
-1
-2
30
40
50
60


70.00
60.00
50.00
40.00
30.00
TRAIT ANGER T SCORE

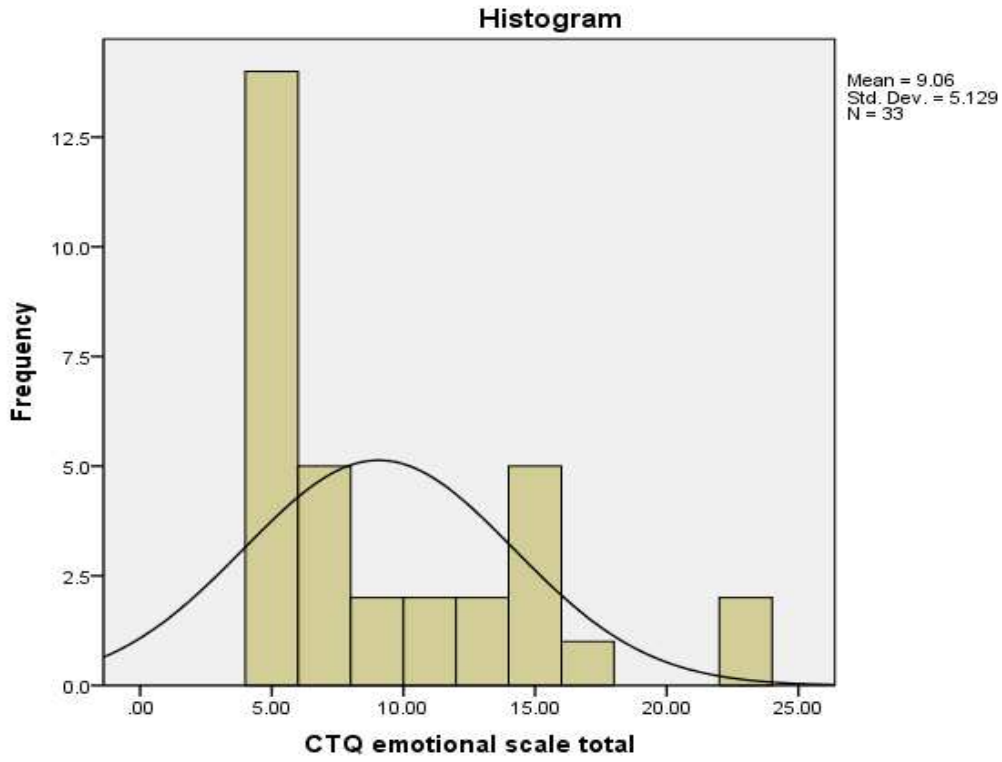
STAXI-2 Anger Expression Out graphs

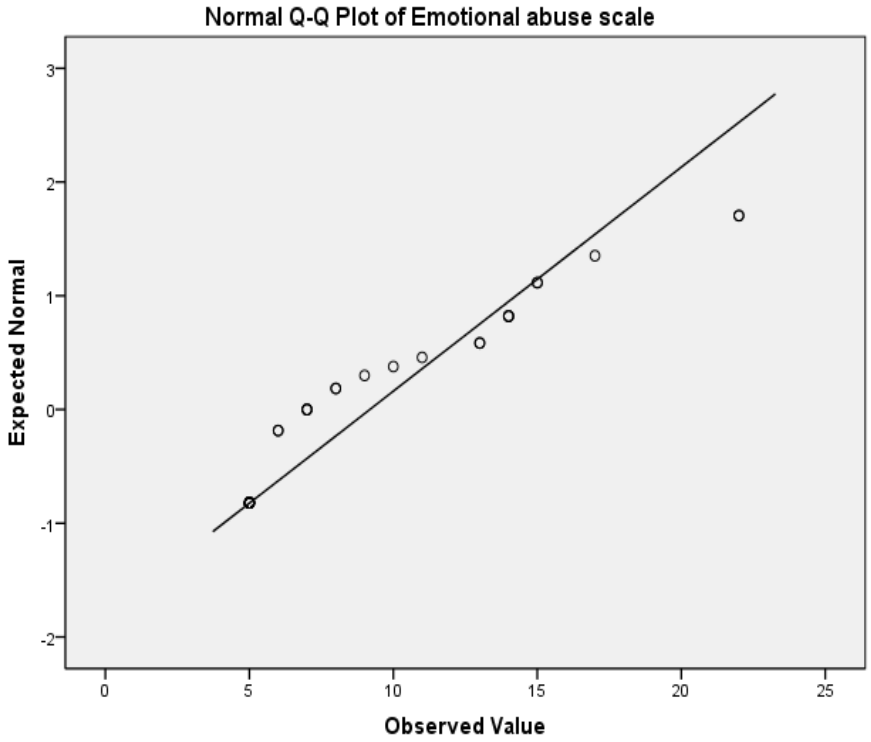


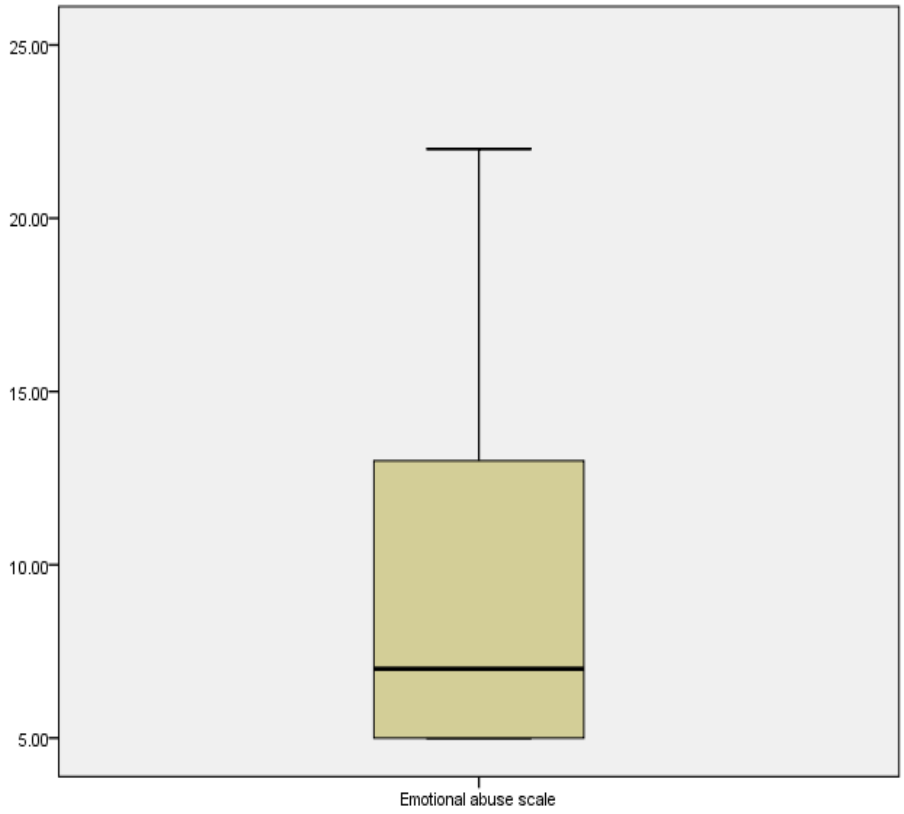



72
70.00
60.00
50.00
40.00
30.00
20.00
ANGER EXPRESSION OUT T SCORE

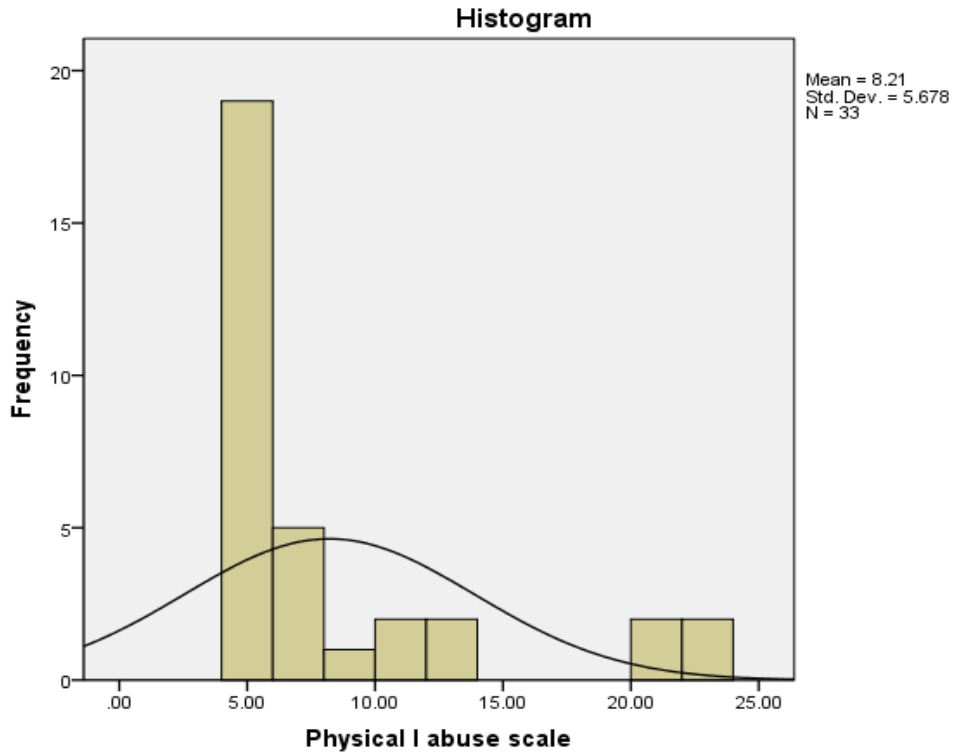
CTQ emotional abuse graphs

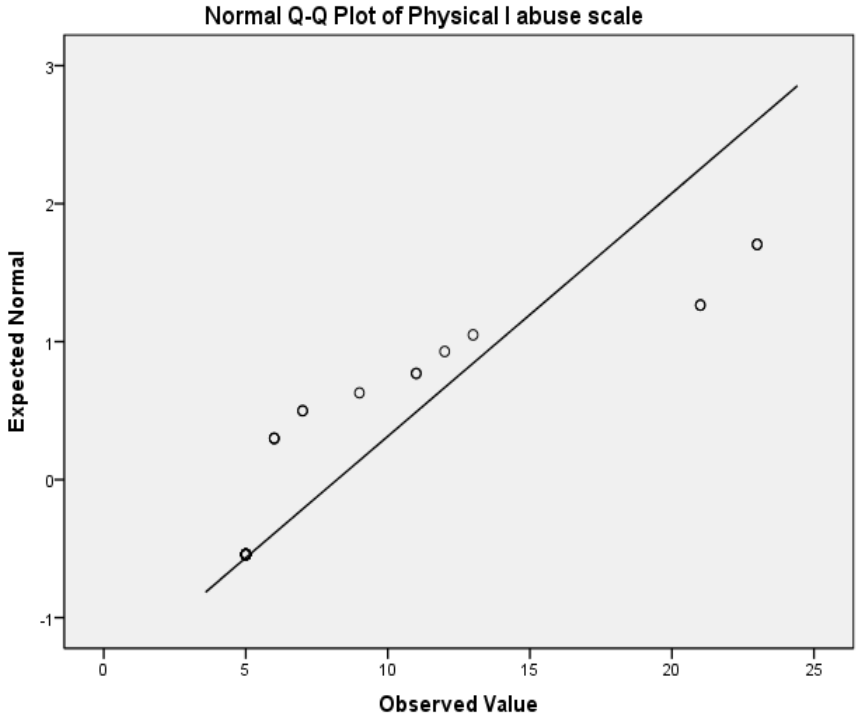


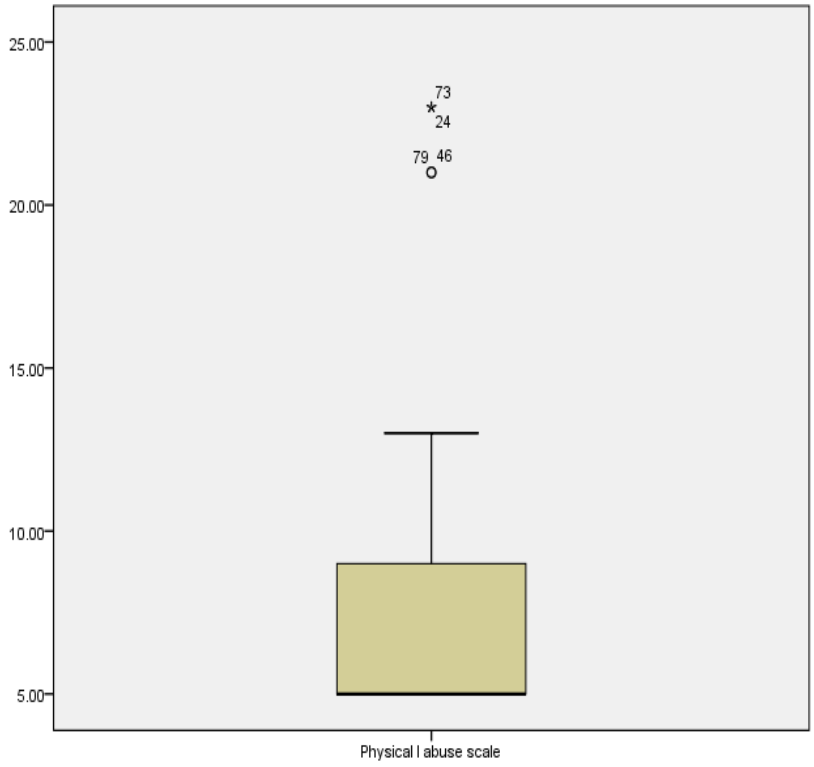



25.00
20.00
15.00
10.00
5.00
Emotional abuse scale

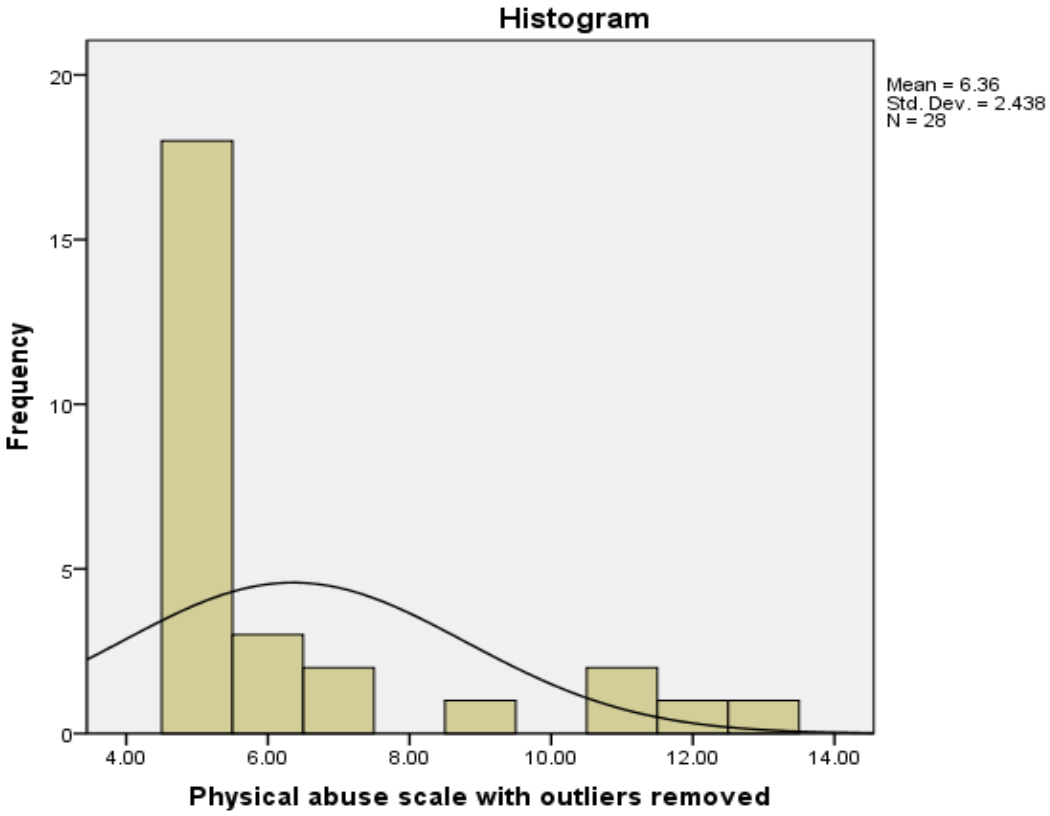
CTQ Physical abuse graphs

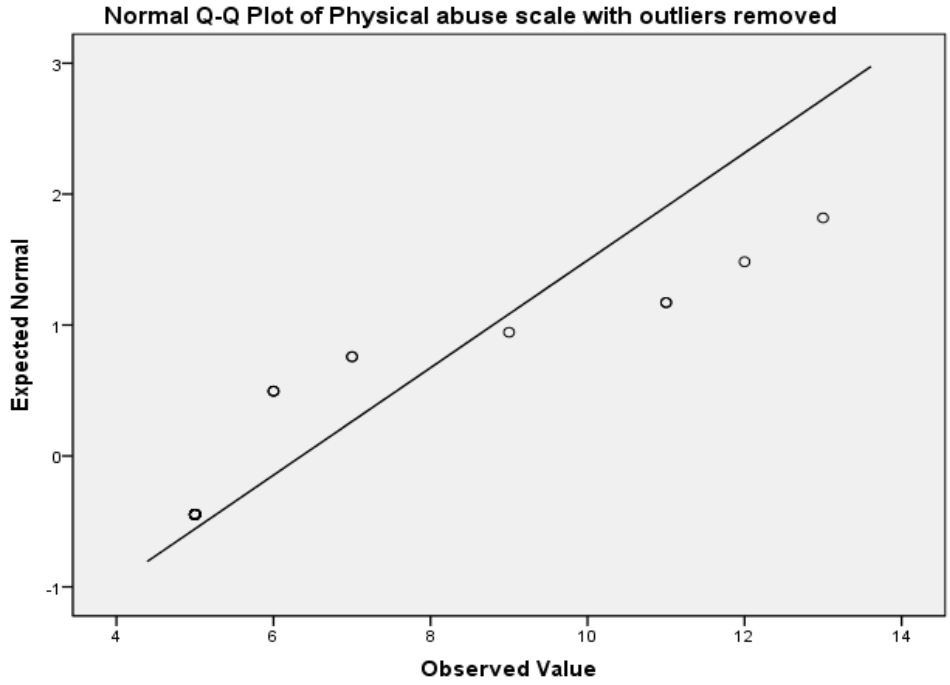


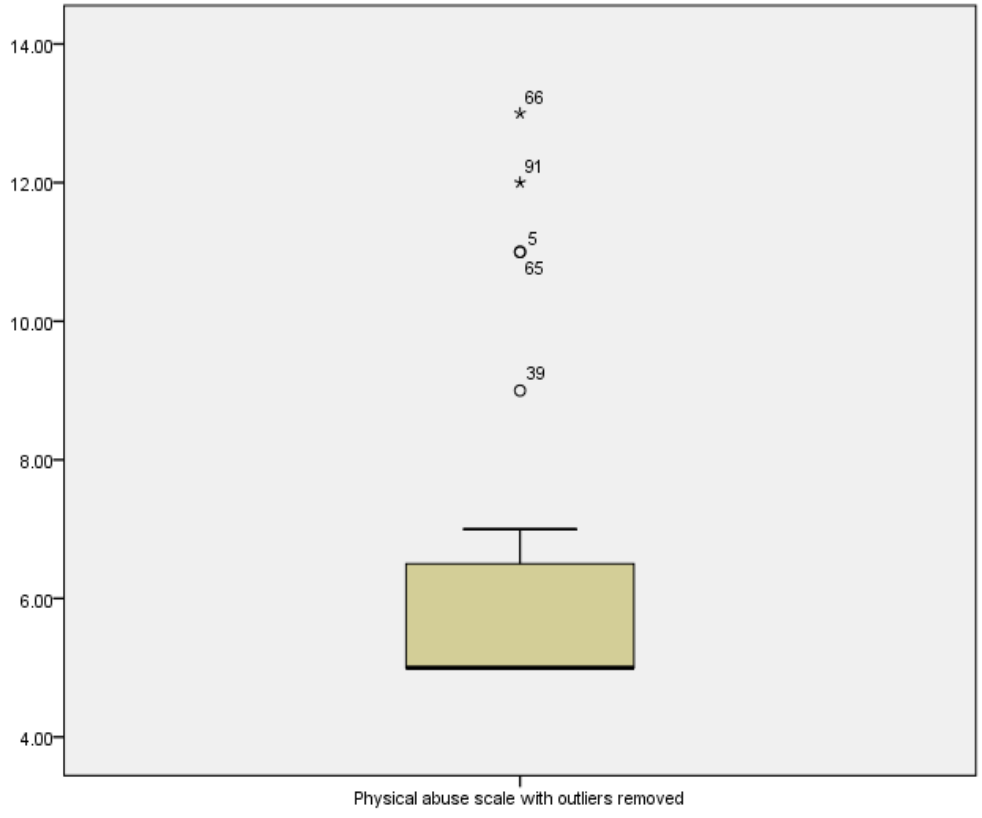



25.00
20.00
15.00
10.00
5.00
73
24
79 46
Physical I abuse scale

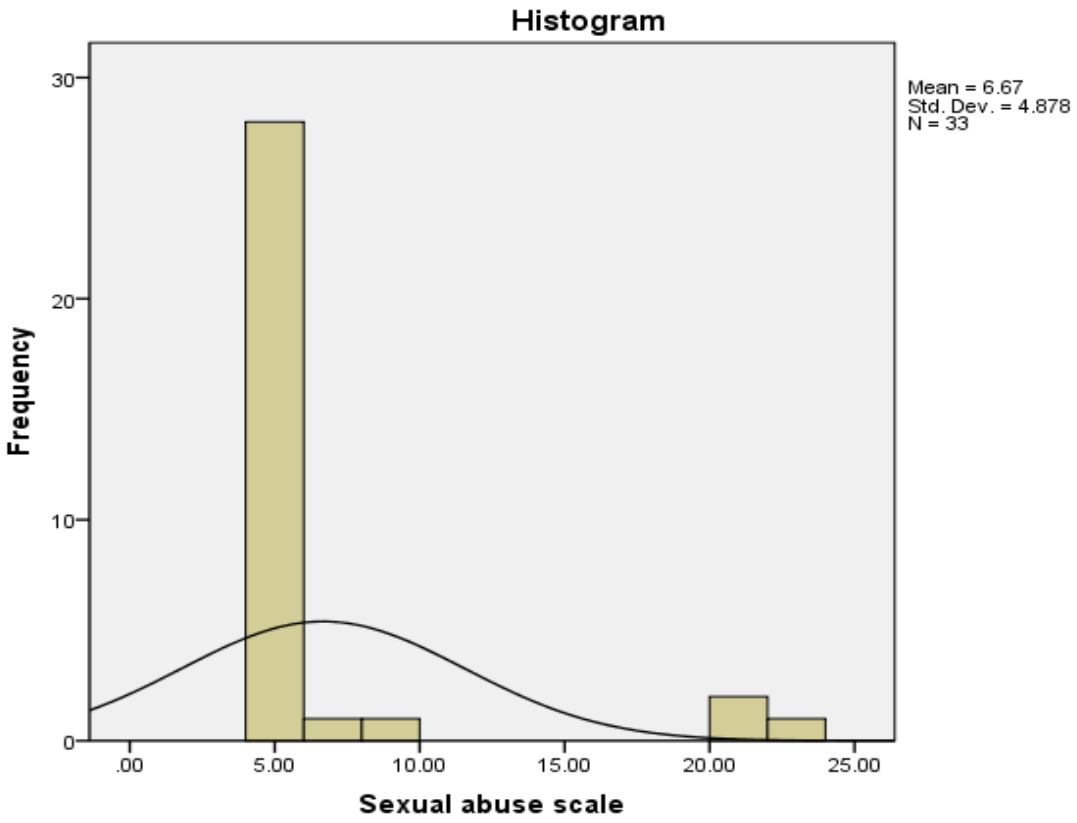
CTQ physical abuse scale with outliers removed

