Volume 1: Research Component

The role of attachment, emotion regulation and recovery style in psychosis

by

Julia Elizabeth Jones

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Department of Clinical Psychology
School of Psychology
The University of Birmingham
Edgbaston
Birmingham
B15 2TT
England
UK
+44 (0)121 414 4915

Overview

This thesis was submitted as part of the Doctorate in Clinical Psychology at the School of Psychology, University of Birmingham. It comprises of two volumes. The first volume is the research component and includes an empirical study and a review of the literature. The second volume is the clinical component and includes five clinical practice reports.

Volume I: Research Component

The literature review explores the concept of recovery style, the adaptation process that takes place following an acute psychotic episode. The notion of two distinct styles of recovery ('integration' and 'sealing-over') grew out of the observational and empirical work of McGlashan and his colleagues in the 1970's. Since then, research has gathered pace, and this presents a timely opportunity to review the literature on recovery style in psychosis populations. The review presents findings from the literature on prevalence rates of integration and sealing-over. It also highlights potential variables that may either predispose an individual to a specific style of recovery or be a consequence of adopting a specific recovery style. Methodological and clinical implications are highlighted, and suggestions regarding the direction of future research are proposed.

The empirical paper presents a quantitative study that examines whether attachment styles and emotion regulation are associated with emotional distress (i.e. depression and anxiety) and positive symptoms of psychosis, in a sample recovering from a first-episode psychosis. The paper provides support for the mediating role of emotion regulation (functional vs. dysfunctional) in the relationship between attachment styles and emotional distress, and symptoms of psychosis. Findings are presented in the context of previous theoretical and empirical literature, with specific emphasis on emotional dysfunction and dysregulation in

first-episode samples with an insecure attachment. Finally, methodological limitations, clinical implications and directions for future research are discussed.

Volume II: Clinical Component

The second volume of the thesis presents five clinical practice reports. Firstly, a case formulation from both a cognitive-behavioural and psychodynamic perspective is presented for a 69 year old female who presented to an Older Adult CMHT with depression, anxiety and cognitive impairment. Secondly, a service-evaluation was carried out to evaluate staff knowledge, skills and attitudes of working with older adults with a diagnosis of personality disorder within a Community Enablement and Recovery Team. Thirdly, a case study is presented of a young female who was receiving intensive input from a Home Treatment Team following presentation to Accident and Emergency for suicidal ideation and self-injurious behaviour. An integrative model of cognitive-behavioural and dialectical-behavioural principles informed assessment, formulation and intervention. The fourth report presents a single-case experimental design investigating the effectiveness of a cognitive-behavioural intervention for social anxiety and paranoid delusions in first-episode psychosis. Lastly, an abstract is included that outlines a functional analysis and positive behavioural support plan for a young male referred to a Community Forensic Team for Learning Disabilities, following staff reports of a recent increase in violent and challenging behaviours.

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Determinants and Consequences of Recovery Style in Psychosis: A Systematic Review of the Literature

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Abstract

Objective: The review systematically and critically appraised the research investigating the prevalence of a sealing-over or integrative recovery style in individuals following psychosis, and identified potential determinants and consequences of adopting either recovery style.

Method: Two databases were searched (PsychINFO and MEDLINE), including inspection of reference lists for relevant papers. Studies published by June 2014 were selected by using a keyword search for English language peer-reviewed articles. Only studies explicitly investigating a psychotic population with the use of an empirical measure of recovery style were included in the review.

Results: Nineteen papers met the inclusion criteria. All studies were subjected to an assessment of quality, which identified that studies generally possessed low statistical power with multiple threats to internal validity. Only 8 studies reported prevalence rates of recovery styles. Sealing-over ranged from 7%-47% (percentage mean = 28.2%) and integration ranged from 11%-87% (percentage mean = 72.8%). Recovery styles were notably influenced by attachment and evaluative beliefs, and were susceptible to change over time. Despite mixed findings in relation to recovery style and outcome, it was clear that sealing-over was associated with more severe negative symptoms of psychosis and poorer global functioning. Studies demonstrated associations of varying strength and found contradictory results in variables considered to predispose or be an outcome of a particular recovery style.

Discussion: The review highlighted that individuals are rarely identified as exclusively sealing-over or integrating in their recovery style. Future research should include more rigorous methodological designs that could determine causality in larger samples or investigate the qualitative differences in recovery style of individuals with an experience of psychosis.

2. Introduction

1.1 Recovery Style: Definition and overview

Recovery style refers to the individual recovery and adaptation process that takes place following an acute psychotic episode (Levy, McGlashan & Carpenter, 1975). In their original paper, McGlashan and colleagues, with their roots in psychoanalysis, define recovery style as "*distinct styles employed by people in coping with various kinds of intrapsychic, physical, and environmental stress* (McGlashan .., 1975, p. 1269)" where recovery is understood as a "*means of psychological mastery over psychotic experiences* (Levy et al., 1975, p. 307)".

Much of McGlashan's early theories on two distinct styles of coping post psychosis were based on his experience and observations of working with psychotic patients on an inpatient unit, Chestnut Lodge in Maryland (US). Patients were aged 18-60 years and admitted to the unit early in a psychotic episode. The unit notoriously adopted a therapeutic community approach where patients received psychoanalytically-oriented psychotherapy, group and family psychotherapy, and occupational and recreational input, in the absence of any pharmacological or electroconvulsive treatment (McGlashan & Levy, 1977).

Recovery was conceived to be on a continuum with 'integration' at one end and 'sealing over' at the other end (Levy et al., 1975). Although, McGlashan was the first to define and conceptualise recovery style in the literature, the concept was first acknowledged by Mayer-Gross in 1920, who defined four modes of reacting to a psychotic experience. Two of these modes are comparable to sealing-over and integration respectively; (1) denial of the psychotic experience itself, and (2) 'melting' of the illness into a continuous set of life values. Semrad et al. (1964; 1966; 1969) furthered the concept by describing integration as a person's ability to understand the continuity between the psychosis and the life before and after it.

Combining earlier theoretical, dynamic and defensive aspects of sealing-over and integration with clinical observations and case studies, McGlashan (1975; 1976) was able to conceptualise and define these two distinct styles of recovery. Distinguishing features of recovery style reflected (1) a patient's experience of his/her psychosis, incorporating the impact and meaning the experience had on the individual and their sense of responsibility, and (2) aspects of the patient's social-relatedness, incorporating the patient's own attitudes towards mental health and towards seeking help from others. From observing individual differences on these aspects, McGlashan and colleagues were able to provide specific descriptions of integration and sealing-over recovery styles (McGlashan et al., 1975; 1976; Levy et al., 1975., McGlashan & Levy, 1977; McGlashan, 1987)

1.2 Integration

An integrated recovery style is characterised by an individual's curiosity about their psychotic experiences, with an attempt to use the experience as a source of new information about them, and provide opportunity for personal growth. There is recognition of continuity from premorbid experiences, through to the experience of psychosis and beyond. Integrators tend to accept their own vulnerability and possess a sense of personal responsibility for their experiences. The psychosis is often considered with both positive and negative aspects (McGlashan et al., 1975; Levy et al., 1975). Therapeutically, integration is reflected in a degree of interpersonal involvement and therapeutic engagement (Levy et al., 1975).

1.3 Sealing-over

A sealing-over recovery style is characterised by a reluctance to discuss thoughts and feelings associated with the psychotic experience. The psychosis may be consciously or

unconsciously denied by the use of suppression and repression (Levy et al., 1975). The psychotic experience is isolated from life before and after the experience, with a failure to recognise a relationship between their psychosis and prior life difficulties. The psychosis is rarely treated as a source of new information about the self and is unlikely to be placed into a personal context. (McGlashan et al., 1975; Levy et al., 1975). There is a tendency to view symptoms (e.g. insomnia, agitation) as the cause rather than the result of the illness, with overall cause and blame for the psychosis attributed externally, and beyond their control (McGlashan, 1987). Individuals who seal-over may seek to return promptly to their premorbid life, and often appear to do so with remarkable success, without eliciting the help of others (Levy et al., 1975). Individuals who seal-over may display limited awareness of the details of the psychotic episode, and are less likely to acknowledge any positive aspects of the experience (McGlashan & Levy, 1977).

1.4 Measuring recovery style (see Appendix 1)

McGlashan's clinical observations of individual tendencies to either integrate or seal-over following an acute psychotic episode led to an attempt to operationalise the complex theoretical constructs to allow for empirical investigation (McGlashan et al., 1975). To date, there are few established measures of recovery style that are supported both theoretically and empirically. Of the current measures of recovery style, the following measures are noteworthy for sound psychometric properties.

Integration / Sealing Over Scale (ISOS; McGlashan et al., 1977; 1987)

The ISOS is an interview-based measure completed by the observer/interviewer. It uses a six-point scale with one representing full integration at one end, and six representing full sealing-

over at the other end of the continuum. The interviewer assesses a client over a number of concepts related to attitude and illness, and from this is able to form a clinical judgement to derive a single score indicative of the client's global recovery style. This classifies an individual into one of 6 recovery styles: (1) integration, (2) tends towards integration, (3) mixed picture in which integration predominates, (4) mixed picture in which sealing-over predominates, (5) tends towards sealing-over, and (6) sealing-over. The scale has good validity, inter-rater reliability and an internal consistency of α=.86 (McGlashan et al., 1977; 1987).

Recovery Style Questionnaire (RSQ; Drayton et al., 1998)

The RSQ is a 39-item self-report measure specifically designed as an alternative to the lengthy ISOS measure, pioneered by McGlashan et al. (1977; 1987). Participants are required to agree or disagree with statements reflecting attitudes towards their psychotic experiences. Consistent with the ISOS, the RSQ measures 13 subscales; curiosity, education, optimism, impact, fear, liking, continuity, ownership, responsibility, help-seeking, blame and satisfaction. The RSQ can be scored categorically or dimensionally. Using a formula, scores can be converted into a total percentage score ranging from 1-100% where higher scores reflect a greater degree of integration. Alternatively, total scores can range from 1 to 6, with low scores reflecting integration and high scores reflecting sealing-over. The RSQ has been shown to have psychometrically strong properties and has been validated against the ISOS (Drayton et al.,1998; Modestin et al., 2009).

Bell Object Relations and Reality Testing Inventory (BORTTI; Bell, 1995)

This is a self-report measure based on the constructs of ego function outlined by Bellack et al. (1973), and is primarily a measure of object relations and reality testing deficits. It consists of 90 descriptive true-false statements answered in accordance with the client's most recent experience. The instrument is used to describe client characteristics, make diagnostic suggestions, and provide explicit individualised treatment recommendations. Scores yield seven subscales from which three pairs of clusters arise: residual impairment, social withdrawal and egocentrism, where differences in recovery are acknowledged in the residual impairment domain (Bell et al., 2001b). Integrated and sealing-over recovery are characterised by differences in affect tolerance, insight into illness and reality testing. In the measure, integration is characterised by a client's recognition of the importance of relationships, and an ability to negotiate these relationships and their illness (Bell & Zito, 2005). Alternatively, sealing-over is characterised by clients who achieve stability by denying symptoms and minimizing, or even excluding interpersonal relationships. The instrument has received validation in a psychosis population, with good to excellent split-half reliability, adequate test-retest reliability, and internal consistencies ranging from .78 to .90 (Bell, 1995; Bell et al., 2001b).

1.5 Theoretical and early empirical findings of impact of recovery style on outcome

McGlashan and Levy (1977) recognised that integrative and sealing-over tendencies are not specific to psychosis but can be applicable to other stressful life events or conflicts. They also noted that an individual was unlikely to be polarised at one extreme of the dimension, with many individuals potentially presenting with mixed sealing-over and integration tendencies, whereby some aspects of the psychosis may be integrated into a personal context and other

aspects sealed-over. McGlashan and Levy (1977) recognised that staff may inadvertently encourage patients to seal-over. On the one hand, the tendency for those who seal-over to reject help and nurture from staff, may impact on the opportunity to establish a therapeutic relationship. Staff may experience feelings of helplessness or anger towards the client, and by default may elicit a rejecting response. On the other hand, staff may value the quality of autonomy and collude with those who seal-over, where emphasis is placed on social recovery.

McGlashan's (1987) earliest piece of empirical research investigated recovery style and long-term outcome (15 year average) in a mixed clinical sample where individuals had either a diagnosis of psychosis, bipolar disorder or personality disorder. He found that those individuals identified as having an integrated recovery style had overall better social functioning and reduced relapse rates compared to those identified as having a sealing-over recovery style. He concluded that integration and sealing-over were best conceived as enduring personality trait characteristics, and acknowledged the potential value of determining an individual's recovery style to examine the capacity for him/her to benefit from different treatment approaches. He proposed matching the intervention to the recovery style. He suggested that integrators may benefit from treatment that fosters insight and personal reflection of the illness and the impact on their life, whereas someone who seals-over may be most responsive to treatments that concentrate less on understanding the nature of the illness and focus more on stabilisation through pharmacological means.

1.6 Rationale for a systematic review of the literature:

An individual's adaptation to psychosis has been and continues to remain a neglected topic (McGlashan, 1994; Drayton et al., 1998), and is often misconstrued as compliance, insight or engagement (Fowler et al., 1995). However, as seen above, adaptation to an episode of

psychosis can be important in influencing recovery and longer-term outcomes (McGlashan, 1987) and facilitating adaptation has been the target of a recent RCT (C. Jackson et al., 2009) and recommended as a goal for services in recent national clinical guidelines (NICE, 2014). Therefore, recovery style could be an important variable in this adaptation process. The first aim of this review is to gather insight from the existing literature on the prevalence of integration and sealing-over recovery styles in people experiencing psychosis. The review also aims to further understand the relationships between variables that may predispose an individual to adopt a specific recovery style. Finally, the review aims to identify potential outcomes or consequences of adopting either an integrative or sealing-over style on both the client and on services and examine whether initial findings for the superiority of an integrative recovery style (McGlashan, 1987) have been found in subsequent studies.

3. Method

2.1 Search strategy

To find empirical studies specifically targeted at McGlashan's (1975) theoretical construct of recovery style in psychotic populations, databases PsychINFO (1806 to June week 4 2014) and MEDLINE (1946 to June week 4 2014) were searched using the following search terms ('recover*adj2 style*' or 'recover*adj2 type*', 'seal*adj4 over* or 'avoidant coping', or 'integrat*adj4 recover*') combined with psychosis-related search terms ('psychosis', 'acute psychosis', 'childhood psychosis', 'hallucinations', 'paranoia', 'delusions' or 'schizophrenia'). The specific search strategies for each database are outlined in Appendix 2. Subsequently, a manual search of reference lists and Google Scholar was completed to identify any additional records. Following the recommendations of the PRISMA statement

(Moher et al., 2009), duplicates were removed, and all remaining records screened against the inclusion and exclusion criteria of the study.

2.2 Inclusion criteria

Studies were selected for inclusion based on the following criteria:

1) Publication in a peer-reviewed and English language journal.
2) Explicit investigation of a psychotic population where participants met an ICD-10 (or equivalent) diagnosis of psychosis (WHO, 1993).
3) Inclusion of an empirical measure of recovery style (ISOS or RSQ)[1] with scores included in statistical analyses.

2.3 Exclusion criteria

Studies were excluded from the review if they met the following criteria:

1) Full text not attainable
2) Non empirical studies i.e. qualitative studies, case studies, book chapters, dissertations
3) Non-psychosis population
4) Measures of recovery style that did not use either the ISOS or RSQ. More general measures of coping were excluded.
5) Recovery style measured as a secondary outcome, with no meaningful analyses and results presented in the paper.

[1]Measurement of recovery style using the BORTTI (Bell, 1995) was excluded from the review. Although the assessment tool provides an indication of integration or sealing-over recovery, the measure is mostly an assessment of object relations and reality testing where integration and sealing-over is conceived in relation to intrapsychic defenses and ego functions (Bell et al., 2001b)

2.4 Quality rating criteria

Recommendations from NICE (2001) and the PRISMA group (2009) emphasise the importance of using a quality assessment framework in systematic reviews. Established checklists, namely that of Downs and Black (1998), Thompson et al. (2005) and Gersten et al. (2005) were modified to establish a tool to be applicable across a range of designs including randomised, non-randomised, cross-sectional and quasi-experimental designs.

4. Results

3.1 Literature search

The search of the databases, references lists, and other sources initially identified 155 records. After removing duplicates and screening abstracts and/or full texts against the inclusion/exclusion criteria, 19 papers met the criteria for inclusion into the review. The search and exclusion process is represented diagrammatically in Figure 1 below.

3.2 Overview of the reviewed studies

The search resulted in 19 papers. Table 1 presents the study characteristics of each of these papers. Four of these papers [4,7,12,17][2] were follow-up studies or extension studies of the same participant group used in a previous paper. Therefore, in total there were 15 studies reported within the 19 papers.

There were 1040 participants in the included studies with a diagnosis of psychosis, of which 429 were of a first episode population (FEP). Based on the data from 19 studies, the participants had a mean age of 26.4 years (SD = 8.6), 67% (n=697) were male and 33% (n=343) were female. Six papers recruited participants with acute psychosis from inpatient

[2]Numbers in square parentheses are indicative of papers included in the review, as numbered in Table 1.

settings [1,6,7,9,12,14], six papers recruited from adult community/outpatient settings [2,13,15,16,17,19], and seven papers recruited from specialist FEP services [3,4,5,8,10,11,18]. All studies reporting a recruitment area used an urban sample, with the exception of one study that used both urban and rural recruitment sites [14]. Three papers did not make reference to the recruitment area [9,12,15].

Designs employed by the reviewed studies included cross-sectional (*n*=7) [2,8,9,12,15,18,19], longitudinal (n=8) [1,4,5,6,7,13,16,17], case-control (*n*=2) [10,14], non-randomised controlled study (*n*=1) [3], and matched-pairs *(n*=1) [11]. Seven papers used the ISOS as a measure of recovery style (RS)[3] [1,3,4,5,9,10,14], nine papers used the RSQ [6,7,8,11,13,15,16,17,18], and three papers used both [2,12,19].

[3]Recovery style is abbreviated to RS throughout the results section for ease of reporting associations.

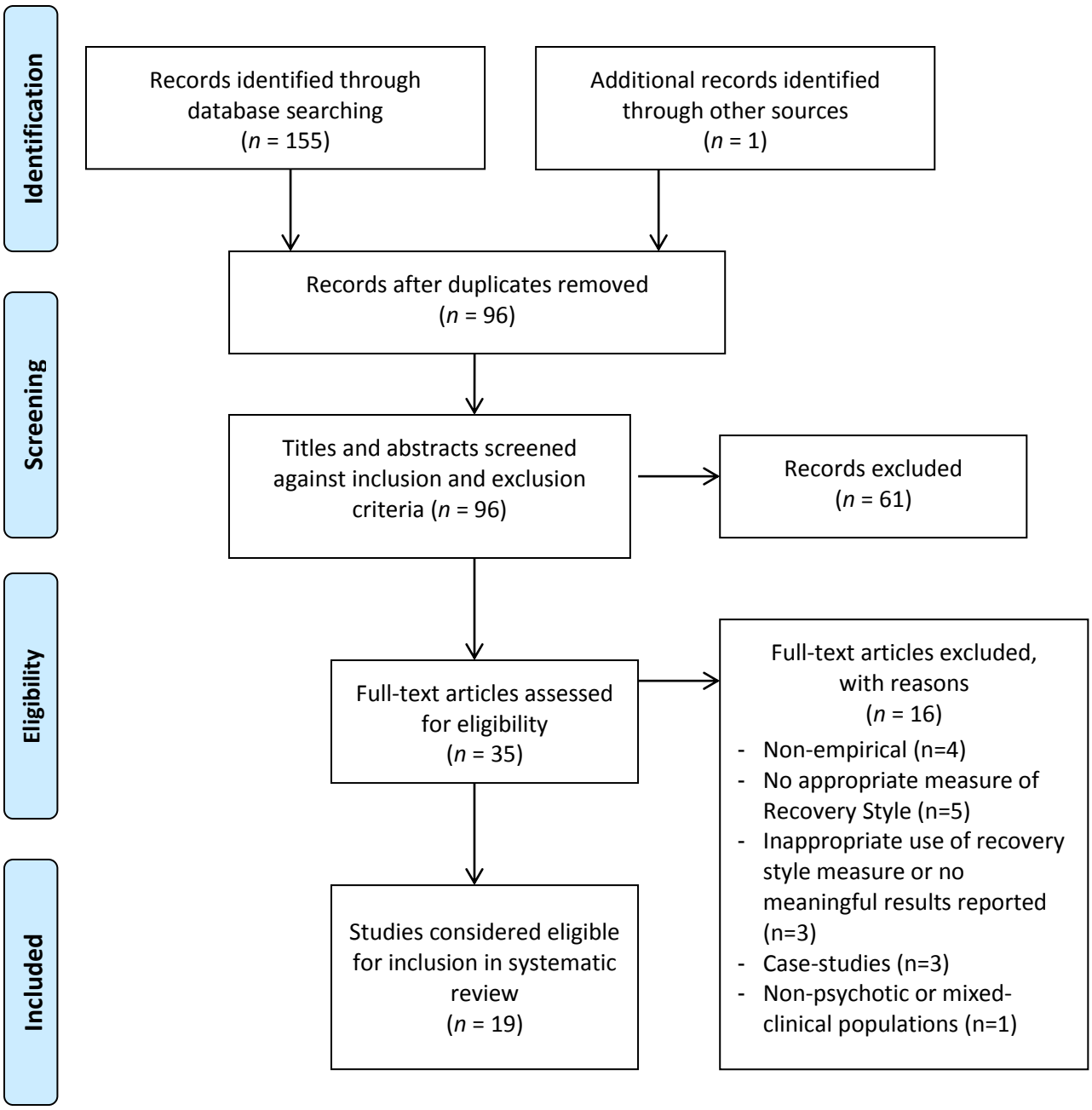

Figure 1: Flow diagram of the literature search process

Table 1. Overview of studies investigating recovery style in patients with a diagnosis of psychosis

Author (Date)	Participants	Study Design	Measure of Recovery Style (RS)	Other Measures	Key Findings
[1] McGlashan et al. (1977)	Total: *n*=24 Gender (M=50%, F=50%) Age (mean=23.0, *SD* 7.8) Urban inpatient sample - US	Longitudinal Measures taken at baseline and 12 month follow-up	ISOS	Pictorial expressiveness (Pictorial Elements Scale)	Integrators used more colour ($p > .05$), drew with greater detail ($p > .01$), and were generally more expressive ($p > .10$), but they were no different as sealing-overs in the amount of space left empty.
[2] Drayton et al. (1998)	Total: *n*=36 Gender (M=78%, F=22%) Age (mean=31.0, *SD* 10.0) Urban community sample - UK	Cross-sectional	ISOS RSQ	Depression (CDSS) Person evaluations (EBS) Early attachment (PBI)	Sealing-over was related to significantly more prevalent and more severe levels of depression than integrators ($F(1, 34) = 16.4$, $p < .0003$). Sealing-over was also associated with significantly more negative self-evaluations ($F(1, 33) = 4.09$, $p < .05$) and perceptions of mothers and fathers as significantly less caring ($F(1, 34) = 5.23$, $p < .02$; $F(1, 34) = 10.76$, $p < .002$). No relationship was found between insight and recovery style.
[3] H. Jackson et al. (1998)	Total: *n*=80 Gender (M=64%, F=36%) Age (mean=21.4, *SD* 3.3) Urban FEP sample - AUS	Non-randomised controlled study. Three groups (COPE Psychotherapy *n*=44, Refusal Group *n*=21, Control Group *n*=15) assessed pre and post treatment.	ISOS	Not relevant	No significant difference between groups on RS pre-treatment. ANCOVA performed at the end of treatment indicated significant superiority of the COPE group on RS (higher integration) compared to the Refusal Group ($p < .05$) and Control Group ($p < .05$). Planned comparisons indicated large to very large effect sizes between COPE and Refusal (d=0.71, 95% CI 0.25-1.19), and COPE and Control (d=1.04, 95% CI 0.57-1.51).
[4] H. Jackson et al. (2001)	Total: *n*=51 Gender (M=61%, F=39%) Age (mean=21.7, *SD* 3.4) Urban FEP sample - AUS	Longitudinal study of H. Jackson et al. (1998). COPE Psychotherapy (*n*=34), Refusal Group (*n*=9), & Control Group (*n*=8), assessed at 12 months.	ISOS	Not relevant	ANCOVA (controlling for pre-treatment scores) and planned contrasts at follow-up indicated a significant difference on RS scores where COPE participants exhibited significantly more integration than Refusals ($p = .008$). No significant difference on RS between COPE and Control at follow-up. Changes between end-of-treatment and follow-up on RS were non-significant.

Table 1. *(Continued)*

Author (Date)	Participants	Study Design	Measure of Recovery Style (RS)	Other Measures	Key Findings
[5] Thompson et al. (2003)	Total: *n*=196 Gender (M=73.5%, F=26.5%) Age (mean=21.8, *SD* 3.5) Urban FEP sample - AUS	Longitudinal	ISOS	Psychopathology (BPRS and SANS) Quality of life (QLS) Beliefs about illness (Explanatory Model Scale; EM)	Sealing-over was significantly associated with poorer functioning on the QLS than the integrated group ($p <$ .001) and mixed group ($p <$ .001). Sealing-over was also related to significantly worse psychopathology including negative symptoms at 12-months, compared to the integrated group (p = .003, $p <$ .001) and mixed group (p = .001, p = .001). There was also a significant linear relationship between a patient's EM and their RS both at stabilisation (r = .71, $p <$ .005) and 12-month follow-up (r = .70, $p <$ .0005).
[6] Tait et al. (2003)	Total: *n*=50 Gender (M=62%, F=38%) Age (mean=33.8, *SD* 12.0) Urban acute psychosis sample (inpatient/home treatment) – UK	Longitudinal	RSQ	Service engagement (SES) Insight (IS) Symptoms of Psychosis (PANSS)	Sealing-over was associated with significantly lower service engagement than the integration group, with 46% more engagement in the integration group. There was a significant change in the predominant RS over time, with integration predominant at baseline (72%) and sealing-over predominant at 6-month follow-up (59.5%). Very little change in RS occurred between 3 and 6 months. Relationships between RS and Insight, and RS and symptoms of psychosis were non-significant.
[7] Tait et al. (2004)	Total: *n*=50 Gender (M=62%, F=38%) Age (mean=33.8, *SD* 12.0) Urban acute psychosis sample (inpatient/home treatment) – UK	Longitudinal Extension study of Tait et al. (2003)	RSQ	Early attachment (PBI) Adult attachment (RAAS) Person evaluations (EBS and SOS) Depression (CDSS)	Sealing-overs scored significantly higher than integrators on Other-Self evaluative beliefs and on insecure self (as measured by the SOS). Sealing-over was also related to poor early attachments, where mothers and fathers were reported as significantly less caring and more abusive. Those that sealed-over also scored low on the close and depend subscale of the adult attachment measure, but significantly higher on attachment anxiety. No significant difference was found between RS and depression.

Table 1. *(Continued)*

Author (Date)	Participants	Study Design	Measure of Recovery Style (RS)	Other Measures	Key Findings
[8] C. Jackson et al. (2004)	Total: *n*=35 Gender (M=74%, F=26%) Age (mean=25.8, *SD* 5.1, range 18-35) Urban FEP sample – UK	Cross-sectional	RSQ	PTSD symptoms (IES) Anxiety/Depression (HADS)	31% of total sample met criteria for PTSD. Sealing-overs were significantly more likely to use avoidance (t = 2.08; p = .04), with a trend towards higher intrusions (t = -1.76; p = .09). There was no difference between the two RSs in regards to PTSD diagnosis, anxiety or depression.
[9] Modestin et al. (2004)	Total: *n*=75 Gender (M=67%, F=33%) Age (mean=37.0, *SD* 11.0) Inpatient hospital, during recovery phase – Switz.	Cross-sectional	ISOS	Early experiences (PBI) Self-concept / personal identity (FSKN) Symptoms of psychosis (PANSS)	No statistically significant correlation coefficients except between ISOS and PANSS, where integration was associated with less severe negative symptoms compared to sealing-over ($\chi 2$ = 5.29, df = 1, p = 0.02).
[10] Startup et al. (2006)	Total: *n*=29 Gender (M=76%, F=24%) Age (mean=29.7, *SD* 8.5) Urban FEP sample – UK	Case-control Drop-outs (*n*=10) matched with stay-ins (*n*=10) from a CBT group. Additional *n*=9 stay-in's non-matched sample.	ISOS	Therapeutic alliance (AES, WAI-O)	Significant difference found on RS between the drop-outs and stay-in group (p = 0.01) where means for dropouts indicated individuals 'tend towards sealing-over' and the mean for stay-ins placed them in the category of 'mixed picture where integration predominates'. Sealing-over was associated with less agreement on tasks (r = -.80), goals in therapy (r = -.83) and active engagement in therapy (r = .79), all significant at p < .01. No significant difference found between sealing-over and integration on therapeutic bond.
[11] Bernard et al. (2006)	Total: *n*=22 Gender (M=61%, F=39%) Age (mean=24.7, *SD* 6.2) Urban FEP sample – UK	Matched-pairs (Written Emotional Disclosure Group, *n*=12 vs. Control Group, *n*=10) at three time-points.	RSQ	PTSD symptoms (IES-R)	Although there was a significant reduction in the total severity of traumatic symptoms, and more specifically avoidance, in the experimental group only, written emotional disclosure did not initiate a significant change in RS between baseline and follow-up.

Table 1. *(Continued)*

Author (Date)	Participants	Study Design	Measure of Recovery Style (RS)	Other Measures	Key Findings
[12] Modestin et al. (2009)	Total: *n*=64 Gender (M=56%, F=44%) Age (mean=37.0, *SD* 11.0) Inpatient hospital, during recovery phase – Switz.	Cross-sectional Extension study of Modestin et al. (2004)	ISOS RSQ	Personality dimension (TPQ) Locus of control (IPC) Global functioning (GAF) Psychosis symptoms-negative (PANSS) Depression (DEPS)	Moderate, yet significant correlation between ISOS and RSQ (r = .50, p < .001). Sealing-over was associated with significantly more severe negative symptoms of psychosis (r = .54, p < .001), higher external control by powerful others (r = .33, p < .01), and poorer global functioning (r = -.46, p < .001). Non-significant associations were found between RS and personality variables, depression, and internal locus of control.
[13] Stainsby et al. (2010)	Total: *n*=50 Gender (M=72%, F=28%) Age (mean=41.0, *SD* 13.2) Urban Rehabilitation & Residential - UK	Longitudinal	RSQ	Beliefs about illness (IPQ-S) Quality of life (MANSA) Life skills (LSP) Engagement (BES) Symptoms of psychosis (BPRS)	Significant change in RS towards integration from baseline to 24-month follow-up (t(25) = 2.24, p =.03). At baseline, integration was related to greater perception of illness coherence (r =-.35, p =.02)and perceptions of treatment as being more effective (r = .36, p =.01). Integration was also moderately associated to quality of life (r =.34 (46), p =.02)and life skills (r =-.32 (48), p = .02), whereby illness perceptions accounted for a greater degree of variance on quality of life than RS. Non-significant associations were found between RS and engagement. RS did not mediate the relationship between illness perceptions and outcome. At follow-up, there was no longer an association between illness perception & RS, nor between RS and outcome.
[14] Mueser et al. (2010)	Total: *n*=38 Gender (M=68%, F=32%) Age (mean=22.5, *SD* 5.9) Inpatient, mixed urban & rural settings - US	Case-control study	ISOS	PTSD (Traumatic Life Events Questionnaire, PATS & PDS)	In comparison to the no PTSD group, individuals with posttraumatic symptoms secondary to psychosis (meeting DSM-IV diagnosis of PTSD without Criteria A) had significantly lower scores on ISOS, indicating they tended to have more of an integrative style of coping with their psychotic episode (t =-2.52, df = 31, p <.02).However, individuals meeting the full diagnosis of PTSD (including Criteria A) exhibited no association with RS (t =-1.52, df =31, p = .14).