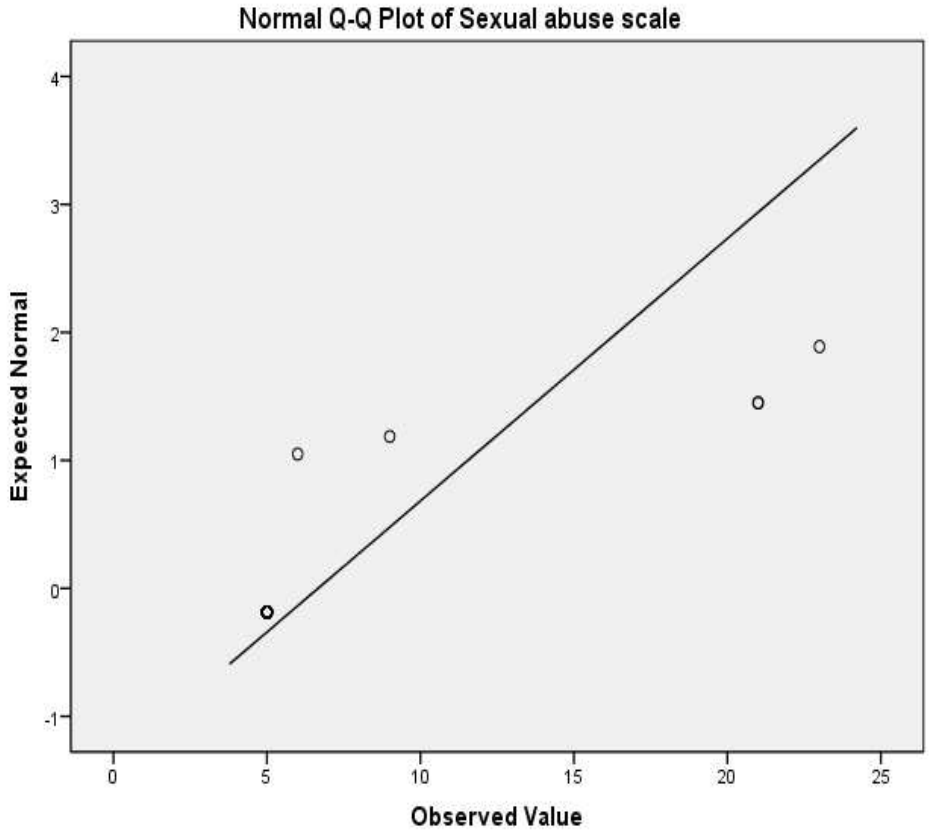


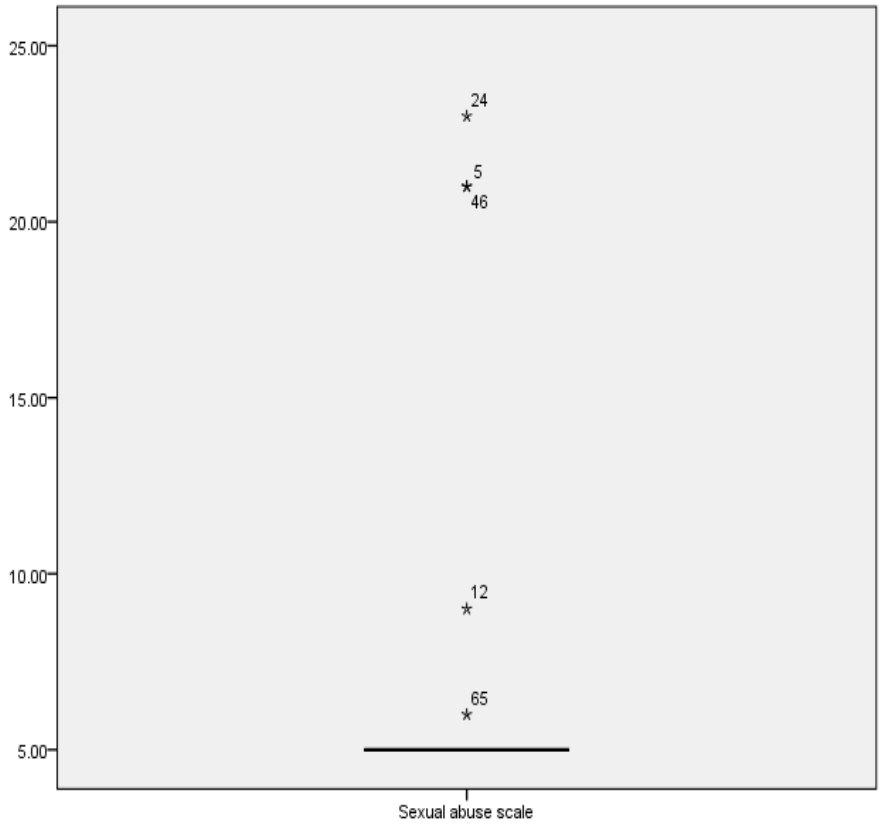

Normal Q-Q Plot of Physical abuse scale with outliers removed
Expected Normal
Observed Value
3
2
1
0
-1
4
6
8
10
12
14


14.00
12.00
10.00
8.00
6.00
4.00
66
91
5
65
39
Physical abuse scale with outliers removed

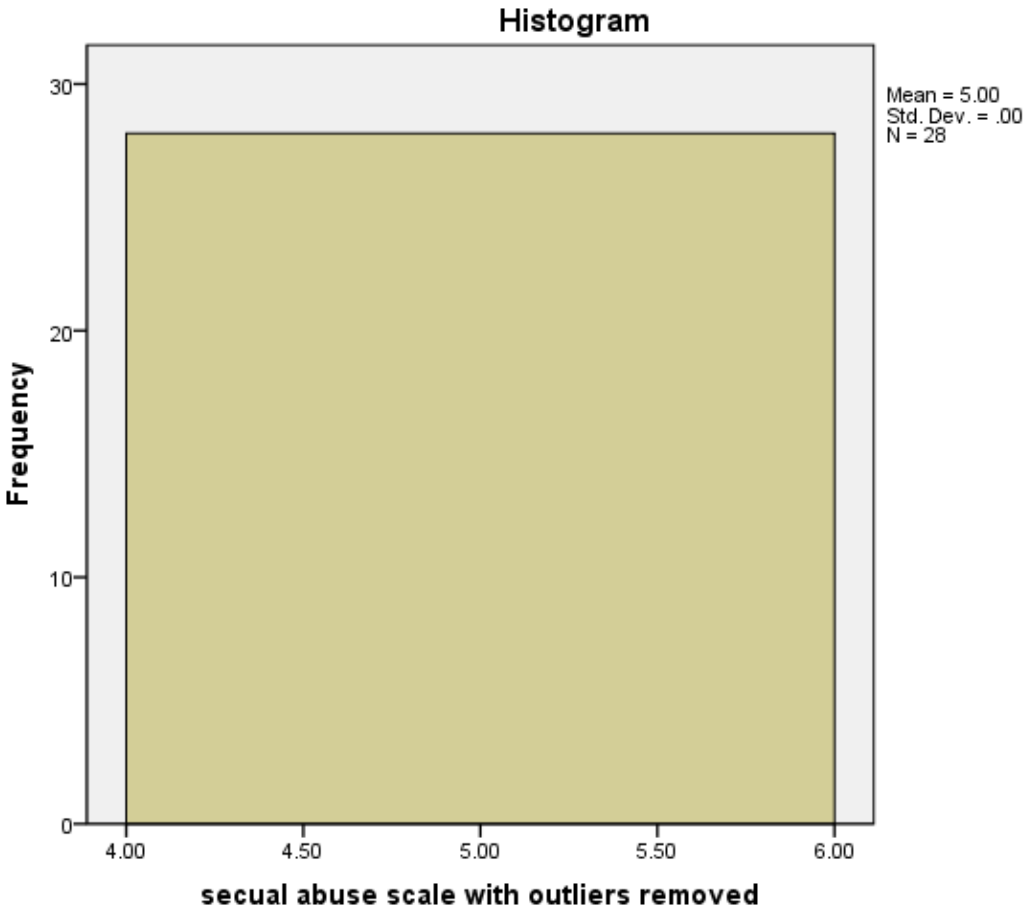
CTQ sexual abuse scale graphs

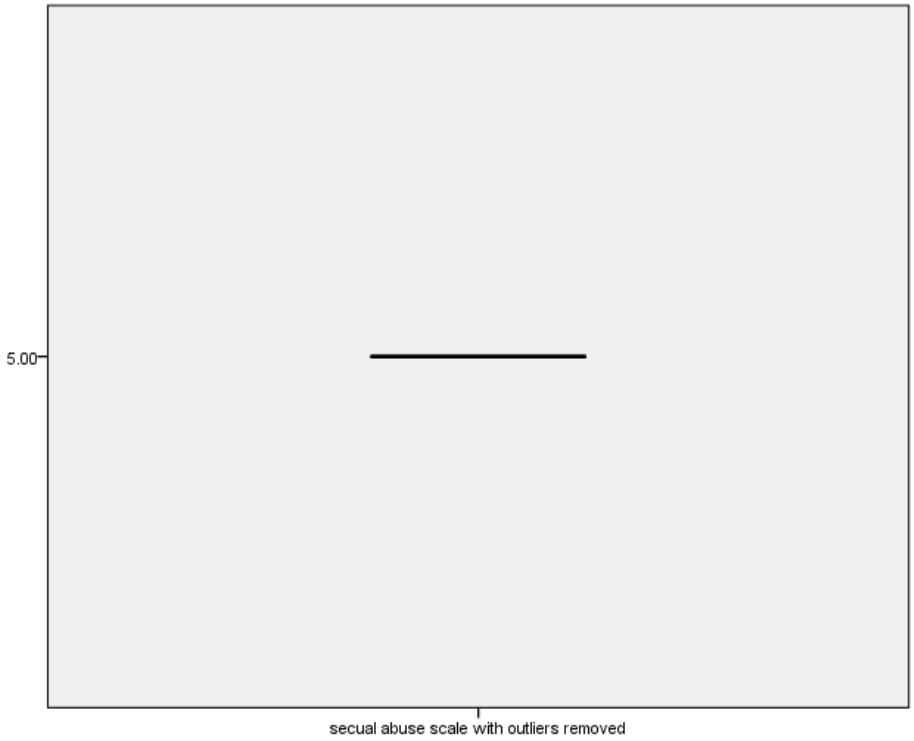




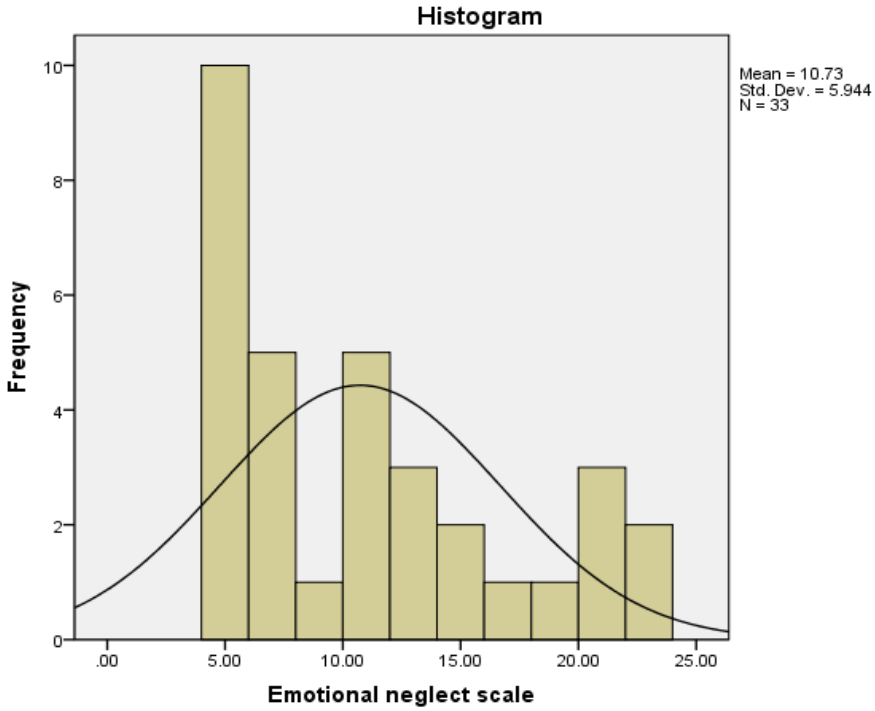

25.00
20.00
15.00
10.00
5.00
24
5
46
12
65
Sexual abuse scale

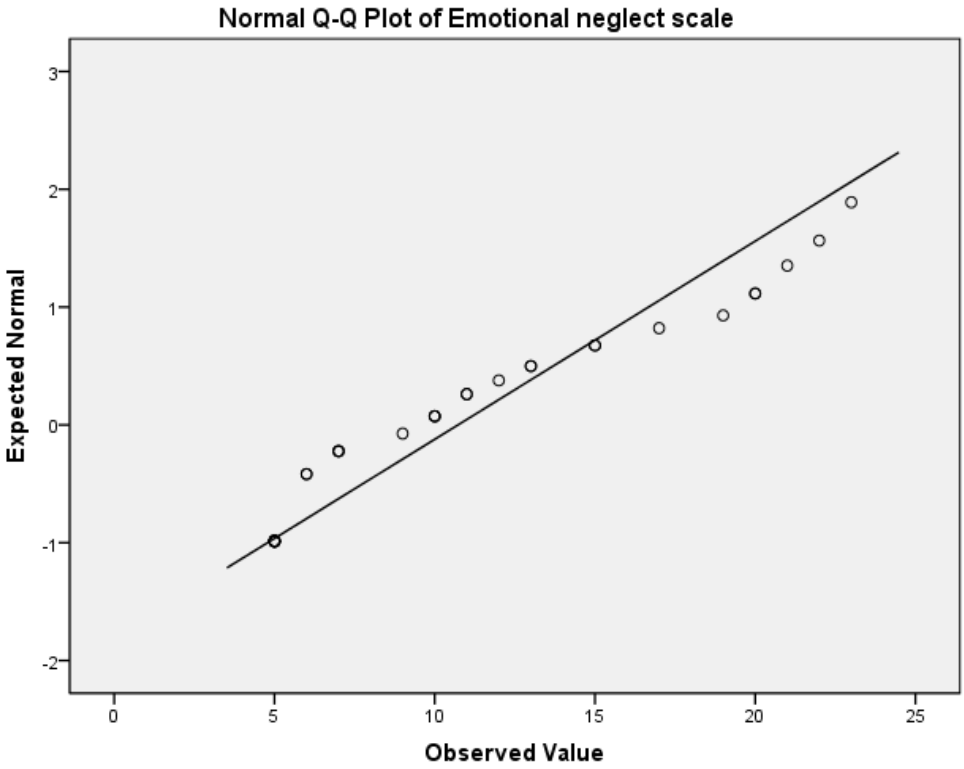
CTQ sexual abuse scale without outliers - graphs