Table 1. *(Continued)*

Author (Date)	Participants	Study Design	Measure of Recovery Style (RS)	Other Measures	Key Findings
[15] Mulligan & Lavender (2010)	Total: *n*=73 Gender (M=75%, F=25%) Age (mean=48.6, *SD* 14.5) Urban community/ outpatient sample - UK	Cross-sectional study	RSQ	Early attachment (PBI) Adult attachment (ASQ)	No relationship found between RS and early attachment experiences, with one significant association found between RS and adult attachment, where integration was related to reduced tendency to treat relationships as secondary to achievement ($r(72) = -.41$, $p < .01$). Men and women were found not to differ significantly in terms of the RS adopted.
[16] Staring et al. (2010)	Total: *n*=109 Gender (M=78%, F=32%) Age (mean=39.0, *SD* 11.6) Urban community sample assessed to have poor service engagement- Neth	Longitudinal	RSQ	Service engagement (SES) Medication adherence (determined from a semi-structured interview)	No significant differences found between the groups that received psychotherapeutic intervention (TAT) or treatment as usual (TAU) on RS at baseline, end of treatment, or at 6-month follow up. No statistical comparisons made between RS and treatment adherence / service engagement.
[17] Staring et al. (2011)	Total: *n*=103 Gender (M=70%, F=30%) Age (mean=39.0, *SD* 11.6) Urban community sample assessed to have poor service engagement- Neth	Longitudinal Extension study of Staring et al. (2010) –	RSQ	Insight (IS) Therapeutic alliance (WAI) Psychosis symptoms (PANSS) Remission (defined as a score of 3 or lower on PANSS subscales, at 6- or 12-month follow-up)	Sealers were found to have significantly more severe negative symptoms ($r = .26$, $p < .01$), and significantly lower levels of insight ($r = -.03$, $p < .01$). A non-significant relationship found between RS and therapeutic alliance. Independent of symptom levels, insight, or therapeutic alliance, an integrating recovery style significantly increased the odds (6.23 times more likely than sealing-overs) of remission at 1-year follow-up ($\beta = -.61$, 95% CI = .33 to .90). Insight and therapeutic alliance were not found to be predictive of remission.
[18] Upthegrove et al. (2012)	Total: *n*=67 Gender (M=79%, F=21%) Age (mean=23.4, *SD* 5.2) Urban FEP sample – UK	Cross-sectional	RSQ	Beliefs about illness (PBIQ-R) Insight (IS)	No significant differences found between different ethnic groups and RS ($F = .96$, $p = .41$). Negative appraisals related to illness (loss, entrapment, group fit, control but not shame) found to be significantly related to insight, but not RS.

Table 1. *(Continued)*

Author (Date)	Participants	Study Design	Measure of Recovery Style (RS)	Other Measures	Key Findings
[19] Vender et al. (2014)	Total: *n*=156 Gender (M=38%, F=62%) Age (mean=41.0, *SD* 10.6) Urban community sample – Italy	Cross-sectional study	ISOS RSQ	Psychosis symptoms (PANSS) Annual cost of service per patient (determined from a state software package)	No significant difference between PANSS symptoms, service engagement and mean service costs on RS, as measured by both the ISOS and RSQ. However, significant relationships existed between annual service costs and PANSS positive (r = .33, p = .02) and PANSS general (r = .45, p = .001).

Note: RS (Recovery Style); Gender: M (male); F (Female); FEP (First Episode Psychosis); US (United States), UK (United Kingdom), AUS (Australia), Switz (Switzerland), Neth (Netherlands); ISOS (Integration Sealing Over Scale), RSQ (Recovery Style Questionnaire); CDSS (Calgary Depression Scale for Schizophrenia), EBS (Evaluative Beliefs Scale), PBI (Parental Bonding Instrument), BPRS (Brief Psychiatric Rating Scale), SANS (Scale for the Assessment of Negative Symptoms), QLS (Quality of Life Scale), EM (Explanatory Model), SES (Service Engagement Scale), IS (Insight Scale), PANSS (Positive and Negative Syndrome Scale), RAAS (Revised Adult Attachment Scale), SOS (Self and Other Scale), IES (Impact of Events Scale), IES-R (Impact of Events Scale – Revised), HADS (Hospital Anxiety and Depression Scale), FSKN (Frankfurt Self-Concept Scale), AES (Active Engagement Scale), WAI (Working Alliance Inventory), WAI-O (Working Alliance Inventory-Observer version), TPQ (Tridimensional Personality Model), IPC (Fragebogen zu Kontrolluberzeugungen "Locus of Control"), GAF (Global Assessment of Functioning Scale), DEPS (Depression Scale), IPQ-S (Illness Perceptions Questionnaire for Schizophrenia), MANSA (Manchester Short Assessment of Quality of Life), LSP (Life Skills Profile), BES (Bexley Engagement Scale), PATS (PTSD Assessment Tool for Schizophrenia), PDS (Posttraumatic Diagnostic Scale), ASQ (Attachment Style Questionnaire), PRIQ-R (Personal Beliefs about Illness Questionnaire – Revised).

3.3 Quality review

Based on aforementioned established quality criteria checklists, the 19 papers included in the review were subjected to an assessment of quality. All 19 papers were reviewed against 10 criteria items, and rated accordingly on how well the paper met the criteria. Table 2 presents the results of the quality assessment for each reviewed paper, where red (-) indicates poor quality, amber (+) represents fair quality, and green (++) represents good quality.

3.3.1 Quality criteria 1: *Study population appropriate and well described, with appropriate demographics reported.*

All of the 19 papers reviewed were rated as 'good' quality. Study populations were appropriate and well defined, often with detailed inclusion/exclusion criteria. Relevant demographics were reported in tables or within the text.

3.3.2 Quality criteria 2: *Sampling fair and unbiased*

The majority of studies were rated as 'fair' quality in regards to fair and unbiased sampling. Only two papers were rated as 'good' quality [1,5], and one as 'poor' quality [17]. Staring et al. (2011)[17] in a longitudinal study recruited participants who had participated in a multicentre randomised controlled trial where half had received psychotherapy and half had received treatment-as-usual. However in contrast to their earlier study [16], participation in therapy was not investigated nor controlled for in the statistical analyses looking at whether baseline RS was predictive of remission at 1-year follow-up. All studies had a gender-bias except for McGlashan et al. (1977)[1] who had a sample matched on age and other demographics. There was an overwhelming bias in recruitment of males across studies (67%). Many papers recruited from urban cities where there are potentially higher rates of

deprivation (Tait et al., 2003). Few papers made reference to ethnic makeup [13,15,17,18], with only Upthegrove et al. (2012)[18] making comparisons between ethnicity and cultural values, and RS. However, there may have been heterogeneity even within ethnic groups where for example multiple Asian backgrounds were all categorised as 'Asian' where individuals may vary substantially in religious beliefs and cultural practices. All studies, except [1,3,4] used self-report measures that are susceptible to recall or interview bias, with difficulties in validating retrospective information. All studies were susceptible to self-selection bias due to the necessities of consent, which poses threats to internal validity (Kazdin et al., 1980).

3.3.3 Quality criteria 3: Sample size is adequate

As we can see from Table 2, all papers were rated as either 'fair' or 'good' quality, with a sample range of n=22 [11] to 196 [5] across papers. Only two papers reported a power calculation [15,16], with one paper [15] acknowledging recruitment below the sample size required to detect significant effects. Many of the longitudinal studies were susceptible to high attrition at follow-up [4,6,7,13], reducing statistical power. Papers that made comparisons between different groups often had unequal distributions across groups [3,4,10,11,17,18].

3.3.4 Quality criteria 4: Appropriate measures chosen in accordance with the research question

The review only included studies with a reliable and valid empirical measure of RS as part of its inclusion criteria; therefore only additional outcome measures were rated in quality. The majority of studies obtained a 'good' quality rating, with only five papers assigned 'fair'

quality [1,2,16,17,18] and one considered as 'poor' quality [19]. Queries were raised on the use of retrospective measures of early attachment [2], the use of a five subscale measure of attachment rather than the more established two-dimensional anxiety and avoidance subscales (Mikulincer & Shaver, 2007) [15], clarity as to whether measures had been validated in another language [17], reliance on verbal reports of medication adherence [18], and service-engagement determined unusually by the patients' level of care package received [19].

3.3.5 Quality criteria 5: Appropriate reliability coefficients are reported for all standardised measures

There was inconsistency in reporting reliability coefficients across the papers, with many papers inconsistently reporting reliabilities for some measures and not others. It was noted across papers, that internal consistencies were often omitted or reporting of psychometric properties without inclusion of actual coefficients within the text. Papers were mostly determined as 'poor' quality when there was failure to report any reliability for standardised measures [3,4,5,16,17,18,19].

3.3.6 Quality criteria 6: Indication that measures have been validated for use in a similar population

Validation of measures in a psychosis population was not routinely acknowledged or made explicit in the papers. However it was noted that many of the measures adopted by authors were either widely established measures (e.g. BDI, BAI), or designed with use with a psychosis population (e.g. PANSS, QLS, SANS). Validation was also queried, where authors modified or scored instruments alternative to original recommendations [9].

3.3.7 Quality criteria 7: *Confidence intervals or measures of variance are reported for the statistics (e.g. means, correlations coefficients) of primary interest in the study*

As can be seen from Table 2, most papers were considered of 'good' quality in reporting confidence intervals or measures of variance. Only one paper, McGlashan et al. (1977)[1] was considered 'poor' quality, where only significance levels (*p*-values) were reported within the results. Drayton et al. (1998) was rated as 'fair' quality due to reporting means and percentages without standard deviations, and for reporting significant associations only.

3.3.8 Quality criteria 8: *Where applicable, attrition rates are reported and appropriate statistical techniques applied*

Reporting of attrition was inconsistent across papers. All longitudinal studies reported dropouts at various time-points, but statistical tests not conducted to assess for statistical differences. Staring et al. (2010)[16], was the only study to report attrition whilst documenting reasons for attrition. Intention-to-treat data were included in this paper with the appropriate statistical tests conducted. Refusal to participate in studies was not routinely acknowledged, nor were specific numbers reported [1,3,4,6,8,9,14,15,17,18,19].

3.3.9 Quality criteria 9: *Results presented in a clear, coherent fashion, allowing unambiguous interpretation of the findings*

All studies were rated as either 'fair' or 'good' quality in relation to this criteria. Studies were rated as poor in situations where correlation tables were omitted or only presented for some associations [2,5,6,13,16], result sections reported *p*-values only, typically for significant results only [1,4,9,16], and where there were errors or inflated reporting of associations where significance levels were low [7,18,19].

3.3.10 Quality criteria 10: *Authors interpret study effect sizes for each primary outcome directly and explicitly compare study effects with those reported in related prior studies*

Papers included in the review were mostly considered 'fair' quality, with few papers considered 'good' quality [2,3,10], and few considered 'poor' quality [1,5,16,19]. The magnitude of effect was not routinely reported across studies, with reliance solely on *p*-values as an indicator of the presence of an affect. Given the novel nature of RS in the literature, it was understandable that earlier papers made little reference to previous associations. However as papers advanced chronologically, all studies made reference to previous findings in their interpretation of results.

Table 2. Quality ratings for reviewed papers.

Author (Date)	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Criteria 8	Criteria 9	Criteria 10
[1] McGlashan et al. (1977)	++	++	++	+	+	+	--	+	+	--
[2] Drayton, Birchwood & Trower (1998)	++	+	+	+	++	++	+	++	+	++
[3] H. Jackson et al. (1998)	++	+	+	++	--	+	++	++	++	++
[4] H. Jackson et al. (2001)	++	+	+	++	--	+	++	++	+	+
[5] Thompson, McGorry & Harrigan (2003)	++	++	++	++	--	+	++	++	++	--
[6] Tait, Birchwood & Trower (2003)	++	+	+	++	+	++	++	++	+	+
[7] Tait, Birchwood & Trower (2004)	++	+	+	++	++	++	++	++	+	+
[8] C. Jackson et al. (2004)	++	+	+	++	+	++	++	++	+	+
[9] Modestin, Soult & Malti (2004)	++	+	++	++	++	+	++	+	++	+

Author (Date)	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Criteria 8	Criteria 9	Criteria 10
[10] Startup, Wilding & Startup (2006)	++	+	+	++	++	++	++	++	++	+
[11] Bernard, Jackson & Jones (2006)	++	+	+	++	++	++	++	++	++	++
[12] Modestin et al. (2009)	++	+	++	++	++	+	++	+	++	+
[13] Stainsby et al. (2010)	++	+	+	++	++	+	++	++	+	+
[14] Mueser et al. (2010)	++	+	+	++	+	++	++	++	++	+
[15] Mulligan & Lavender (2010)	++	+	+	++	++	+	++	+	++	+
[16] Staring et al. (2010)	++	+	++	+	--	--	+	++	+	--
[17] Staring et al. (2011)	++	--	+	++	--	++	++	++	++	+
[18] Upthegrove et al. (2012)	++	+	+	++	--	+	++	+	+	+
[19] Vender et al. (2014)	++	+	++	--	--	--	++	+	+	--

Note:
Criteria 1: Study population appropriate and well described, with appropriate demographics reported

Criteria 2: Sampling fair and unbiased
Criteria 3: Sample size is adequate
Criteria 4: Appropriate measures chosen in accordance with the research question
Criteria 5: Appropriate reliability coefficients are reported for all standardised measures
Criteria 6: Indication that measures have been validated for use in a similar population
Criteria 7: Confidence intervals or measures of variance are reported for the statistics (e.g. means, correlations coefficients) of primary interest in the study
Criteria 8: Where applicable, attrition rates are reported and appropriate statistical techniques applied
Criteria 9: Results presented in a clear, coherent fashion, allowing unambiguous interpretation of the findings
Criteria 10: Authors interpret study effect sizes for each primary outcome directly and explicitly comparing study effects with those reported in related prior studies.

Key: ++ Good quality + Fair quality -- Poor quality

3.4 Key findings in recovery style and psychosis studies

The review identified a number of key themes across the literature reviewing recovery style in psychosis. The key results identified for each key theme are outlined below.

3.4.1 Prevalence

Only eight of the nineteen papers reported prevalence of integration and sealing-over in their sample [2,5,8,11,12,15,17,19], with three of these papers reporting integration, sealing-over and mixed recovery styles [5,12,17]. In papers reporting prevalence in integration and sealing-over RS only, integration ranged from 11%-87% (percentage mean = 71.8%), and sealing-over ranged from 7%-47% (percentage mean = 28.2%). Papers that reported prevalence on integration, sealing-over and mixed RS, found a mean prevalence of 30% for integration, 21% for sealing-over, and 49% majority for mixed RS.

3.4.2 Demographics

Thompson et al. (2003)[5] and Vender et al. (2014)[19] both found females to be more integrative than males, however Mulligan and Lavender (2010)[15] failed to find a significant gender difference. However, caution should be taken in interpreting results given the large gender bias within studies, limiting generalisability to wider populations.

Upthegrove et al. (2012)[18] found that the Black ethnic group tended to appraise their psychosis significantly less negatively than any other ethnic group, however this was not related to insight or RS. No significant differences were found in the study between ethnic groups. Caution is placed in interpreting results as the quality assessment indicated heterogeneity within ethnic groups, where simplistic grouping of ethnicity into White, Asian

and Black does not account for the influence of often very different religious beliefs and cultural practices within each of these groups.

3.4.3 Relationship between insight and recovery style

Initial theories hypothesised a significant positive relationship between insight and integrated RS (Amador et al., 1991). By definition, integrating patients are insightful, seeking to understand their psychosis and elicit help (McGlashan et al., 1975; Levy et al., 1975). Tait et al. (2003)[6] suggest impaired insight may reflect denial and avoidant coping, synonymous with sealing-over. However studies have differed in results, with some studies finding a significant relationship between RS and insight [5,17], and others finding little or no association [2,6]. In addition, Upthegrove et al. (2012) [18] found illness appraisals to be significantly related to insight but not RS, and so concluded insight and RS to be distinct concepts.

3.4.4 Stability of recovery style

Thompson et al. (2003)[5] in a first-episode sample (n=196) receiving input from a specialist Early Intervention Service in Australia, found that 56% (n=196) participants maintained their original RS when assessed at 12-month follow-up, whilst 44% (n=84) changed RS, with a trend towards integration. Likewise, in an UK acute psychosis population (n=50), Tait et al. (2003)[6] found a change in the RS over time, where integration was found to be the predominant RS at baseline (72%), with a shift towards sealing-over at 6-month follow-up. Very little change occurred in RS between three to six months.

3.4.5 Attachment

Two studies using the Parental Bonding Instrument (PBI; Parker et al. 1979) found that sealing-over was associated with poor early attachments, where mothers and fathers were reported as significantly less caring [7,2], and more abusive [7]. In contrast, two later studies found no association between early attachment experiences and RS [9,15]. Modestin et al. (2004)[9] who reported no association did however acknowledge that approximately half of eligible participants refused to take part, and thus it is unclear how participants may have differed from those that refused to take part, in relation to the variables of interest in the study. Additionally, caution should be placed on interpretation of results of all studies using the PBI, as reliance solely on retrospective data can pose threats to internal validity. Furthermore, Manassis et al. (1999) advises against using the PBI in small clinical samples.

Two studies reported associations between adult attachment styles and RS [7,15]. Tait et al. (2004)[7], using the Revised Adult Attachment Scale (RAAS; Collins, 1996), found that sealing-over was significantly associated with insecure attachment, with high scores on *attachment anxiety* and low scores on the *close and depend* subscales. Mulligan and Lavender (2010)[15], using the Attachment Style Questionnaire (ASQ; Feeney et al., 1994), found one significant association where sealing-over was associated with a tendency to treat relationships as *secondary to achievement* [15]. The use of the ASQ is queried due to the instrument's measure of attachment using five subscales rather than the anxiety and avoidance dimensions which underlie the majority of self-report measures of attachment (Korver-Nieberg et al., 2014). Furthermore, Mulligan and Lavender (2010) [15] is one of only two studies [15,16,17] in the review to perform a power calculation. The power analysis deemed that 90 participants were required to detect a medium effect size. However actual recruitment

in the study was below this required amount (*n*=73), which may mean that a failure to detect significant associations was potentially due to insufficient power.

3.4.6 Person evaluations, beliefs and beliefs about illness

Studies using the Evaluative Beliefs Scale (EBS; Chadwick et al., 1999) found that sealing-over was associated with negative self-evaluations (self-self) [2] and other-self evaluations [7], but not self-other evaluative beliefs [2,7]. Sealing-over was also associated with insecure self [7], as measured on the Self and Other Scale (SOS; Dagnan et al., 2002). On the contrary, no associations were found between RS and any of the ten self-concepts (e.g. 'self-esteem', 'appreciation by others' and 'quality of relationships to others') measured on the Frankfurt Self-Concept Inventory (FSKN; Deusinger, 1986) [9]. Additionally, sealing-over was found to have a positive relationship with external locus of control by powerful others, with no significant relationships found between RS and internal locus of control [12].

Stainsbury et al. (2010)[13] explored the relationship between RS and illness perceptions, related to a diagnosis and experience of psychosis, in an adult outpatient sample. They found that an integrating RS was associated with greater perception of illness coherence, and perceptions of treatment being more effective. With established links between illness perceptions and long-term outcome in psychosis (Lobban, Barrowclough & Jones, 2004; Watson et al., 2006), the authors explored the mediating role of RS. However, results indicated that RS did not mediate this relationship. Caution should be placed on interpreting these results given the high rate of refusals to take part (55%) and attrition at follow-up (38%) in the study. In conflict with the findings by Stainsby et al. (2010)[13], Upthegrove et al. (2012)[18] using the Personal Beliefs about Illness Questionnaire (PBIQ-R; Birchwood et al., 2012) in a FEP population, found no associations between RS and negative appraisals related

to illness. However, unlike RS, insight had a negative relationship to appraisals of loss, entrapment, group fit, and control following psychosis. Shame was associated with neither insight nor RS. The PBIQ-R has established reliability and validity in a FEP population (Birchwood et al., 2012).

3.4.7 Psychotherapeutic intervention

In a non-randomised controlled study, H. Jackson et al. (1998)[3] found significantly more integrators in the treatment group (COPE)[4] than in the refusal and control groups. There were no significant differences between groups on RS prior to treatment, and therefore any changes in RS were considered to be as a result of participation in COPE. In a 12-month follow-up study [4], the significant difference on RS between COPE and refusals was sustained, however there was no longer a significant difference between the COPE and control group on RS. The potential for making a type 2 error is noted, where lack of association may be as a result of high attrition at follow-up (37%) and small numbers in the control group (n=8). On the other hand, the reported superiority of the COPE group on integration immediately after treatment could be attributed to variables other than participation in COPE. It is noted that the frequency and number of sessions an individual received was not controlled for within the study, but was determined by the therapist's perception of individual need. Different therapists delivered COPE, where change in RS could be attributed to therapist variables rather than the therapy itself. Moreover, individuals were not randomly assigned to COPE, and although there were no significant differences on RS at baseline, participants with a tendency toward integration may have been more likely to opt into the COPE intervention

[4] Cognitively oriented psychotherapy for early psychosis (COPE) is a treatment approach developed by H. Jackson et al. (1996) in Melbourne, Australia. The foci of the treatment include facilitating adjustment to psychosis and preventing or alleviating secondary morbidity in the wake of a first-episode psychosis. It is delivered during individual therapy, with flexibility on duration, frequency and total number of sessions, dependent on individual need.

given their openness to talking about their psychosis. Therefore self-selection bias may pose threats to internal validity (Kazdin, 1980).

In contrast to the above findings, Staring et al. (2010) [16] found a non-significant difference between groups who received psychotherapeutic intervention (TAT; Treatment Adherence Therapy) or treatment-as-usual (TAU) on RS at baseline, end of treatment, and at 6-month follow-up. However, the intervention was not aimed at manipulating change in individual RS. Instead, RS was measured in view of it having a role as a mediator between psychotherapy and outcome e.g., service engagement, medication adherence and symptoms. Likewise, Bernard et al. (2006)[11] explored the impact of Written Emotional Disclosure[5] on RS. However results indicated no significant difference between the treatment and control group on RS. It is important to note that Written Emotional Disclosure is aimed at reducing symptoms of post-traumatic stress disorder (PTSD), and therefore the impact of RS was investigated on an exploratory basis within the study. Sealing-over was underrepresented within the sample (n=3), with consequential low statistical power to detect significant effects.

3.4.8 Psychopathology

Four studies looked at the relationship between RS and depression [2,7,8,12]. Drayton et al. (1998)[2] found that sealing-over was associated with more prevalent and more severe levels of depression, where 88% of individuals with a sealing-over RS experienced moderate to severe levels of depression, whereas 53% of integrators experienced mild depression only. However, later studies failed to replicate the findings of Drayton et al. (1998), with non-significant associations reported between RS and depression [7,8,12], and between RS and anxiety [8].

[5] Written Emotional Disclosure (Pennebaker & Beall, 1986) aims to encourage the emotional expression of trauma related thoughts and feelings, and incorporate elements of emotional processing, exposure and cognitive restructuring.

A number of the reviewed studies examined the relationship between RS and psychotic symptomatology [5,6,9,12,17,19]. With the exception of two studies [6,19], the majority of papers reported a significant association between sealing-over and more severe negative symptoms of psychosis [5,9,12,17]. However, all studies examining positive psychotic symptomatology, failed to find an association with RS [6,9,17,19]. Staring et al. (2011)[17] was the only study to examine whether RS predicts remission of psychotic symptoms at one-year follow-up. They found that in a sample of 103 patients, independent of symptom levels, insight, or therapeutic alliance, an integrating recovery style strongly increased the odds (6.23 times more likely than sealing-overs) of being in remission at 12-months.

Three papers reported associations between RS and PTSD following a psychotic episode [8,11,14]. Two of these papers reported prevalence of PTSD within FEP samples, on the basis of fulfilling DSM-IV-TR (American Psychiatric Association, 2000) criteria B, C and D, whilst excluding for criterion A[6]. C. Jackson et al. (2004)[8] reported 31%, whereas a later paper by Mueser et al. (2010)[14] reported a greater percentage (66%) of the sample met criteria for PTSD. Individuals with a diagnosis of PTSD were more likely to adopt an integrative style of coping [14]. Sealing-over was associated with significantly more avoidance, and a trend (non-significant) towards higher intrusions, as measured on the Impact of Events Scale (IES; Horowitz, 1979) [8]. However, no associations were found between PTSD and RS approximately 1.5 years after a first-episode. One paper investigated the effect of writing about the trauma (Written Emotional Disclosure) on RS approximately 2.5 years after a first-episode, and found no significant interactions or main effects. It is noted that this

[6] Criterion A definition of a traumatic event has been criticised for it's restrictiveness, and not acknowledging the psychological impact of events such as psychosis (Shaw, McFarlane & Bookless, 1997) and interpersonal trauma such as childhood abuse (Allen, 2001).

paper had a relatively small sample size (*n*=22) with extremely low levels of sealing-over represented in the sample (*n*=3), thereby reducing the scope to detect change in the sample following participation in the intervention.

3.4.9 Quality of life and global functioning.

Three studies examined interactions between RS and quality of life and global functioning. All found that sealing-over was associated with poorer functioning and life skills than those with an integrative or mixed style of recovery [5,12,13].

3.4.10 Engagement with staff and services

Tait et al. (2003)[6] found that patients who seal-over had lower engagement with services than integrators, with 46% more engagement in the integration group. Following an acute episode, RS but not insight nor symptoms of psychosis at 3-months, predicted the level of engagement at 6-months. Conversely, later studies failed to replicate these findings, with no significant associations found between RS and engagement with services [10,13,19].

Startup et al. (2006)[10], using the established Working Alliance Inventory (WAI; Horvath & Greenberg, 1989), found that sealing-over was significantly associated with less agreement on tasks and fewer goals in therapy, with no significant difference in therapeutic bond. Again, these findings were not supported in a later study by Staring et al. (2011)[17] who failed to find any significant associations between the WAI and RS.

It is important to note methodological limitations of many of the studies reporting the presence or absence of associations between RS and service engagement/therapeutic alliance. Vender et al. (2014)[19] used an unusual method that determined level of engagement by the level of care package an individual received, instead of the use of a more formal

psychometrically sound measure such as the Service Engagement Scale (SES; Tait et al., 2002) used by Tait et al. (2003). Startup et al. (2006)[10] adapted the use of the ISOS where only three ('curiosity', 'impact' and 'help-seeking') out of the 13 subscales were used as a measure of RS, with the justification that the psychodynamic principles underlying the unused subscales had not been supported by research (Wilding, 2004). The sample recruited by Staring et al. (2011)[17] had a low representation of sealing-over (7%). In addition, all participants were deemed to have low engagement as part of the inclusion criteria of the study. These factors may have impacted on the ability to detect differences in engagement in relation to sealing-over and integrative styles of recovery.

4. Discussion

The current paper set out to systematically review the literature on recovery style in psychosis with a specific aim to further understand variables that may predispose an individual to a particular recovery style, and the subsequent outcomes of developing either a sealing-over or integrative style.

4.1 Determinants of recovery style

Attachment is thought to have an influential role in recovery from, or adaptation to, psychosis (Drayton et al., 1998). Childhood antecedents such as adverse early experiences have been implicated in insecure attachment in psychosis (Read & Gumley, 2008). Birchwood (2003) suggests that traumatic histories and developmental anomalies disrupt the development of a 'secure internal base' due to the negative impact on schematic beliefs. Without such a 'secure base', an individual is less able to integrate and process information relating to their experiences of psychosis (Birchwood et al., 2003). Authors have examined the relationship

between recovery style and early attachment experiences [2,7,9,15], and adult attachment styles [7,15], in an attempt to establish why some individuals adopt a sealing-over recovery style whilst others attempt to integrate the information relating to their diagnosis into an updated concept of themselves and others. The associations between early attachment and recovery style remains inconclusive, with earlier literature reporting associations between sealing-over and poor early attachment [2,7], however the results were not replicated in later studies [9,15]. On the other hand, research examining adult attachment has been more promising with results indicating associations between sealing-over and high anxiety, low closeness and dependency in relationships [7], and a tendency to treat relationships secondary to achievement [15].

Attitudes, inferences, and evaluations that an individual holds about themselves and their psychotic illness are considered influential in adapting to a diagnosis of psychosis (Chadwick, Birchwood & Trower, 1996). Drayton et al. (1998)[2] argued that the roots of negative self-evaluation might lie in insecure early attachments, and proposed that individuals with a poorly developed sense of self might defend against the threat of psychosis using denial, a characteristic attributed to a sealing-over recovery style. Empirical findings indicate that sealing-over is associated with negative self-evaluations [2], difficulties with feelings of insecurity and interpersonal rejection [7], and a belief that others evaluate them negatively [7]. Furthermore, how an individual perceives their psychosis is expected to play a crucial role in how they manage, cope and adjust to their psychosis (Iqbal et al., 2000). Anticipating loss and experience of shame is associated with depression in psychosis, and it is thought that sealing-over acts as a defence against these appraisals (Iqbal et al., 2000). However, this relationship is yet to be confirmed empirically, with mixed and inconclusive findings in the literature [13,18]. The relationship between insight and recovery styles has also been

explored across the literature. Insight is considered an individual's capacity for understanding his or her difficulties (David, 1990). The literature provides mixed results on associations between insight and recovery style [2,5,6,17,18], and thus the relationship between insight and recovery style remains unclear. However, it has been suggested that individuals can seal-over with or without insight [17], and that insightful patients may seal-over as a means of coping, to preserve their self-esteem [12].

McGlashan's (1975) original theory conceived recovery styles as representative of an enduring personality trait characteristic. However, research since then has indicated that individual recovery styles can change over time, and may vary at different stages of the recovery process [5,6]. In corroboration of this, Modestin et al. (2009)[12] found no association between recovery style and three dimensions of personality that the authors subjectively deemed to represent core constructs underlying recovery style (novelty seeking, harm avoidance and reward dependence). These findings raise implications for McGlashan's original proposal that interventions should be matched to an individual's recovery style, as this proposition does not acknowledge the trajectory of change in recovery style post psychotic episodes. H. Jackson et al. (1998)[3] in fact found that COPE, an intervention aimed at fostering an integrative style led to significantly more integration in the sample post treatment.