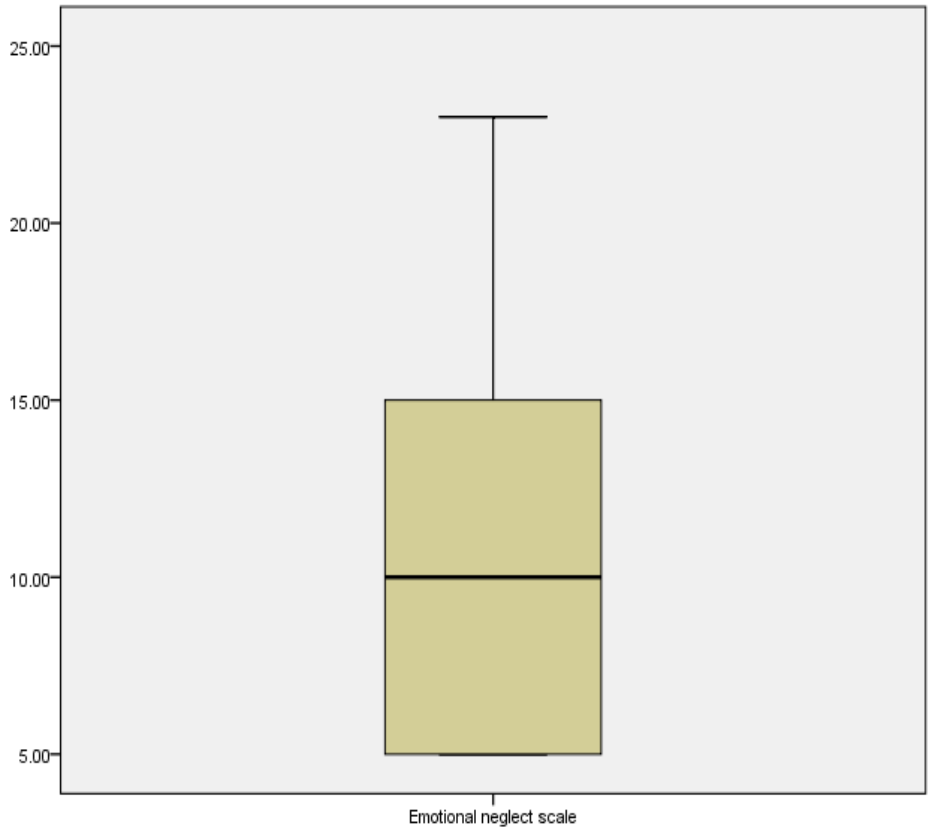




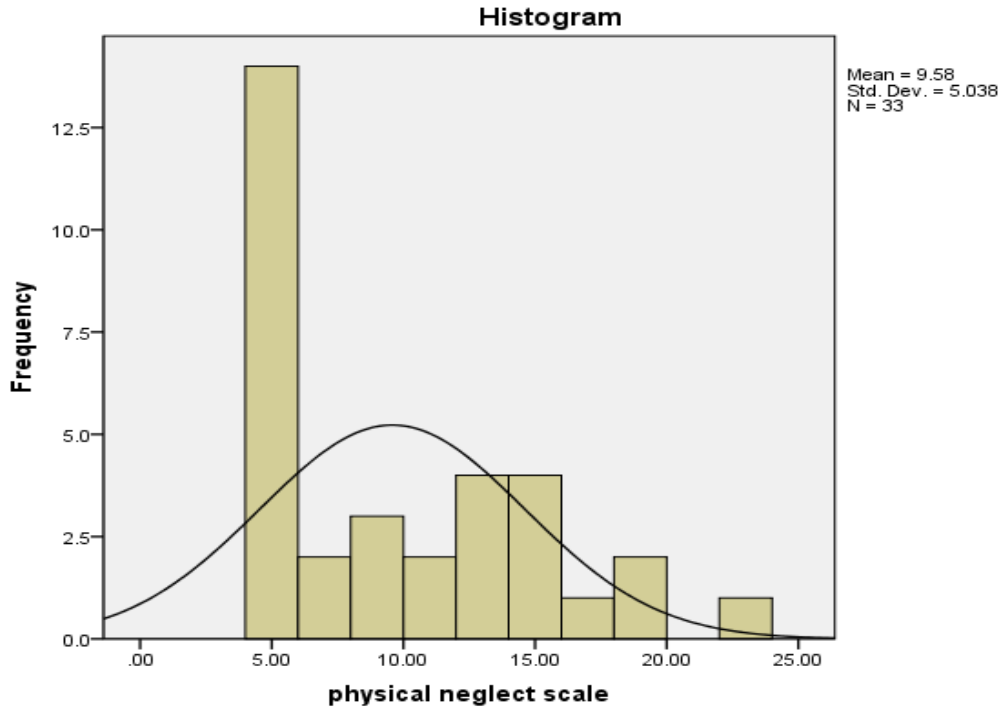
CTQ Emotional neglect scale – graphs

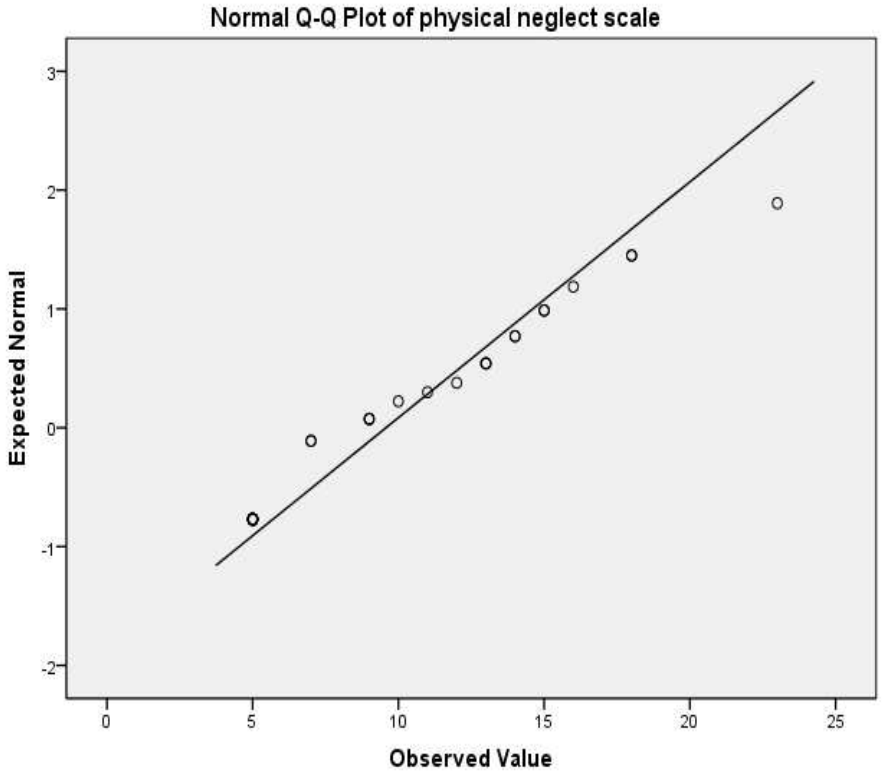


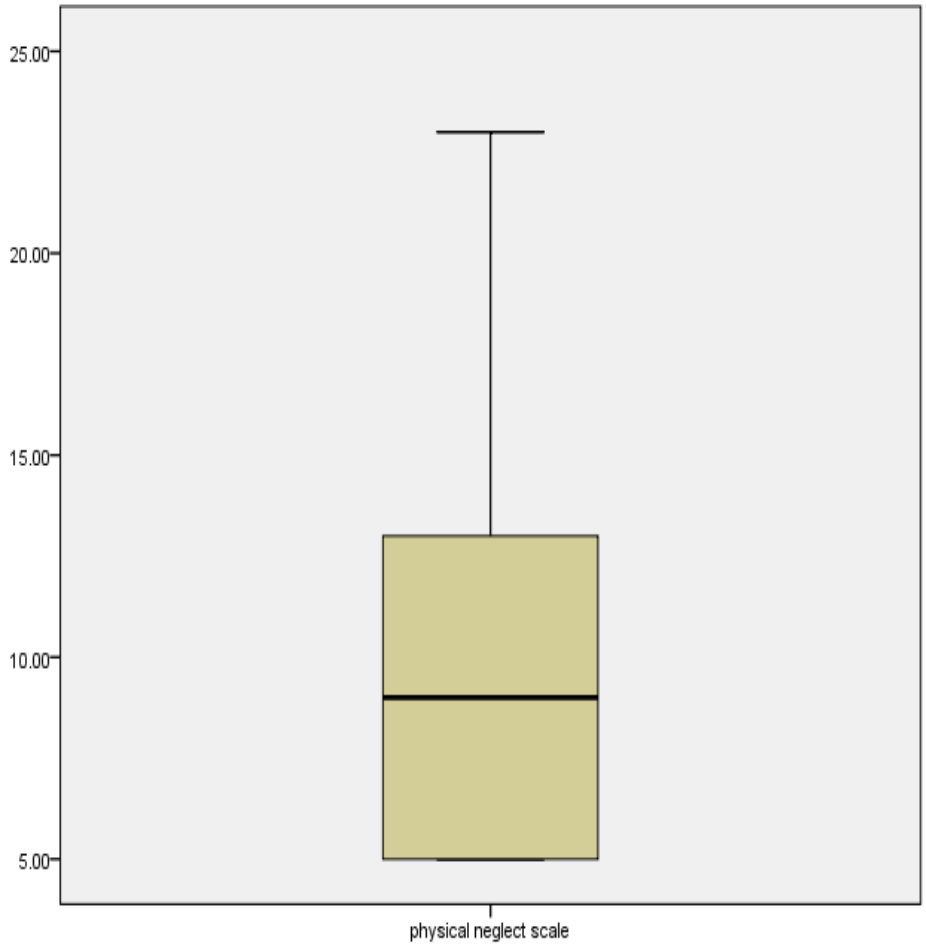



25.00
20.00
15.00
10.00
5.00
Emotional neglect scale

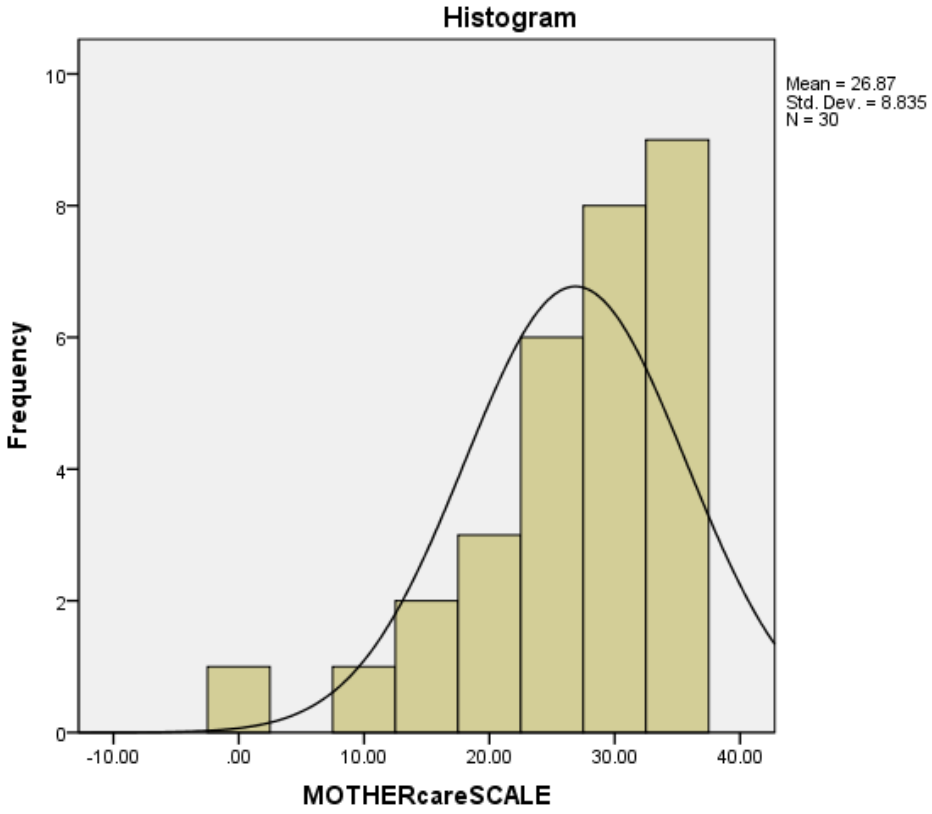
CTQ physical neglect graphs

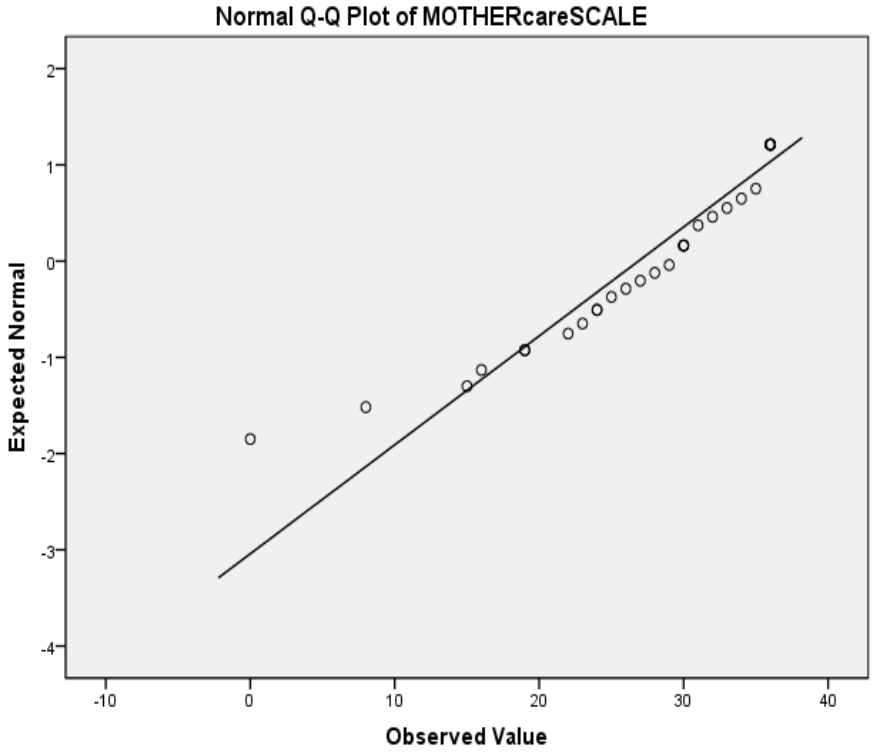


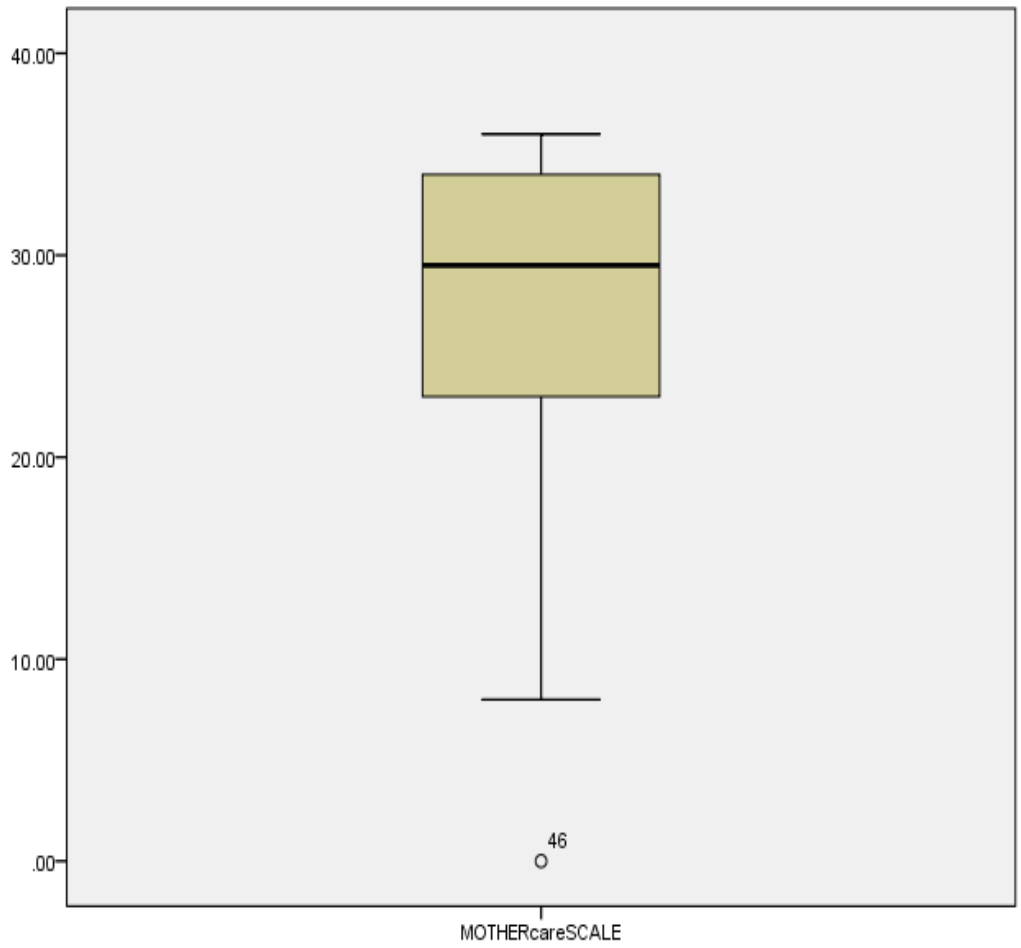



25.00
20.00
15.00
10.00
5.00
physical neglect scale

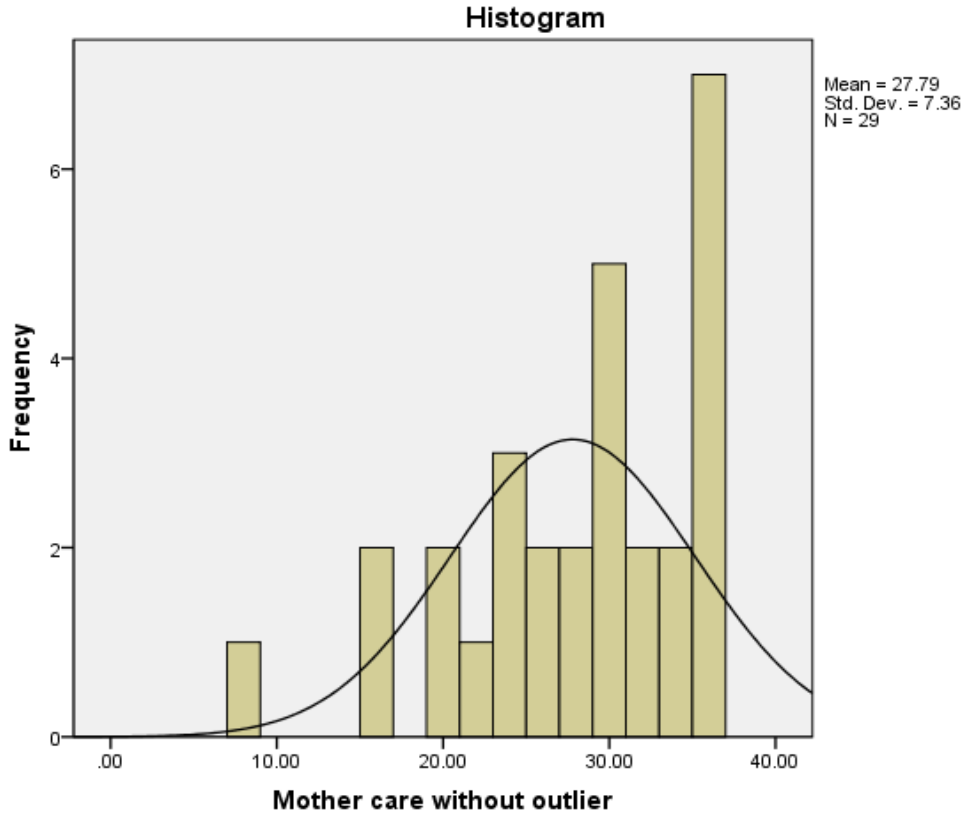
PBI mother care scale

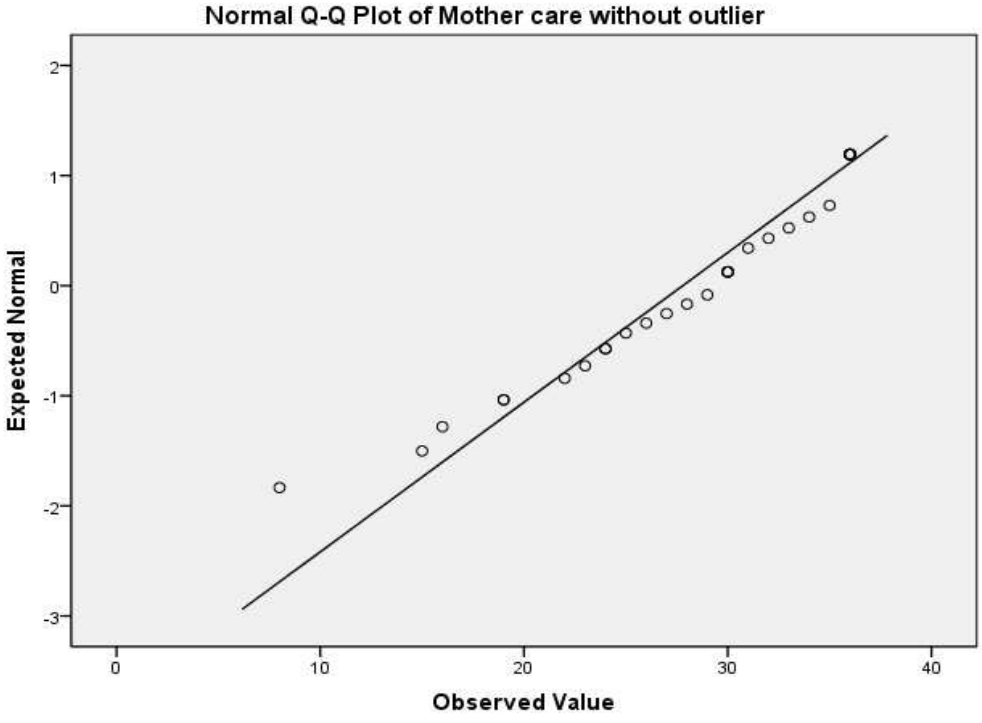


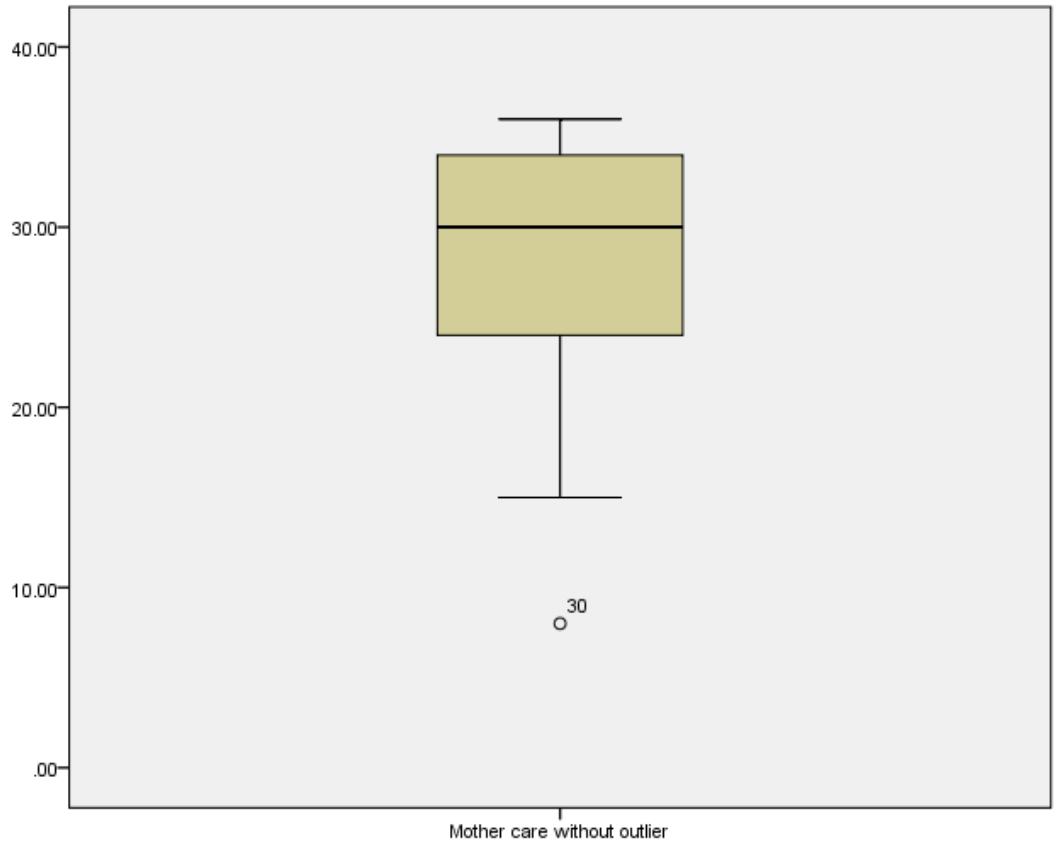



40.00
30.00
20.00
10.00
.00
46
MOTHERcareSCALE

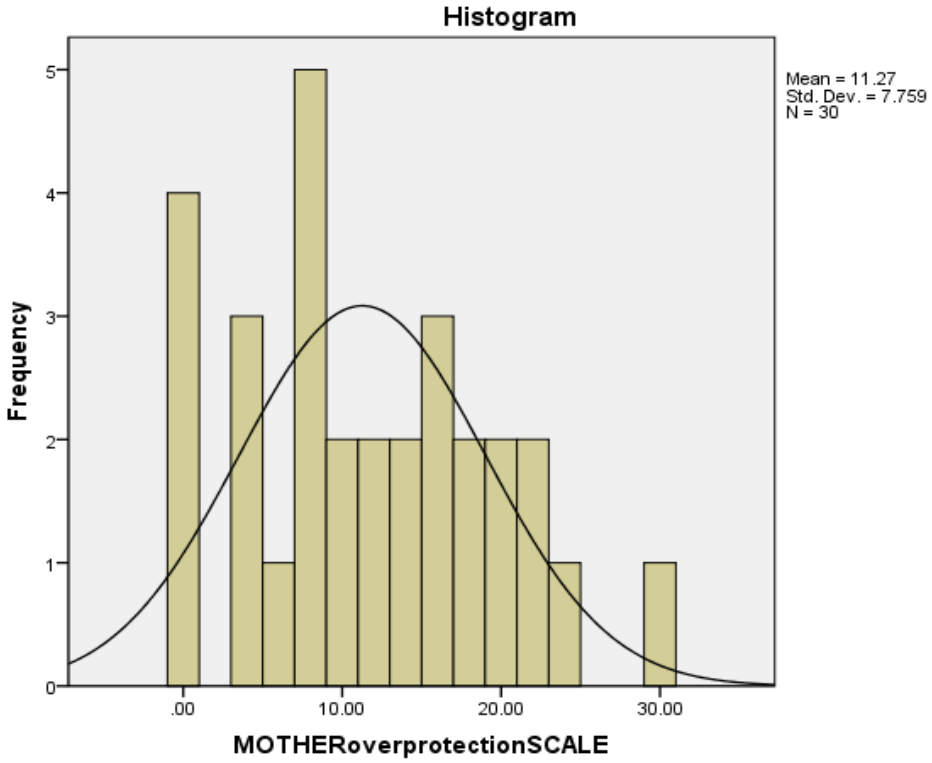
PBI mother care without outliers – graph