4.2 Consequences of recovery style

McGlashan's (1987) original paper examined the association between recovery style and long-term outcome in a mixed-clinical population. He found that integrators, with a tendency to discuss their symptoms and understand the risk factors that may contribute to, or exacerbate their symptoms, had better long-term functional outcome. He concluded that

recovery style could be used as a predictor of outcome in individuals experiencing severe mental health difficulties.

The literature examining the relationship between recovery style and outcome specifically with a psychotic population has produced mixed results. The relationship between recovery styles and depression [2,7,8,12], anxiety [8] and positive symptoms of psychosis [6,9,17,19] remains uncertain. However, current literature indicates an association between sealing-over and negative symptoms of psychosis [5,9,12,17]. This relationship can be understood in the context of sealing-over representing a process of deactivation of affect, with the conscious or unconscious use of suppression or repression (Levy et al., 1975). Also of interest was the significant association between sealing-over and the greater use of avoidance as measured on the Impact of Events Scale (IES; Horowitz, 1979) [8]. The development and experience of psychosis can be a distressing and traumatic life event (Birchwood, 2003; C. Jackson et al., 2004) often compounded by the exposure of coercive treatments such as involuntary hospitalisation, use of seclusion and forced administration of medications (Deegan, 1990). Only Mueser et al. (2010) reported a significant association between diagnosis of PTSD and recovery style, where individuals with a diagnosis of PTSD secondary to the onset of psychosis were more likely to adopt an integrative style of coping with their psychotic episode. However, C. Jackson et al. (2004)[8] found no association between recovery style and PTSD approximately 1.5 years after a FEP, suggesting that the desire to understand and integrate the experience of psychosis may be stronger soon after the traumatic event.

Poor service engagement and treatment adherence is traditionally attributed to lack of insight (Ghaemi & Pope, 1994). However, Tait et al. (2003)[6] found that sealing-over was associated with poor engagement, where recovery style but not insight measured at three-

months after an acute psychosis predicted the level of engagement with services at six-months. This suggests that poor psychological adjustment to psychosis may underlie or contribute in these difficulties. Other studies focussed on the impact of recovery style on therapeutic alliance, the affective bond between patient and therapist (Martin, Garske and Davis, 2000). Individuals with a tendency to seal-over was found to demonstrate less agreement on tasks and less goals in therapy [10] which is understandable given the tendency of those who seal-over to minimise their symptoms and not enlist the help of others in mastering their difficulties (Levy et al., 1975). It is possible that those who seal-over may deny they have an illness and hope that it is a one-off experience (McGlashan & Levy, 1977), and resist treatment because of the stigma associated with mental illness (Birchwood et al., 2006). Accordingly, sealing-over was associated with poorer functioning and life skills across a number of studies [5,12,13].

4.3 Methodological limitations

A major limitation of many of the studies included in the review is the cross-sectional nature of the designs and the consequential inability to determine causal relationships. The generalizability of the findings is also limited in terms of sample characteristics. Across the studies there was a large gender bias (67% male), low mean age (28.4 years), and recruitment mostly from urban communities. Sample sizes were often small or moderate, which may have led to low statistical power to detect significant associations. Additionally, there was a failure across studies to report effect sizes. Statistical significance should consider not only the presence of an effect, but also the magnitude of the effect (Sullivan & Feinn, 2012). Other limitations include the use of self-report assessments in a high proportion of the studies, which are liable to self-report or social desirability bias.

Furthermore, it is important to acknowledge the low representation of sealing-over in the overall sample (percentage mean = 28.2%) and the impact this may have had on the ability to detect changes in investigated variables. Whilst this low representation of sealing-over may represent actual prevalence of sealing-over in psychotic samples, it is also likely that the nature of opportunistic sampling relying on self-selection may in fact attract those with integrative tendencies. The numbers of those refusing to take part in studies were not often reported, and therefore little is known regarding the recovery style of this population. Mulligan and Lavender (2010) speculated that high attrition and refusal to take part in research might be characteristic of sealing-over tendencies.

Finally, the conceptual basis and current measurement of recovery style is queried. Beck-Sander (1998) in a discussion paper questioned the utility and accuracy of determining an individual's recovery style. For example, a patient that does not elicit help may be deemed to have a sealing-over style of recovery, where in fact the poor therapeutic alliance may be as a result of unhelpful staff.

4.4 Conclusions

Recovery style was initially explored as a concept in the early 1970's and has been readdressed in recent years to consider its impact not only on personal understanding of the illness, but also on how it may influence wider factors such as therapeutic alliance. Originally, both styles of recovery were conceived as enduring personality traits (McGlashan, 1987). More recent literature indicates that recovery styles can change over time [3,5], and can be influenced by psychotherapeutic interventions [3].

Much of the literature reviewed in this paper provides inconsistent findings related to the determinants and consequences of recovery style, largely due to methodological

limitations within the studies. The role of adult insecure attachment and negative self-evaluation in the development of a sealing-over recovery style appears convincing [2,7,15], and calls for further investigation using attachment measures with anxiety and avoidance subscales (Korver-Nieberg et al., 2014). However, the results from the review found contradictory associations between recovery style and outcomes such as depression, anxiety, service engagement and therapeutic alliance, and therefore the relationship between recovery style and prognosis remains unresolved.

It is suggested that the initial process of sealing-over may be adaptive, psychologically protecting the individual from perceived negative realities of the psychosis and its implications for the self (Tait et al., 2004; C. Jackson et al., 2004). However, continued use can be problematic in the longer-term with poorer quality of life and social functioning [5,12,13], and reduced likelihood of future symptom remission [17].

Most studies included in the review were underpowered and at present there is insufficient data to draw any definitive conclusions on the development and influence of recovery style in individuals experiencing psychosis. Further research with methodological rigour is required to further explore the concept, measurement and processes underpinning individual differences in recovery styles. Few of the studies reviewed have used recovery style as a primary outcome measure, with a need for more research to focus more specifically on the determinants and consequences of adopting an integrative or sealing-over style.

What is clear from the research is the need to think carefully about an individual's subjective experience of their psychosis and the environment. This can have clinical value in informing formulation and treatment, as opposed to 'imposing' treatments (Drayton et al., 1998). Future research investigating adaptation to psychosis requires larger and more rigorous quantitative based studies that assess recovery style over time. Qualitative based

studies may also be beneficial in establishing individual nuances in a construct that requires further exploration.

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Emotional regulation mediates attachment style, positive symptoms and emotional distress in first episode psychosis.

Word Count: 11,690

Abstract

Objectives: Emotional dysfunction has historically been neglected in research exploring psychosis. This study presents evidence for understanding emotional distress and psychotic symptomatology under the developmental frameworks of attachment theory and emotion regulation.

Design: The study used a cross-sectional design, using bivariate correlational analyses and the mediation analysis procedure described by Preacher and Hayes (2008).

Method: Fifty-one individuals who met the criteria for a psychotic disorder and whose acute psychotic symptoms were in remission, completed measures of attachment style, emotion regulation, distress (depression, anxiety and stress), and severity of psychotic symptoms.

Results: Consistent with expectation, attachment style was associated with affective and psychotic symptomatology. There was evidence of mediation in the relationship between secure attachment and depression, and between secure attachment and hallucinations, through less dysfunctional emotional regulation. More dysfunctional emotional regulation was also found to mediate the relationship between fearful attachment style and depression, and hallucinations. Partial mediation was observed between dismissing attachment and positive symptoms through greater use of internal strategies.

Conclusions: Insecure attachment, specifically fearful attachment style, can leave individuals vulnerable to dysfunctional emotion regulation. Consequently, individuals may experience elevated emotional distress and more severe positive symptoms. Furthermore, secure attachment appears to be a protective factor against the severity of affective and psychotic symptomatology due to less dysfunctional emotional regulation.

Practitioner Points:

- Knowledge of an individual's attachment style may help identify individuals who may be more or less vulnerable to post-psychotic emotional dysfunction, potentially due to dysfunctional or functional emotion regulation.
- Psychotherapeutic interventions aimed at reducing emotional distress and dysfunctional emotional regulatory strategies such as rumination and self-criticism may prove to be effective in alleviating distress and positive symptoms of psychosis.

5. Introduction

1.1 Psychosis: Overview

Psychosis can be a chronic, disempowering and stigmatising disorder for many affected individuals (Pitt et al., 2009). The experience of a psychotic episode can significantly alter an individual's perceptions, thoughts, mood and behaviour. Understandably, such experiences can be frightening, distressing and highly confusing for many young people diagnosed with the disorder (Jackson et al., 2004), and can derail a young person's social, educational and vocational development (Birchwood et al., 2000). It can present unique challenges to the individual, family members, and clinical providers (National Institute of Mental Health [NIMH], 2014). Onset of a first-episode psychosis (FEP) typically occurs during late adolescence or early twenties, but can be evident in people much younger or older than this window of age. A recent systematic review and meta-analysis of the incidence of schizophrenia and other psychoses in England over the last 60 years, found that approximately 32 cases per 100,000 persons received a diagnosis of psychosis per annum (Kirkbride et al., 2012). Despite historical pessimism about prognosis, research indicates that early intervention following a first-episode psychosis can improve outcome (Lieberman et al., 2001). The past two decades has seen the development and value of early intervention services that provide prompt early detection, intensive support during episodes of acute psychosis and recovery-oriented treatment over 2 to 3 years following the onset of FEP (Edwards et al., 2000; Spencer et al., 2001).

1.2 Impact of first-episode psychosis: Symptoms and emotional dysfunction

Symptoms of psychosis are typically categorised as 'positive symptoms' such as hallucinations, delusions and paranoia, and 'negative symptoms' such as emotional apathy,

poverty of speech and social withdrawal (Crow, 1980a; 1980b). In addition, emotional dysfunction including depression, social anxiety, and psychosis related trauma, is a common comorbidity in individuals with a diagnosis of psychosis (Birchwood, 2003). Research has found significantly high levels of depression (50%) in the post-psychotic phase (Birchwood et al., 2000), and even higher levels (70%) when the prodrome and acute phases are considered (Upthegrove et al., 2010). There are high rates (36%) of anxiety disorders (Achim et al., 2011) including social anxiety (Michail & Birchwood, 2014). Birchwood (2003) proposed three different pathways to emotional dysfunction following psychosis. In the first pathway, emotional dysfunctions such as depression and anxiety are experienced in the acute phase due to their direct association with positive symptoms such as auditory hallucinations and delusions, (Birchwood, 2003; Birchwood et al., 2000; Frame & Morrison, 2001; Freeman & Garety, 2003). In the second pathway, emotional dysfunction arises due to poor coping with psychotic symptoms or a dysfunctional psychological reaction. For example, research has indicated that appraising psychosis as shameful results in depression (Iqbal et al., 2000), social anxiety (Birchwood et al., 2006) and trauma (Turner et al., 2012), following a first-episode. Finally, in the third pathway, childhood adversity such as abuse, neglect or problems in attachment results in emotional dysfunction due to its negative impact on variables such as schematic beliefs.

1.3 Childhood trauma and psychosis

Birchwood's (2003) proposed pathway implicating childhood adversity in the development of emotional dysfunction in FEP is supported by evidence implicating adverse life events in early developmental years as a vulnerability marker for psychosis (Read et al., 2005). Over the last decade, empirical evidence of this association has continued to accumulate rapidly

(Read & Bentall, 2012). A recent meta-analysis by Varese et al. (2012) found that individuals who had experienced childhood adversity (e.g., sexual and physical abuse and neglect) were nearly three times more likely to experience psychosis, implying that exposure to such adversities in childhood should be regarded as an important determinant of psychotic disorders. A review by Read, Bentall and Fosse (2009) found child maltreatment to be significantly related to psychosis in ten out of eleven reviewed studies, where seven of the studies included a FEP population. They also reported a relationship between childhood adversity and the actual content of hallucinations and delusions. More recently, Read and Bentall (2012) have argued that research now needs to move on by looking at variables that may potentially mediate the relationship between childhood adversity and specific psychotic symptoms and experiences. One potential mediating variable is attachment.

1.4 Attachment: Overview and measurement

Bowlby (1973) defines attachment as an affectionate bond that an individual forms with a specific person, who is approached in times of distress. The infant-carer relationship is hypothesised to provide the infant with a 'safe haven' and a 'secure base' from which to experience a sense of safety and to engage in exploration (Ainsworth et al., 1978). These bonds are first formed during infancy with primary caregivers, but continue to be of importance throughout the lifespan (Bowlby, 1979). During infancy, interactions with the caregiver lead to the development of mental representations, termed 'working models', of the self and of others (Bowlby, 1973). If caregivers are responsive and sensitive to the infant's distress, the individual will develop a positive self-image, sense of autonomy, closeness in relationships and an ability to manage distress (Shaver & Hazen, 1993). On the other hand, if caregivers are unresponsive and insensitive to the infant's distress, the individual will learn to

either escalate their level of distress (insecure anxious attachment) or they will inhibit their distress (insecure avoidant attachment), in order to get their attachment needs met (Shaver & Mikulincer, 2002; Berry, Barrowclough & Wearden, 2008). Such strategies of hyperactivation or deactivation of affect in infancy may be functional, but continued use in adulthood can become problematic (Bakermans-Kranenburg & Van IJzendoorn, 2009). Although models of attachment-system activation generally conceptualise hyperactivation and deactivation as independent strategies, it is acknowledged that some individuals will exhibit unusual fluctuations between anxiety and avoidance, characterised by awkward or inconsistent behaviour (Mikulincer & Shaver, 2007).

In more recent years, models of attachment theory has been updated and supported by developments in neuroscience (Schore, 1996). The early organisation of the right brain, including the accelerated growth of brain structure during critical periods of infancy is considered to be dependent not only on genetics, but also on experience, described by neuroscientists as the "social construction of the human brain" (Schore, 1996; Schore, 2005). Such advances in neuroscience suggest that the cellular architecture of the cerebral cortex is formed in part by interactions with the social environment, embedded in these early attachment relationships (Schore, 2005).

The definition and measurement of attachment can be a complex field (Bentall, 2003). Individual differences in attachment-system functioning in adults are described in terms of attachment style (Hazan & Shaver, 1987). Early attachment relationships are hypothesised to determine individual patterns of expectations, needs, emotions, and social behaviours (Fraley & Shaver, 2000). The concept of specific individual differences in attachment behaviours was first proposed by Ainsworth (1967), who originally classified infants as secure, avoidant or anxious ambivalent. A fourth category 'disorganised' was later added by Main and

Solomon (1990) who noted that some infants and adults oscillate in their use of both strategies of hyperactivation and deactivation.

With the advancement in theoretical literature surrounding attachment processes, came the empirical need to construct a measure of attachment in order to develop an empirical base. At present, there are a number of measures of adult attachment, differing in their conceptual focus and method (narrative approach vs. self-report), with each exhibiting potential conceptual and methodological strengths and constraints (see Mikulincer and Shaver, 2007). The Adult Attachment Interview (AAI) measures attachment on the basis of the coherence of the individual's narrative in describing their early parental relationships (Main, Kaplin & Cassidy, 1985). Berry and colleagues (2007) question the validity of this measure in samples with psychosis, suggesting that the presence of thought disorder may produce more incoherent narratives irrespective of the attachment status, leading to a possible over-classification of insecure attachment (Dozier et al., 1999).

Bartholomew and Horowitz (1991) were the first to propose a four-category model of attachment style. Bowlby's suggestion of two types of internal representations or 'working models' of the self and other, led Bartholomew and Horowitz to conceptualise each internal model to be dichotomised as positive or negative, to produce four hypothetical attachment styles. Figure 1 illustrates the four dimensions and the corresponding attachment style. Each dimension can be conceptualised in terms of anxiety on the horizontal axis and avoidance of intimacy on the vertical axis. Previous measures are limited to assessing three attachment styles, namely secure/autonomous, anxious/ambivalent and avoidant/dismissing. However, the authors argue that Main and Goldwyn's (1988) dismissing attachment and Hazen and Shaver's (1987) avoidant attachment represent two different types of avoidance which are respectively motivated by defensive self-sufficiency and avoidance of rejection.

In validating the model in a non-clinical sample, Bartholomew and Horowitz (1991) developed the Relationship Questionnaire (RQ) and found that the secure group rated high on warmth, balance of control in friendships, and level of involvement in romantic relationships. The dismissing group scored high on self-confidence but low on emotional expressiveness, frequency of crying and warmth, self-disclosure, caregiving and capacity to rely on others and use others as a secure base. The preoccupied group was opposite to the dismissing group in almost every respect. They scored particularly high on self-disclosure, emotional expressiveness and reliance on others with the use of others as a secure base. Finally the fearful group had significantly the lowest scores on self-disclosure, intimacy and reliance on others, scoring uniquely low in self-confidence.

		MODEL OF SELF (ANXIETY)	
		Positive (Low)	**Negative (High)**
MODEL OF OTHER (AVOIDANCE)	**Positive (Low)**	**SECURE** High self-worth, believes that others are responsive, comfortable with autonomy and in forming close relationships with others.	**PREOCCUPIED** A sense of self-worth that is dependent on gaining the approval and acceptance of others.
	Negative (High)	**DISMISSING** Overt positive self-view, denies feelings of subjective distress and dismisses the importance of close relationships.	**FEARFUL** Negative view of the self, lack of trust in others, subsequent apprehension about close relationships and high levels of distress.

Figure 1: Bartholomew and Horowitz (1991) model of the self and other

The Psychosis Attachment Measure (PAM; Berry et al., 2006) is a continuous self-report measure, developed specifically for use with a psychosis population. The scale assesses two constructs; insecure anxiety and insecure avoidance. The PAM demonstrates

good reliability and concurrent validity (Berry et al., 2007; Berry et al., 2008), but misses the opportunity to explore the four attachment styles recognised by Main et al. (1985) and Bartholomew and Horowitz (1991).

Many of the self-report methods can measure attachment styles either categorically or dimensionally. Fraley and Waller (1998) recommend the use of continuous ratings rather than categorical ratings for measures of attachment. Categorical approaches are arguably inadequate at capturing attachment style stability and change, whereas studies using dimensional approaches have reported that up to 87% stability exists in adult attachment style (Sibley & Liu, 2004).

1.5 Attachment and psychosis

Since Bowlby's and Ainsworth's influential work, the link between attachment difficulties and emotional dysfunction such as depression and anxiety has been fairly well established in general psychiatric populations (Rosenstein & Horowitz, 1996; Dozier, Stovall, & Albus, 1999). However, despite advancements in the attachment literature and its application to psychiatric samples it is only recently that empirical studies have examined attachment styles in psychosis samples, which is surprising given the predominance of interpersonal difficulties which individuals with psychosis face (Penn et al., 2004; Berry et al., 2008).

An early study by Dozier (1990) found that individuals with a diagnosis of schizophrenia had higher levels of insecure attachment, particularly avoidant attachment style, than those with a diagnosis of bipolar disorder or major depression. More recent studies have found significantly higher levels of insecure attachment in psychosis samples when compared to non-clinical controls (Ponizovsky et al., 2007). Further to this, in a recent paper, Harder (2014) reviews previous research and reports the distribution of attachment styles in

psychosis. She reports dismissing attachment to be the most prevalent, ranging from 48-71%, compared with 27% in a control group. Preoccupied was the least represented in studies, ranging between 12-20%, and secure ranging between 27-32%, as compared with 19% and 58%, respectively in a control group. Prevalence of the disorganised/fearful attachment styles ranged between 29-35%. However, the review by Harder acknowledged that the disorganised/fearful attachment style is measured only in a handful of studies, and that future research may benefit from including this fourth style.

Using the RQ (Bartholomew & Horowitz, 1991), Ponizovsky et al. (2013) found differential relationships existed between specific psychosis symptomatology and the three insecure attachment styles. Interestingly, preoccupied attachment was associated with more severe positive symptoms (delusions and suspiciousness), whereas fearful attachment was significantly associated with more severe hallucinations. Contrary to the authors' expectations, dismissing attachment was associated with only anxiety, but not symptoms of psychosis. Pickering, Simpson and Bentall (2008) in a non-clinical sample, and likewise Wickham, Sitko and Bentall (2014) in a psychosis sample, found that attachment anxiety and avoidance, as indicated by the RQ, was significantly associated with suspiciousness/paranoia, but not hallucinations. In a recent publication, Korver-Nieberg et al. (2015) in a large psychosis sample (n=500) found that both attachment anxiety and avoidance was associated with severity of positive symptoms, where anxiety was associated with suspiciousness, hallucinations and delusions, and avoidance was associated with hallucinations and suspiciousness only. Berry and colleagues (2006) propose that individuals with a fearful attachment style are more likely to perceive their voices as powerful and malevolent, and consequently experience elevated distress and severity. It also seems plausible that fearful

attachment may be present in elevated levels in FEP, given the conceptual basis of low self worth and low value of others.

Other recent studies have examined associations between attachment styles and emotional dysfunction and have shown associations between preoccupied and fearful attachment and higher levels of depression and anxiety in psychosis samples (Berry et al., 2007; Ponizovsky et al., 2013; & Strand et al., 2014; Korver-Nieberg et al., 2015), and social interaction anxiety (Gajwani, Patterson & Birchwood, 2013) in a sample displaying *at risk-mental states of psychosis*[7]. However, Korver-Nieberg et al. (2015) found no association between avoidant/dismissing attachment and affective symptoms such as depression. This is understandable given Bartholomew and Horowitz's (1991) theory that both preoccupied and fearful attachments are related to a negative view of the self, and dismissing and secure attachments are related to a positive view of the self.

Berry et al. (2006) suggested that those with a dismissing attachment style are hypothesised to use avoidant emotional regulation strategies in reaction to distress, which they suggest may leave individuals vulnerable to more severe negative symptoms. Similarly, others have suggested that insecure attachment styles may be associated with problems with emotional regulation in adulthood (Read & Gumley, 2008; Ponizovsky et al., 2013) in psychosis samples. In addition, it has recently been suggested that the high levels of emotional dysfunction following a first episode of psychosis highlighted by Birchwood (2003) could in part be due to problems with effective emotional regulation (Bernard, Jackson & Birchwood, 2015), which may have their origins in poor attachments. However, to my

[7] At-risk mental state of psychosis (ARMS) is a term used by health professionals to refer to young people, usually aged between 14-35 years, at heightened risk of developing psychosis. Such individuals are typically experiencing a change to premorbid functioning with nonspecific symptoms such as depressed mood, anxiety and sleep disturbance, as well as sub-threshold psychotic symptoms (Yung et al, 2003). Such symptoms are regarded as a risk factor for subsequent psychosis, but that psychosis is not inevitable (McGorry & Singh, 1995).

knowledge there are few empirical studies investing links between attachment and emotional regulation in first episode psychosis.

1.6 Emotion regulation: Overview and measurement

Emotion regulation emerged in psychological literature during the mid 1980s and only became part of empirical studies during the mid 1990s. Despite this, the study of emotion regulation has roots that go back over a century to early psychoanalytic theory of defences (Breuer & Freud, 1895/1957; Freud, 1946) and to Lazarus's (1966) stress-vulnerability model of coping. Emotion regulation can be defined as the cognitive and behavioural processes by which we influence which emotions we have, when we have them, and how we experience and express them (Gross, 1998b). Emotions can be regulated consciously or unconsciously. They can be automatic or controlled. One of the most influential models of emotional regulation is proposed by Gross (2002). Gross draws a distinction between *antecedent-focussed* strategies which refers to strategies we employ before the emotional response tendencies have been activated (e.g. reappraisal) and *response-focussed* strategies that refer to strategies we employ once the emotional response is activated (e.g. suppression). Gross suggests that there are a limitless number of emotion regulation strategies whereby different strategies produce differential profiles of affective, cognitive and social consequences (Gross, 2002).

A meta-analytic review by Aldao, Nolen-Hoeksema and Schweizer (2010) found that adaptive emotion regulation strategies (acceptance, reappraisal and problem-solving) were associated with fewer psychopathologies (depression, anxiety, eating and substance disorders), whereas maladaptive emotion regulation strategies (suppression, avoidance and rumination) were associated with more psychopathologies. Unexpectedly, they found a large

effect size for rumination, medium to large for avoidance, problem-solving and suppression, and small to medium for reappraisal and acceptance. This is surprising given the prominence of reappraisal in cognitive-behavioural therapy (CBT) and acceptance in acceptance and commitment therapy (ACT). Additionally, they found that internalising disorders (depression and anxiety) were more consistently associated with emotion-regulation strategies than externalising disorders (eating and substance disorders).

Given the infinite number of potential emotion regulatory strategies, understandably there is a wide range of measures to assess specific aspects of emotion regulation. The majority of these measures are self-report, with the exception of the Emotion Regulation Interview (ERI; Werner et al., 2011) which is a structured clinical interview based on Gross's (1998) process model of emotion regulation.

Phillips and Power (2007) present a self-report measure (Regulation of Emotions Questionnaire; REQ) of emotion regulation that assesses the frequency with which individuals adopt functional and dysfunctional emotion regulation strategies depending on their acceptance or rejection of emotions, whilst drawing on both internal (intrapersonal) and external (interpersonal) resources to regulate emotions. This model considers strategies used in everyday situations rather than focussing on specific strategies that may be elicited in response to a particular stressor. The model presented by Phillips and Power has theoretical underpinnings to attachment theory, where the use of 'internal' resources in relation to the model of self (e.g., "I harm or punish myself in some way" or "I put the situation into perspective"), and the use of 'external' resources in relation to the model of other (e.g., "I take my feelings out on others physically" or "I ask others for advice"), can be associated with actual attachment-related resources.

1.7 Emotion regulation and psychosis

Although emotion regulation has become a developing field of psychological theory and research (Gross, 2014), there is still very little research investigating emotion regulation in psychosis (Livingstone, Harper & Gillanders, 2009) possibly because emotional dysfunction (i.e., depression and anxiety) has often been neglected in the psychosis literature (Birchwood, 2003). However, the significance of affect and associated physiological changes are increasingly becoming recognised and incorporated into cognitive models of psychosis (e.g., Garety et al., 2001; Morrison, 2001), with more recent models recognising a role for emotional dysregulation in the development of positive symptoms (Berry et al., 2006). Birchwood and Trower (2006) have argued that psychotherapeutic interventions such as cognitive-behavioural therapy (CBT) should be primarily aimed at reducing emotional dysfunction by relieving distress, and that the resolution of positive symptoms should be a secondary outcome of treatment. Thus, more research investigating emotional regulation in psychosis samples is desirable.

A recent review by Bernard, Jackson and Birchwood (2015) found only seven studies investigating specific emotional regulation in psychosis, with the majority of studies focussing on the use of re-appraisal and suppression in relation to outcomes. Increased use of re-appraisal was found to be associated with decreased levels of depression (Henry et al., 2008; Perry et al., 2011), negative symptoms (Perry et al., 2011) and functional impairment (Henry et al., 2008). On the other hand, increased use of suppression was found to be associated with poorer social functioning (Perry et al., 2011; Badcock et al., 2011) and increased frequency, duration and loudness of auditory hallucinations (Badcock et al., 2011). However, a non-significant association was found between suppression and emotional dysfunction (Henry et al., 2008). In addition, greater use of acceptance was associated with

less depression and better social functioning (Perry et al., 2011). In a recent paper, Lincoln et al. (2014) found psychosis to be characterised by difficulties in the use of awareness, understanding and acceptance to regulate anger, shame, anxiety and sadness.

Finally, Livingstone et al. (2009) found that both individuals with psychosis and individuals with anxiety or mood disorders experienced similar levels of negative and positive emotions but both groups experienced more negative emotions and less positive emotions when compared to non-clinical controls. Livingstone et al. (2009) also found the two clinical groups used higher levels of internal-dysfunctional and lower levels of internal-functional emotional regulatory strategies on the Regulation of Emotions Questionnaire (REQ; Phillips & Power, 2007) compared to the control group. No significant differences were found between the groups on external-dysfunctional and external-functional strategies. They conclude that individuals with psychosis attempt to regulate their emotions in similar ways as people with anxiety or mood disorders, by using more dysfunctional strategies such as rumination, and contribute to the assertion that treatment should focus on emotional dysfunction and regulation rather than focussing on purely psychotic phenomena.

1.8 The relationship between attachment and emotion regulation

Attachment theory can offer a useful framework in understanding the development and maintenance of emotion regulation strategies across the lifespan (Mikulincer, Shaver, & Pereg, 2003). The attachment-system in itself can be conceived of as an emotion regulation device, whereby the activation of the attachment-system and proximity seeking are considered to be integral to an individual's regulatory efforts, playing a role in shaping his or her emotional responses (Mikulincer & Shaver, 2007). Gilbert (2005) and Linehan (1993)

suggest that a caregiver's availability and responsiveness can play a crucial role in developing skills to self-soothe and maintain close functional relationships when distressed.

Research indicates that deficits in emotion regulation can originate in adverse development (Schore 2001, Barlow, 2002). Considering the high incidence of reported childhood adversity by individuals with psychosis (Read et al., 2009; Varese et al., 2012), knowledge of their emotion regulation strategies could provide insight into how such traumatic experiences are coped with and expressed in the therapeutic context (Strand, Goulding & Tidefors, 2014). Using an attachment perspective, Owens, Haddock and Berry (2012) were the first to examine emotion regulation (as measured by the Difficulties in Emotion Regulation Scale; Gratz & Roemer, 2004) alongside therapeutic alliance in individuals with a diagnosis of psychosis. They found that attachment avoidance and attachment anxiety were significantly related to global deficits in emotion regulation, with a consequent weaker therapeutic alliance. More specifically, attachment-avoidance was related to less acceptance, awareness and understanding, whilst attachment-anxiety was related to fewer goal-directed behaviours, situationally appropriate strategies, acceptance, clarity, and greater difficulties in impulse control. The authors argue that attachment and emotion regulation patterns can have important implications for clinical practice, suggesting staff can be considered as key attachment figures to individuals with a diagnosis of psychosis.

Mikulincer and Shaver (2012) in a discursive paper, offer an attachment perspective on psychopathology. The authors consider existing empirical links between attachment insecurity and psychopathology, hypothesising the potential mediating pathways of emotion regulation, self-representations, and problems in interpersonal relations. A review by Malik, Wells and Wittkowski (2015) concluded that current empirical findings indicate a mediating role of emotion regulation in the relationship between attachment and depressive

symptomatology in non-clinical populations. Conclusive evidence suggested mediation by hyperactivating strategies in the relationship between insecure-anxiety and depression, with mixed results for the mediating role of deactivating strategies in the relationship between insecure-avoidant and depression. However, to my knowledge there are no studies investigating the relationship between attachment and emotional regulation in FEP.

1.9 The current study

1.9.1 Study aims

1) To investigate whether attachment styles and emotion regulation are associated with emotional distress (i.e. depression and anxiety) and symptoms of psychosis (positive symptoms), in a sample recovering from a first episode of psychosis.

2) To investigate whether emotion regulation mediates the relationship between attachment and emotional distress, and symptoms of psychosis in a sample recovering from a first episode of psychosis.