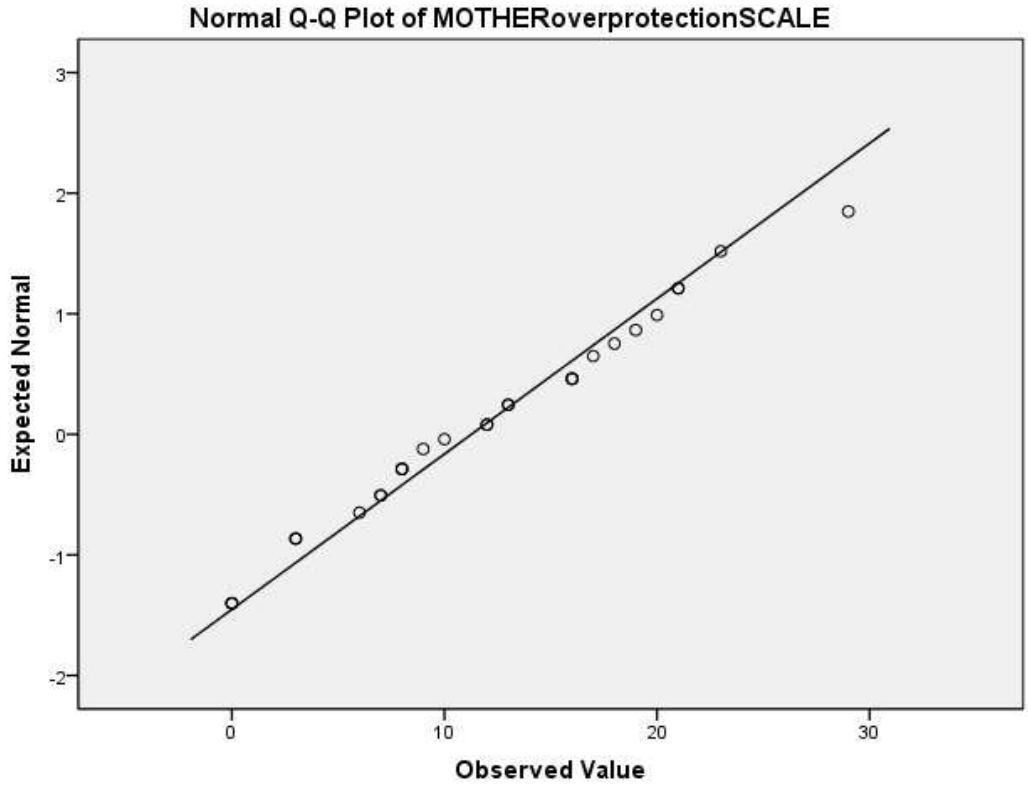


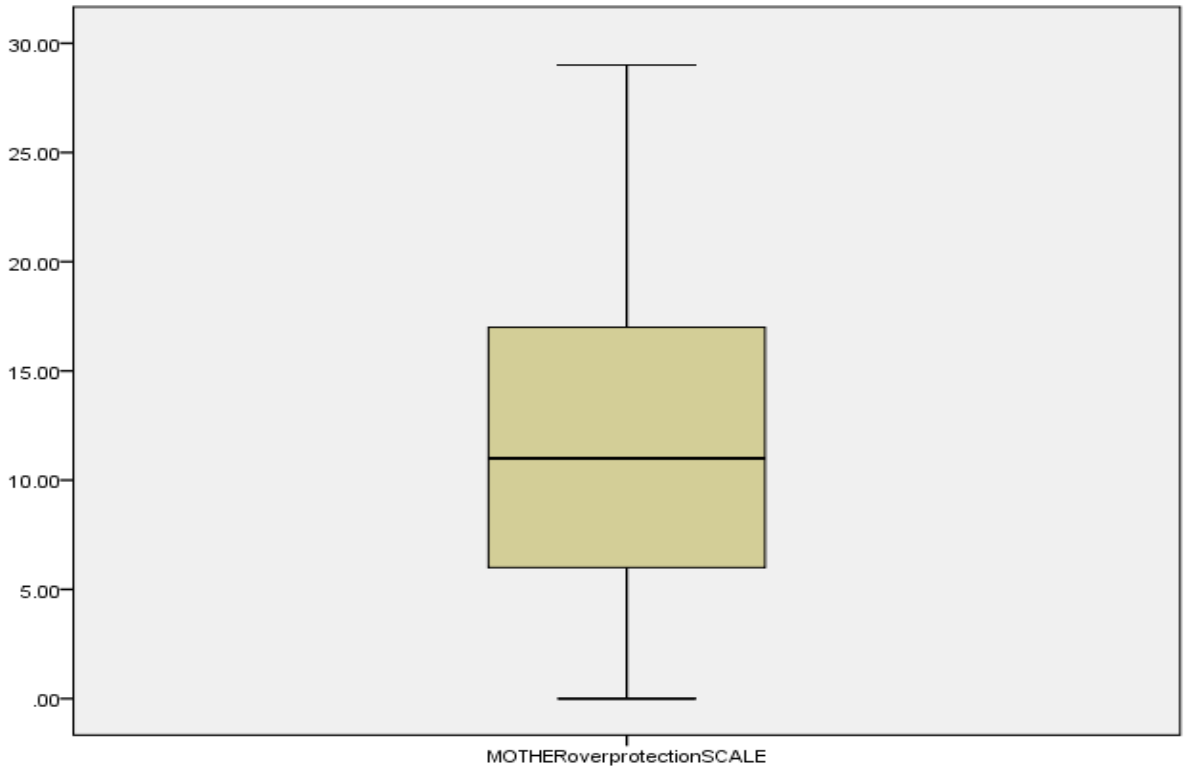



40.00
30.00
20.00
10.00
.00
30
Mother care without outlier

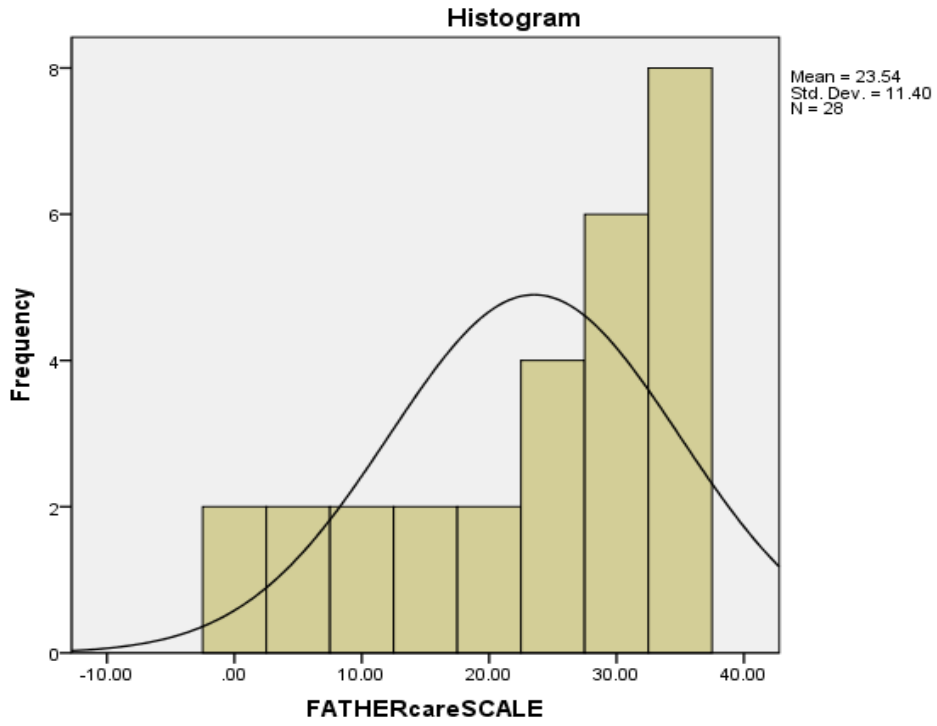
Mother overprotection graphs

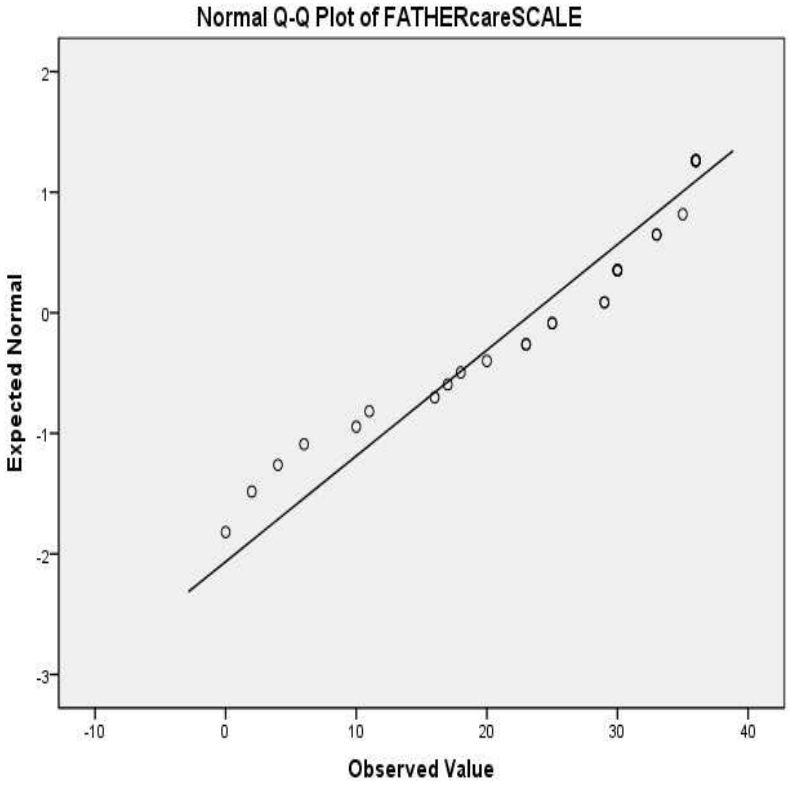


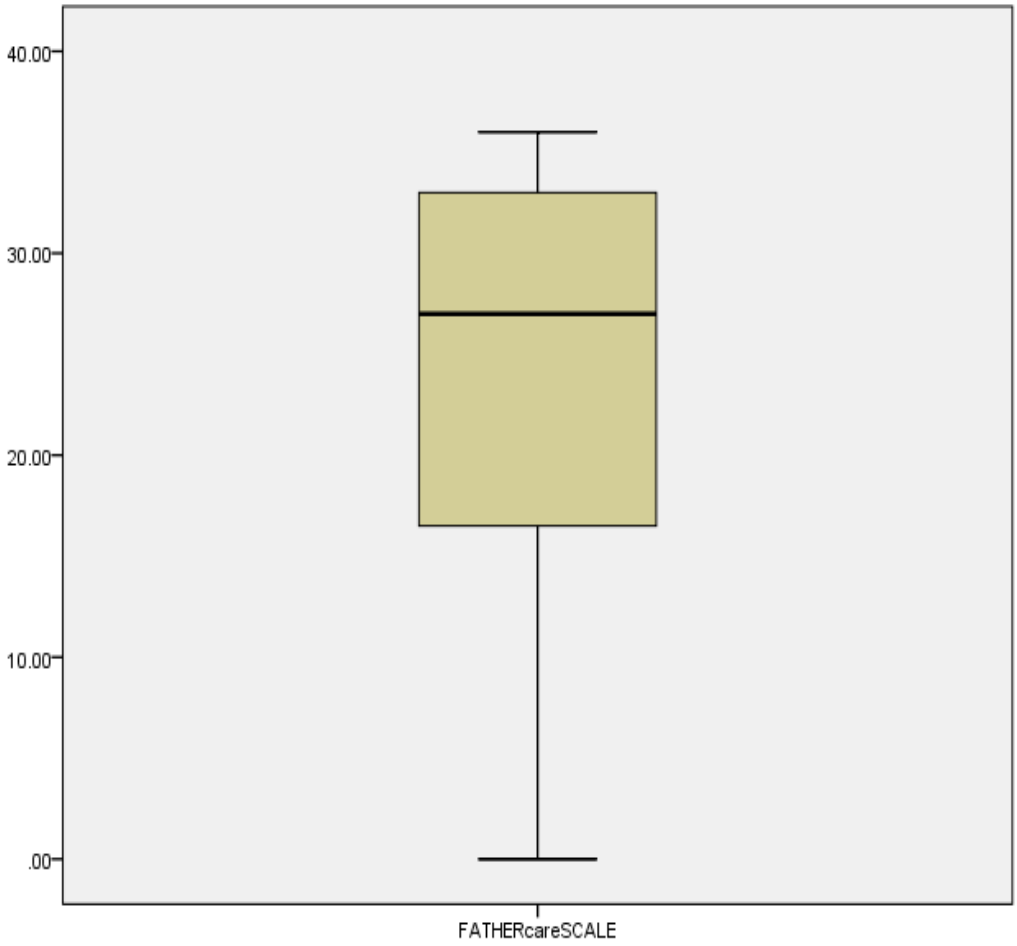



30.00
25.00
20.00
15.00
10.00
5.00
.00
MOTHERoverprotectionSCALE

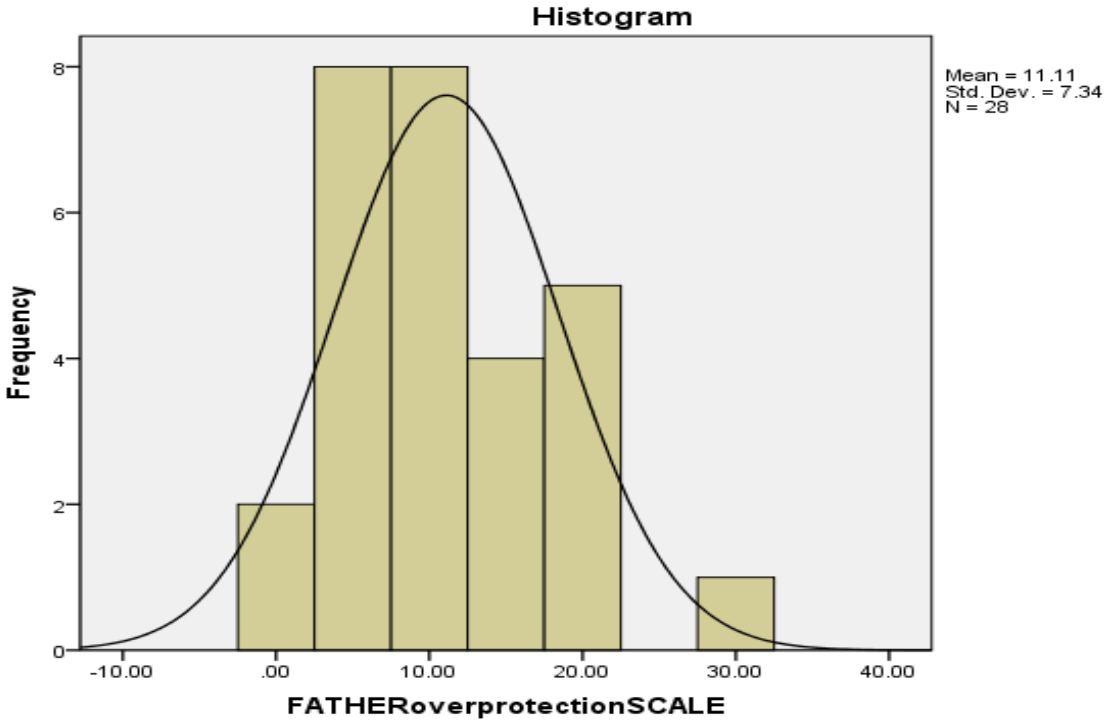
PBI father care graph

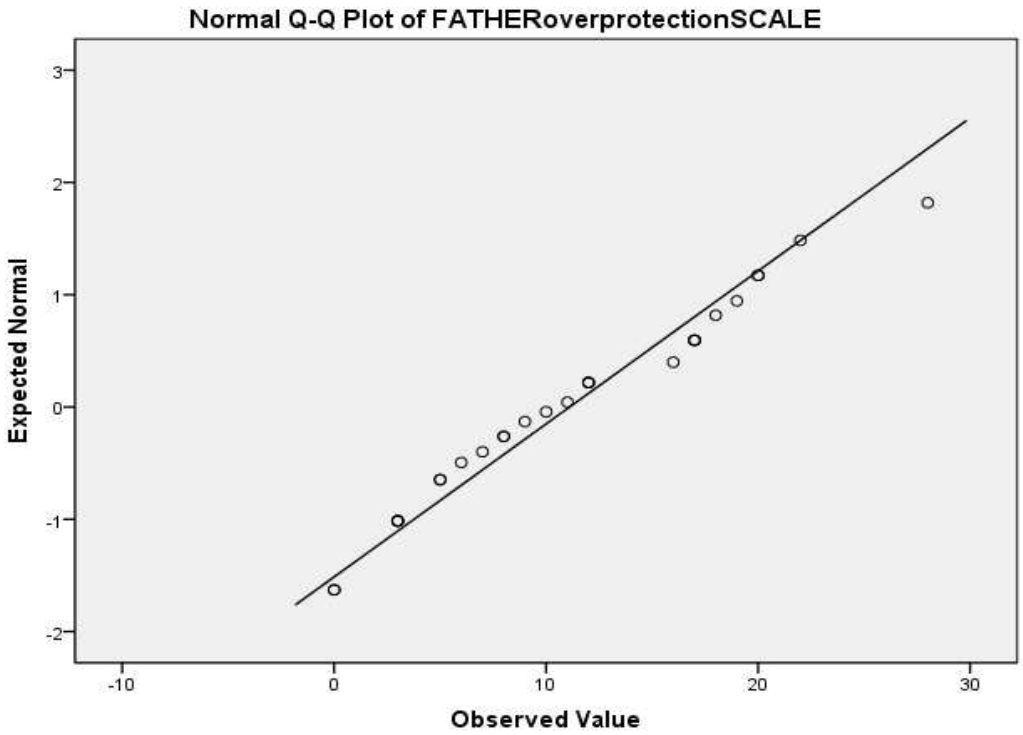


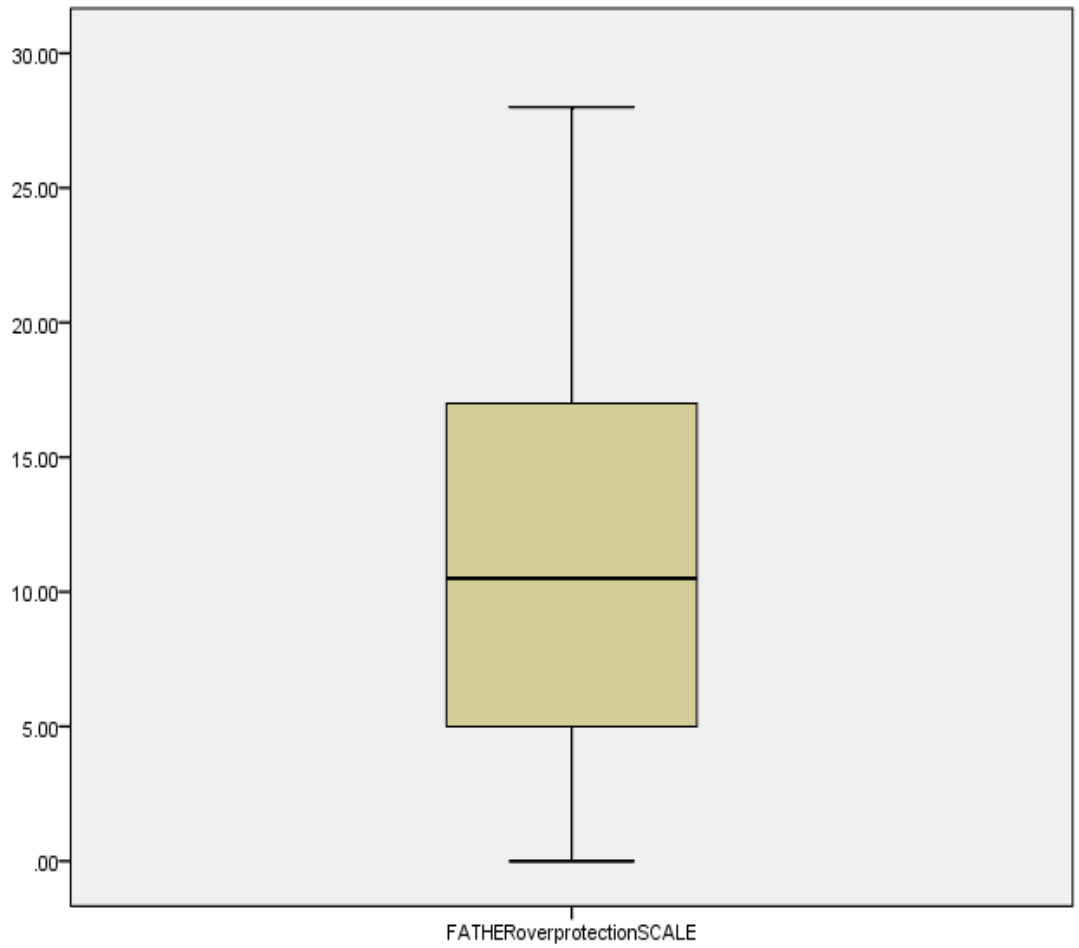



40.00
30.00
20.00
10.00
.00
FATHERcareSCALE

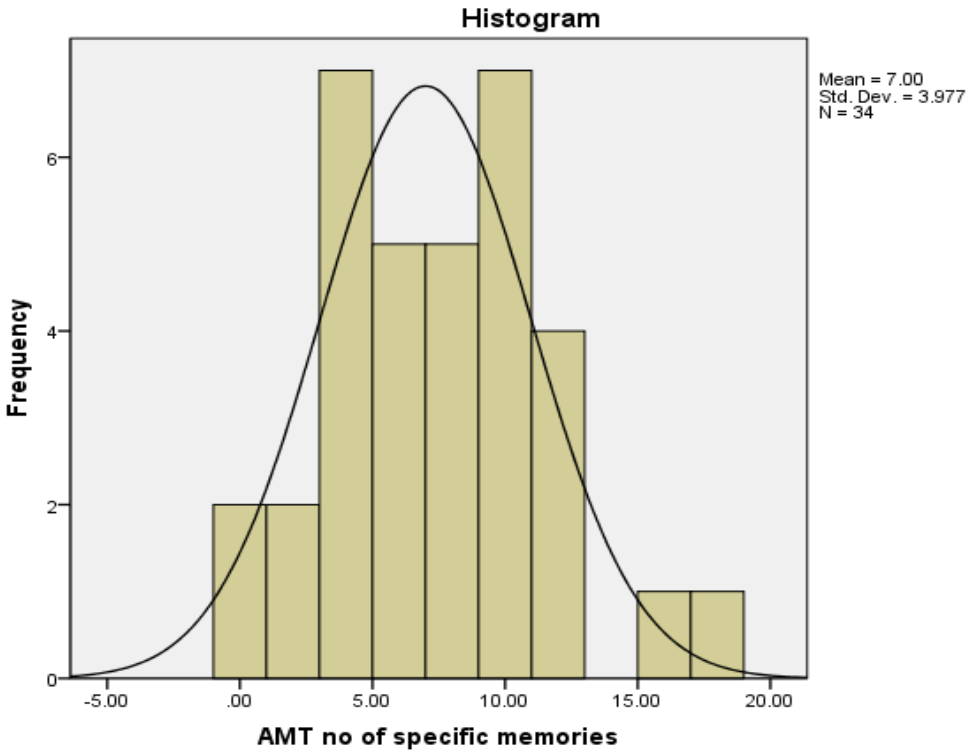
Father overprotection graphs

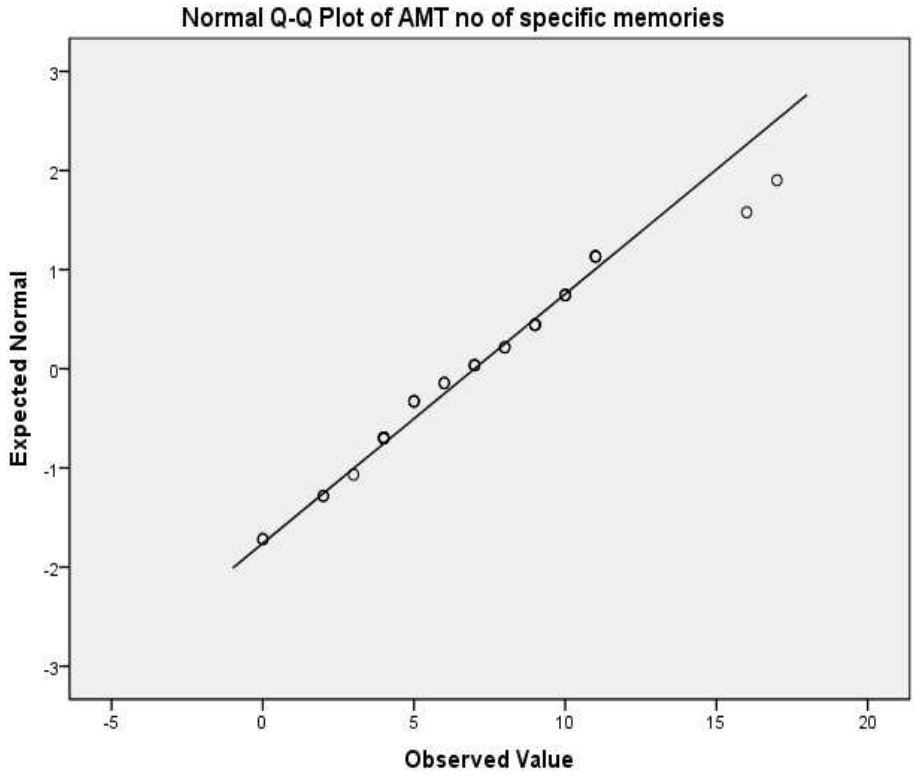


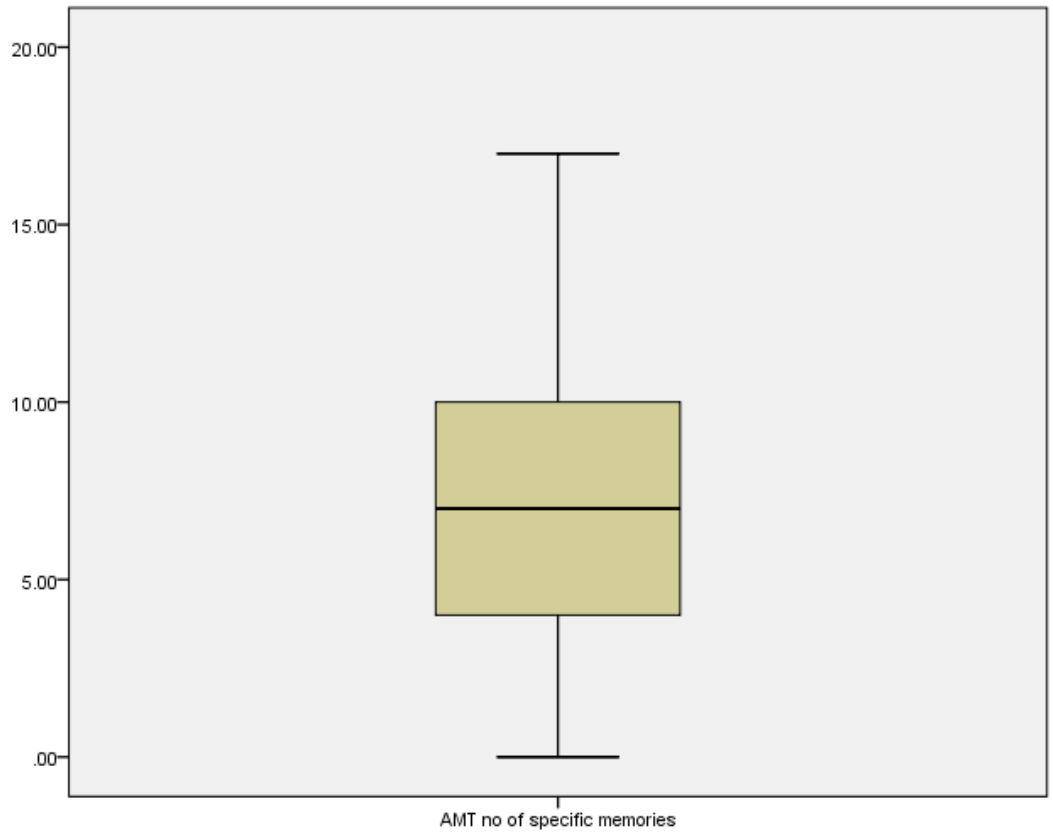



30.00
25.00
20.00
15.00
10.00
5.00
.00
FATHERoverprotectionSCALE

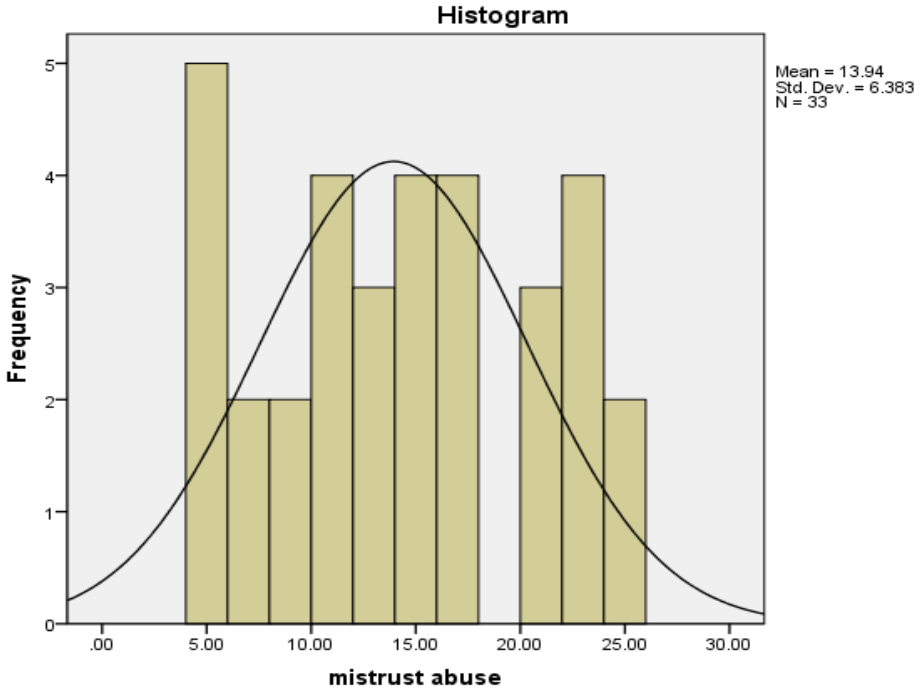