1.9.2 Study hypotheses

1) Secure attachment, was expected to be positively associated with functional internal and external emotion regulation strategies and negatively associated with dysfunctional (internal and external) emotional regulatory strategies. Consistent with evidence considered above (Owens et al., 2012), insecure attachment was expected to be positively associated with dysfunctional (both internal and external) emotion regulation strategies. More specifically, fearful attachment with conceptually the lowest sense of worth for self and others, was expected to have the strongest association with internal and external dysfunctional strategies compared to the preoccupied and dismissing attachment styles.

2) Consistent with previous research (Ponizovsky et al., 2013; Strand et al., 2014), secure attachment was expected to be associated with lower levels of emotional distress and low severity of psychotic symptoms compared to the insecure attachment styles.
3) Consistent with previous findings in other samples (e.g., Aldao et al., 2010), it was expected that greater use of functional emotion regulation strategies would be negatively associated with emotional distress and symptom severity of psychosis whilst dysfunctional emotion regulation strategies would be positively associated with emotional distress and symptom severity of psychosis.
4) Finally, based on recent evidence that emotional regulation mediates attachment and depression in non-clinical samples (Malik et al., 2015), the last hypothesis examined whether emotional regulation mediated attachment styles and emotional dysfunction and positive symptoms in a first-episode psychosis sample.

6. Method

2.1 Ethical Approval

Ethical approval was obtained from [redacted]

2.2 Participants

Fifty-one participants, with a diagnosis of psychosis as defined by the International Classification of Mental and Behavioural Disorders 10th Revision (WHO, 1993) were recruited from an Early Intervention Service (EIS) within an urban area of the UK. The service provides specialist mental health input to young people aged 16-35 years, who have experienced an episode of psychosis. EIS offers a multidisciplinary approach, involving

psychiatrists, psychologists, community psychiatric nurses, and support workers, with a focus on maximising engagement, psychosocial recovery and preventing relapse in individuals with a newly diagnosed psychosis. The service adopts an assertive outreach approach, where people are often seen either in their own homes or within the local community. The mean age (± standard deviation) for participants included in the study was 22.45 (± 4.29); 58.8% were male and 41.2% were female, with a response rate of 73%. Participants were from a diverse range of ethnic backgrounds, with 51% identifying themselves as White British, 33% as Asian / British Asian, 10% as Black or Afro-Caribbean, 4% as Mixed Race and 2% as Other. Diagnosis was determined by the treating consultant psychiatrist and included schizophrenia (18%), schizoaffective disorder (2%), unspecified non-organic psychosis (59%), bipolar-affective disorder (8%), acute and transient psychotic disorder (10%), severe depressive episode with psychotic symptoms (2%), other non-organic psychotic disorder (2%) and delusional disorder (2%). All participants had a good command of written and spoken English, and were deemed to have capacity to provide informed voluntary consent. Participants who were acutely psychotic, hospitalised or detained under the Mental Health Act (1983; 2007) at the time of recruitment were excluded from the study.

2.3 Measures (see Appendix 3)

Measures were selected on the basis of theoretical and empirical research, to provide indicators of attachment style, emotion regulatory strategies and psychopathology.

2.3.1 Measuring adult attachment

Relationship Questionnaire (RQ: Bartholomew & Horowitz, 1991): The RQ is a self-report instrument, adapted from Hazen and Shaver's (1987) measure and consists of four

short descriptions of the four attachment styles (secure, preoccupied, dismissing and fearful), which participants are first asked to select as the most self-descriptive. For example secure attachment is described as: "It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me". The three insecure attachment styles can be found in Appendix 3. In addition to the categorical forced-choice approach, a dimensional approach can also be applied to the measure where participants are asked to indicate on a 7-point Likert scale ranging from 1 (disagree strongly) to 7 (agree strongly) the extent each description applies to their feelings and behaviours in close relationships, including relationships with peers. Applying the forced-choice approach first, serves to counterbalance and minimize order effects when participants rate the degree to which each prototype characterizes them.

The use of a single-item measure of attachment style may undermine reliability and invite criticism from researchers in support of the use of multi-item measures of attachment (Mikulincer & Shaver, 2007). However, many alternative multi-item measures are criticised for their focus on conscious thoughts, feelings and behaviours, and an emphasis on romantic interpersonal relationships (Berry et al. 2007). This is potentially problematic in psychosis research, as the diagnosis is associated with limited insight into difficulties (Amador et al., 1994) and social isolation, with limited opportunities for stable relationships (Jablensky et al., 1992). This is particularly relevant for a first-episode sample, aged 16-35 years of age with possible limited opportunities or experiences of a romantic relationship. However, the RQ is beneficial in that it's focus is on more generalised interpersonal relationships with close others, rather than focussing on an individual's experience of closeness with romantic partners (Mikulincer & Shaver, 2007). Another advantage of the RQ over alternative measures of attachment is its focus on four attachment styles. Many alternative measures

miss the opportunity to distinguish between the *fearful-avoidant* and *dismissing-avoidant* subtypes proposed by Bartholomew and Horowitz (1991). Despite potential criticisms, Griffin and Bartholomew (1994) demonstrated a reasonable convergence between self and informant ratings on the RQ, and although the measure was developed primarily on a non-clinical student sample, Ponizovsky et al. (2013; 2014) demonstrated the feasibility of this measure in their study investigating adult attachment in a psychosis sample. Strand et al. (2014) similarly used the RQ in a psychosis population, and concluded that the RQ was a valid measure for assessing attachment, reporting that participants in their study did not appear to have any difficulties completing the measure.

2.3.2 Measuring emotion regulation

Regulation of Emotion Questionnaire (REQ: Phillips & Power, 2007): The 21-item REQ categorises emotion regulation strategies on the basis of their functionality and dysfunctionality in relation to accepting or rejecting emotional states, and their use of internal (intrapersonal) and external (interpersonal) resources. Thus, the REQ provides scores for internal-functional regulation (e.g., *"I put the situation into perspective"*), internal-dysfunctional regulation (e.g., *"I keep the feelings locked up inside"*), external-functional regulation (e.g., *"I talk to someone about how I feel"*) and external-dysfunctional regulation (e.g., *"I try to make others feel bad"*). Participants were asked to rate how frequently they used each strategy on a 5-point Likert scale ranging from 1 (never) to 5 (always), with higher scores indicating greater use of each strategy. This relatively new scale originally developed as a measure of emotion regulation in children and adolescents has demonstrated good psychometric properties (Phillips & Power, 2007). Although the REQ was not originally validated in an adult clinical population, Livingstone et al. (2009) demonstrated good internal

reliability and support for the use of the REQ in their cross-sectional study of emotion regulation in an adult psychosis population. In this study, internal reliability for each of the subscales were as follows; *internal-functional regulation* (α = .81), *internal-dysfunctional regulation* (α = .67), *external-functional regulation* (α = .85) and *external-dysfunctional regulation* (α = .82).

2.3.3 Measuring emotional distress

Depression, Anxiety and Stress Scale short form (DASS-21: Lovibond & Lovibond, 2004): This 21-item scale measures the dimensions of depression, anxiety and stress on a 4-point Likert scale ranging from 0 (never) to 3 (almost always), with higher scores indicating elevated levels of distress. It is a short form of Lovibond and Lovibond's (1995) 42-item self-report measure of depression, anxiety and stress. This is a well-established and widely used measure, which has demonstrated sound psychometric properties across non-clinical and clinical populations, and is enhanced by the provision of normative data based on a large sample (Henry & Crawford, 2005). In this study, the internal reliability of the depression (α = .85), anxiety (α = .80), and stress (α =.79) scales were all good.

2.3.4 Measuring psychosis symptom severity

Positive And Negative Syndrome Scale (PANSS: Kay, Fiszbein & Opler, 1987): A 30-item, semi-structured interview consisting of 7 positive symptom items, 7 negative symptom items and 16 general psychopathology items. Each item is rated on a 7-point severity scale ranging from 1 (absent) to 7 (severe). Summing subscale scores as a measure of symptom severity can derive the total symptom score. This is a widely used and well-established measure of psychosis symptom severity and has demonstrated good inter-rater reliability, and

construct and concurrent validity (Kay et al., 1987). Internal consistencies in the current study for positive symptoms (α = .76), negative symptoms (α = .90), and general symptoms (α = .82) were all good. However, only the total score on positive symptoms and separate scores for delusions, hallucinations, and suspiciousness were used.

2.4 Procedure

Two Early Intervention teams within an urban region of the UK were informed of the study. Care coordinators (usually community psychiatric nurses) were asked to screen their caseload to identify potential participants who fulfilled the inclusion and exclusion criteria. With patient permission, the researcher then visited potential participants to provide a study information sheet, answer any questions regarding the research, and obtain informed consent. Individuals, who consented to take part, went on to complete a number of self-report measures and a structured clinical interview. All measures were completed within one sitting, lasting approximately an hour. The majority of assessments took place within the participant's home environment. Medical records of patients that consented to take part in the study were reviewed to obtain information about demographic and diagnosis variables.

2.4.1 Inclusion criteria

Participants were selected for inclusion in the study based on the following criteria:

i. A chart or clinical diagnosis of psychosis as defined by the International Classification of Mental Disorders 10th Revision (WHO, 1993).

ii. Currently within the recovery stage of psychosis where symptoms of psychosis are not acute (i.e. not catatonic, aggressive, suicidal, or grossly psychotic or disoriented).

iii. Aged 16-35 years.

iv. Deemed to have capacity to provide informed voluntary consent.

v. Good command of written/spoken English due to the use of standardised measures.

2.4.2 Exclusion criteria

Participants were excluded from the study if they met the following criteria:

i. Experiencing an acute phase of their psychotic illness where they are deemed to be acutely psychotic or distressed by positive symptoms of psychosis (e.g. voices or delusional beliefs).

ii. Considered a risk to themselves and/or others. Members of the participant's multidisciplinary team must be satisfied that they do not pose a risk. Risk is updated on a daily and/or weekly basis.

iii. Hospitalised or detained under the Mental Health Act (1983; 2007) in the last month prior to taking part in the study.

3 Results

Analyses for the study were performed using SPSS v.21 (SPSS Inc., Chicago, II, USA). The Hayes PROCESS procedure for SPSS v.2.13 (Hayes, 2012) was used for mediation analyses.

3.1 Sample characteristics

From a clinical sample of fifty-one participants, 18% reported a secure attachment (n = 9) on the forced-choice categorical rating of the RQ, whereas 82% reported an insecure attachment style including 16% being preoccupied (n = 8), 33% being dismissing (n = 17) and 33% being fearful (n = 17). The percentage of participants reporting a secure attachment style (18%) is much lower than Ponizovsky et al. (2013) who reported a higher 53% of participants with

secure attachment. However, the distribution across the four attachment styles is similar to that presented by Harder et al. (2014) who reported an over-representation of dismissing attachment in psychosis. The dimensional approach using the 7-point Likert rating scale of the RQ was used for further statistical analyses.

Table 1 presents the means and standard deviations (*SD*) for all the variables used in the analyses. From Table 1, it can be seen that participants scored highest on the dismissing attachment style (*M* = 4.25) and lowest on the secure attachment style (*M* = 3.29). In relation to Regulation of Emotions Questionnaire (REQ), it can be seen from Table 1, that participants reported lower levels of external-dysfunctional regulatory strategies (*M* = 8.27) compared to internal-dysfunctional regulation (*M* = 12.51), internal-functional regulation (*M* = 13.80) and external-functional regulation (*M* = 15.53). These scores are very similar to the psychosis sample from the study by Livingstone et al. (2009), which found that their psychosis sample had elevated use of internal-dysfunctional strategies compared to a non-clinical sample (*M* = 8.76).

In relation to emotional dysfunction, it can be seen from Table 1, that the total sample (*n* = 51) displayed relatively low levels of depression (mean = 5.76, *SD* = 4.21), anxiety (mean = 5.47, *SD* = 4.70), and stress (mean = 7.25, *SD* = 4.56).

Finally, the severity of positive symptoms as identified by the PANSS in the study sample (mean = 17.25, *SD* = 6.99) was found to be similar to that identified by the authors of the instrument (Kay, Fiszbein & Opler, 1987) who validated the measure on a sample of 101 patients with schizophrenia (mean = 18.20, *SD* = 6.08).

Table 1. Descriptive statistics of all measures

	Mean	Std. Deviation	Scale Range Min-Max
Attachment Style (RQ)			
Secure	3.29	1.80	1-7
Fearful	3.94	1.99	1-7
Preoccupied	3.39	1.89	1-7
Dismissing	4.25	2.12	1-7
Emotion Regulation Strategies (REQ)			
Internal Dysfunctional	12.51	4.25	5-25
Internal Functional	13.80	4.74	5-25
External Dysfunctional	8.27	4.08	5-25
External Functional	15.53	5.92	6-30
Emotional Distress (DASS-21)			
Depression	5.76	4.21	0-21
Anxiety	5.47	4.70	0-24
Stress	7.25	4.56	0-21
Positive Symptoms (PANSS)			
Total Positive	17.25	6.99	7-49
Delusions	3.20	1.93	0-7
Hallucinations	2.78	1.79	0-7
Suspiciousness	3.55	1.71	0-7

Note: RQ (Relationship Questionnaire; Phillips & Power, 2007), REQ (Regulation of Emotions Questionnaire; Phillips & Power, 2007), DASS-21 (Depression Anxiety and Stress Scale short form; Lovibond & Lovibond, 2004), PANSS (Positive and Negative Syndrome Scale; Kay, Fiszbein & Opler, 1987)

3.2 Data analysis

The study used a quantitative cross-sectional design. Correlation analyses were conducted to explore the relationships between attachment styles, emotion regulation strategies, psychological distress and positive symptoms of psychosis. Following this, mediation analyses were done to test out additional hypotheses.

A one-sample Kolmogorov-Smirnov Z test (Appendix 4) was use to identify variables that show a significant deviation from normality. The distribution of three variables

(hallucinations, suspiciousness/paranoia, and external-dysfunctional emotion regulation) showed a statistically significant deviation from that expected of a normally distributed variable. Accordingly, where possible, when these three non-normally distributed variables are employed in subsequent analyses, either a nonparametric test is employed or bootstrap confidence intervals (which do not rely on parametric assumptions) are reported.

3.3 Correlational analyses

First, the correlations between the hypothesised independent variable (attachment style), and outcome (distress and positive symptoms of psychosis) are examined. Variables that did not yield significant associations are removed from subsequent analyses, as only significant associations between the independent and dependent variables are required for successive mediation analyses.

Secondly, the correlations between attachment and emotion regulation are reported. Following this, the correlations between emotion regulation strategies, and distress and symptoms of psychosis are examined. Finally, only the variables that indicate significant associations are included in the mediation analysis.

Correlations between attachment style, and distress and symptoms of psychosis

Twenty-eight correlation coefficients are reported in Table 2. If alpha were set to 0.05 for the examination of this correlation matrix, then we would expect 1.4 Type I errors as a result of multiple comparisons. If a Bonferroni correction were to be applied to these data then the alpha rate would be set at 0.0017, which would result in an unacceptable Type II error rate. Therefore, if the alpha were set to 0.04 then the expected Type I error rate would be reduced to 1. Given that the intention at this stage of the analysis is to identify those

bivariate relationships that should go forward for multivariate analysis (mediation analysis), it is held that an alpha level of 0.04 provides an acceptable balance between Type I and Type II errors.

Table 2. Correlations between attachment style, and distress and symptoms of psychosis (*n*=51)

	Attachment style			
	Secure	Fearful	Preoccupied	Dismissing
Depression	-.44**	.43**	.26	-.06
Anxiety	-.14	.09	-.02	.10
Stress	-.34*	.30*	.00	.08
Positive Symptoms	-.35*	.31*	.10	.33*
Delusions	-.35*	.16	.04	.28
Hallucinations	-.33*	.34*	.10	.12
Suspiciousness	-.37*	.27	-.03	.15

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.04 level (2-tailed)

Note: All data was analysed using bivariate Pearson's correlation analyses except variables indicated in italics, which were analysed using an alternative non-parametric test (Spearman's rank).

From Table 2, it can be seen that the secure attachment style was significantly associated with lower depression (r = -.44, p = .001), and stress (r = -.34, p = .01) but was not related to anxiety (r = -.14, p = .35). Secure attachment was also associated with significantly less severe positive symptoms of psychosis (r = -.35, p = .01), including delusions (r = -.35, p = .01), hallucinations (r = -.33, p = .03) and suspiciousness/paranoia (r = -.35, p = .01).

In contrast to secure attachment, insecure fearful attachment was associated with significantly higher levels of depression, (r = .43, p = .001) and stress (r = .30, p = .03), and likewise was not associated with anxiety (r = .09, p = .52). Fearful attachment was also associated with significantly more severe positive symptoms of psychosis (r = .31, p = .03),

specifically hallucinations (r = .34, p = .02), but not suspiciousness/paranoia (r = .27, p = .05), or delusions (r = .16, p = .27).

From Table 2, it can be seen that there were no significant associations between the preoccupied attachment style and outcome (distress and symptoms of psychosis). The preoccupied attachment style was therefore removed from subsequent analyses.

Finally, there was a significant positive association between dismissing attachment style and positive symptoms of psychosis (r = .33, p = .02), but there were no associations between dismissing attachment style and distress (depression, anxiety and stress).

Correlations between attachment style and emotion regulation

Twelve correlation coefficients are reported in Table 3. Similarly, the alpha level is set to 0.04 for examination of this correlation matrix. With an alpha of 0.04, a 0.5 Type I error can be expected as a result of multiple comparisons.

Table 3. Correlations between attachment style and emotion regulation (n=51)

	Attachment Style		
	Secure	Fearful	Dismissing
Internal dysfunctional	-.29*	.53**	-.06
Internal functional	.20	-.20	.29*
External dysfunctional	-.10	.39**	.02
External functional	.32*	-.23	-.10

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.04 level (2-tailed)

Note: All data was analysed using bivariate Pearson's correlation analyses except variables indicated in italics, which were analysed using an alternative non-parametric test (Spearman's rank).

From Table 3, it can be seen that secure attachment style was significantly associated with less internal-dysfunctional emotion regulation (r = -.29, p = .04) and a significantly

greater use of external-functional regulation (r = .32, p = .02). In contrast, insecure fearful attachment had a strong significant positive association with internal-dysfunctional regulation (r = .53, p < .001) and external-dysfunctional regulation (r = .39, p = .01).

Finally, dismissing attachment style was significantly associated with internal-functional regulation (r = .29, p = .04).

Correlations between emotion regulation, and distress and symptoms of psychosis

Table 4 reports twenty-four correlation coefficients, with alpha set to 0.04, reducing the expectation of a Type I error due to multiple comparisons to 1.

Table 4. Correlations between emotion regulation, and distress and symptoms of psychosis (n=51)

	Emotion Regulation			
	Internal dysfunctional	Internal functional	External dysfunctional	*External functional*
Depression	.53**	-.26	.02	-.34**
Stress	.39**	-.06	.28	-.20
Positive Symptoms	.36**	-.30*	.12	-.31*
Delusions	.24	-.16	.00	-.27
Hallucinations	.54**	-.37*	.27	-.31*
Suspiciousness	.27	-.44**	.07	-.48**

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.04 level (2-tailed)

Note: All data was analysed using bivariate Pearson's correlation analyses except variables indicated in italics, which were analysed using an alternative non-parametric test (Spearman's rank).

From Table 4, it can been seen that internal-dysfunctional emotion regulation was associated with significantly elevated levels of depression (r = .53, p < .001), stress (r = .39, p = .004), and positive symptoms (r = .36, p = .01), specifically hallucinations (r = .55, p < .001). In contrast, internal-functional emotion regulation was significantly associated with

less severe positive symptoms (r = -.30, p = .03), including less severe hallucinations (r = -.37, p = .01) and suspiciousness/paranoia (r = -.44, p = .001).

External-functional emotion regulation was associated with significantly lower depression (r = -.34, p = .01), and less severe positive symptoms of psychosis, specifically less severe hallucinations (r = -.31, p = .03) and suspiciousness/paranoia (r = -.48, p < .001). However, there were no significant associations between external-dysfunctional emotion regulation, and distress and symptoms of psychosis. Therefore, external-dysfunctional emotion regulation was removed from subsequent multivariate analyses (mediation analysis).

3.4 Mediation analyses

Further statistical analysis using the mediation analysis procedure described by Preacher and Hayes (2008) was employed to explore the hypothesis that emotion regulation mediates attachment and psychological distress, and again to explore whether emotion regulation mediates attachment and the severity of symptoms of psychosis. Prior to mediation each variable was standardised with data transformed to z scores in order to inform us of how many standard deviations above or below the mean a single case in a distribution is located.

The goal of mediation analysis is to establish the extent to which a causal variable influences an outcome through one or more mediator variables. Figure 2 depicts a simple mediation model that is used in the analysis of these data. Path '*a'* represents the effect of the independent variable (*X*; i.e. attachment style) on the proposed mediator (*M*; i.e. emotion regulation), whereas path '*b'* is the effect of *M* on the dependent variable (*Y*; i.e. distress/symptoms). Mediation analysis is ultimately the difference between the direct effect of *X* on *Y*, also called the '*c*' path, and the indirect effect of *X* on *Y* after accounting for *M*, the

'ć' path. If both '*a*' and '*b*' paths are statistically significant, and 'ć' is closer to zero than '*c*', then *M* is deemed a mediator of the relationship between *X* and *Y* (Preacher & Hayes, 2004).

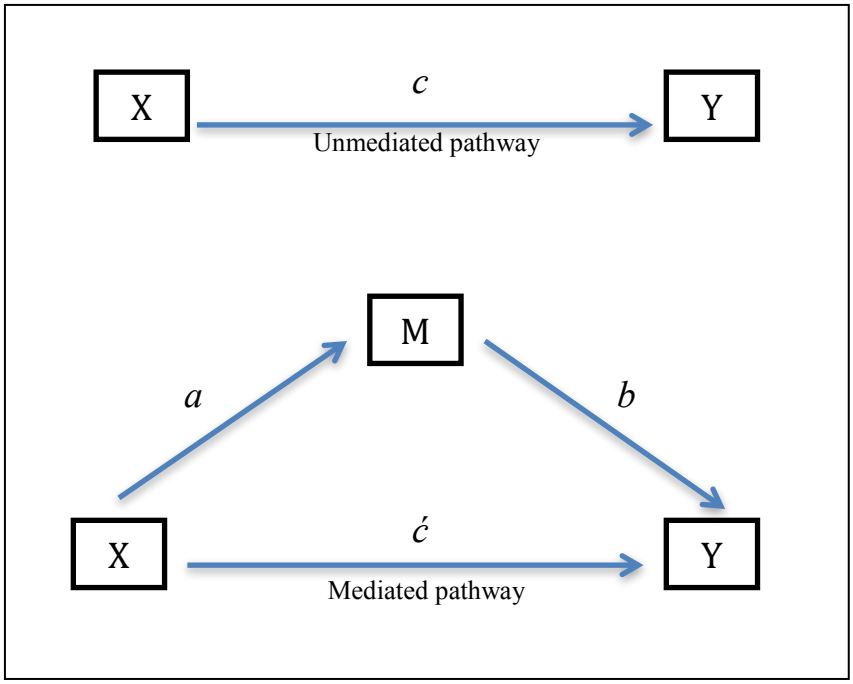

Figure 2: Simple mediation model

To test for mediation, direct and indirect effects were computed using a series of regressions and the bootstrapping procedure recommended by Preacher and Hayes (2004, 2008). Bootstrapping is a nonparametric resampling procedure that does not impose the assumption of normality of the sampling distribution. Mediators were tested by calculating bias-corrected 95% confidence intervals (CI) using bootstrapping based on a 1000 resamples. Statistical significance was determined where upper and lower CI's did not cross zero. To reach a sufficient level of statistical power, a sample size of approximately 50 was deemed an acceptable recruitment number for this study. In psychological research, power is conventionally considered adequate at 0.8 (Cohen, 1992). Fritz and MacKinnon (2007) provide a table of the necessary sample sizes to achieve statistical power. The authors found

that where medium to large effect sizes are expected, bootstrapping mediation analyses, such as that of Preacher and Hayes (2008), require a sample size of greater than 53 participants.

Three attachment styles (secure, fearful and dismissing) were included in the mediation analysis. Preoccupied attachment was removed due to it yielding no significant associations with emotion regulation or outcome variables. Three emotion regulation strategies (internal-dysfunctional, internal-functional and external-functional) were examined as mediators in the hypothesised pathway between attachment style and outcome. Correlational analyses identified no significant associations between external-dysfunctional emotion regulation and outcome, and accordingly this variable is removed from the mediation analysis. In addition, dependent variables anxiety and delusions were removed from subsequent analyses due to lack of previous significant associations in the correlational analyses.

3.4.1 Emotion regulation as a mediator of the relationship between attachment and distress

The path estimates and confidence intervals for the direct and indirect effects for each dependent variable are presented in Tables 5 and 6.

Depression

From Table 5, it can be seen that there was a significant relationship between secure attachment and depression (β = .44, 95% CI -.72 to -.17) in the unmediated model. With the inclusion of the three emotional regulatory strategies in the mediation model, the direct effect of secure attachment upon depression reduced to -0.24 (95% CI -.48 to .01), indicating that the mediated paths account for approximately 47% of the variation in the relationship between secure attachment and depression. Internal dysfunction regulation showed a

significant mediated pathway (β = -.18, 95% CI -.39 to -.04) with a significant negative relationship between secure attachment and internal dysfunction regulation (β = -.29, 95% CI -.54 to -.05) and a significant positive relationship between internal dysfunction regulation and depression (β = .61, 95% CI .34 to .88). Therefore, the negative association between secure attachment style and depression was fully mediated by less use of internal-dysfunctional emotional regulation strategies.

Similarly, there was a significant relationship between fearful attachment and depression (β = .43, 95% CI .72 to -.17) in the unmediated model. Again, with the inclusion of the three mediated pathways (emotional regulation) in the mediation model, the direct effect of the fearful attachment upon depression reduced to 0.22 (95% CI -.48 to .01), indicating that the mediated paths account for approximately 49% of the variation of the relationship between fearful attachment and depression. In this model, internal dysfunction regulation (β = 0.31, 95% CI .15 to .53) showed a significant mediated pathway, where there was a significant positive relationship between fearful attachment and internal dysfunction regulation (β = .53, 95% CI .27 to .78) and a significant positive relationship between internal dysfunction regulation and depression (β = .59, 95% CI .28 to .89). Therefore, the positive association between fearful attachment and depression was fully mediated by internal dysfunction regulation.

Given the non-significant relationship between dismissing attachment and depression (r = -.06, p = .66), mediation analysis was not examined.

Table 5. Results from the mediation analysis where depression is the dependent variable

	Path Estimate	Standard Error	Lower 95% Bootstrap Confidence Interval	Upper 95% Bootstrap Confidence Interval
Attachment: Secure				
Direct effect in mediated model	-0.24	0.12	-0.48	0.01
Mediated Path: Internal Dysfunctional	-0.18	0.09	-0.39	-0.04
Mediated Path: Internal Functional	-0.02	0.04	-0.15	0.03
Mediated Path: External Functional	0.04	0.05	-0.20	0.03
Total of Direct and Indirect Effects	0.44	0.14	-0.72	-0.17
Attachment: Fearful				
Direct effect in mediated model	0.22	0.14	-0.49	0.01
Mediated Path: Internal Dysfunctional	0.31	0.10	0.15	0.53
Mediated Path: Internal Functional	0.02	0.04	-0.04	0.15
Mediated Path: External Functional	0.04	0.05	-0.01	0.19
Total of Direct and Indirect Effects	0.43	0.13	-0.72	-0.17
Attachment: Dismissing				
Direct effect in mediated model	0.00	0.12	-0.24	0.24
Mediated Path: Internal Dysfunctional	-0.04	0.10	-0.24	0.15
Mediated Path: Internal Functional	-0.03	0.07	-0.21	0.06
Mediated Path: External Functional	0.02	0.04	-0.02	0.17
Total of Direct and Indirect Effects	-0.06	0.15	-0.36	0.23

Stress

From Table 6 it can be seen that secure attachment is significantly related to stress in the unmediated model (β = -.34, 95% CI -.65 to -.37). However, with the inclusion of the three emotion regulatory pathways in the mediated model, the direct effect of attachment security and stress reduced to -.24 (95% CI -.56 to .08), where 31% of the variation of the relationship between secure attachment and stress can be accounted for by emotion regulation. More specifically, internal dysfunction regulation was found to significantly mediate the relationship between secure attachment and stress (β = -.07, 95% CI -.25 to -.002), where secure attachment was associated with significantly lower internal-dysfunctional regulation (β

= -.29, 95% CI -.54 to -.05). However, mediation cannot be assumed to be observed in this model since internal-dysfunctional strategies, although showing an overall significant effect did not show a significant pathway with the dependent variable of stress (β = -.24, 95% CI -.07 to .55).

Likewise, emotion regulation was not found to mediate the relationship between dismissing attachment and stress, nor between fearful attachment and stress (See Table 6).

Table 6. Results from the mediation analysis where stress is the dependent variable

	Path Estimate	Standard Error	Lower 95% Bootstrap Confidence Interval	Upper 95% Bootstrap Confidence Interval
Attachment: Secure				
Direct effect in mediated model	-0.24	0.16	-0.56	0.08
Mediated Path: Internal Dysfunctional	-0.07	0.06	-0.25	-0.01
Mediated Path: Internal Functional	0.02	0.04	-0.019	0.18
Mediated Path: External Functional	-0.04	0.06	-0.22	0.04
Total of Direct and Indirect Effects	-0.34	0.15	-0.65	-0.37
Attachment: Fearful				
Direct effect in mediated model	0.09	0.19	-0.30	0.48
Mediated Path: Internal Dysfunctional	0.14	0.09	-0.03	0.35
Mediated Path: Internal Functional	-0.02	0.05	-0.17	0.02
Mediated Path: External Functional	0.05	0.05	-0.01	0.21
Total of Direct and Indirect Effects	0.30	0.13	0.03	0.57
Attachment: Dismissing				
Direct effect in mediated model	0.04	0.16	-0.26	0.37
Mediated Path: Internal Dysfunctional	-0.02	0.05	-0.16	0.07
Mediated Path: Internal Functional	0.02	0.06	-0.08	0.20
Mediated Path: External Functional	0.01	0.04	-0.02	0.17
Total of Direct and Indirect Effects	0.08	0.12	-0.17	0.33

3.4.2 Emotion regulation as a mediator of the relationship between attachment and symptoms of psychosis

The path estimates and confidence intervals for the direct and indirect effects for each dependent variable are presented in Tables 7 and 8.

Positive Symptoms of Psychosis

From Table 7, it can be seen that the unmediated pathway between secure attachment and positive symptoms was significantly related (β = -.35, 95% CI -.62 to -.07). However, this relationship significantly reduced with the addition of the three mediated pathways (β = -.20, 95% CI -.55 to .16). 43% of the variation in the relationship between security and positive symptoms could be accounted for by emotion regulatory strategies. In a similar manner, internal dysfunction regulation appeared to mediate the relationship between secure attachment and positive symptoms (β = -.09, 95% CI -.29 to -.01), as secure attachment had a significant negative relationship to internal dysfunction regulation (β = -.29, 95% CI -.54 to -.05). However, internal dysfunction did not report a significant pathway with positive symptoms of psychosis (β = .32, 95% CI -.36 to .68), despite demonstrating an overall significant effect, and therefore the conservative conclusion is that mediation did not occur in the model.

Contrary to expectations, emotion regulation did not significantly mediate the relationship between fearful attachment style and positive symptoms of psychosis.

However, internal-functional strategies showed a significant mediated pathway (β = -.15, 95% CI -.38 to -.02) with a significant positive relationship between dismissing attachment and internal-functional regulation (β = .29, 95% CI .02 to .56), and a significant positive relationship between internal-functional regulation and positive symptoms (β = -.51,

95% CI -.89 to -.14). The total effect of dismissing attachment on positive symptoms was significant (β = .33, 95% CI .05 to .61) in the unmediated model. With the addition of the mediated pathway in the mediation model, the direct effect of dismissing attachment on positive symptoms remained significant (β = .53, 95% CI .29 to .77). The inflation of the direct effect between the unmediated and mediated model is due to negative paths confounding the calculation of the mediated pathway. From this we can conclude that the dismissing attachment style and positive symptoms was mediated by a trivial effect by more internal-functional regulation.

Table 7. Results from the mediation analysis where positive symptoms is the dependent variable

	Path Estimate	Standard Error	Lower 95% Bootstrap Confidence Interval	Upper 95% Bootstrap Confidence Interval
Attachment: Secure				
Direct effect in mediated model	-0.20	0.18	-0.55	0.16
Mediated Path: Internal Dysfunctional	-0.09	0.06	-0.29	-0.01
Mediated Path: Internal Functional	-0.04	0.05	-0.18	0.03
Mediated Path: External Functional	-0.03	0.07	-0.22	0.08
Total of Direct and Indirect Effects	-0.35	0.14	-0.62	-0.07
Attachment: Fearful				
Direct effect in mediated model	0.12	0.17	-0.23	0.47
Mediated Path: Internal Dysfunctional	0.17	0.10	-0.00	0.42
Mediated Path: Internal Functional	0.04	0.06	-0.02	0.21
Mediated Path: External Functional	0.03	0.06	-0.05	0.20
Total of Direct and Indirect Effects	0.31	0.13	0.05	0.56
Attachment: Dismissing				
Direct effect in mediated model	0.53	0.12	0.29	0.77
Mediated Path: Internal Dysfunctional	-0.03	0.07	-0.19	0.11
Mediated Path: Internal Functional	-0.15	0.09	-0.38	-0.02
Mediated Path: External Functional	-0.01	0.03	-0.14	0.02
Total of Direct and Indirect Effects	0.33	0.14	0.05	0.61

Hallucinations

From Table 8, it can be seen that there was a strong significant relationship between secure attachment and hallucinations (β = -.30, 95% CI -.55 to -.05) in the unmediated model. With the inclusion of the three emotional regulatory strategies in the mediation model, the direct effect of secure attachment upon hallucinations reduced considerably to -.09 (95% CI -.36 to .18), indicating that the mediated paths account for approximately 70% of the variation of the relationship between secure attachment and hallucinations. Internal dysfunction regulation showed a significant mediated pathway (β = -.16, 95% CI -.37 to -.05) with a significant negative relationship between secure attachment and internal dysfunction regulation (β = -.29, 95% CI -.54 to -.05) and a significant positive relationship between internal dysfunction regulation and hallucinations (β = .55, 95% CI .22 to .88). Therefore, the association between secure attachment and hallucinations was fully mediated by less internal-dysfunctional regulation.

Likewise, fearful attachment was found to have a significant relationship to hallucinations (β = -.33, 95% CI .08 to .58) in the unmediated pathway, which again reduced substantially to non-significance (β = .01, 95% CI -.23 to .25) with the addition of the three mediated pathways (see Table 8). In this model, emotion regulation was found to account for 97% of the variance in the relationship between fearful attachment style and hallucinations. This would suggest "complete mediation" of the relationship between fearful attachment and hallucinations. In a similar manner, internal-dysfunctional regulation showed a strongly significant mediation pathway (β = .30, 95% CI .13 to .59), with again a significant positive relationship between fearful attachment style and internal dysfunction regulation (β = .53, 95% CI .27 to .78), and a significant positive relationship between internal dysfunction regulation and hallucinations (β = .57, 95% CI .25 to .89). Thus, the relationship between

fearful attachment and hallucinations was fully mediated by the presence of more internal-dysfunctional regulation.

However, emotion regulation did not mediate the relationship between the dismissing attachment style and hallucinations (see Table 8).

Table 8. Results from the mediation analysis where hallucinations is the dependent variable

	Path Estimate	Standard Error	Lower 95% Bootstrap Confidence Interval	Upper 95% Bootstrap Confidence Interval
Attachment: Secure				
Direct effect in mediated model	-0.09	0.13	-0.36	0.18
Mediated Path: Internal Dysfunctional	-0.16	0.08	-0.37	-0.05
Mediated Path: Internal Functional	-0.06	0.05	-0.20	0.02
Mediated Path: External Functional	0.00	0.06	-0.14	0.12
Total of Direct and Indirect Effects	-0.30	0.13	-0.55	-0.05
Attachment: Fearful				
Direct effect in mediated model	0.01	0.12	-0.23	0.25
Mediated Path: Internal Dysfunctional	0.30	0.11	0.13	0.59
Mediated Path: Internal Functional	0.06	0.06	-0.02	0.21
Mediated Path: External Functional	0.00	0.05	-0.08	0.13
Total of Direct and Indirect Effects	0.33	0.13	0.08	0.58
Attachment: Dismissing				
Direct effect in mediated model	0.27	0.12	0.02	0.52
Mediated Path: Internal Dysfunctional	-0.04	0.09	-0.23	0.15
Mediated Path: Internal Functional	-0.14	0.08	-0.35	-0.02
Mediated Path: External Functional	-0.01	0.03	-0.13	0.02
Total of Direct and Indirect Effects	0.08	0.14	-0.20	0.37

4 Discussion

4.1 Summary of findings

The current study found a higher proportion of insecure attachment (82%) in psychosis, which is much higher compared to previous studies using the RQ (Ponizovsky et al., 2013; Ponizovsky et al., 2014; Wickham et al., 2014). Moreover, the study found that 18% of participants identified themselves as secure, 16% as being preoccupied, 33% as being dismissing, and 33% as being fearful in their adult attachment style. The distribution across the four attachment styles is similar to that presented by Harder (2014) in a recent review.

A primary aim of this study was to investigate the associations between attachment, emotional regulation, emotional distress and positive symptoms of psychosis, in a clinical sample recovering from a first episode of psychosis. As expected, the results found that secure attachment was positively associated with external-functional emotional regulation and negatively associated with internal-dysfunctional emotional regulation, emotional dysfunction (depression and stress) and positive symptoms of psychosis including hallucinations, delusions, and suspiciousness/paranoia. In contrast and as expected, insecure fearful attachment style was positively associated with dysfunctional (both internal and external) emotional regulation, emotional dysfunction (depression and stress) and positive symptoms of psychosis, namely hallucinations. To my knowledge, this is the first study to find associations between secure and insecure attachment styles and functional and dysfunctional emotional regulation in a clinical sample recovering from FEP. Finally, mediation analysis found that the associations between secure attachment and depression, and between secure attachment and hallucinations were mediated by less internal-dysfunctional emotion regulation. In contrast, associations between fearful attachment style and depression and hallucinations were mediated by more internal-dysfunctional emotion regulation. Contrary to

expectation, associations between dismissing attachment style and positive symptoms were mediated by more internal-functional emotion regulation.

The influence of attachment style and emotion regulation on distress and symptoms in psychosis

As expected, secure attachment was associated with lower internal-dysfunctional strategies and greater use of external-functional strategies, whereas a fearful attachment style was associated with a greater use of internal and external-dysfunctional strategies. This is not surprising given the conceptually opposing models of self and other for the secure and fearful attachment styles. Secure attachment is hypothesised to have a greater sense of worth for the self and others, and therefore is less likely to employ internal-dysfunctional strategies such as rumination and self-criticism, and instead utilise external resources to help alleviate distress. In contrast, fearful attachment is hypothesised to have a low sense of self-worth and value of others, and thus likely to exhibit poor intra- and inter-personal strategies to alleviate distress. As predicted, this study found that secure attachment was associated with significantly lower depression, stress and positive symptoms (delusions, hallucinations and suspiciousness/paranoia), which is consistent with Ponizovsky et al. (2013) who also found significantly lower levels of depression, stress, anxiety, and positive symptoms of psychosis, namely hallucinations, in the secure attachment style. The association in this study between fearful attachment and hallucinations is different to earlier empirical findings that reported insecurity was related to paranoia but not hallucinations (Berry et al., 2008; Wickham et al., 2014; Strand et al., 2014). Unlike previous research (Ponizovsky et al., 2013; Strand, 2014), no significant associations were found between preoccupied attachment and distress, or symptoms of psychosis. However, the current study uniquely found that dismissing

attachment was related to greater use of internal-functional strategies such as acceptance and goal-oriented thinking, yet experiencing significantly more severe positive symptoms of psychosis. The greater use of internal-dysfunctional regulation found in fearful attachment and the surprising greater use of internal-functional regulation found in dismissing attachment, may be due to the what Ellring and Smith (1998) described as the prominence of internal regulation as opposed to social regulation in individuals experiencing psychosis, and it is this over-absorption in the internal world that may be problematic (Livingstone et al., 2009).

A meta-analytic review by Aldao et al. (2010) found that adaptive emotion regulation strategies were associated with less psychopathologies, whereas maladaptive emotion regulation were associated with more psychopathologies. Consistent with Aldao et al. (2010), this study found strong associations between the use of internal-dysfunctional strategies and more depression, stress and positive symptoms, namely hallucinations. On the other hand, external-functional strategies were associated with less depression and less severe positive symptoms, namely hallucinations and suspiciousness.

The mediating role of emotional regulation

A secondary aim of the study was to investigate the potential mediating role of emotion regulation in the relationship between attachment and distress, and between attachment and symptom severity of psychosis. Previous theorists have indicated a potential mediating role of emotion regulation in attachment and psychopathology (Mikulincer & Shaver, 2012). This has been supported in empirical research in non-clinical populations where emotion regulation was found to mediate attachment and depression (Malik et al., 2015). In this current study with a first-episode psychosis population, lower internal-

dysfunctional regulation was found to mediate the relationship between secure attachment and depression (47% variation), and hallucinations (70% variation, indicative of full mediation). Moreover, greater dysfunctional internal emotion regulation mediated the relationship between fearful attachment and depression (49% variance). Full mediation was observed between fearful attachment and hallucinations through more internal-dysfunctional regulation (97% variance). A unique finding of this study was the observed partial mediation between dismissing attachment and more severe positive symptoms of psychosis through greater use of internal-functional regulation. This finding was unexpected given that internal-functional regulation is conceived as adaptive in the model presented by Phillips and Power (2007). However, an elevated use in individuals with a dismissing style may in fact reflect their self-sufficiency and dismissal of value of interpersonal relationships, in which an over-reliance on internal-functional resources can be perceived as maladaptive or even counterproductive. Therefore, in line with the suggestion by Gross (2002), it may be better to view emotion regulation as either functional or dysfunctional dependent on the individual context. For example, Gross (2002) describes rumination as dysfunctional in the context of emotion regulation theory, however the absence of rumination can be portrayed as avoidance of thought, which in itself can be conceived as dysfunctional.

4.2 Methodological limitations

There is a wealth of empirical literature advocating a significant interaction with anxiety in a psychotic population (Cosoff & Hafner, 1998). Anxiety, including social anxiety has been previously related to persecutory delusions (Freeman & Garety, 1999), paranoia (Matos et al., 2013) and hallucinations (Lobben et al., 2002). However, in this study stress but not anxiety was associated with insecure fearful attachment in a first-episode population. The overall

lack of significant association between anxiety and attachment was surprising given that both preoccupied and fearful attachment are conceived as constructs with high anxiety in the Bartholomew and Horrowitz (1991) model. The concept of 'working models' and the representation of attachment in two-dimensional space are widely accepted in the literature. However, debate continues regarding the optimum measure of attachment and it is agreed that much work is needed to understand and improve attachment measures (Mikulincer & Shaver, 2007). The use of a single statement to measure attachment style in the Relationship Questionnaire (RQ) may undermine reliability and attract criticism by researchers in support of the use of multi-item measures of attachment (Mikulincer & Shaver, 2007). However, prior research by Ponizovsky et al. (2013; 2014), Strand et al. (2014) and Korver-Nieberg et al. (2015) report the ease of use, suitability and validity of the measure in a psychosis population. In addition to the potential flaws of the RQ as a measure of attachment, the DASS-21 may not have been an optimum measure of anxiety. Although the DASS-21 holds strong psychometric properties, the anxiety subscale has a stronger emphasis on the physiological symptoms of anxiety (e.g. dryness of mouth, breathing difficulties, trembling, increased heart rate) rather than an emphasis on cognitive symptoms of anxiety, such as fear of losing control, fear of the worst happening, fear of dying, which may be better represented by items on the Beck Anxiety Inventory (Beck et al., 1998).

The overall low scores on distress within the sample, as seen in Table 1, may also be attributed to the high proportion of dismissing-avoidant (33%) and fearful-avoidant (33%) in the total sample as measured by the forced-choice categorical score on the RQ. Dozier (1990) reported that dismissing-avoidant attachment styles were less likely to disclose symptomatology, more likely to minimize the interventions of case managers, and less likely to engage with treatment. Other authors have also noted a greater use of sealing-over

recovery styles (Mulligan & Lavender, 2010) and lower reflective functioning (MacBeth et al., 2011) in avoidant attachments. With a potential tendency to underreport symptoms and potentially low reflective functioning, it is possible that self-reported levels of distress and symptoms of psychosis are under representative of actual distress in the sample.

The measure of emotion regulation (REQ) employed in this study may be considered too unspecific, whereby more specific measures of self-criticism or rumination may have revealed more differential associations (Smith & Alloy, 2009). However, in this explorative study, the REQ found a particularly strong association between internal-dysfunctional regulation and elevated distress and positive symptoms of psychosis, and between external-functional regulation and lower distress and positive symptoms. Therefore, the REQ with its conceptual basis underpinned by Bartholomew and Horowitz's (1991) two-dimensional model of the self and other in relation to attachment anxiety and avoidance, can be considered a useful instrument to measure a variety of internal and external cognitive and behavioural mechanisms.

Finally, the cross-sectional nature of the study removed the opportunity to determine stability of characteristics over time or deduce causal relationships between variables (Miller, 1998). Although backward causality was unlikely, it can be argued that the experience of psychosis in itself may impact on the use of emotion regulatory strategies. There is evidence to suggest the traumatic nature of experiencing an episode of psychosis, which in turn can affect coping or recovery, and this itself may determine the severity of emotion dysfunction (Jackson et al., 2004; Mueser et al., 2010). Furthermore, an earlier study found that over 50% of individuals with a diagnosis of psychosis, reported moderate to high levels of internalised stigma (Brohan et al, 2010). With fears of future discrimination and/or perceived social threat, it is reasonable to expect an impact on an individual's interpersonal and social

functioning, similar to that represented in the insecure fearful attachment style measured by the RQ (e.g. difficulties trusting others and worrying about being hurt by others they may become close to). The role of stigma-related factors such as shame, social marginalisation and entrapment has been well documented in the research with links to social anxiety (Birchwood et al, 2006) and depression (Upthegrove et al, 2014) in first-episode psychosis. It is therefore possible that the interpersonal style of individuals with psychosis is a response to the adversity including social stigma, and not a result or precursor to psychosis (Ringer et el, 2013).

4.3 Clinical implications

The findings of the study emphasise the influence which attachment security and insecurity, and emotion regulation (or dysregulation) can have on the severity of distress and positive symptoms experienced by those with a diagnosis of psychosis. Assessing attachment and recognising deficits in emotion regulation could be a valuable target for psychological intervention, with a move away from treating specific symptoms of psychosis (e.g. persecutory delusions) and treating the emotional dysfunction (Birchwood & Trower, 2006). There is potential for third wave CBT approaches such as Compassion Focussed Therapy (Gilbert, 2009) and Mindfulness-based CBT (Segal et al., 2002) to be offered to individuals experiencing psychosis, where less emphasis is placed on the content of thoughts and changing faulty thinking, to changing people's relationship to their thoughts, feelings and experiences by reducing dysfunctional strategies like avoidance, suppression, and self-criticism, and promoting more functional strategies like acceptance and self-soothing (Bernard et al., 2015).

It is important to note that insecure attachments are not specific to psychosis and are related to a number of psychopathologies, and that not all individuals with insecure attachments develop psychiatric difficulties (Dozier et al., 1999). Instead clinically, it is the awareness of the vulnerability to mental health difficulties that an insecure attachment can have in the context of additional vulnerabilities such as poverty and living in urban environments (Read & Gumley, 2008).

There is evidence to suggest that the presence of an alternative supportive attachment figure in the life of an infant can mitigate the effects of the other attachment figure that may be perceived as hostile, critical or intrusive (Fonagy et al., 1994; Rutter et al., 1995; Read & Gumley, 2008). A central concept of attachment is its dynamic nature, with influence to change across the lifespan (Bowlby, 1979; Scharfe & Bartholomew, 1994; Waters et al., 2000). Given the limited social networks of many individuals with psychosis, clinicians can play a central role in the lives of people, and can be considered as key attachment figures (Berry et al., 2008; Livingstone et al., 2009; Owens et al., 2012). It is hoped that developments in the literature can help staff to view patients' interactions with them or services (e.g. persistent reassurance seeking or disengagement) as reflecting different cognitive and behavioural mechanisms in response to adverse life experiences and consequential attachment insecurities.

Finally it is important to acknowledge the implication for attachment theory to be perceived as 'parent blaming'; however the attachment between caregiver and infant does not imply that causality runs from parent to infant, (Tait et al., 2004). Contemporary developmental theories accepts that some parents may struggle to adapt to the behavioural anomalies of a young person arising from the development of a psychosis, which may culminate in attachment difficulties in adulthood (Duggan et al., 1998).

4.4 Future research

Given the cross-sectional nature of this study and the limitations this places on inferences, there is a need for future research to use more robust methodological designs that consider causality and longitudinal datasets. Moreover, given a limitation of this study was the unspecific nature of the REQ as a measure of emotion regulation, the inclusion of a more specific measure of emotion regulation may be a beneficial development to the current study. A measure such as the Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski, Kraaij & Spinhoven, 2001) examines functional and dysfunctional cognitive emotional regulation, more specifically positive reappraisal, putting into perspective, positive refocusing, planning, acceptance, self-blame, other-blame, rumination and catastrophising.

Furthermore, whilst the findings of this study demonstrate a clear relationship between an insecure adult attachment and dysfunctional emotion regulation in the development and maintenance of affective and psychotic symptomatology in individuals experiencing a FEP, there is still little evidence that the relationship is stronger or weaker for other diagnostic groupings. The current study and previous studies often lack a comparison group or the use of a healthy control group, and thus it is difficult to ascertain whether these findings are specific to people with psychosis, or the same as what would be found in individuals with generalised mental illness. Livingstone et al. (2009) examined emotional experience and regulation in individuals with a diagnosis of psychosis, anxiety or mood disorders and non-clinical controls. The authors found that individuals with psychosis attempt to regulate their emotions in similar ways to people with anxiety or mood disorders, but differed significantly from the non-clinical control group. Therefore future research exploring attachment and emotion regulation in psychosis would benefit from including a comparison group (e.g. non-psychotic mood disorders) and/or a non-clinical control.

In addition to emotion regulation, potential mediators in the relationship between attachment and distress/symptoms need further exploration, for example the role of self, other or illness appraisals (Schmidt et al., 2010). Knowledge of an individual's attachment style may inform clinicians not only of how an individual regulates their emotions but also how they may adjust to a diagnosis of psychosis, in terms of their recovery style (McGlashan et al., 1975). Sealing-over, characterised by cognitive and behavioural avoidance of the diagnosis and experience, has been found to relate to insecure attachment and vulnerable self-esteem (Drayton et al., 1998). Mulligan and Lavender. (2010) found that sealing-over was significantly associated with an avoidant/dismissive adult attachment style, with a tendency to treat relationships secondary to achievement. Future studies may consider the relationship between functional vs. dysfunctional or hyperactivating vs. deactivating emotion regulation strategies, in the context of adult attachment and recovery style in psychosis.

4.5 Conclusions

The current study aimed to further understand how attachment relationships with close others may influence how individuals regulate their emotions at times of upset. Furthermore, the study examined how specific strategies used to regulate emotions may impact on difficulties with low mood, anxiety and positive symptoms of psychosis. Consistent with expectations, a secure attachment style was found to be associated with more functional strategies (e.g. putting the situation into perspective, or asking others for advice) and less dysfunctional strategies (e.g. dwelling on thoughts and feelings, and keeping the feeling locked up inside) of regulating emotions, with significantly less depression, stress and positive symptoms of psychosis (delusions, hallucinations and suspiciousness/paranoia). In contrast, an insecure fearful attachment style was found to have significantly more dysfunctional strategies, and

more severe levels of depression, stress and positive symptoms of psychosis (hallucinations but not delusions or suspiciousness/paranoia). The relationship between a fearful attachment style and more severe hallucinations in individuals with a diagnosis of psychosis, replicates the findings of Ponizovsky et al. (2013).

To my knowledge this is the first paper to examine and find a mediating role of emotion regulation in the relationship between attachment styles and the severity of distress and positive symptoms experienced by individuals with a diagnosis of first-episode psychosis. The study provides unique evidence for mediation in the relationship between secure attachment and depression, and between secure attachment and hallucinations, through less dysfunctional emotion regulation. Conversely, increased use of dysfunctional internal emotion regulation was found to mediate the relationship between an insecure fearful attachment style and more depression, and fully mediate the relationship between an insecure fearful attachment style and more severe hallucinations. The findings suggest that individuals with an insecure fearful attachment, with conceptually low self-worth and low value of others, are vulnerable to more dysfunctional emotion regulation. With such poor interpersonal relationships and difficulties in coping with distress, individuals with an insecure fearful attachment may consequently experience elevated emotional distress and more severe positive symptoms of psychosis. However, a secure attachment style, with conceptually a greater sense of worth for the self and others, is potentially a protective factor against the severity of affective and psychotic symptomatology, due to employing less dysfunctional emotion regulation.

The findings support the contention that emotional dysfunction and dysregulation is prominent in first-episode psychosis (Birchwood, 2003). This suggests that first-episode psychosis populations may benefit from assessment and treatment of emotional dysfunction

(e.g. depression) with a focus on reducing dysfunctional regulatory strategies such as rumination and self-criticism, as opposed to targeting treatment at the specific psychotic symptomatology, especially for individuals who may have an insecure attachment style.

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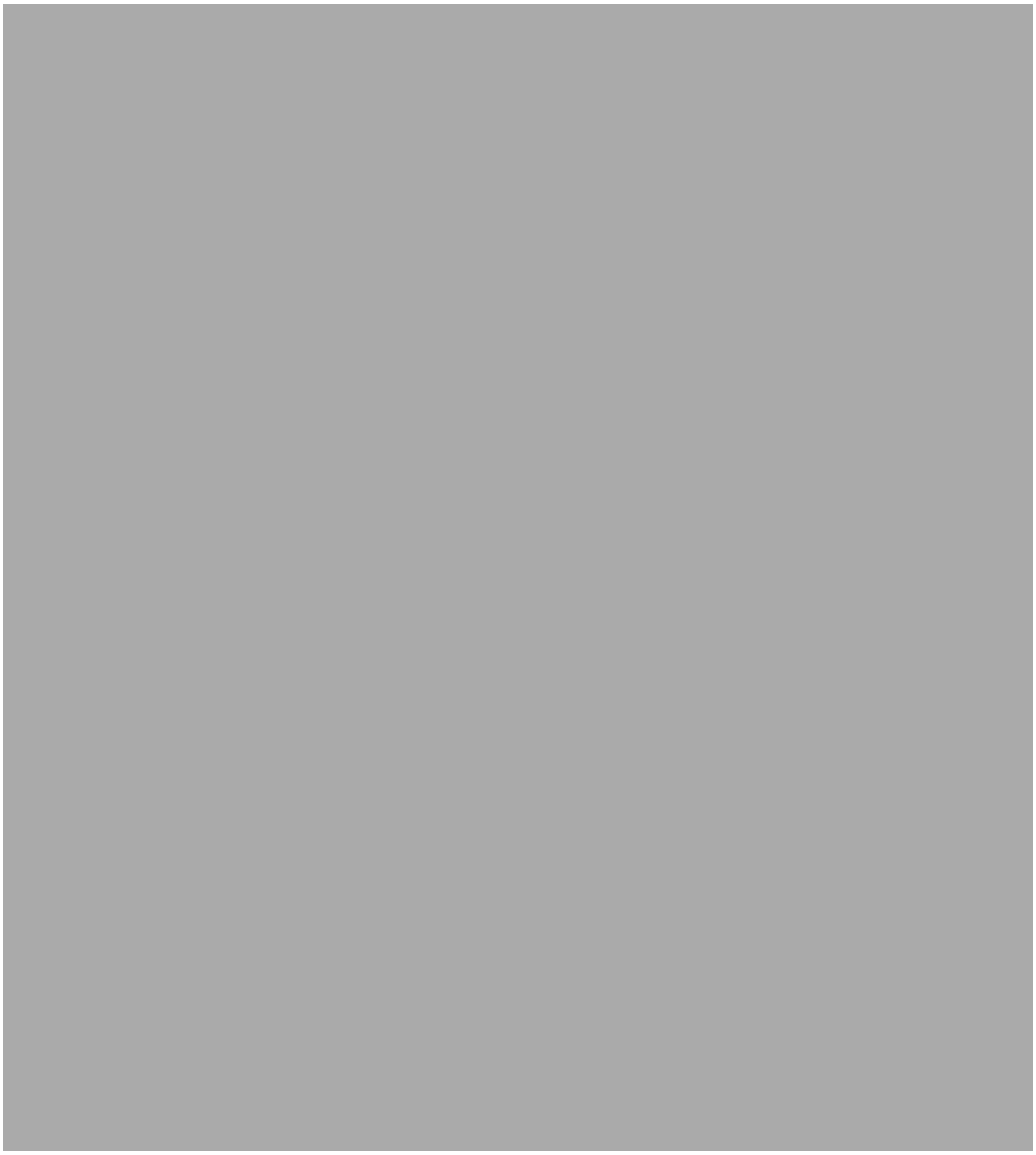
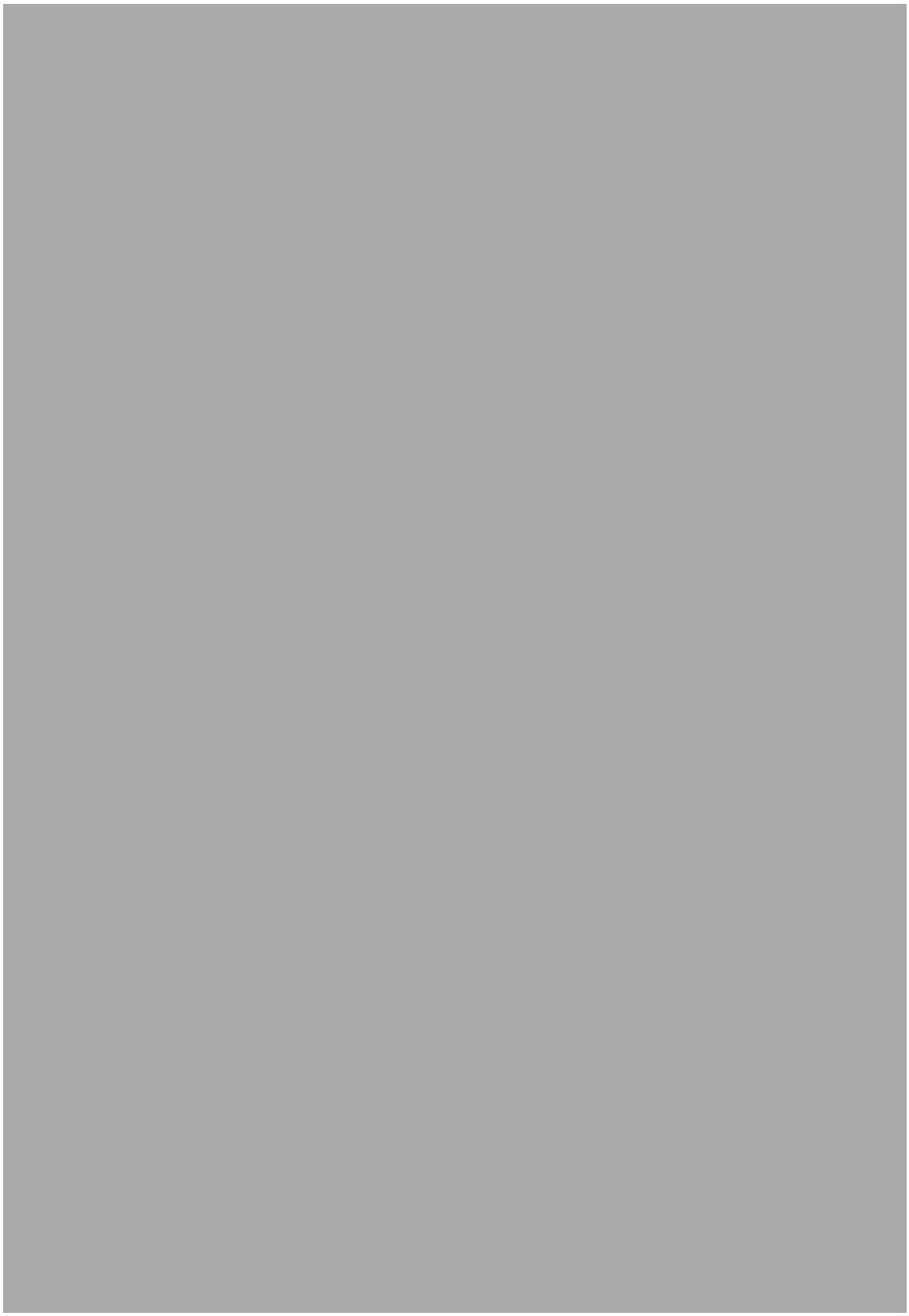
Appendix 1:

Measures of Recovery Style

(1) The Integration / Sealing Over Scale (ISOS; McGlashan et al., 1977; 1987)



(2) The Recovery Style Questionnaire (RSQ; Drayton et al., 1998)



Appendix 2:
Literature search strategy

	Search Terms	Article Results
1	exp psychosis/ or exp acute psychosis/ or exp alcoholic psychosis/ or exp childhood psychosis/ or exp hallucinosis/ or exp "paranoia (psychosis)"/ or exp schizophrenia/	42316
2	(psychosis or psychoses or psychotic or schizophreni*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	62859
3	1 or 2	63105
4	(recover* adj2 style*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	50
5	(recover* adj1 type*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	12
6	(seal* adj4 over*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	34
7	"avoidant coping".mp	626
8	(integrat* adj4 recover*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	201
9	4 or 5 or 6 or 7 or 8	905
10	3 and 9	78