AMT graphs

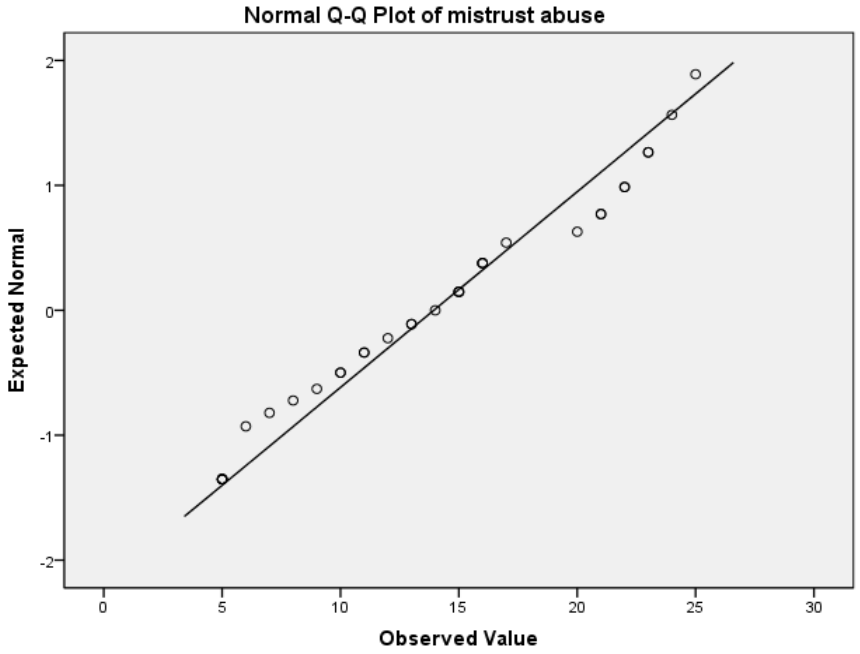

Histogram
Mean = 7.00
Std. Dev. = 3.977
N = 34
Frequency
0
2
4
6
-5.00
.00
5.00
10.00
15.00
20.00
AMT no of specific memories

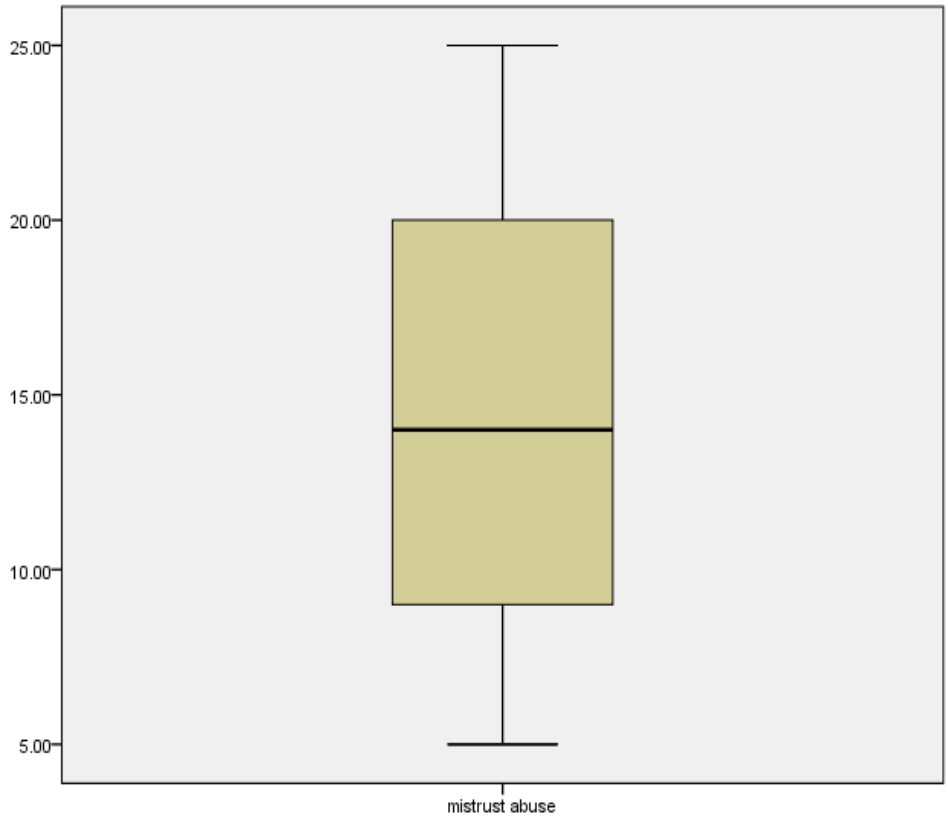

Normal Q-Q Plot of AMT no of specific memories
Expected Normal
3
2
1
0
-1
-2
-3
-5
0
5
10
15
20
Observed Value


20.00
15.00
10.00
5.00
.00
AMT no of specific memories

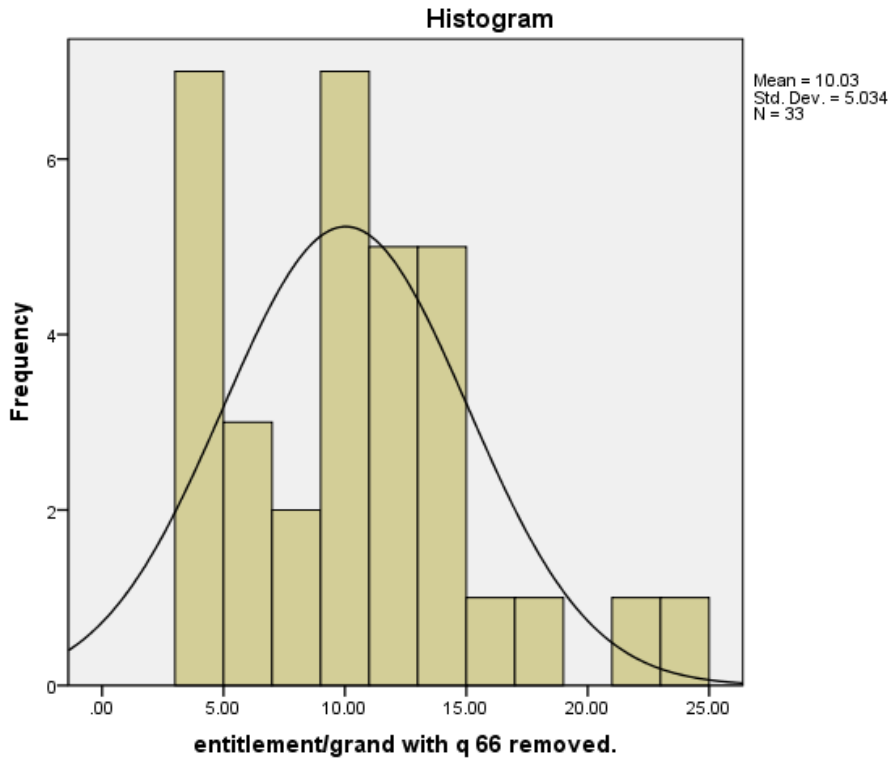
EMS – Mistrust/abuse graph

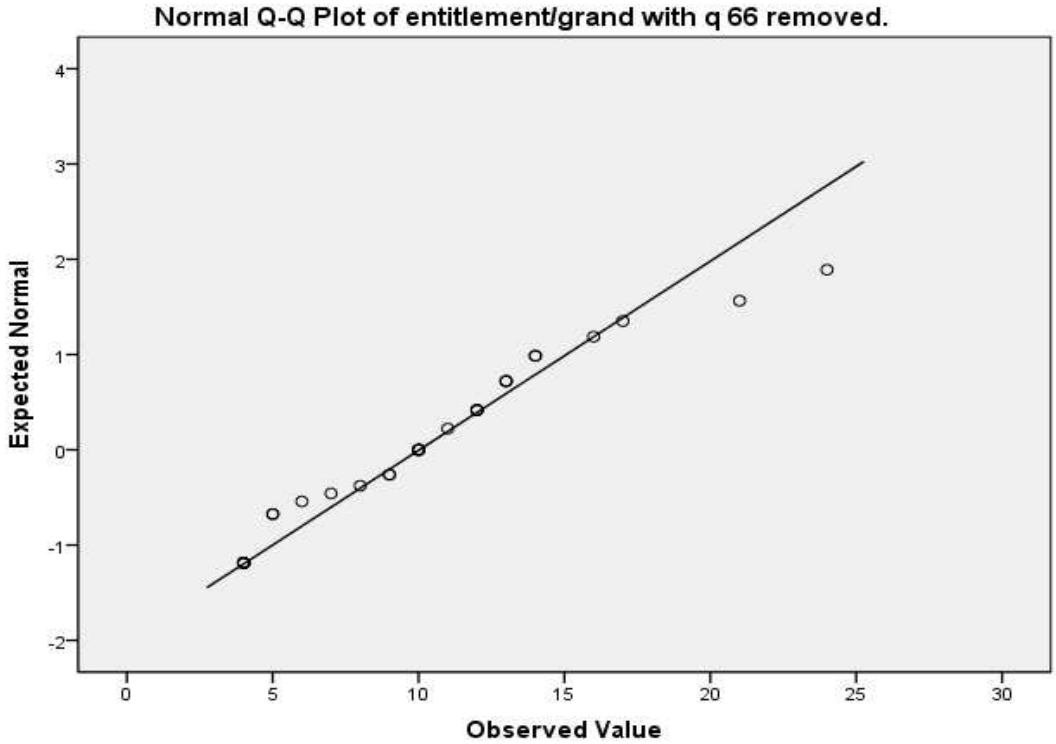


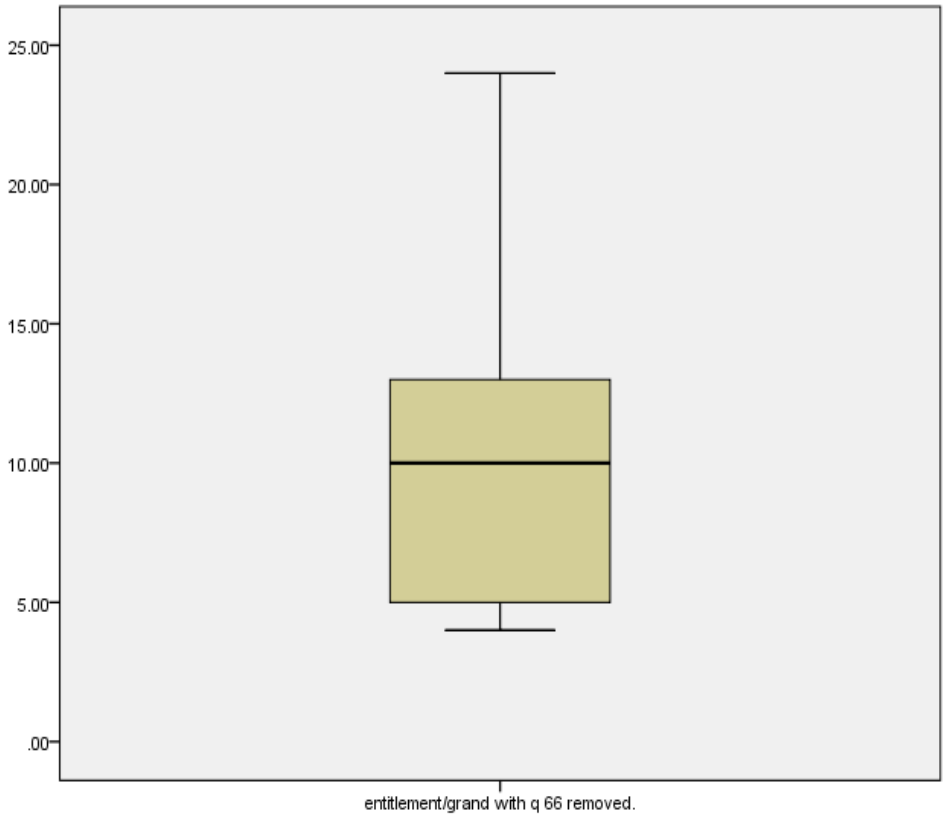



25.00
20.00
15.00
10.00
5.00
mistrust abuse

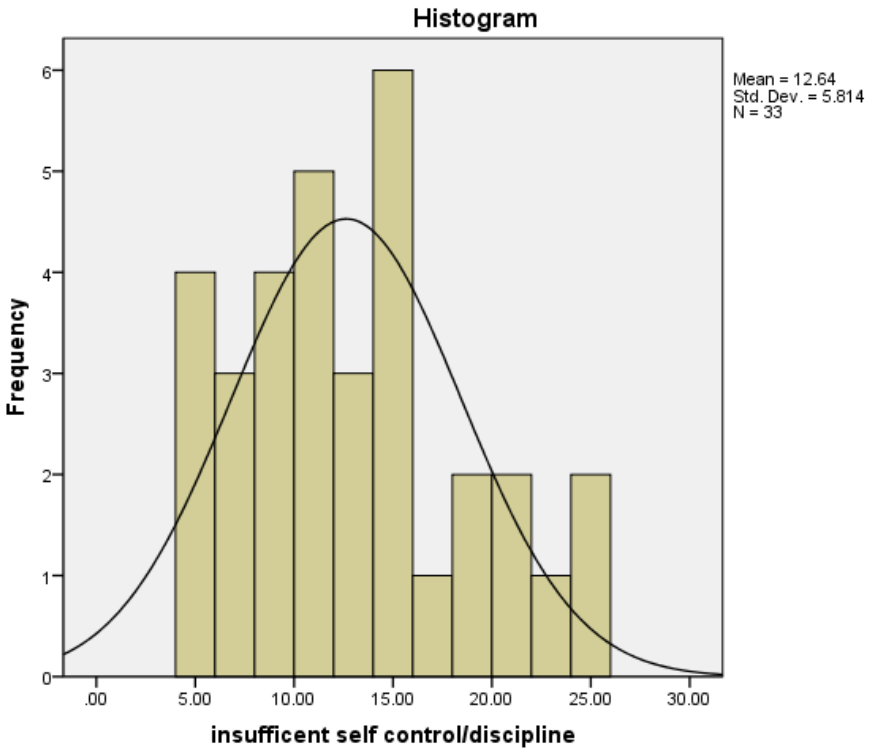
EMS - entitlement/grandiosity graphs

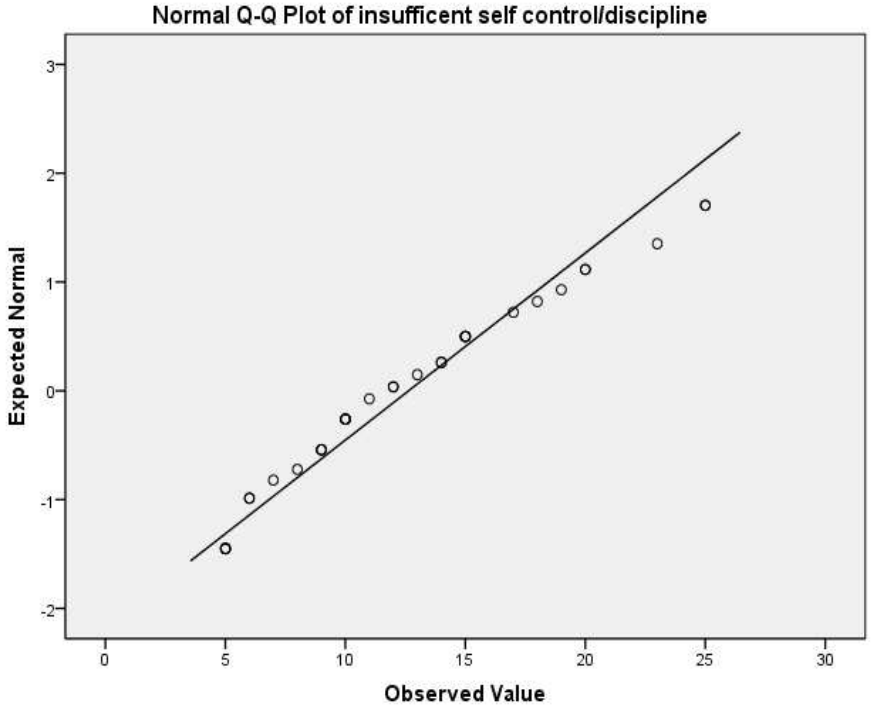


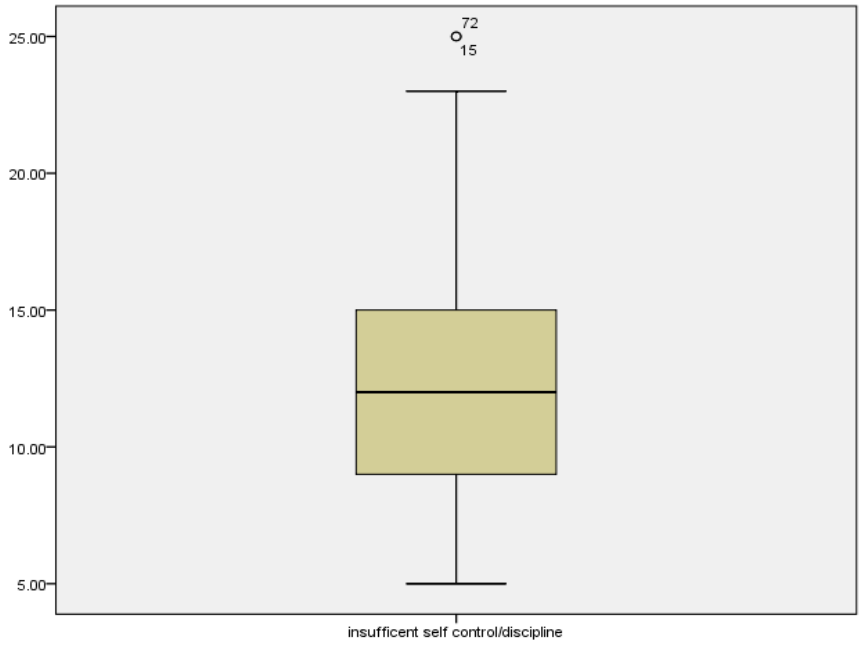



25.00
20.00
15.00
10.00
5.00
.00
entitlement/grand with q 66 removed.