PsychINFO: June 2014 week 4

Literature search strategy

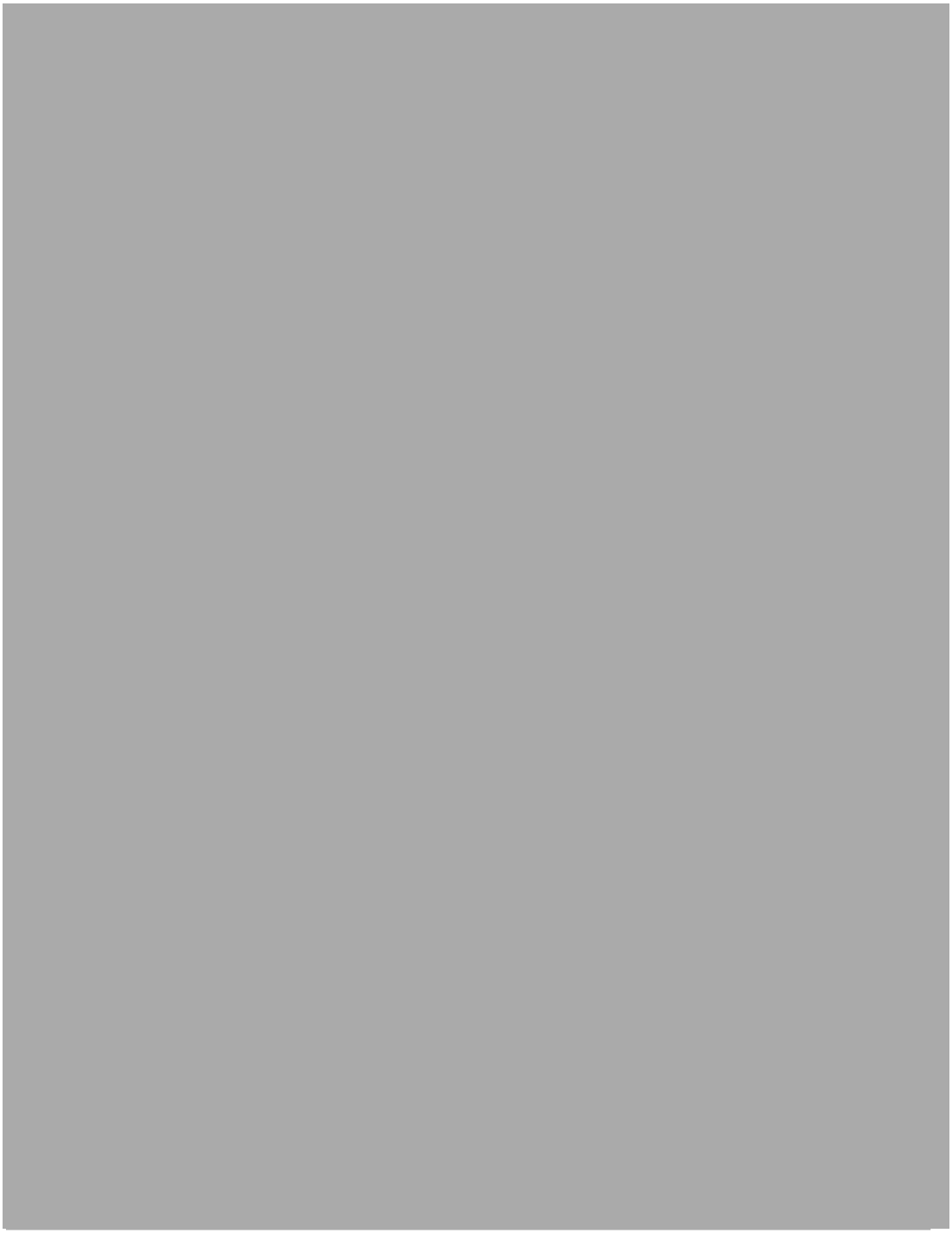
	Search Terms	Article Results
1	exp "schizophrenia and disorders with psychotic features"/ or exp psychotic disorders/ or exp schizophrenia/	117122
2	(psychosis or psychoses or psychotic or schizophreni*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	149327
3	1 or 2	151168
4	(recover* adj2 style*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	37
5	(recover* adj1 type*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	163
6	(seal* adj4 over*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	430
7	"avoidant coping".mp.	457
8	(integrat* adj4 recover*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	352
9	4 or 5 or 6 or 7 or 8	1413
10	3 and 9	77

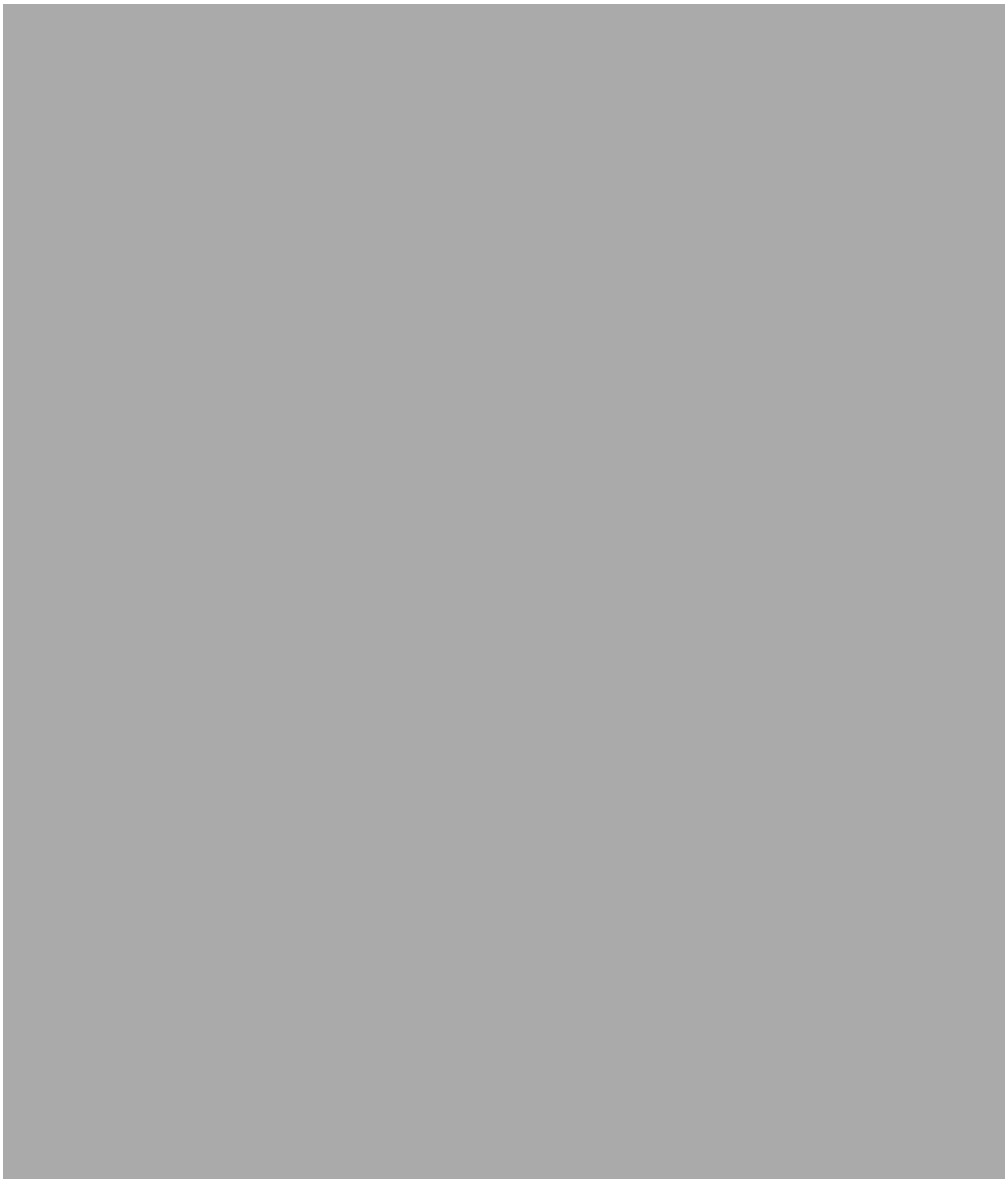
MEDLINE: June 2014 week 4

Appendix 3:

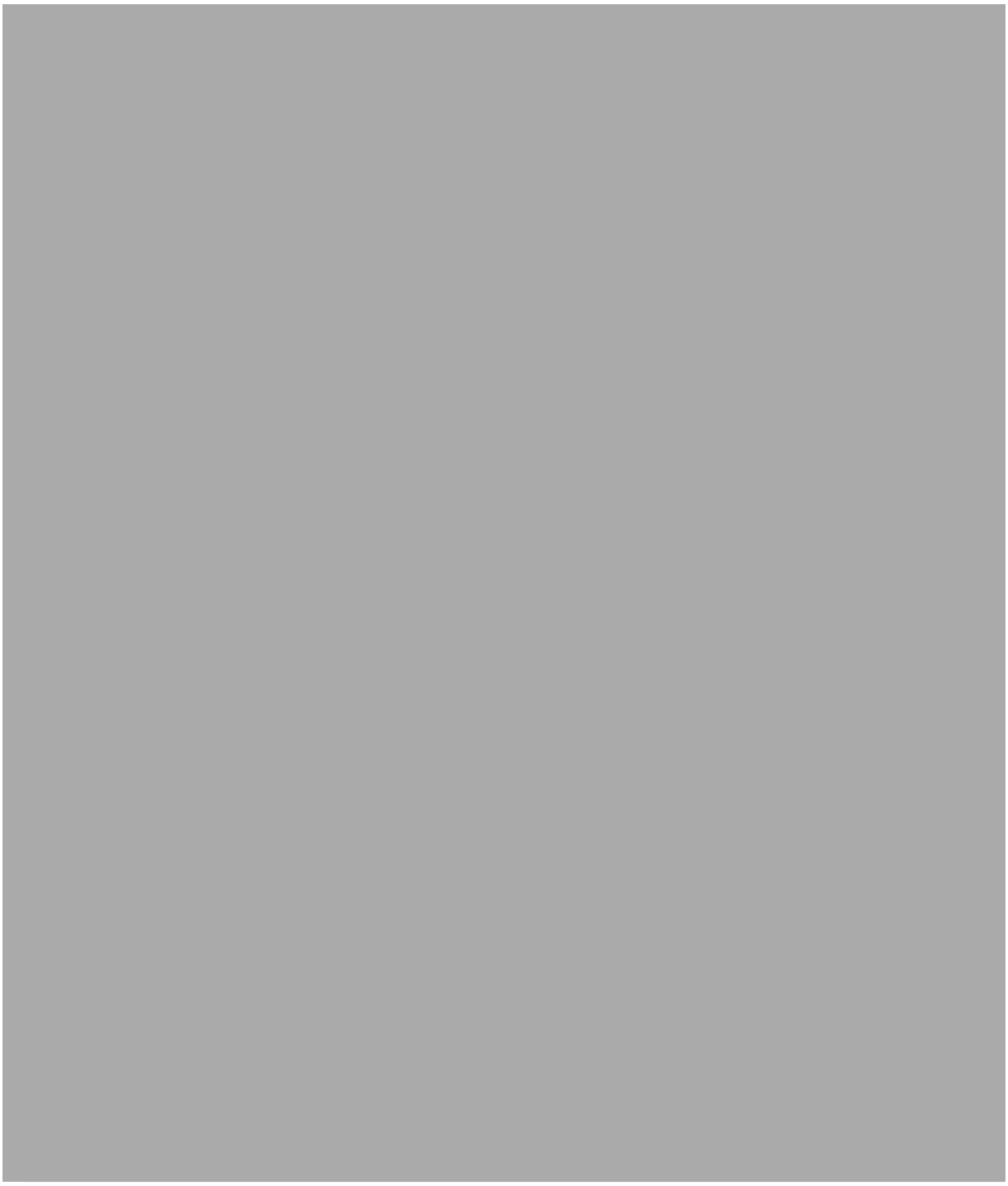
Research Measures

(1) Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991)

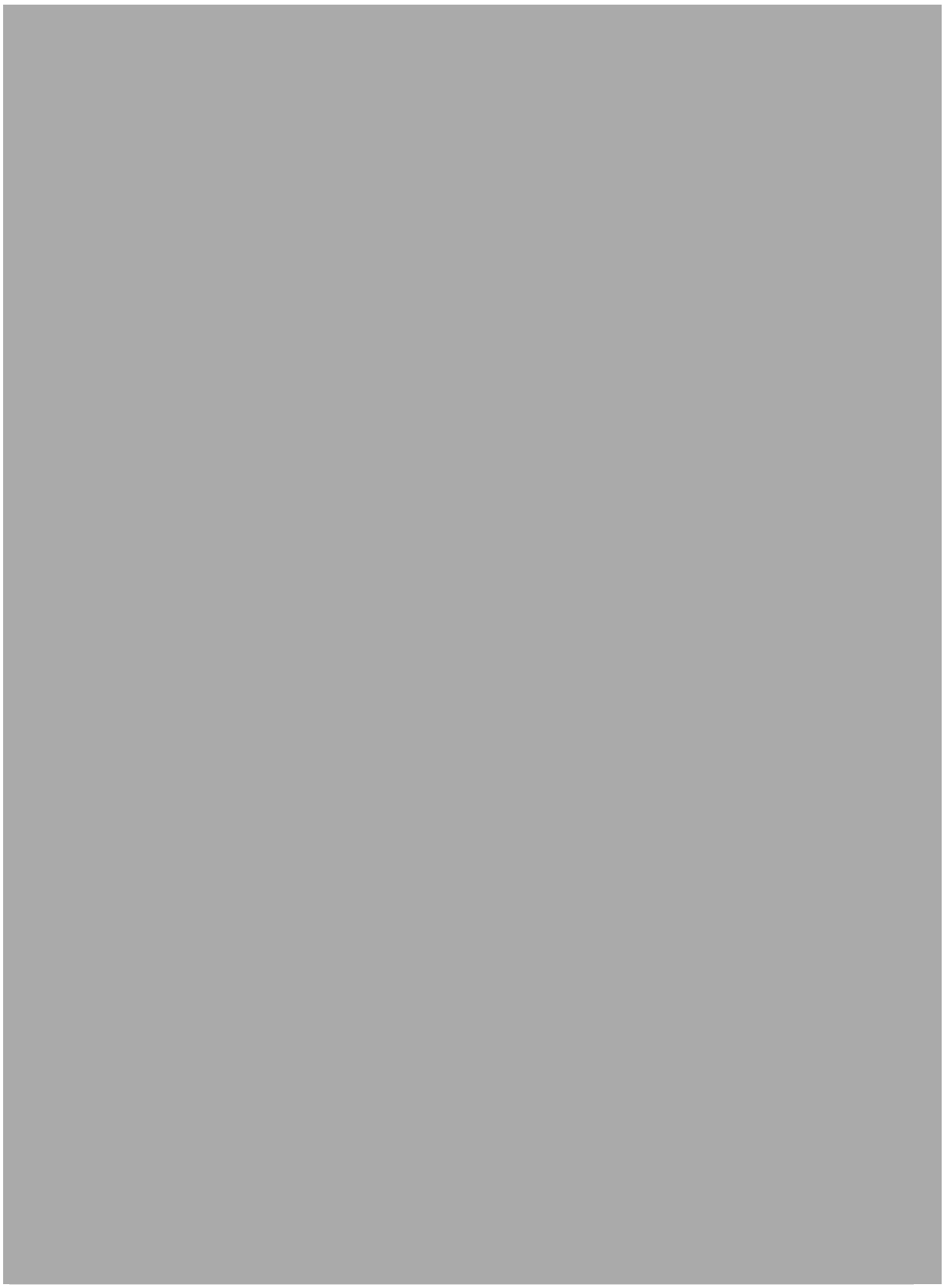




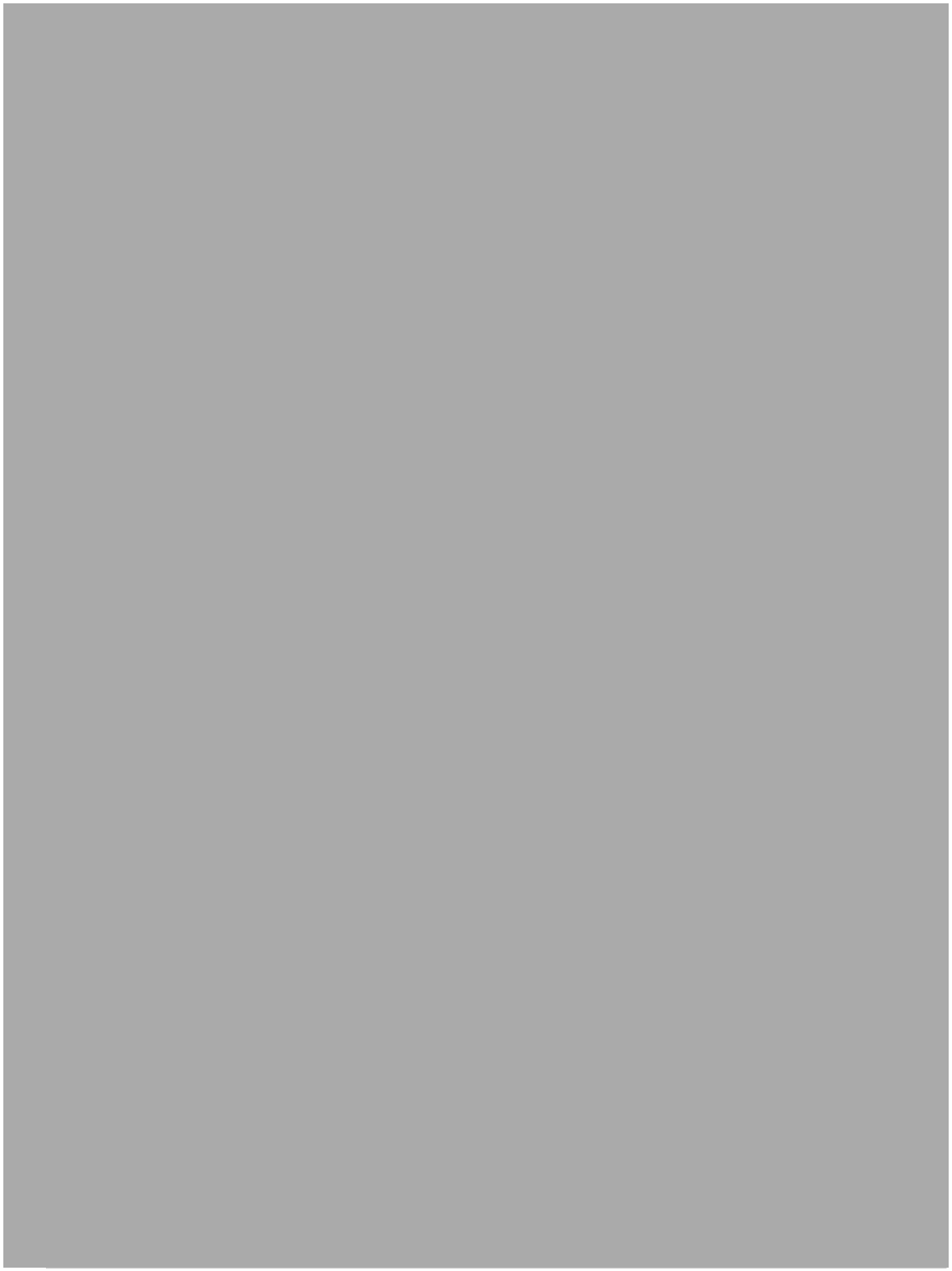
(2) Regulation of Emotions Questionnaire (REQ; Phillips & Power, 2007)

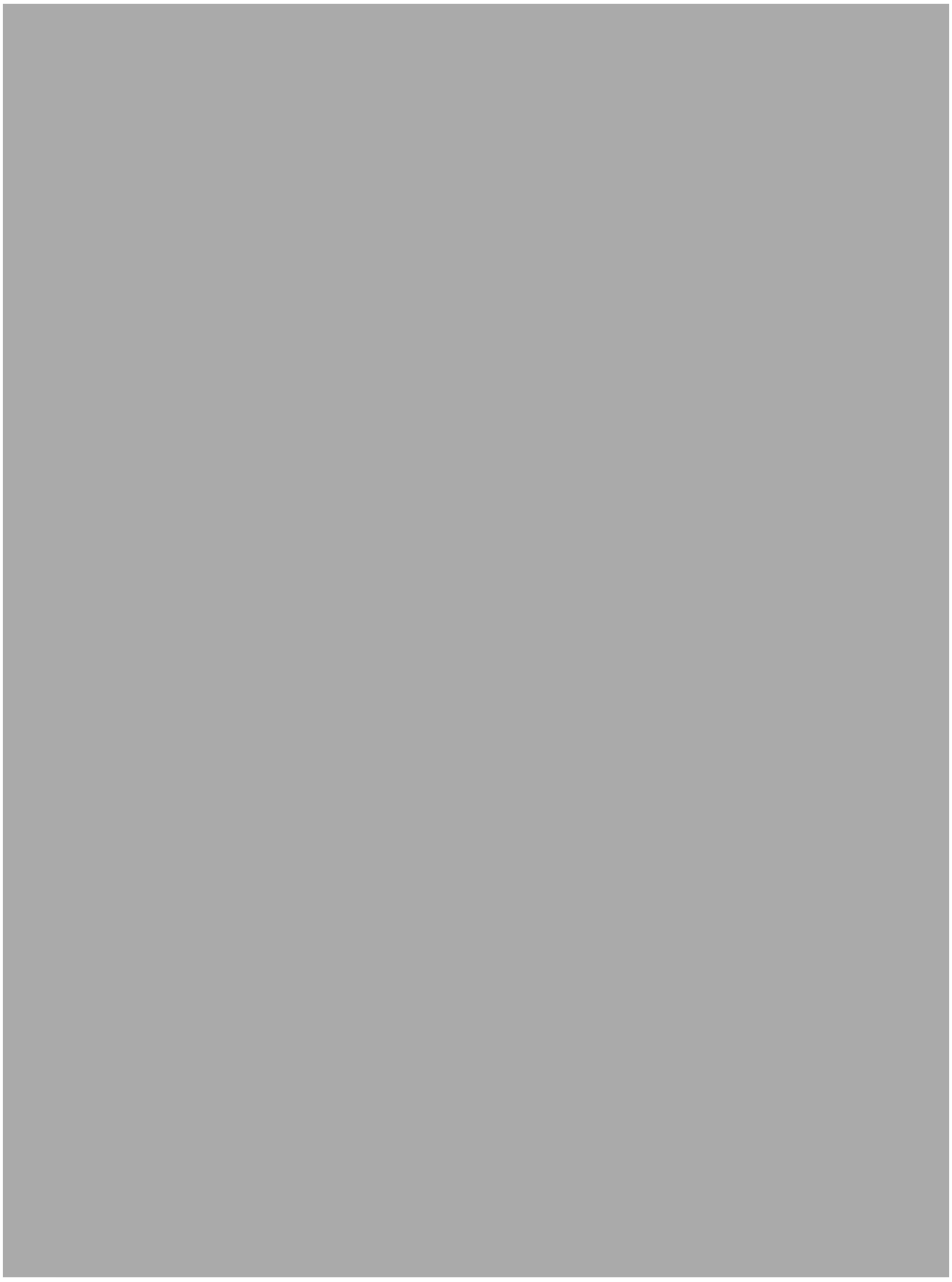


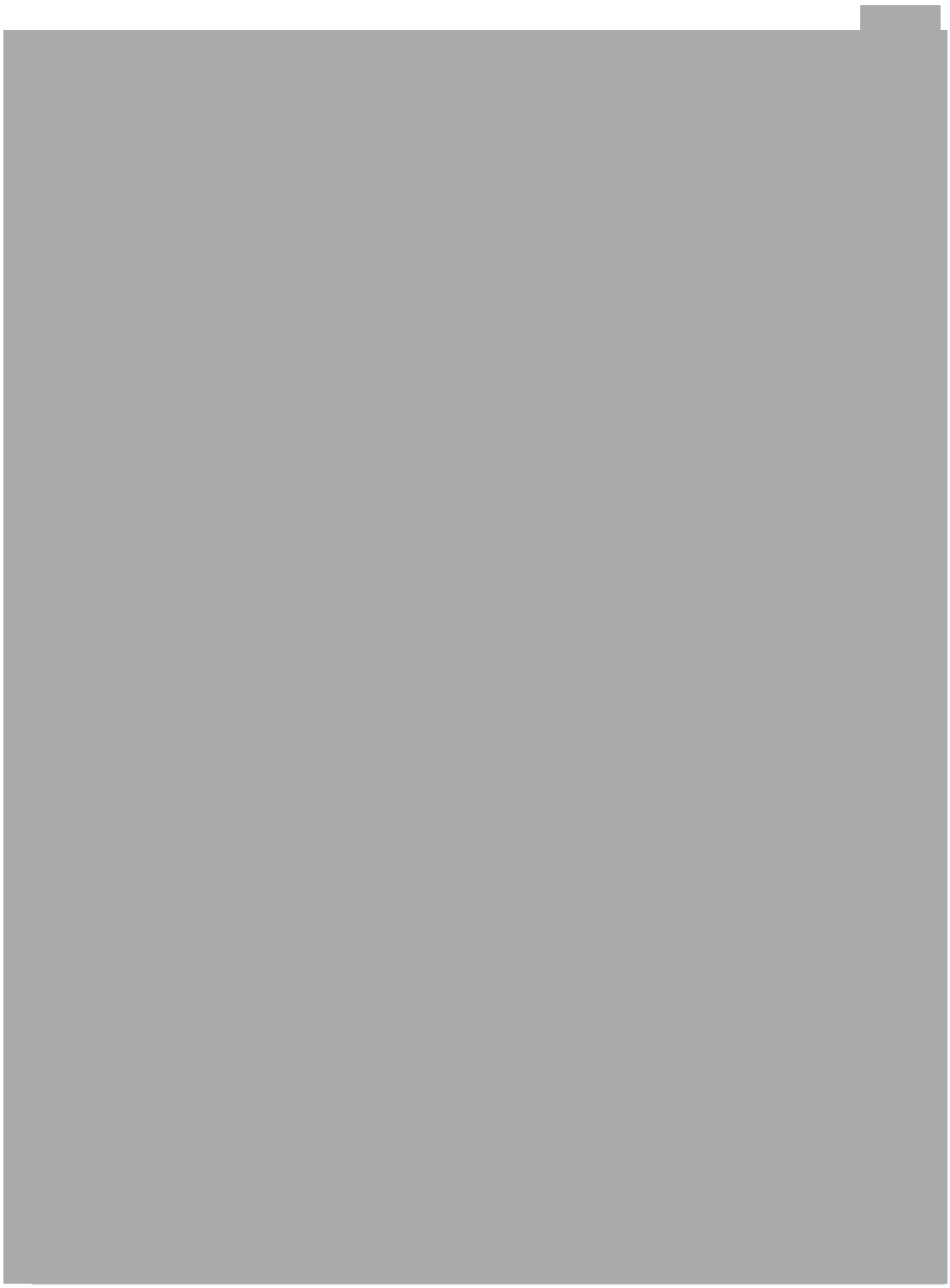
(3) Depression, Anxiety and Stress Scale (DAS-21; Henry & Crawford, 2005)

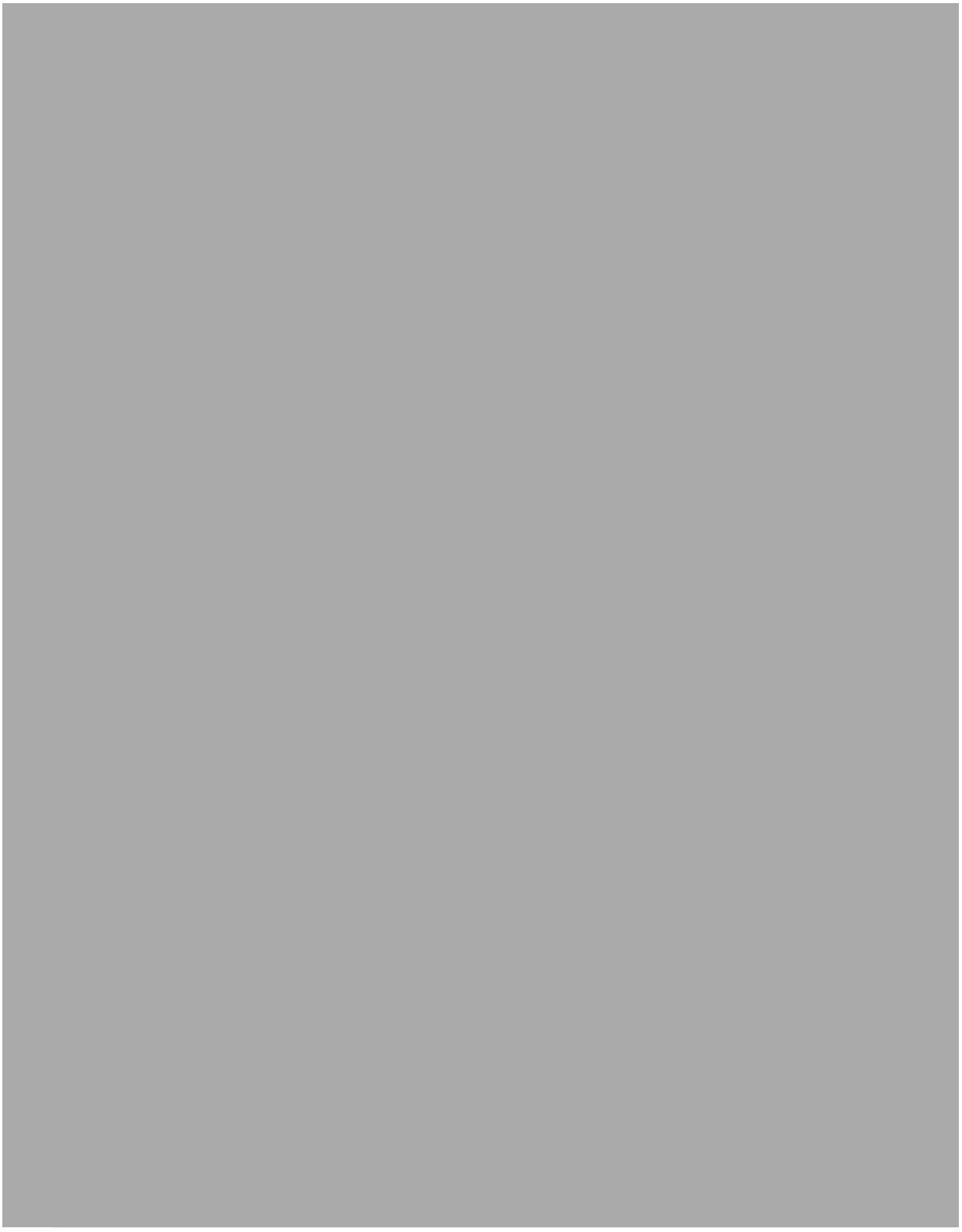


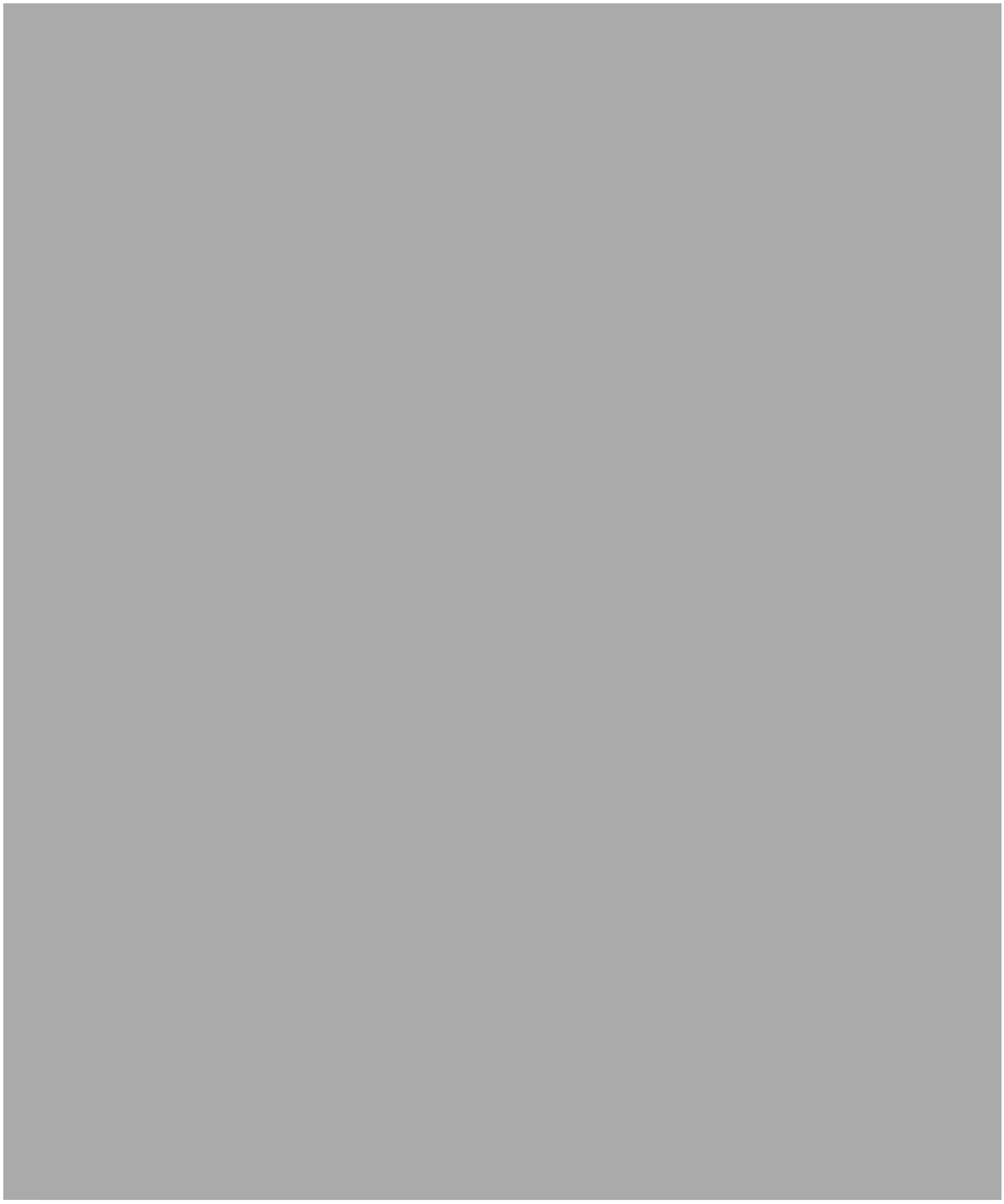
(4) Positive and Negative Syndrome Scale (PANSS; Kay & Fiszbein, 1987)