EMS Insufficient self-control/self-discipline graphs






25.00
20.00
15.00
10.00
5.00
72
15
insufficent self control/discipline

Appendix J. Correlational data.

Table J1. Correlations between variables

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. MCMI-III scale C	1.															
2. STAXI 2 trait anger	.154	1.														
3. STAXI 2 anger expression-out	.177	.387**	1.													
4. CTQ emotional abuse	-.014	.178	.098	1.												
5. CTQ physical abuse	-.077	.133	.108	.638**	1.											
6. CTQ sexual abuse	.079	-.140	-.067	.465**	.482**	1.										
7. CTQ emotional neglect	-.120	.248	-.036	.626**	.443**	.283	1.									
8. CTQ physical neglect	-.071	.176	-.115	.614**	.473**	.353*	.691**	1.								
9. PBI mother care	.102	-.201	-.006	-.637**	-.444**	-.338*	-.614**	-.578**	1.							
10. PBI father care	.029	-.358*	-.165	-.510**	-.446**	-.351*	-.596**	-.538**	.617**	1.						
11. PBI mother overprotection	-.192	.140	-.277	.546**	.448**	.332*	.482**	.300*	-.570**	-.415**	1.					
12. PBI father overprotection	-.038	.266	-.180	.507**	.367*	.265	.416**	.252	-.457**	.436**	.841**	1.				
13. EMS mistrust/abuse	.082	.237	-.054	.278*	.364**	.197	.340**	.243	-.253	-.433**	.437*	.455*	1.			
14. EMS entitlement/grandiosity	.152	.336*	.102	.410**	.364**	.149	.445**	.398**	-.329*	-.538**	.230	.366**	.285*	1.		
15. EMS insufficient self-control/discipline	.183	-.020	-.096	.023	-.107	-.135	.037	-.054	.118	.053	-.105	-.067	.063	.107	1.	
16. AMT no of specific memories	.019	-.470**	.115	-.148	-.147	.000	-.265*	-.327*	.225	.371**	-.339	-.295	-.187	.086	.177	1.

Significant at p <.05, **Significant at p<.001

Appendix K. Mediational data

Table K1. Results from PROCESS analysis

Hypothesis	N	X to M pathway	M to Y pathway	X to Y pathway (direct)	Indirect effect	Significance
1.						
X = EA Y= BPD M= EMS (MA)	31	b = 0.38, p = .092	b = 0.21, p = .785	b = -0.02, p = .981	b = 0.08, BCa CI [-0.592, 1.001]	NS
X = EA Y= BPD M= EMS (EG)	31	b = 0.55, p = .001	b = 2.02, p = .051	b = -1.05, p = .092	b = 1.11, BCa CI [0.107, 3.169]	S medium effect size of κ2 = .21, 95% BCa CI [0.038, 0.459]
X = EA Y= BPD M= EMS (IS/SD)	31	b = -0.07, p = .724	b = 0.67, p = .392	b = 0.11, p = .904	b = -0.05, BCa CI [-0.794, 0.299]	NS

X = EA **Y= BPD** **M= Specific memories**	31	b = -0.13, p = .347	b = -1.30, p = .296	b = -0.11, p = .904	b = 0.16, BCa CI [-0.131, 1.438]	NS
X = PA **Y= BPD** **M= EMS (MA)**	31	b = 0.38, p = .060	b = 0.14, p = .853	b = 0.19, p = .822	b = 0.05, BCa CI [-1.525, 1.906]	NS
X = PA **Y= BPD** **M= EMS (EG)**	31	b = 0.45, p = < .001	b = 1.76, p = .083	b = -0.55, p = .531	b = 0.79, BCa CI [-0.116, 2.192]	NS
X = PA **Y= BPD** **M= EMS (IS/SD)**	31	b = -0.17, p = .366	b = 0.73, p = .359	b = 0.37, p = .644	b = - 0.12, BCa CI [-1.176, 0.138]	NS
X = PA	31	b = -0.14, p = .223	b = -1.25, p = .319	b = 0.06, p = .937	b = 0.18, BCa CI [-	NS

Y= BPD **M= Specific memories**					0.143, 1.453]	
X = SA **Y= BPD** **M= EMS (MA)**	31	b = 0.38, p = .107	b = 0.11, p = .885	b = 0.40, p = .679	b = 0.04, BCa CI [-0.670, 0.867]	NS
X = SA **Y= BPD** **M= EMS (EG)**	31	b = 0.23, p = .228	b = 1.42, p = .114	b = 0.12, p = .899	b = 0.33, BCa CI [-0.103, 1.392]	NS
X = SA **Y= BPD** **M= EMS (IS/SD)**	31	b = -0.14, p = .529	b = 0.72, p = .359	b = 0.54, p = .556	b = -10.0, BCa CI [-1.627, 0.173]	NS
X = SA **Y= BPD** **M= Specific**	31	b = -0.00, p = .977	b = -1.27, p = .297	b = 0.44, p = .630	b = -0.01, BCa CI [-.408, 2.274]	NS

memories						
X = EN **Y= BPD** **M= EMS** **(MA)**	31	b = 0.39, p = .040	b = 0.37, p = .633	b = -0.48, p = .558	b = 0.14, BCa CI [-.554, 1.143]	NS
X = EN **Y= BPD** **M= EMS (EG)**	31	b = 0.44, p = .002	b = 2.28, p = .023	b = -1.35, p = .104	b = 1.02, BCa CI [0.222, 2.583]	S medium/large effect size of $\kappa^2 = 0.24$, 95% BCa [0.033, 0.436]
X = EN **Y= BPD** **M= EMS** **(IS/SD)**	31	b = 0.08, p = .639	b = 0.70, p = .371	b = -0.39, p = .602	b = 0.06, BCa CI [-0.182, 0.870]	NS
X = EN **Y= BPD** **M= Specific**	31	b = -0.18, p = .119	b = -1.56, p = .220	b = -0.60, p = .433	b = 0.273, BCa CI [-0.201, 0.953]	NS

memories						
X = PN **Y= BPD** **M= EMS** **(MA)**	31	b = 0.43, p = .060	b = 0.24, p = .757	b = -0.13, p = .889	b = 0.10, BCa CI [-0.592, 1.062]	NS
X = PN **Y= BPD** **M= EMS (EG)**	31	b = 0.47, p = .008	b = 1.87, p = .057	b = -0.92, p = .343	b = 0.89, BCa CI [0.078, 2.88]	S small effect size of $\kappa^2 = 0.17$, 95% BCa [0.030, 0.387]
X = PN **Y= BPD** **M= EMS** **(IS/SD)**	31	b = -0.14, p = .527	b = 0.67, p = .395	b = 0.06, p = .948	b = -0.09, BCa CI [-0.955, 0.233]	NS

X = PN **Y= BPD** **M= Specific memories**	31	b = -0.29, p = .028	b = -1.53, p = .250	b = -0.48 p = .623	b = 0.44, BCa CI [-0.318, 1.905]	NS
2.						
X = MC **Y= BPD** **M= EMS (MA)**	28	b = -0.25, p = .060	b = 0.88, p = .270	b = 1.12 p = .051	b = -0.22, BCa CI [-0.005, 0.127]	NS
X = MC **Y= BPD** **M= EMS (EG)**	28	b = -0.17, p = .085	b = 2.78, p = .007	b = 1.36, p = .008	b = -0.46, BCa CI [-1.166, -0.098]	S Medium/large effect size of κ^2 = 0.22, 95% BCa [0.055, 0.405]

X = MC **Y= BPD** **M= EMS** **(IS/SD)**	28	b = 0.12, p = .369	b = 0.42, p = .599	b = 0.85, p = .120	b = 0.05, BCa CI [-0.127, 0.615]	NS
X = FC **Y= BPD** **M= Specific memories**	26	b = 0.12, p = .134	b = -2.20, p = .077	b = 1.17, p = .031	b = 0.27, BCa CI [-1.242, 0.047]	NS
X = FC **Y= BPD** **M= EMS** **(MA)**	26	b = -0.33, p = .001	b = -0.64, p = .499	b = -0.16, p = .759	b = 0.21, BCa CI [-0.443, 0.929]	NS
X = FC **Y= BPD** **M= EMS (EG)**	26	b = -0.28, p = .002	b = 1.73, p = .099	b = 0.54, p = .269	b = -0.48, BCa CI [-1.153, -0.005]	S Medium/large effect size of κ^2 = 0.21, 95% BCa [0.058, 0.373]

X = FC **Y= BPD** **M= EMS** **(IS/SD)**	26	b = -0.02 p = .871	b = 1.37, p = .098	b = -0.08, p = .840	b = -0.02, BCa CI [-0.332, 0.311]	NS
X = FC **Y= BPD** **M= Specific memories**	26	b = 0.17 p = .009	b = -1.97 p = .162	b = 0.38 p = .404	b = -0.33, BCa CI [-1.442, 0.336]	NS
X = MOP **Y= BPD** **M= EMS** **(MA)**	28	b = 0.37 p = .013	b = 1.01 p = .239	b = -1.21 p = .080	b = 0.37, BCa CI [-0.113, 1.06]	NS
X = MOP **Y= BPD** **M= EMS (EG)**	28	b = 0.18 p = .106	b = 2.60 p = .014	b = -1.31 p = .029	b = 0.47, BCa CI [0.047, 1.226]	S Small effect size of $\kappa^2 = 0.18$, 95% BCa [0.028, 0.357]

X = MOP Y= BPD M= EMS (IS/SD)	28	b = -0.06 p = .698	b = 0.56 p = .483	b = -0.81 p = .192	b = -0.03, BCa CI [-0.618, 0.194]	NS
X = MOP Y= BPD M= Specific memories	28	b = -0.15 p = .101	b = -2.17 p = .091	b = -1.18 p = .062	b = 0.34, BCa CI [-0.003, 1.574]	NS
X = FOP Y= BPD M= EMS (MA)	26	b = 0.45 p = .006	b = -0.69 p = .431	b = 0.37 p = .618	b = -0.31, BCa CI [-1.641, 0.393]	NS
X = FOP Y= BPD M= EMS (EG)	26	b = 0.40 p = .005	b = 1.42 p = .162	b = -0.50 p = .497	b = 0.57, BCa CI [-0.126, 1.80]	NS

X = FOP Y= BPD M= EMS (IS/SD)	26	b = -.0.6 p = .692	b = 1.38 p = .097	b =0.15 p = .806	b = 0.09, BCa CI [-0.99, 1.400]	NS
X = FOP Y= BPD M= Specific memories **3.**	26	b = -0.15 p = .162	b = -1.47 p = .250	b =-0.15 p = .820	b = 0.21, BCa CI [-1.49, 1.42]	NS
X = EA Y= Trait anger M= EMS (MA)	30	b = -0.34 p = .131	b = .31 p = .270	b =-0.26 p = .451	b = 0.11, BCa CI [-0.089, 0.525]	NS
X = EA Y= Trait anger M= EMS (EG)	30	b = 0.53 p = .002	b = 0.83 p = .033	b = -0.07 p = .850	b = 0.43, BCa CI [0.081, 1.027]	S Medium effect size of κ^2 = 0.22, 95% BCa [0.045, 0.470]

X = EA **Y= Trait anger** **M= EMS (IS/SD)**	30	b = -0.12 p = .571	b = -0.02 p = .948	b = 0.36 p = .286	b = 0.00, BCa CI [-0.13, 1.171]	NS
X = EA **Y= Trait anger** **M= Specific memories**	30	b = -0.15 p = .288	b = -1.58 p = <.001	b = 0.14 p = .600	b = 0.23, BCa CI [-0.097, 0.645	NS
X = PA **Y= Trait anger** **M= EMS (MA)**	30	b = 0.35 p = .078	b = 0.34 p = .235	b = 0.09 p = .773	b = 0.12, BCa CI [--0.093, 0.683	NS

X = PA **Y= Trait anger** **M= EMS (EG)**	30	b = 0.44 p = .005	b = 0.89 p = .019	b = -0.18 p = .574	b = 0.39, BCa CI [0.060, 0.987]	S Medium effect size of κ^2 = 0.23, 95% BCa [0.035, 0.478]
X = PA **Y= Trait anger** **M= EMS (IS/SD)**	30	b = -0.20 p = .285	b = -0.01 p = .969	b = 0.21 p = .498	b = 0.002, BCa CI [-0.18, 0.256]	NS
X = PA **Y= Trait anger** **M= Specific memories**	30	b = -0.16 p = .193	b = -1.64 p = <.001	b = -0.04 p = .850	b = 0.26, BCa CI [-0.004, 0.698]	S Medium effect size of κ^2 = 0.19, 95% BCa [0.019, 0.426]
X = SA **Y= Trait anger** **M= EMS**	30	b = 0.36 p = .121	b = 0.51 p = .063	b = -0.62 p = .075	b = 0.19, BCa CI [-0.043, 0.544]	NS

(MA)						
X = SA **Y= Trait anger** **M= EMS (EG)**	30	b = 0.22 p = .253	b = 0.92 p = .004	b = -0.63 p = .044	b = 0.20, BCa CI [-0.090, 0.550]	NS
X = SA **Y= Trait anger** **M= EMS (IS/SD)**	30	b = -0.16 p = .471	b = -0.11 p = .720	b = -0.45 p = .203	b = 0.02, BCa CI [-0.091, 0.396]	NS
X = SA **Y= Trait anger** **M= Specific memories**	30	b = -0.01 p = .940	b = -1.63 p = <.001	b = -0.45p = .082	b = 0.02, BCa CI [-4.79, 0.347]	NS

X = EN **Y= Trait anger** **M= EMS (MA)**	30	b = 0.36 p = .062	b = 0.28 p = .322	b = 0.26 p = .379	b = 0.10, BCa CI [-0.10, 0.63]	NS
X = EN **Y= Trait anger** **M= EMS (EG)**	30	b = 0.43 p = .004	b = 0.77 p = .043	b = 0.04 p = .901	b = 0.33, BCa CI [-0.097, 0.753]	S Medium effect size of $\kappa^2 = 0.20$, 95% BCa [0.055, 0.404]
X = EN **Y= Trait anger** **M= EMS (IS/SD)**	30	b = 0.05 p = .802	b = -0.07 p = .806	b = 0.37 p = .201	b = 0.00, BCa CI [-0.198, 0.090]	NS
X = EN **Y= Trait anger** **M= Specific**	30	b = -0.20 p = .087	b = -1.59 p = .001	b = 0.05 p = .819	b = 0.31, BCa CI [0.035, 0.82]	S Medium effect size of $\kappa^2 = 0.23$, 95% BCa [0.038, 0.497]

memories						
X = PN Y= Trait anger M= EMS (MA)	30	b = 0.43 p = .059	b = 0.32 p = .275	b = 0.19 p = .589	b = 0.14, BCa CI [-0.151, 0.709]	NS
X = PN Y= Trait anger M= EMS (EG)	30	b = 0.47 p = .008	b = 0.82 p = .026	b = -0.06 p = .869	b = 0.38, BCa CI [0.064, 0.964]	S Medium effect size of $\kappa^2 = 0.20$, 95% BCa [0.049, 0.458]
X = PN Y= Trait anger M= EMS (IS/SD)	30	b = -0.14 p = .505	b = -0.02 p = .952	b = 0.32 p = .346	b = 0.00, BCa CI [-0.140, 0.223]	NS

X = PN **Y= Trait anger** **M= Specific memories**	30	b = -0.29 p = .028	b = -1.71 p = < .001	b = -0.17 p = .536	b = 0.50, BCa CI [0.168, 1.00]	S Large effect size of κ^2 = 0.31, 95% BCa [0.112, 0.522]
X = EA **Y= Anger expression out** **M= EMS (MA)**	30	b = 0.34 p = .131	b = 0.58 p = .044	b = -0.05 p = .879	b = 0.01, BCa CI [-0.004, 0.069]	NS
X = EA **Y= Anger expression out** **M= EMS (EG)**	30	b = 0.53 p = .002	b = 0.21 p = .624	b = 0.04 p = .924	b = 0.11, BCa CI [-0.185, 0.642]	NS
X = EA **Y= Anger expression out** **M= EMS**	30	b = -0.12 p = .571	b = 0.496 p = .113	b = 0.21 p = .539	b = -0.06, BCa CI [-0.446, 0.896]	NS

(IS/SD)						
X = EA **Y= Anger expression out** **M= Specific memories**	30	b = -0.15 p = .288	b = -1.18 p = .012	b = -0.02 p = .945	b = 0.17, BCa CI [-0.050, 0.750]	NS
X = PA **Y= Anger expression out** **M= EMS (MA)**	30	b = 0.35 p = .078	b = 0.61 p = .039	b = -0.13 p = .682	b = 0.22, BCa CI [0.008, 0.780]	S medium effect size of κ^2 = .13, 95% BCa [0.023, 0.350]
X = PA **Y= Anger expression out** **M= EMS (EG)**	30	b = 0.44 p = .005	b = 0.24 p = .567	b = -0.01 p = .971	b = 0.10, BCa CI [-0.178, 0.509]	NS

X = PA **Y= Anger expression out** **M= EMS (IS/SD)**	30	b = -0.20 p = .285	b = 0.52 p = .106	b = 0.19 p = .529	b = -0.10, BCa CI [-0.676, 0.028]	NS
X = PA **Y= Anger expression out** **M= Specific memories**	30	b = -0.16 p = .193	b = -1.21 p = .011	b = -0.10 p = .728	b = 0.19, BCa CI [-0.035, 0.716]	NS
X = SA **Y= Anger expression out** **M= EMS (MA)**	30	b = 0.36 p = .121	b = 0.65 p = .024	b = -0.35 p = .311	b = 0.24, BCa CI [-0.005, 0.683]	NS
X = SA **Y= Anger expression out**	30	b = 0.22 p = .253	b = 0.27 p = .467	b = -0.17 p = .639	b = 0.06, BCa CI [-0.037, 0.530]	NS

M= EMS (EG)						
X = SA **Y= Anger expression out** **M= EMS (IS/SD)**	30	b = -0.16 p = .471	b = 0.47 p = .136	b = -0.04 p = .905	b = -0.07, BCa CI [-0.621, 0.656]	NS
X = SA **Y= Anger expression out** **M= Specific memories**	30	b = -0.01 p = .940	b = -1.18 p = .011	b = -0.13 p = .691	b = 0.12, BCa CI [-0.256, 0.338]	NS
X = EN **Y= Anger expression out** **M= EMS (MA)**	30	b = 0.36 p = .062	b = 0.65 p = .028	b = -0.24 p = .425	b = 0.23, BCa CI [0.006, 0.674]	S medium effect size of κ^2 = .15, 95% BCa [0.021, 0.416]
X = EN **Y= Anger**	30	b = 0.43 p = .004	b = 0.31 p = .453	b = -0.14 p = .696	b = 0.13, BCa CI [-0.093, 0.509]	NS

expression out M= EMS (EG)						
X = EN Y= Anger expression out M= EMS (IS/SD)	30	b = 0.05 p = .802	b = 0.48 p = .128	b = -0.02 p = .934	b = 0.02, BCa CI [-0.121, 0.346]	NS
X = EN Y= Anger expression out M= Specific memories	30	b = -0.20 p = .087	b = -1.31 p = .007	b = -0.26 p = .354	b = 0.26, BCa CI [-0.002, 0.857]	NS
X = PN Y= Anger expression out M= EMS (MA)	30	b = 0.43 p = .059	b = 0.72 p = .087	b = -0.51 p = .134	b = 0.31, BCa CI [0.032, 0.830]	S medium effect size of κ^2 = .18, 95% BCa [0.029, 0.388]

X = PN **Y= Anger expression out** **M= EMS (EG)**	30	b = 0.47 p = .008	b = 0.43 p = .289	b = -0.41 p = .304	b = 0.20, BCa CI [-0.042, 0.761]	NS
X = PN **Y= Anger expression out** **M= EMS (IS/SD)**	30	b = -0.14 p = .505	b = 0.46 p = .144	b = -0.14 p = .676	b = -0.06, BCa CI [-0.500, 0.074]	NS
X = PN **Y= Anger expression out** **M= Specific memories**	30	b = -0.29 p = .028	b = -1.54 p = .002	b = -0.66 p = .048	b = 0.45, BCa CI [0.028, 1.165]	S large effect size of $\kappa^2 = 27$, 95% BCa [0.034, 0.515]

4.						
X = MC Y= Trait anger M= EMS (MA)	27	b = -0.23 p = .078	b = 0.40 p = .202	b = -0.12 p = .557	b = 0.09, BCa CI [-0.543, 0.300]	NS
X = MC Y= Trait anger M= EMS (EG)	27	b = -0.16 p = .108	b = 0.59 p = .163	b = -0.12 p = .546	b = -0.09, BCa CI [-0.346, 0.000]	NS
X = MC Y= Trait anger M= EMS (IS/SD)	27	b = 0.14 p = .291	b = -0.09 p = .785	b = -0.23 p = .276	b = 0.01, BCa CI [-0.114, 0.215]	NS

X = MC **Y= Trait anger** **M= Specific memories**	27	b = 0.13 p = .114	b = -1.53 p = <.001	b = -0.01 p = .947	b = -0.20, BCa CI [-0.538, -0.027]	S Medium/large effect size of κ^2 = 0.23, 95% BCa [0.036, 0.487]
X = FC **Y= Trait anger** **M= EMS (MA)**	25	b = -0.33 p = < .001	b = -0.07p = .858	b = -0.42 p = .054	b = 0.02, BCa CI [-0.318, 0.294]	NS
X = FC **Y= Trait anger** **M= EMS (EG)**	25	b = -0.28 p = .001	b = 0.48 p = .264	b = -0.26 p = .194	b = -0.14, BCa CI [-0.361, 0.063]	NS
X = FC **Y= Trait anger** **M= EMS (IS/SD)**	25	b = -0.02 p = .857	b = -0.07 p = .837	b = -0.40 p = .020	b = 0.00, BCa CI [-0.054, 0.019]	NS

X = FC **Y= Trait anger** **M= Specific memories**	25	b = 0.16 p = .010	b = -1.75 p = <.001	b = -0.11 p = .446		
X = MOP **Y= Trait anger** **M= EMS (MA)**	27	b = 0.39 p = .025	b = 0.454 p = .165	b = 0.01 p = .972	b = 0.15, BCa CI [-0.034, 0.554]	NS
X = MOP **Y= Trait anger** **M= EMS (EG)**	27	b = 0.16 p = .163	b = 0.64 p = .193	b = 0.06 p = .792	b = 0.10, BCa CI [0.002, 0.282]	S medium effect size of κ^2 = .09, 95% BCa [0.011, 0.229]
X = MOP **Y= Trait anger** **M= EMS**	27	b = 0.10 p = .506	b = 0.04 p = .893	b = 0.17 p = .486	b = -0.00, BCa CI [-0.214, 0.116]	NS

(IS/SD)						
X = MOP Y= Trait anger M= Specific memories	27	b = -0.18 p = .068	b = -1.63 p = <.001	b = -0.13 p = .511	b = 0.29, BCa CI [0.014, 0.767]	S medium effect size of κ^2 = .28, 95% BCa [0.038, 0.580]
X = FOP Y= Trait anger M= EMS (MA)	25	b = 0.42 p = .011	b = 0.27 p = .479	b = 0.29 p = .363	b = 0.11, BCa CI [--0.200, 0.565]	NS
X = FOP Y= Trait anger M= EMS (EG)	25	b = 0.38 p = .008	b = 0.74 p = .079	b = 0.12 p = .698	b = 0.28, BCa CI [0.047, 0.691]	S medium effect size of κ^2 = .19, 95% BCa [0.029, 0.425]
X = FOP Y= Trait	25	b = -0.10 p = .527	b = 0.03 p = .927	b = 0.40 p = .0156	b = -0.00, BCa CI [-0.226, 0.155]	NS

anger						
M= EMS						
(IS/SD)						
X = FOP	25	b = -0.17 p = .123	b = -1.85 p = <.001	b = 0.09 p = .641	b = 0.31, BCa CI [-	NS
Y= Trait					0.079, 0.740]	
anger						
M= Specific						
memories						
X = MC	27	b = -0.23 p = .078	b = 0.74 p = .027	b = 0.09 p = .691	b = -0.17, BCa CI	S
Y= Anger					[-0.518, -0.028]	medium effect size
expression out						of κ^2 = .16, 95%
						BCa [0.029, 0.399]
M= EMS						
(MA)						
X = MC	27	b = -0.16 p = .108	b = -0.02 p = .943	b = -0.2 p = .943	b = -0.07, BCa CI	NS
Y= Anger					[-0.337, 0.035]	
expression out						
M= EMS (EG)						
X = MC	27	b = 0.14 p = .291	b = 0.151p = .130	b = -0.16 p = .469	b = 0.71, BCa CI [-	NS

Y= Anger expression out					0.046, 0.354]	
M= EMS (IS/SD)						
X = MC **Y= Anger expression out**	27	b = 0.13 p = .114	b = -1.33 p = .010	b = 0.89 p = .661	b = 0.71, BCa CI [-0.046, 0.001]	NS
M= number of specific memories						
X = FC **Y= Anger expression out**	25	b = -0.33 p = .001	b = 0.39 p = .356	b = -0.18 p = .424	b = - 0.13, BCa CI [-0.493, 0.117]	NS
M= EMS (MA)						
X = FC **Y= Anger**	25	b = -0.28 p = .001	b = -0.28 p = .558	b = -0.38 p = .085	b = - 0.08, BCa CI [-0.122, 0.345]	NS

expression out **M= EMS (EG)**						
X = FC **Y= Anger expression out** **M= EMS (IS/SD)**	25	b = -0.02 p = .857	b = 0.65 p = .068	b = -0.2 p = .074	b = - 0.01, BCa CI [-0.253, 0.079]	NS
X = FC **Y= Anger expression out** **M= number of specific memories**	25	b = 0.16 p = .010	b = -1.32 p = .021	b = -0.09 p = .617	b = - 0.22, BCa CI [-0.689, 0.004]	NS
X = MOP **Y= Anger expression out**	27	b = 0.34 p = .025	b = 0.57 p = .088	b = 0.22 p = .390	b = 0.19, BCa CI [-0.006, 0.679]	NS

M= EMS (MA)						
X = MOP Y= Anger expression out M= EMS (EG)	27	b = 0.16 p = .163	b = 0.29 p = .522	b = 0.37 p = .152	b = 0.05, BCa CI [-0.030, 0.289]	NS
X = MOP Y= Anger expression out	27	b = -0.10 p = .506	b = 0.54 p = .083	b = 0.47 p = .051	b = -0.06, BCa CI [-0.386, 0.094]	NS
M= EMS (IS/SD)						
X = MOP Y= Anger expression out M= number of specific memories	27	b = -0.18 p = .068	b = -1.11 p = .028	b = 0.22 p = .356	b = 0.20, BCa CI [-0.019, 0.717]	NS

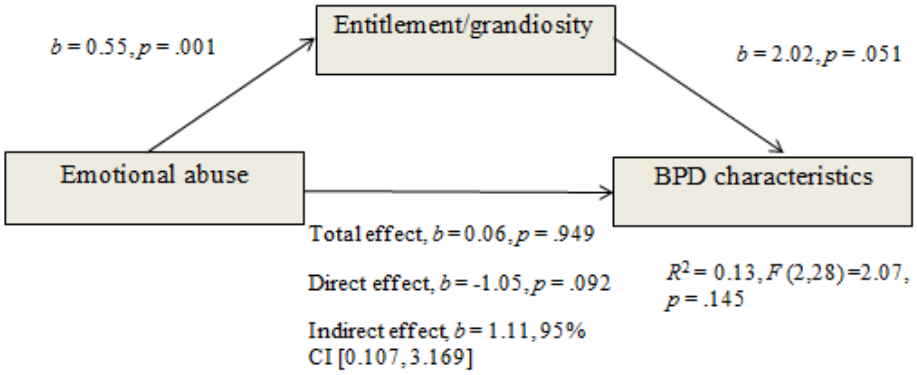
X = FOP Y= Anger expression out M= EMS (MA)	25	b = 0.42 p = .011	b = 0.53 p = .168	b = 0.13 p = .682	b = 0.22, BCa CI [-0.037, 0.700]	NS
X = FOP Y= Anger expression out M= EMS (EG)	25	b = 0.38 p = .008	b = -0.02 p = .292	b = 0.36 p = .292	b = -0.01, BCa CI [-0.466, 0.217]	NS
X = FOP Y= Anger expression out M= EMS (IS/SD)	25	b = -0.10 p = .527	b = 0.75 p = .042	b = 0.42 p = .115	b = -0.07, BCa CI [-0.397, 0.130]	NS

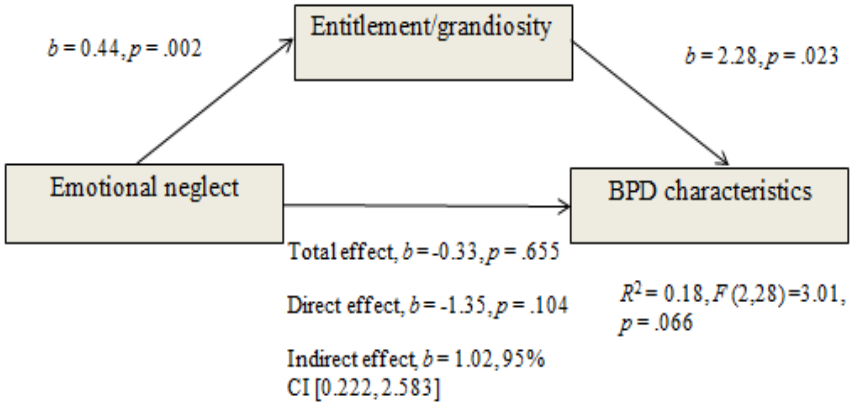
X = FOP Y= Anger expression out M= number of specific memories	25	b = -0.17 p = .123	b = -1.39 p = .009	b = 0.12 p = .640	b = 0.23, BCa CI [-0.030, 0.890]	NS

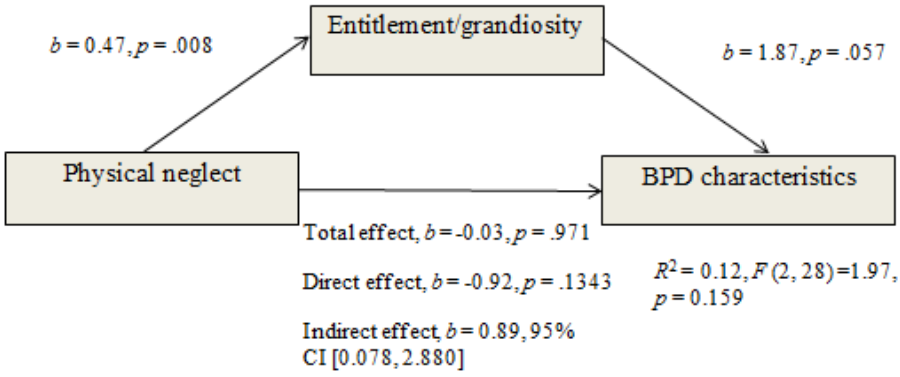
Note: EA (emotional abuse), PA (physical abuse), SA (sexual abuse), EN (emotional neglect), PN physical neglect, MA mistrust/abuse, EG entitlement/grandiosity, IS/SD insufficient self-control/self-discipline, MC mother care, FC father care, MOP mother overprotection, FOP father overprotection. All CI at 95%, Bootstrap sample of 1000.

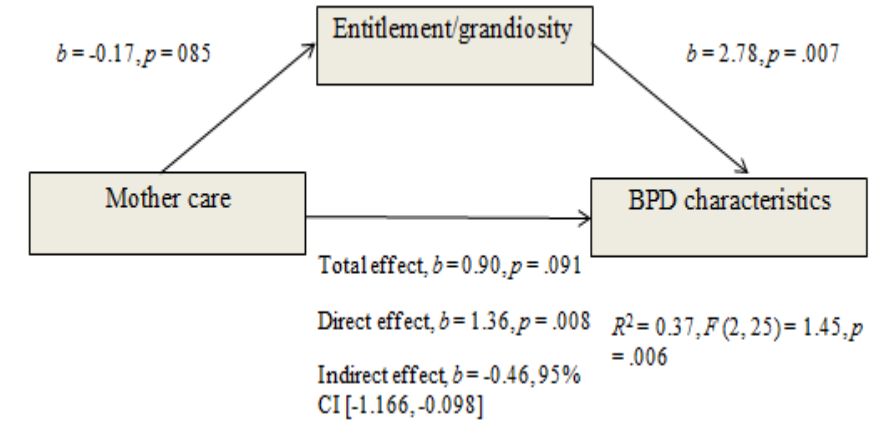
Appendix L. Figures displaying significant mediational analysis

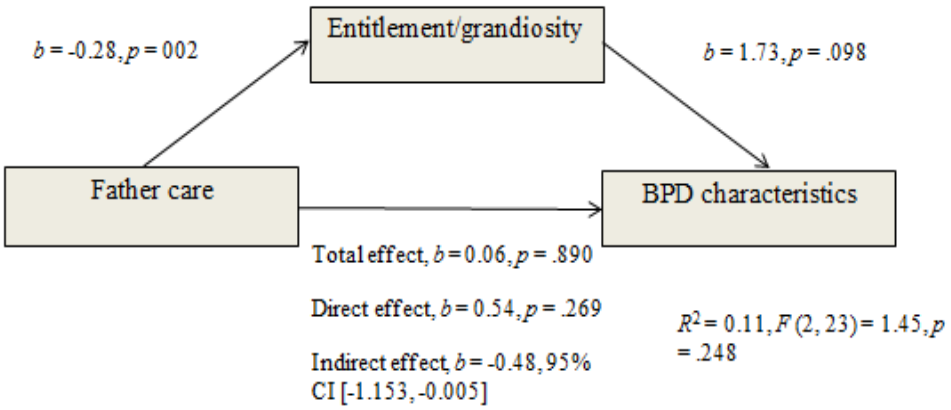
Note: "total effect" refers to the relationship between X and Y (pathway c) when controlling for the mediator. The "direct effect" (pathway *c'*) refers to this relationship with the mediator included. The referenced R^2 refers to the model with all of the variables included.

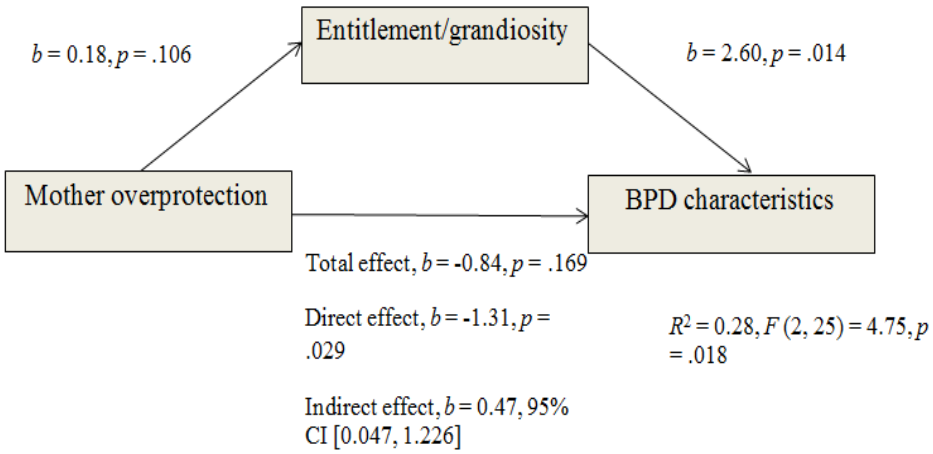

Entitlement/grandiosity
b = 0.55, p = .001
b = 2.02, p = .051
Emotional abuse
BPD characteristics
Total effect, b = 0.06, p = .949
Direct effect, b = -1.05, p = .092
Indirect effect, b = 1.11, 95% CI [0.107, 3.169]
R2 = 0.13, F (2,28)=2.07, p = .145

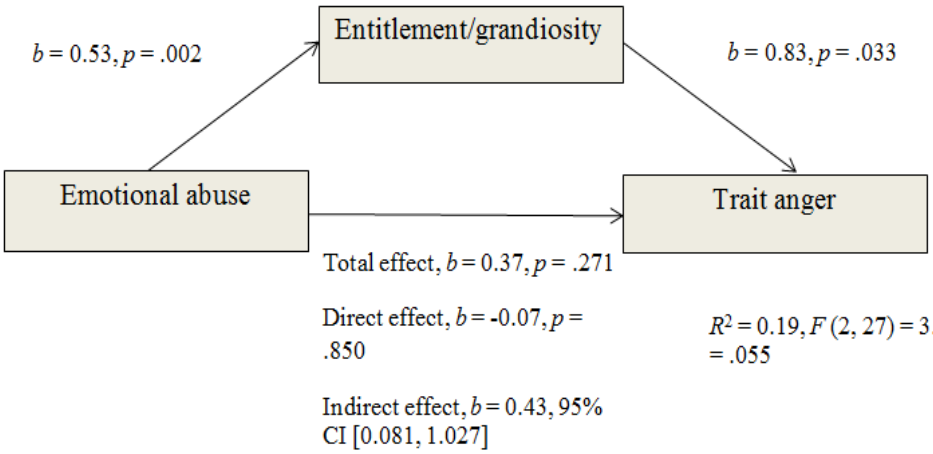

Entitlement/grandiosity
b = 0.44, p = .002
b = 2.28, p = .023
Emotional neglect
BPD characteristics
Total effect, b = -0.33, p = .655
Direct effect, b = -1.35, p = .104
Indirect effect, b = 1.02, 95% CI [0.222, 2.583]
R2 = 0.18, F (2,28)=3.01, p = .066

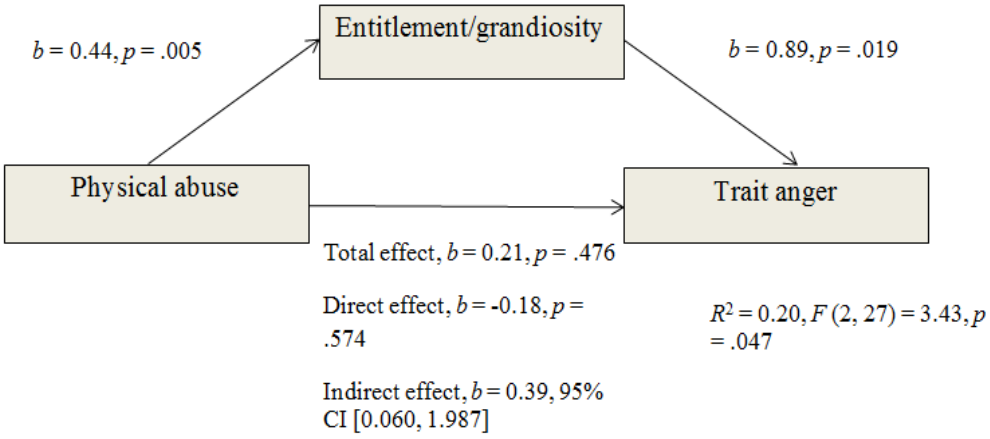

Entitlement/grandiosity
b = 0.47, p = .008
b = 1.87, p = .057
Physical neglect
BPD characteristics
Total effect, b = -0.03, p = .971
Direct effect, b = -0.92, p = .1343
Indirect effect, b = 0.89, 95% CI [0.078, 2.880]
R2 = 0.12, F (2, 28)=1.97, p = 0.159

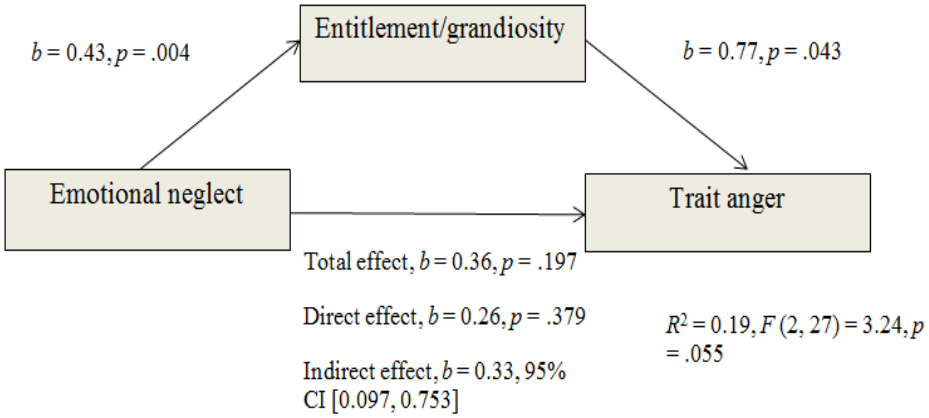

Entitlement/grandiosity
b = -0.17, p = 085
b = 2.78, p = .007
Mother care
BPD characteristics
Total effect, b = 0.90, p = .091
Direct effect, b = 1.36, p = .008
Indirect effect, b = -0.46, 95% CI [-1.166, -0.098]
R2 = 0.37, F (2, 25) = 1.45, p = .006

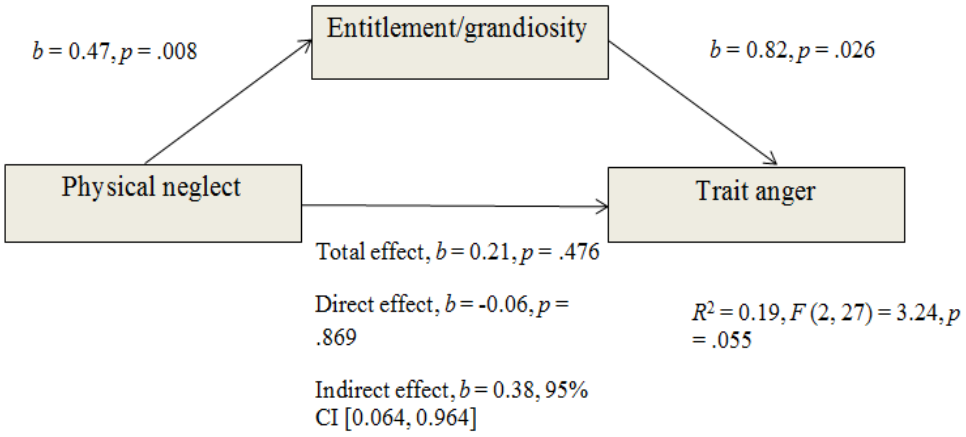

Entitlement/grandiosity
b = -0.28, p = 002
b = 1.73, p = .098
Father care
BPD characteristics
Total effect, b = 0.06, p = .890
Direct effect, b = 0.54, p = .269
Indirect effect, b = -0.48, 95% CI [-1.153, -0.005]
R2 = 0.11, F (2, 23) = 1.45, p = .248

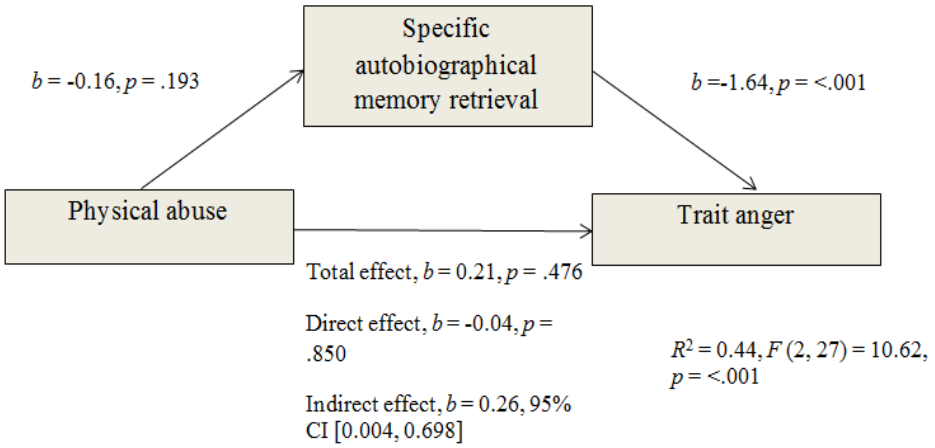

Entitlement/grandiosity
b = 0.18, p = .106
b = 2.60, p = .014
Mother overprotection
BPD characteristics
Total effect, b = -0.84, p = .169
Direct effect, b = -1.31, p = .029
Indirect effect, b = 0.47, 95% CI [0.047, 1.226]
R2 = 0.28, F (2, 25) = 4.75, p = .018

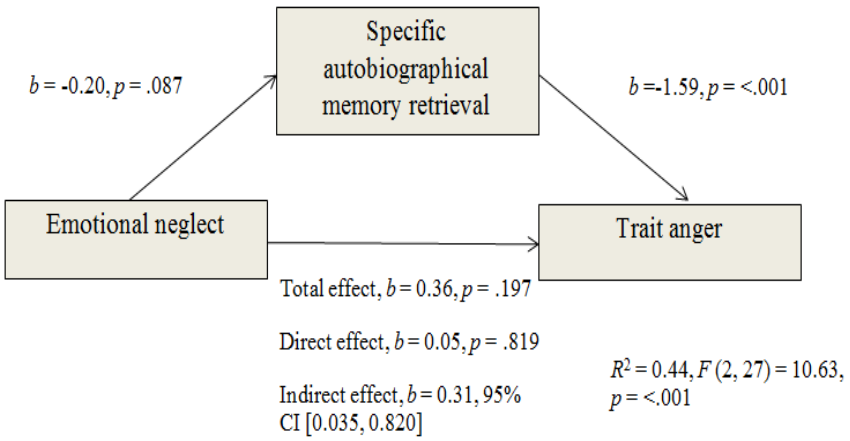

Entitlement/grandiosity
b = 0.53, p = .002
b = 0.83, p = .033
Emotional abuse
Trait anger
Total effect, b = 0.37, p = .271
Direct effect, b = -0.07, p = .850
Indirect effect, b = 0.43, 95% CI [0.081, 1.027]
R² = 0.19, F (2, 27) = 3.25, p = .055

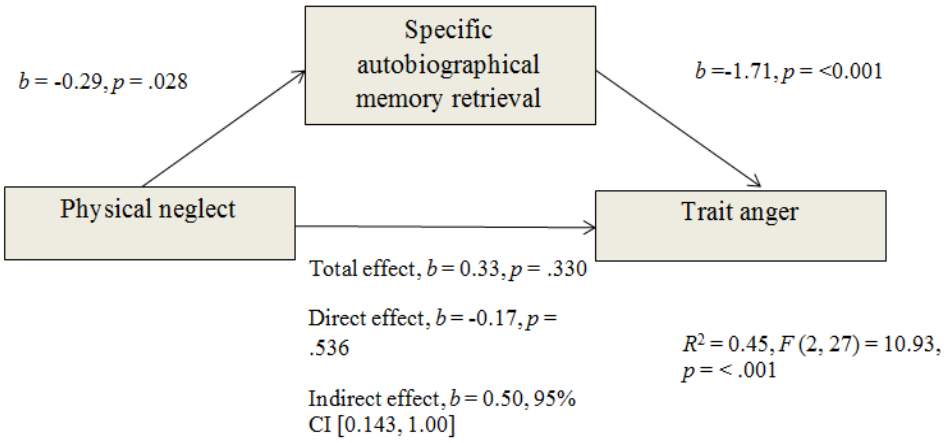

Entitlement/grandiosity
b = 0.44, p = .005
b = 0.89, p = .019
Physical abuse
Trait anger
Total effect, b = 0.21, p = .476
Direct effect, b = -0.18, p = .574
Indirect effect, b = 0.39, 95% CI [0.060, 1.987]
R² = 0.20, F (2, 27) = 3.43, p = .047

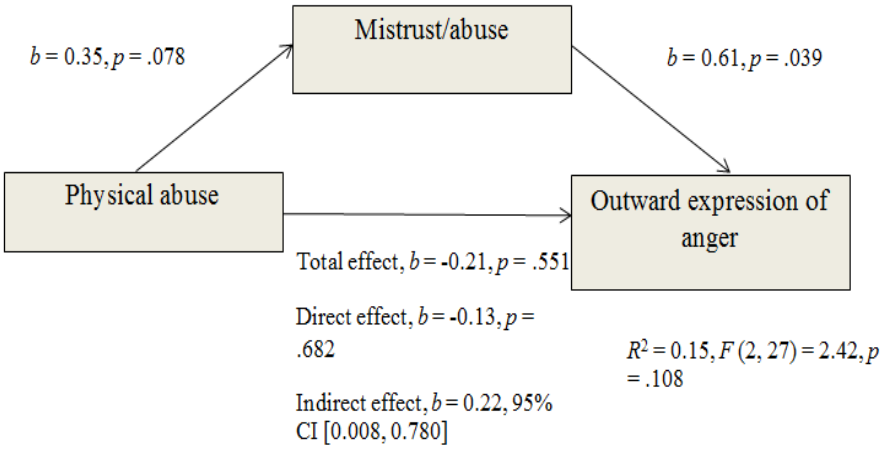

Entitlement/grandiosity
b = 0.43, p = .004
b = 0.77, p = .043
Emotional neglect
Trait anger
Total effect, b = 0.36, p = .197
Direct effect, b = 0.26, p = .379
Indirect effect, b = 0.33, 95% CI [0.097, 0.753]
R² = 0.19, F (2, 27) = 3.24, p = .055

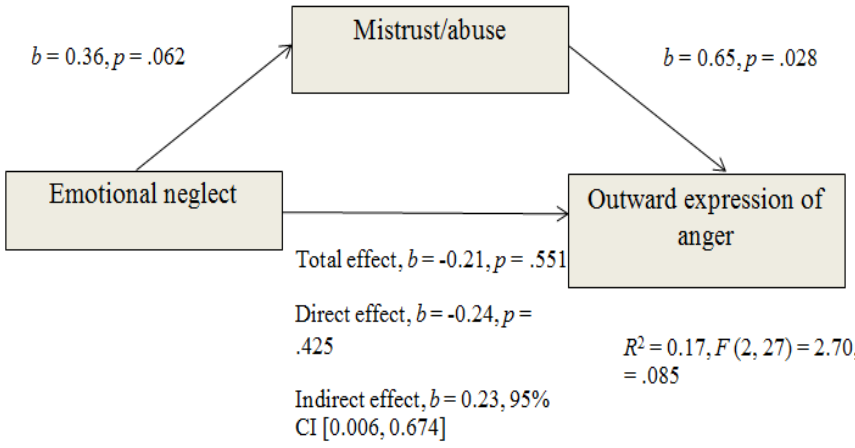

Entitlement/grandiosity
b = 0.47, p = .008
b = 0.82, p = .026
Physical neglect
Trait anger
Total effect, b = 0.21, p = .476
Direct effect, b = -0.06, p = .869
Indirect effect, b = 0.38, 95% CI [0.064, 0.964]
R2 = 0.19, F (2, 27) = 3.24, p = .055

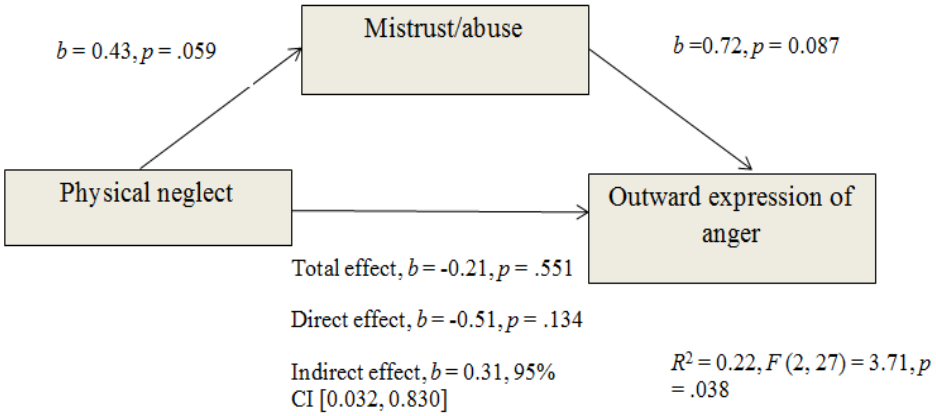

Specific autobiographical memory retrieval
b = -0.16, p = .193
b =-1.64, p = <.001
Physical abuse
Trait anger
Total effect, b = 0.21, p = .476
Direct effect, b = -0.04, p = .850
Indirect effect, b = 0.26, 95% CI [0.004, 0.698]
R2 = 0.44, F (2, 27) = 10.62, p = <.001

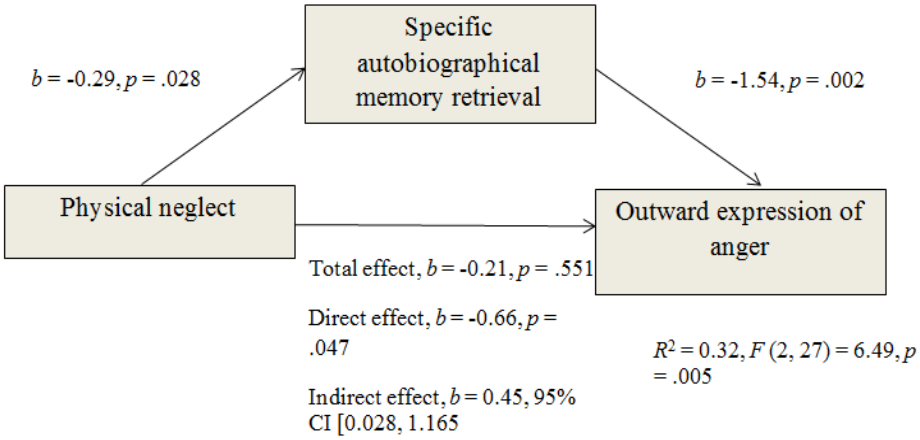

Specific autobiographical memory retrieval
b = -0.20, p = .087
b =-1.59, p = <.001
Emotional neglect
Trait anger
Total effect, b = 0.36, p = .197
Direct effect, b = 0.05, p = .819
Indirect effect, b = 0.31, 95% CI [0.035, 0.820]
R2 = 0.44, F (2, 27) = 10.63, p = <.001

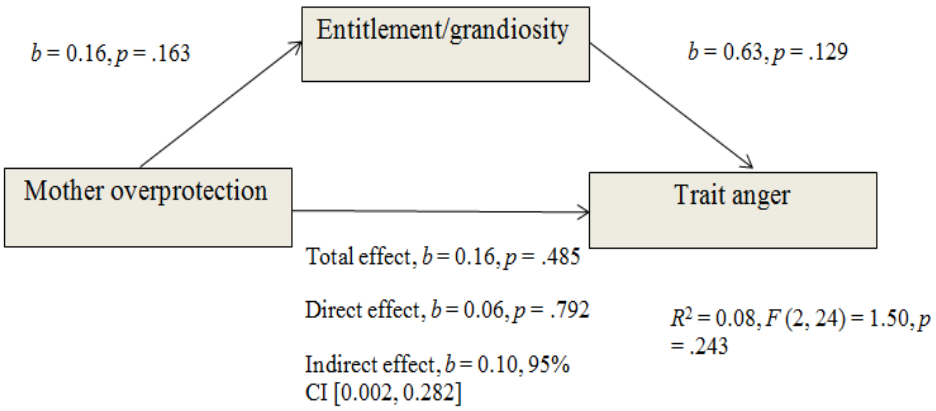

Specific autobiographical memory retrieval
b = -0.29, p = .028
b =-1.71, p = <0.001
Physical neglect
Trait anger
Total effect, b = 0.33, p = .330
Direct effect, b = -0.17, p = .536
Indirect effect, b = 0.50, 95% CI [0.143, 1.00]
R² = 0.45, F (2, 27) = 10.93, p = < .001

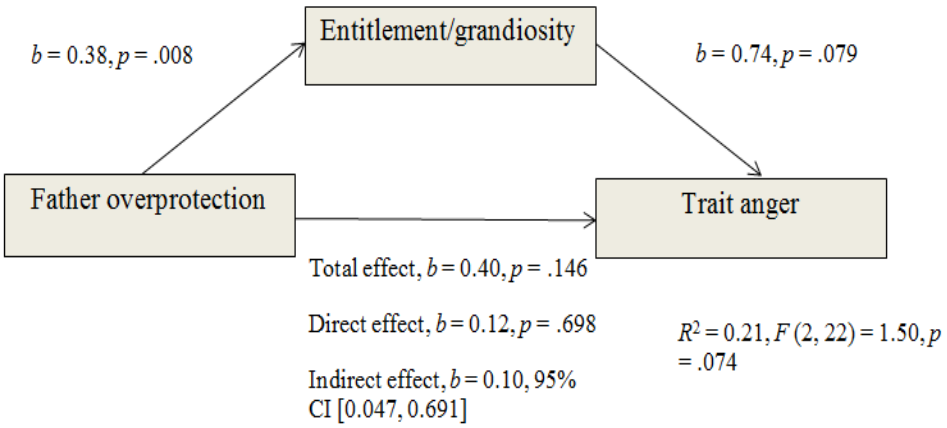

Mistrust/abuse
b = 0.35, p = .078
b = 0.61, p = .039
Physical abuse
Outward expression of anger
Total effect, b = -0.21, p = .551
Direct effect, b = -0.13, p = .682
Indirect effect, b = 0.22, 95% CI [0.008, 0.780]
R² = 0.15, F (2, 27) = 2.42, p = .108

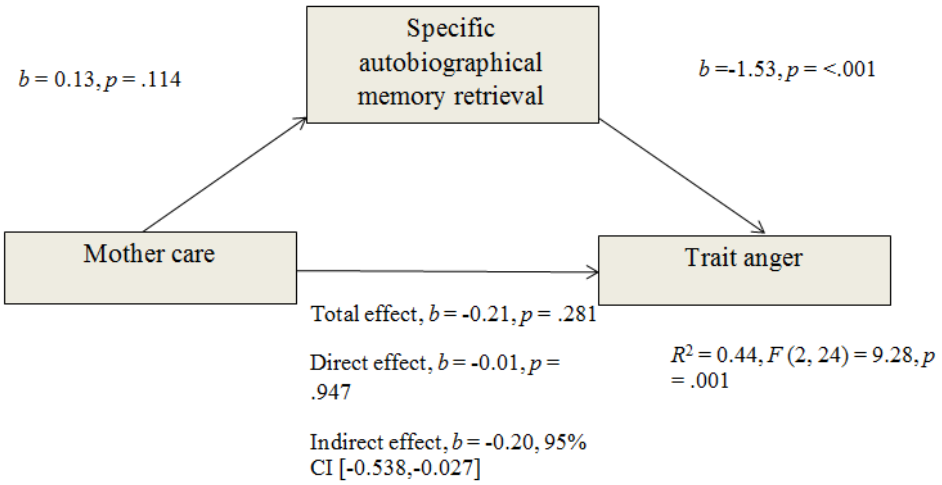

Mistrust/abuse
b = 0.36, p = .062
b = 0.65, p = .028
Emotional neglect
Outward expression of anger
Total effect, b = -0.21, p = .551
Direct effect, b = -0.24, p = .425
Indirect effect, b = 0.23, 95% CI [0.006, 0.674]
R² = 0.17, F (2, 27) = 2.70, p = .085

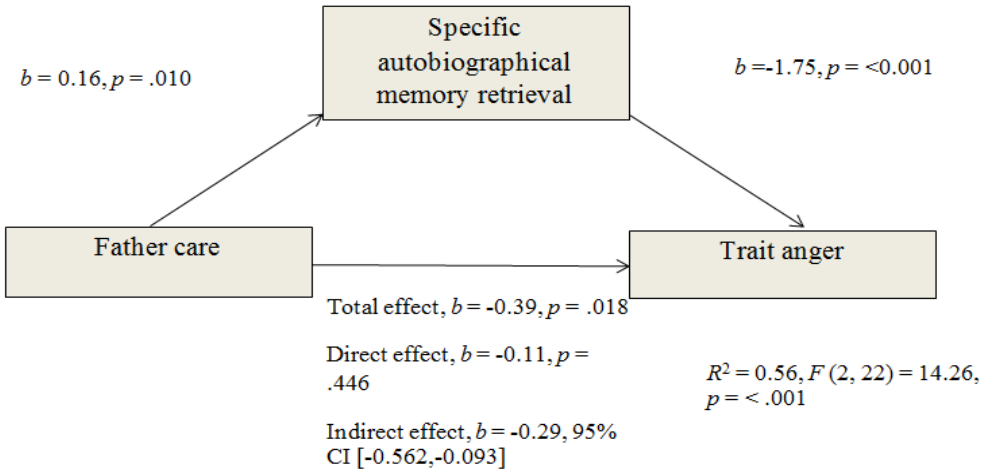

Mistrust/abuse
b = 0.43, p = .059
b =0.72, p = 0.087
Physical neglect
Outward expression of anger
Total effect, b = -0.21, p = .551
Direct effect, b = -0.51, p = .134
Indirect effect, b = 0.31, 95% CI [0.032, 0.830]
R² = 0.22, F (2, 27) = 3.71, p = .038

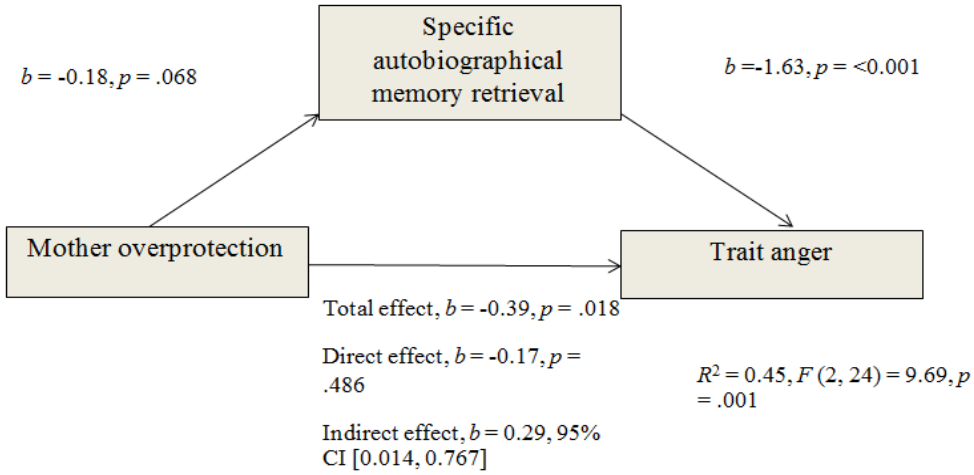

Specific autobiographical memory retrieval
b = -0.29, p = .028
b = -1.54, p = .002
Physical neglect
Outward expression of anger
Total effect, b = -0.21, p = .551
Direct effect, b = -0.66, p = .047
Indirect effect, b = 0.45, 95% CI [0.028, 1.165
R² = 0.32, F (2, 27) = 6.49, p = .005

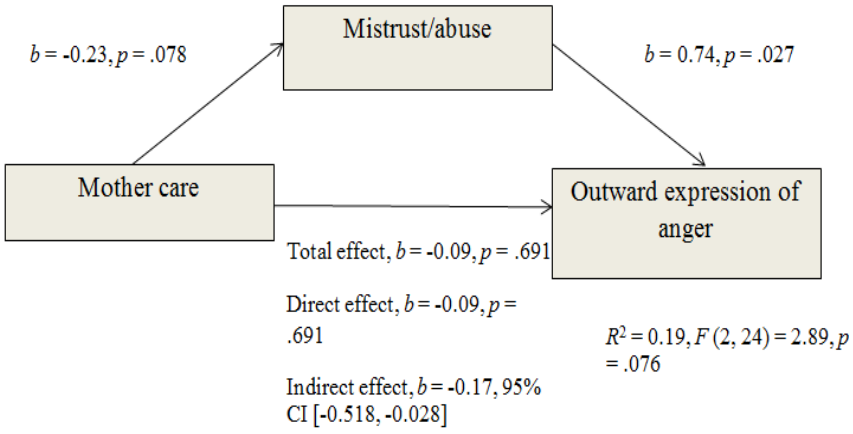

Entitlement/grandiosity
b = 0.16, p = .163
b = 0.63, p = .129
Mother overprotection
Trait anger
Total effect, b = 0.16, p = .485
Direct effect, b = 0.06, p = .792
Indirect effect, b = 0.10, 95% CI [0.002, 0.282]
R² = 0.08, F (2, 24) = 1.50, p = .243


Entitlement/grandiosity
b = 0.38, p = .008
b = 0.74, p = .079
Father overprotection
Trait anger
Total effect, b = 0.40, p = .146
Direct effect, b = 0.12, p = .698
Indirect effect, b = 0.10, 95% CI [0.047, 0.691]
R² = 0.21, F (2, 22) = 1.50, p = .074


Specific autobiographical memory retrieval
b = 0.13, p = .114
b =-1.53, p = <.001
Mother care
Trait anger
Total effect, b = -0.21, p = .281
Direct effect, b = -0.01, p = .947
Indirect effect, b = -0.20, 95% CI [-0.538,-0.027]
R² = 0.44, F (2, 24) = 9.28, p = .001


Specific autobiographical memory retrieval
b = 0.16, p = .010
b =-1.75, p = <0.001
Father care
Trait anger
Total effect, b = -0.39, p = .018
Direct effect, b = -0.11, p = .446
Indirect effect, b = -0.29, 95% CI [-0.562,-0.093]
R² = 0.56, F (2, 22) = 14.26, p = < .001





** Correlation is significant at the 0.01 level (two-tailed), * Correlation is significant at the 0.05 level (two-tailed).

Figure L1. Significant mediator models.

Appendix M. Author guideline notes for submission to the British Journal of Clinical Psychology

Author Guidelines (taken from http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%292044-8260/homepage/ForAuthors.html)

The British Journal of Clinical Psychology publishes original contributions to scientific knowledge in clinical psychology. This includes descriptive comparisons, as well as studies of the assessment, aetiology and treatment of people with a wide range of psychological problems in all age groups and settings. The level of analysis of studies ranges from biological influences on individual behaviour through to studies of psychological interventions and treatments on individuals, dyads, families and groups, to investigations of the relationships between explicitly social and psychological levels of analysis.

The following types of paper are invited:

• Papers reporting original empirical investigations

• Theoretical papers, provided that these are sufficiently related to the empirical data

• Review articles which need not be exhaustive but which should give an interpretation of the state of the research in a given field and, where appropriate, identify its clinical implications

• Brief reports and comments

1. Circulation

The circulation of the Journal is worldwide. Papers are invited and encouraged from authors throughout the world.

2. Length

Papers should normally be no more than 5000 words (excluding abstract, reference list, tables and figures), although the Editor retains discretion to publish papers beyond this length in cases where the clear and concise expression of the scientific content requires greater length.

3. Submission and reviewing

All manuscripts must be submitted via http://www.editorialmanager.com/bjcp/. The Journal operates a policy of anonymous peer review. Before submitting, please read the terms and conditions of submission and the declaration of competing interests.

4. Manuscript requirements

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• Tables should be typed in double spacing, each on a separate page with a self-explanatory title. Tables should be comprehensible without reference to the text. They should be placed at the end of the manuscript with their approximate locations indicated in the text.

• Figures can be included at the end of the document or attached as separate files, carefully labelled in initial capital/lower case lettering with symbols in a form consistent with text use. Unnecessary background patterns, lines and shading should be avoided. Captions should be listed on a separate sheet. The resolution of digital images must be at least 300 dpi.

• All papers must include a structured abstract of up to 250 words under the headings: Objectives, Methods, Results, Conclusions. Articles which report original scientific research should also include a heading 'Design' before 'Methods'. The 'Methods' section for systematic reviews and theoretical papers should include, as a minimum, a description of the methods the author(s) used to access the literature they drew upon. That is, the abstract should summarize the databases that were consulted and the search terms that were used.

• All Articles must include Practitioner Points – these are 2–4 bullet points to detail the positive clinical implications of the work, with a further 2–4 bullet points outlining cautions or limitations of the study. They should be placed below the abstract, with the heading ‘Practitioner Points’.

• For reference citations, please use APA style. Particular care should be taken to ensure that references are accurate and complete. Give all journal titles in full and provide DOI numbers where possible for journal articles.

• SI units must be used for all measurements, rounded off to practical values if appropriate, with the imperial equivalent in parentheses.

• In normal circumstances, effect size should be incorporated.

• Authors are requested to avoid the use of sexist language.

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. Brief reports and comments

These allow publication of research studies and theoretical, critical or review comments with an essential contribution to make. They should be limited to 2000 words, including references. The abstract should not exceed 120 words and should be structured under these headings: Objective, Method, Results, Conclusions. There should be no more than one table

or figure, which should only be included if it conveys information more efficiently than the text. Title, author name and address are not included in the word limit.

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