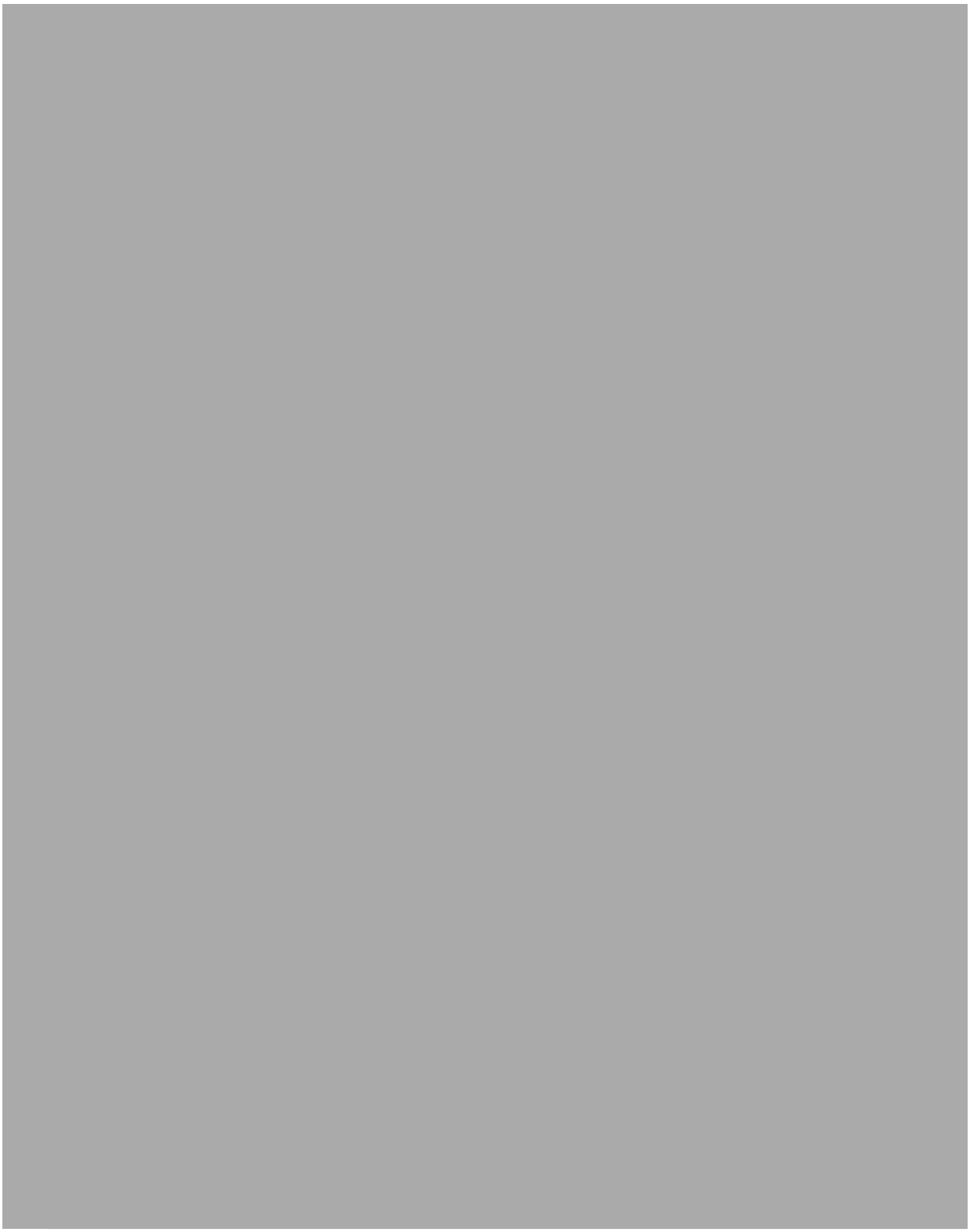


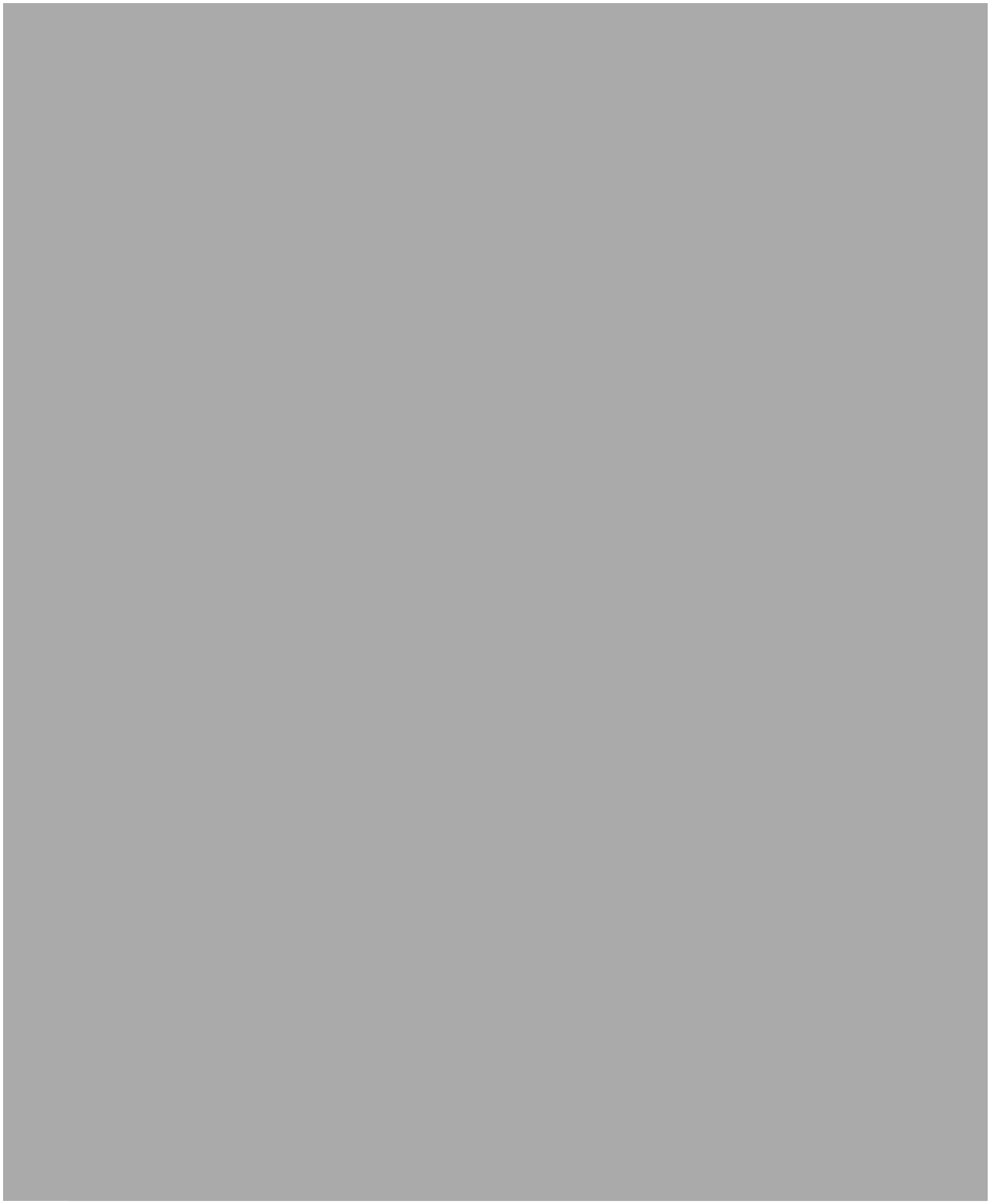


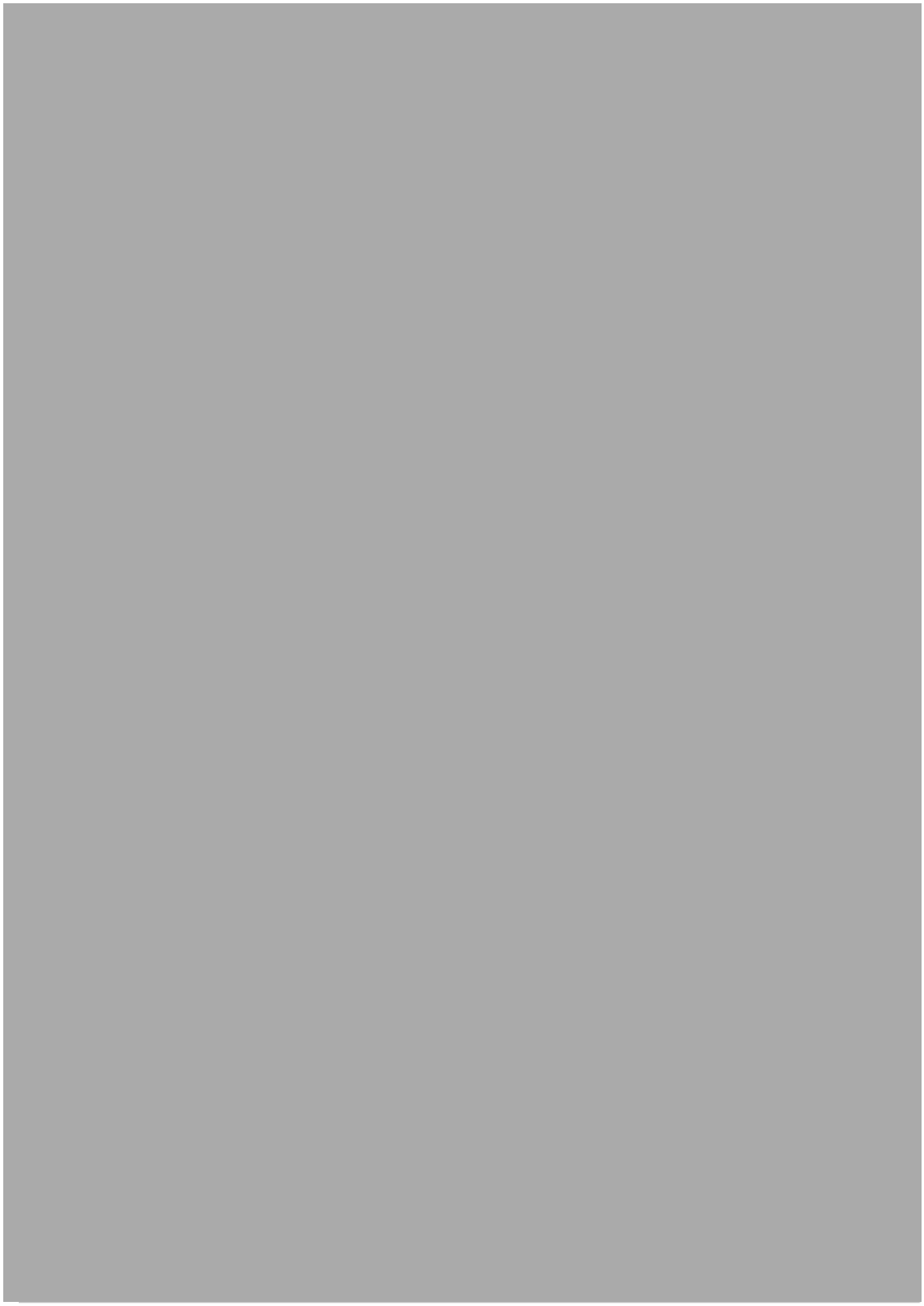


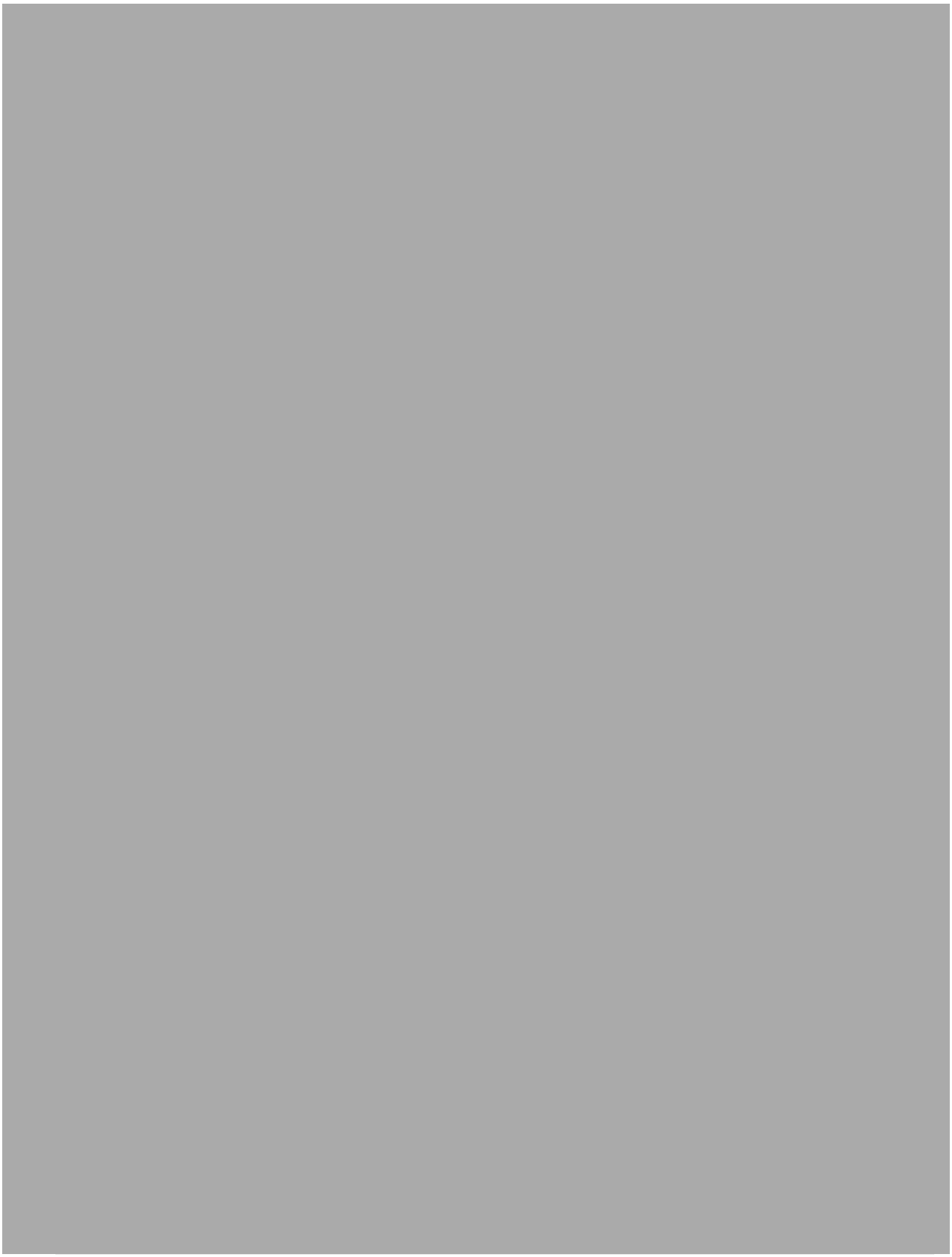


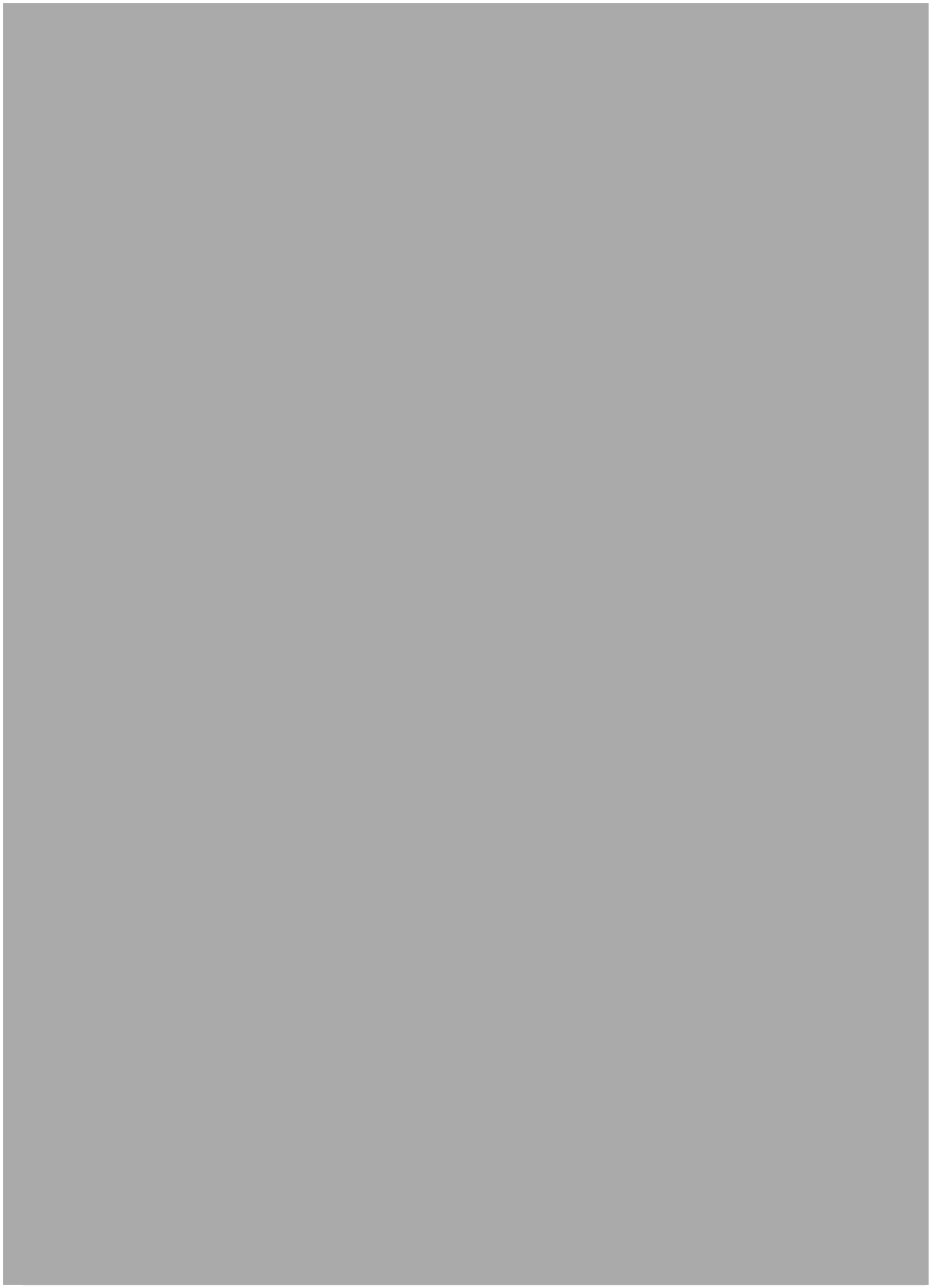


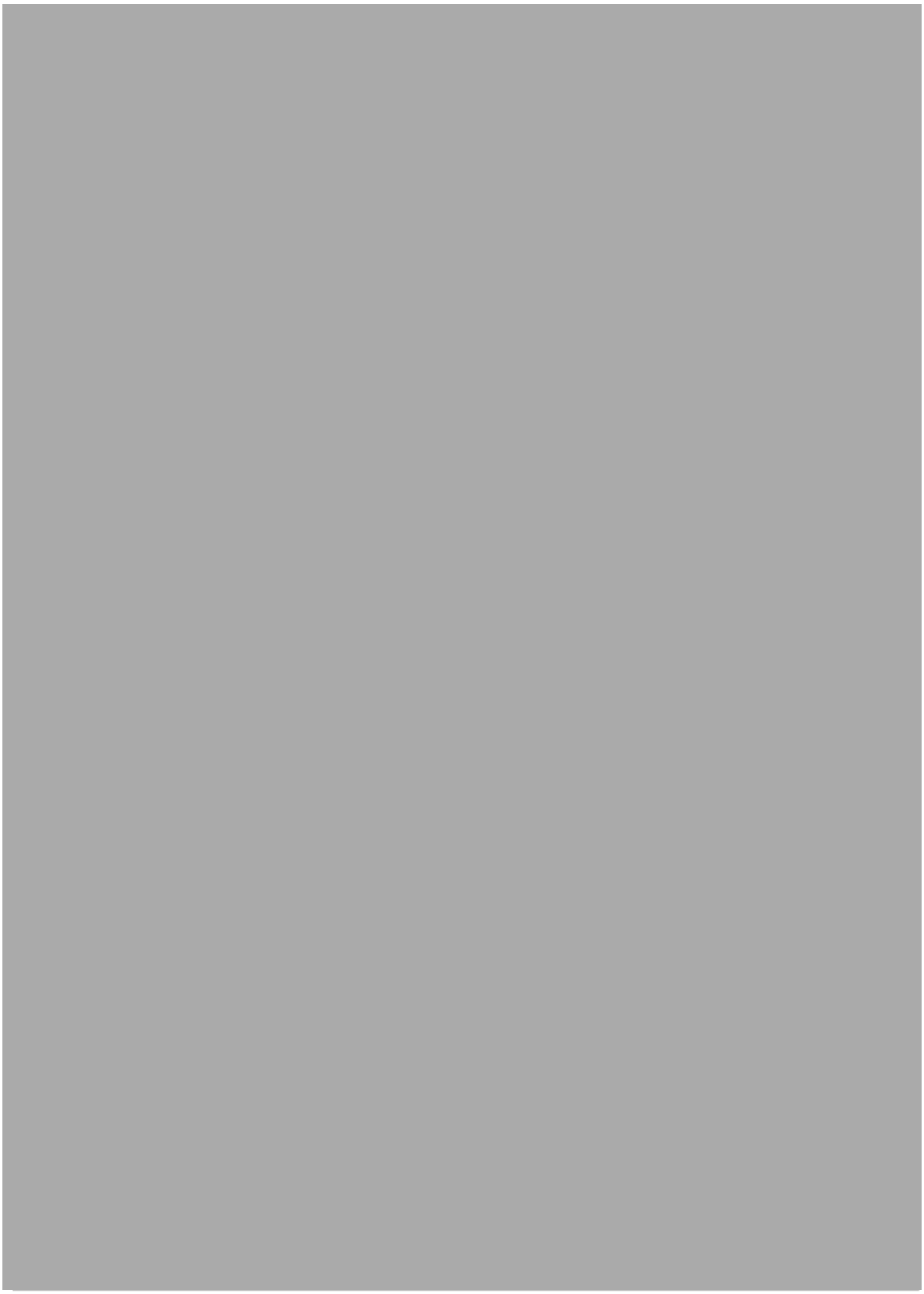


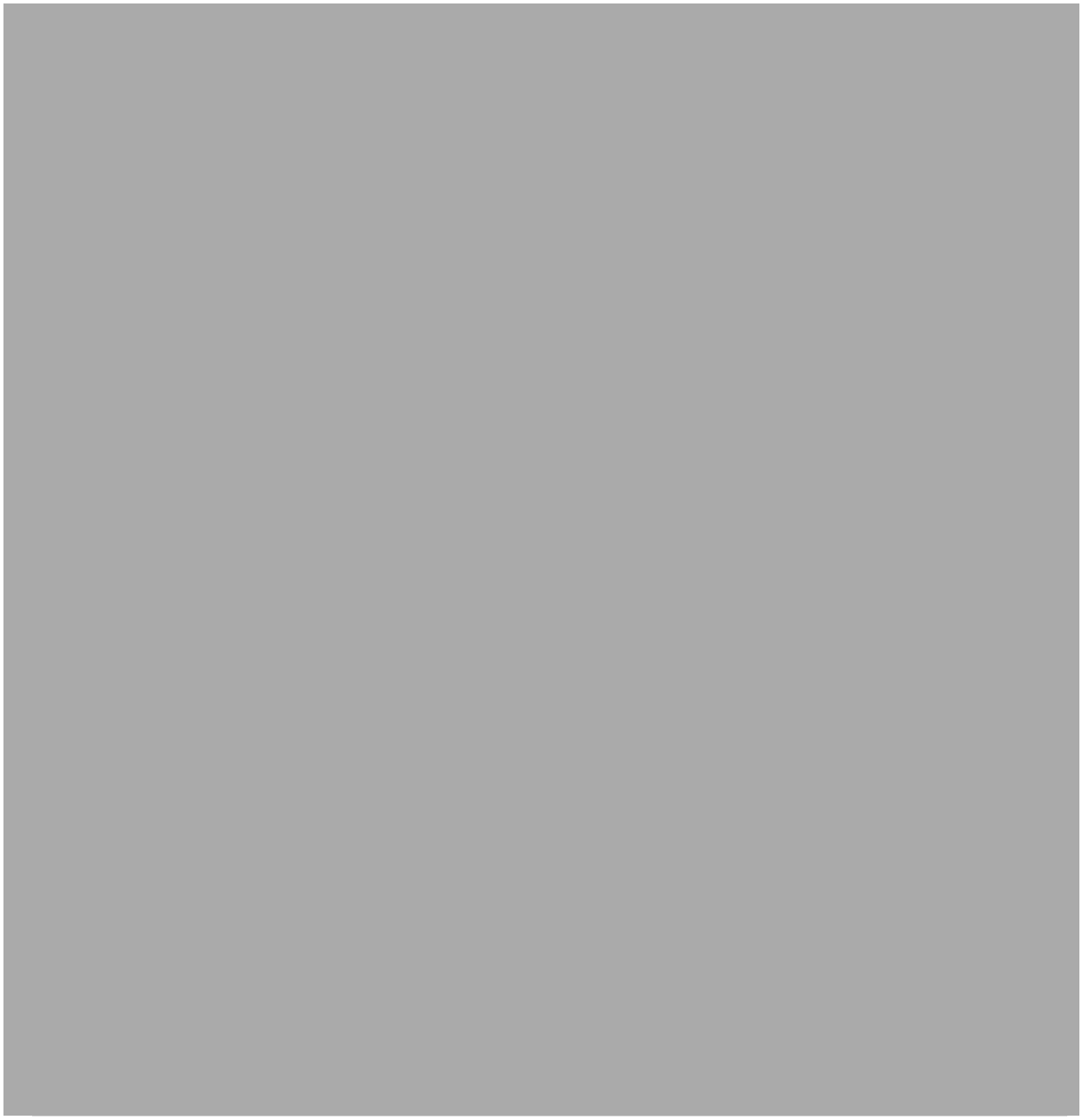


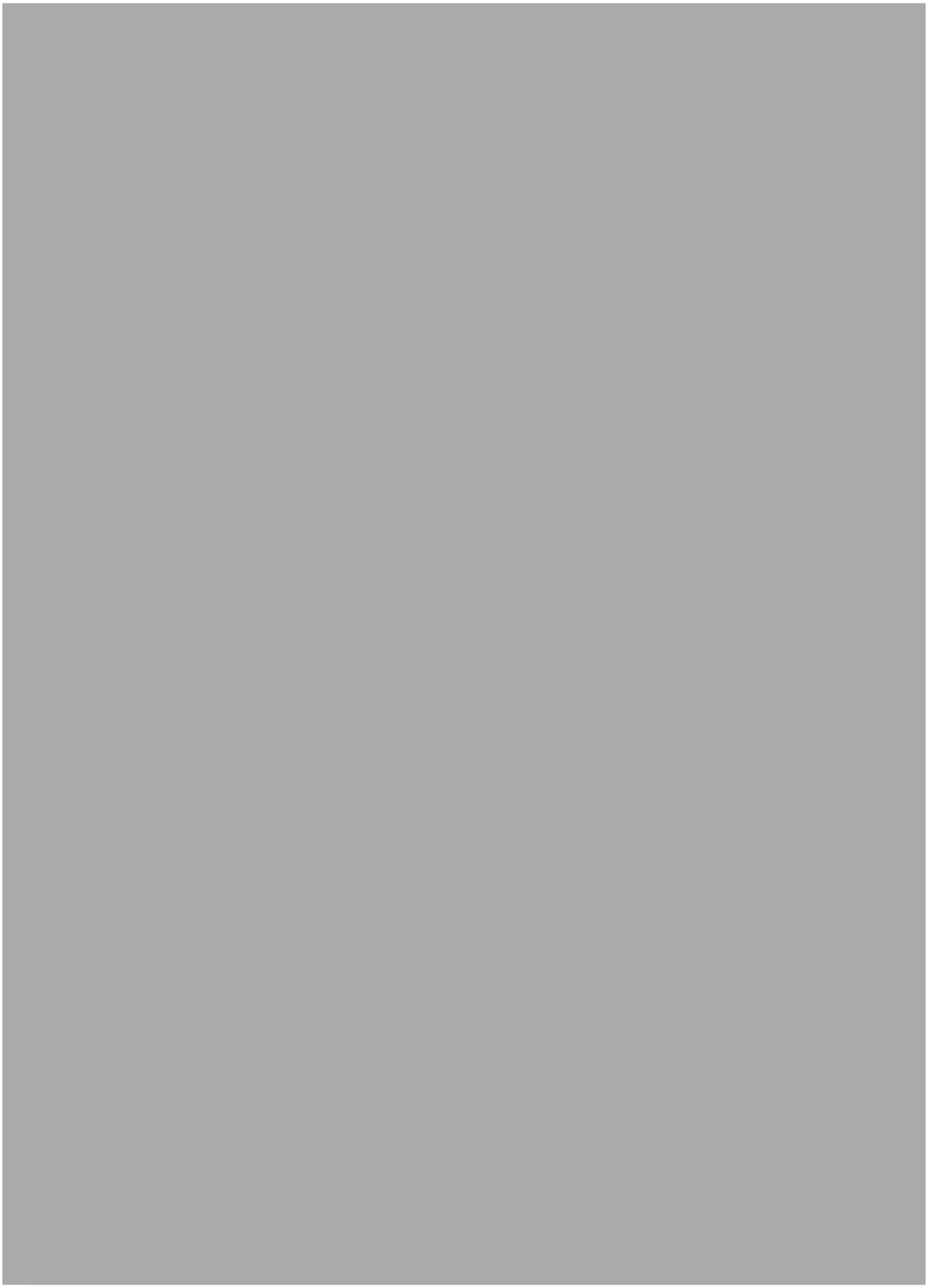


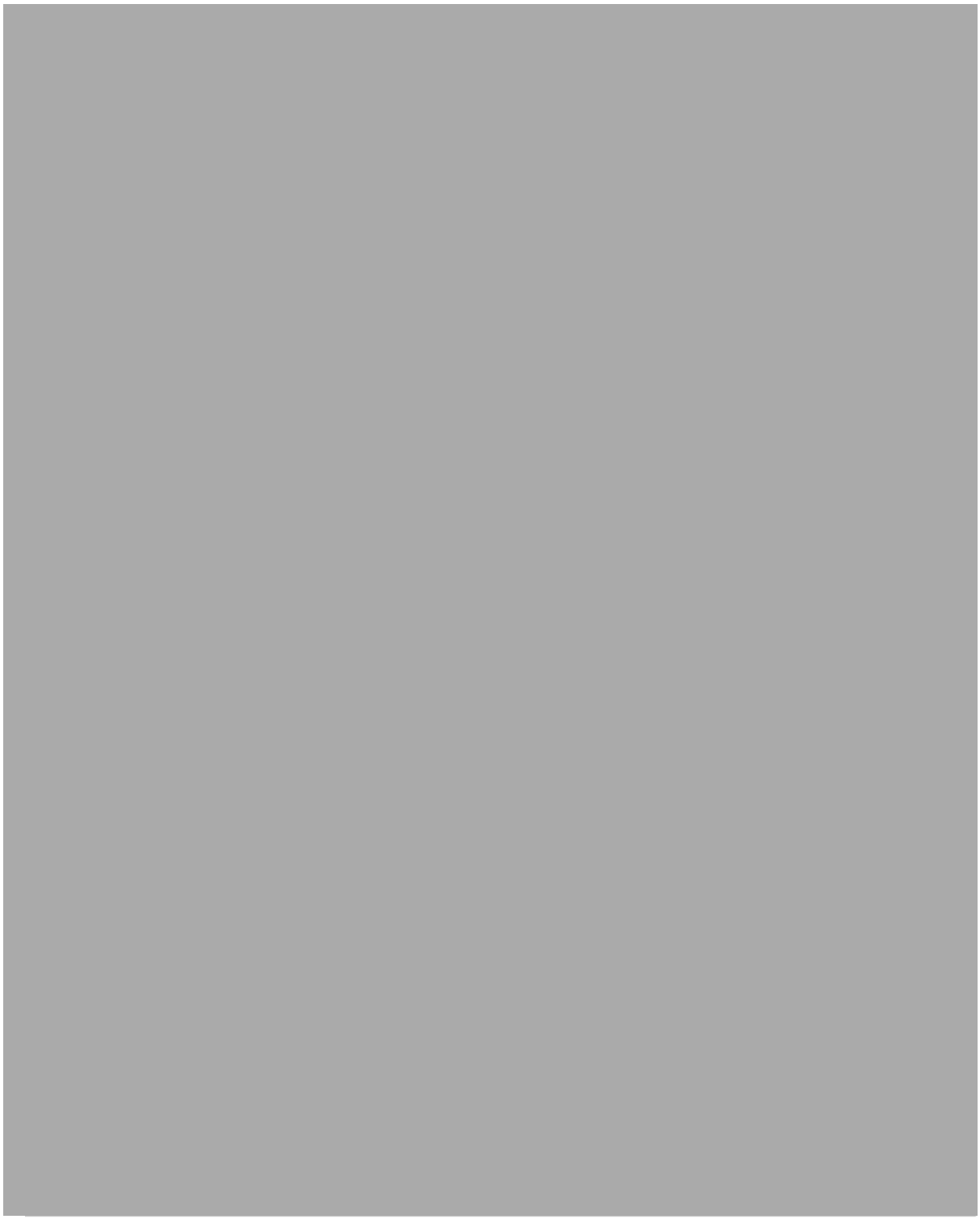


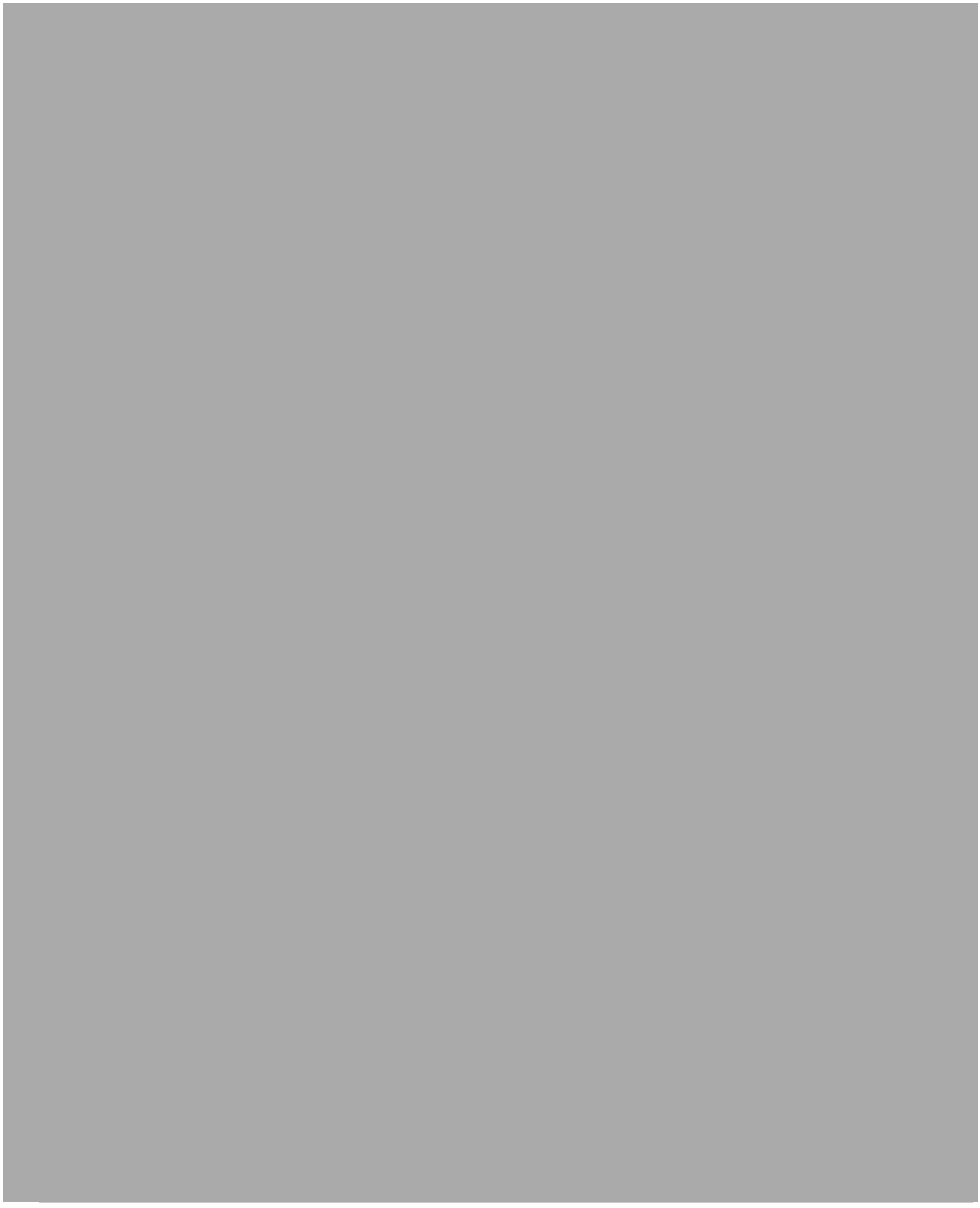


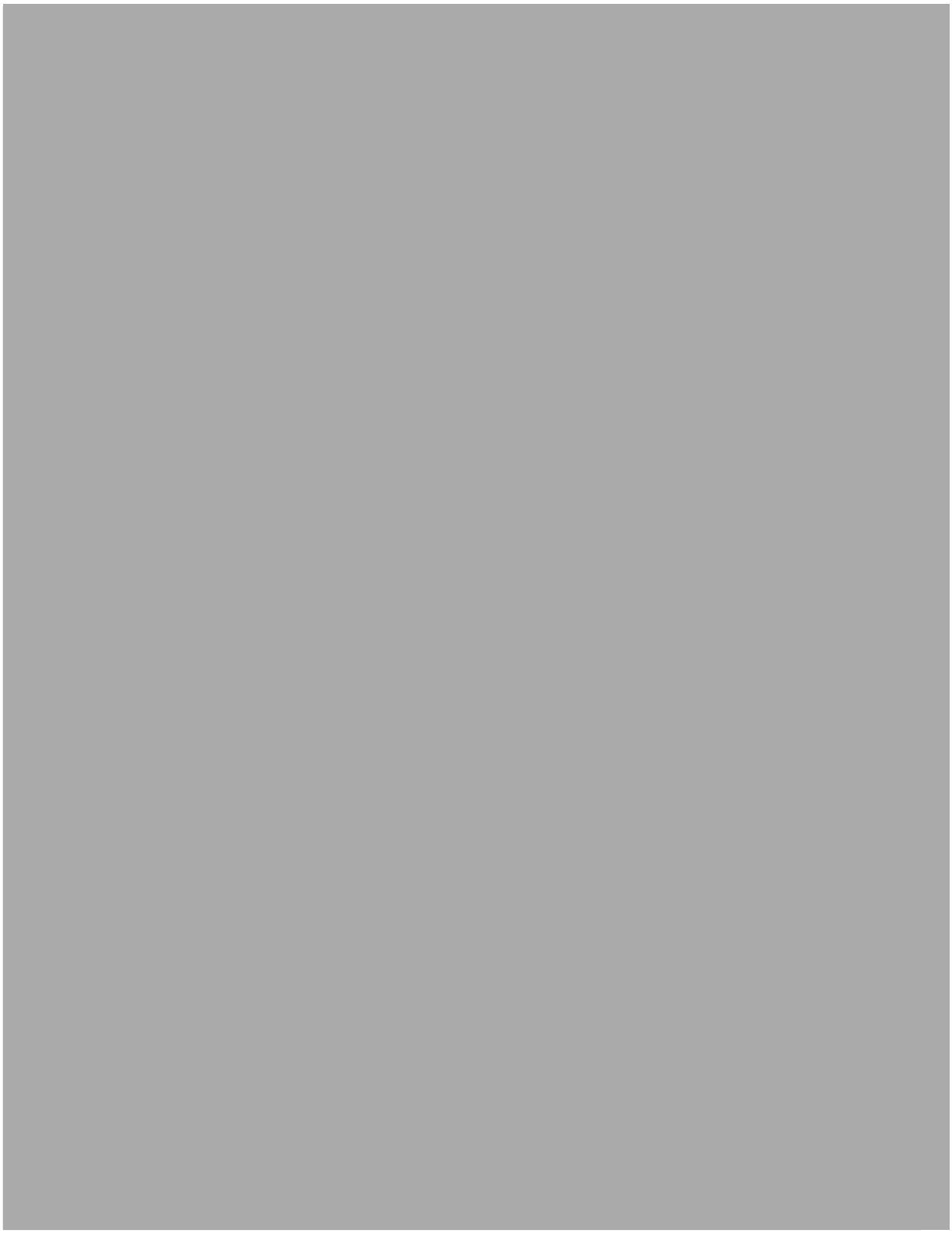


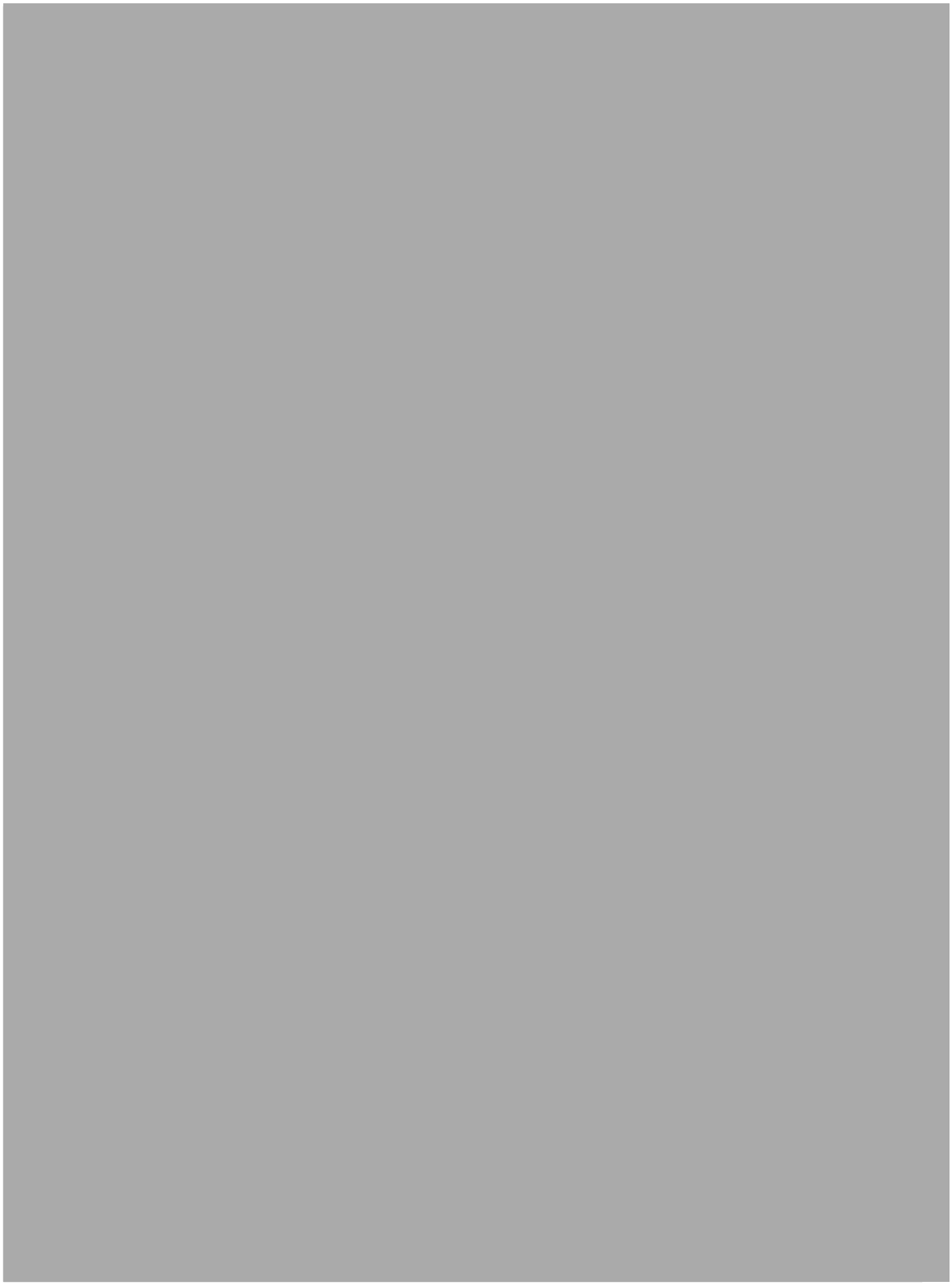












Appendix 4:

One-Sample Kolmogorov-Smirnov Test

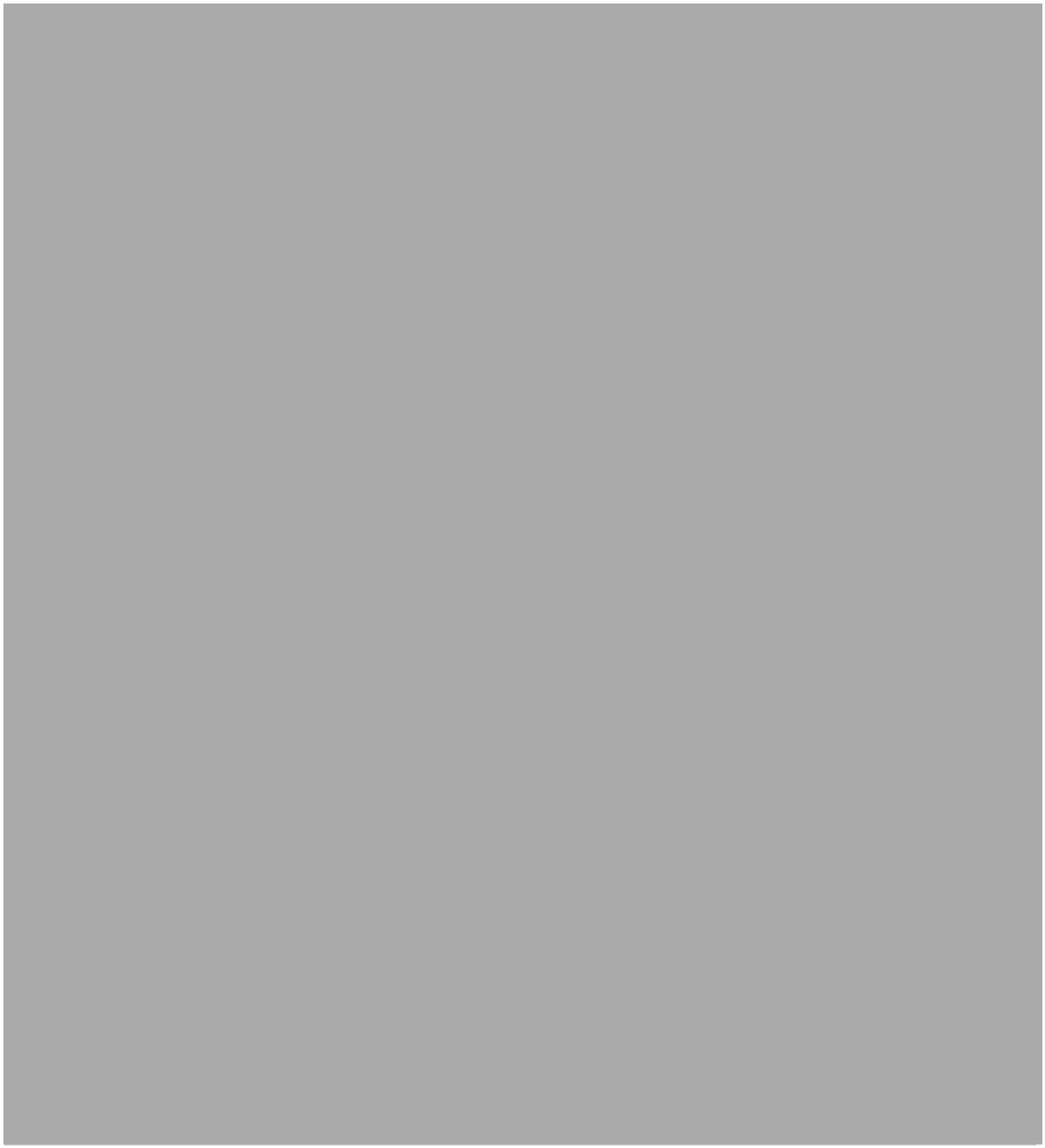
	N	Normal Parameters[a,b]		Most Extreme Differences			Kolmogorov-Smirnov Z
		Mean	Std. Deviation	Absolute	Positive	Negative	
Hallucinations	51	.0000000	1.00000000	.252	.252	-.166	1.800
Delusions	51	.0000000	1.00000000	.183	.183	-.127	1.310
Suspiciousness / Persecution	51	.0000000	1.00000000	.194	.194	-.155	1.388
IntDysf	51	.0000000	1.00000000	.108	.108	-.075	.771
IntFunc	51	.0000000	1.00000000	.087	.087	-.085	.619
ExtDysf	51	.0000000	1.00000000	.221	.221	-.211	1.578
ExtFunc	51	.0000000	1.00000000	.099	.099	-.094	.710
PANSSpos	51	.0000000	1.00000000	.107	.107	-.071	.767
DASSdep	51	.0000000	1.00000000	.136	.136	-.090	.974
DASSanx	51	.0000000	1.00000000	.167	.167	-.122	1.195
DASSstr	51	.0000000	1.00000000	.118	.118	-.068	.844
Secure	51	.0000000	1.00000000	.156	.156	-.103	1.112
Fearful	51	.0000000	1.00000000	.139	.126	-.139	.994
Preoccupied	51	.0000000	1.00000000	.133	.133	-.116	.948
Dismissing	51	.0000000	1.00000000	.131	.131	-.129	.938

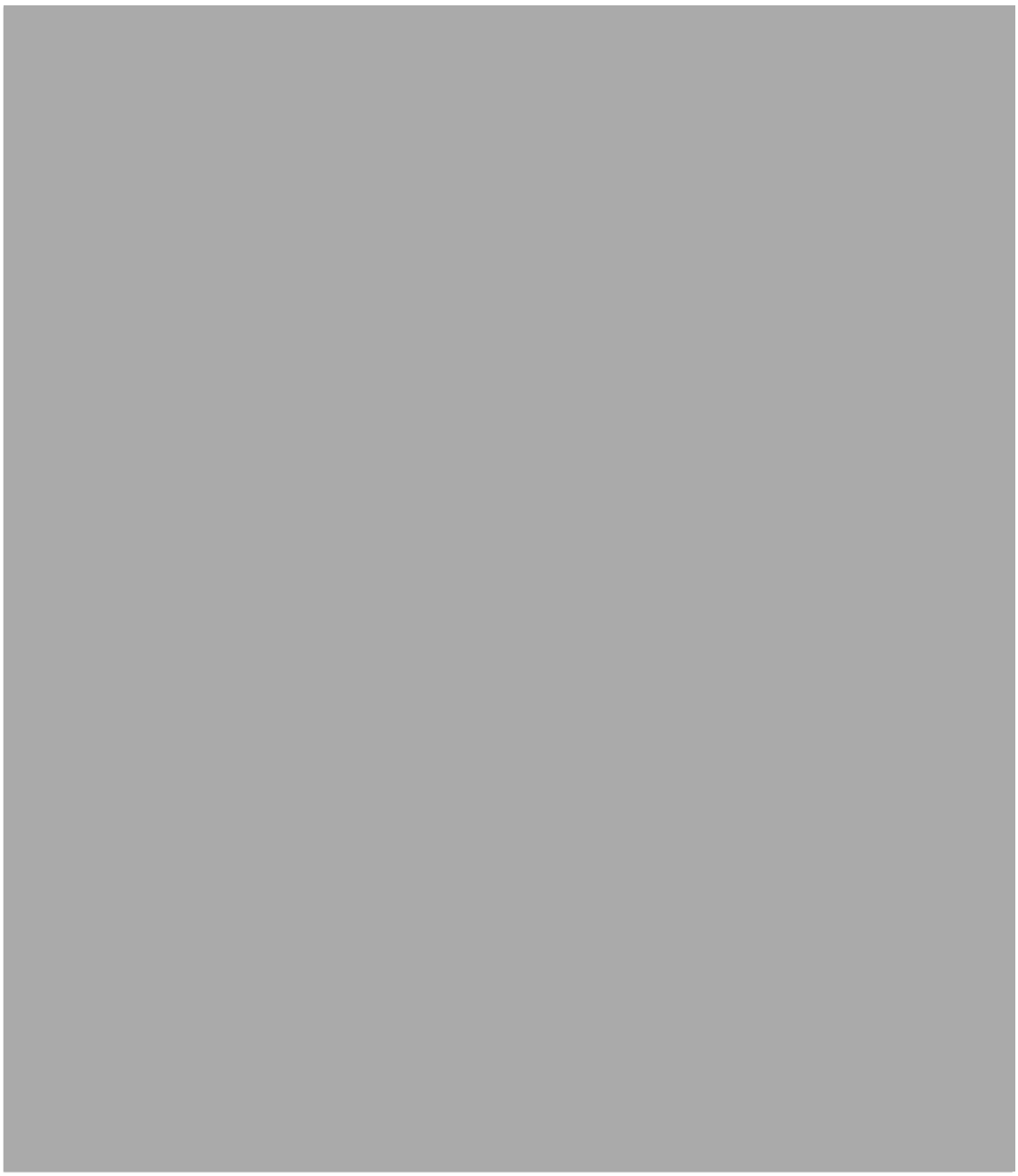
	Asymp. Sig. (2-tailed)
Hallucinations	.003
Delusions	.065
Suspiciousness/Persecution	.042
IntDysf	.591
IntFunc	.838
ExtDysf	.014
ExtFunc	.694
PANSSpos	.599
DASSdep	.299
DASSanx	.115
DASSstr	.475
Secure	.169
Fearful	.276
Preoccupied	.330
Dismissing	.343

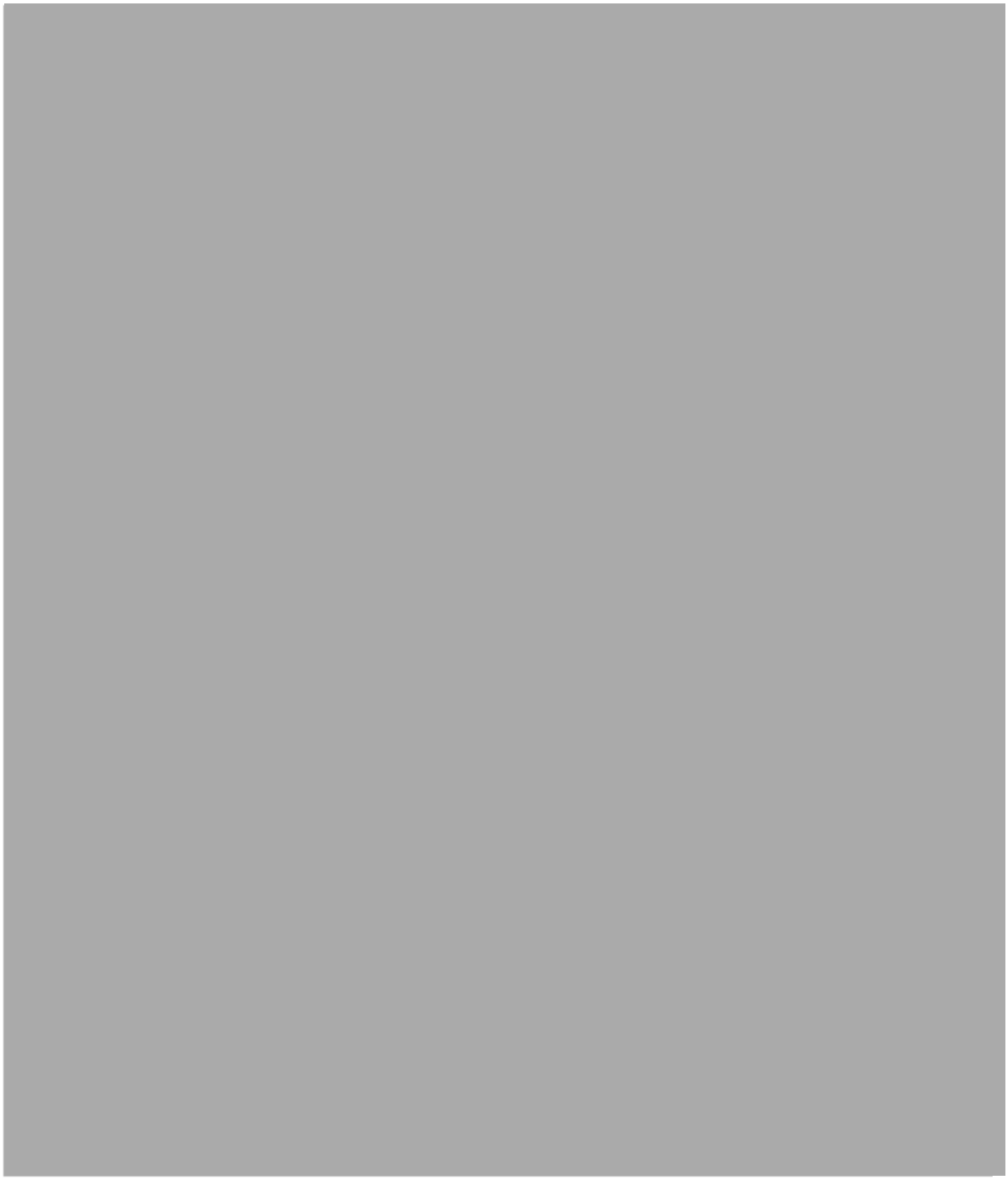
a. Test distribution is normal; b. Calculated from data

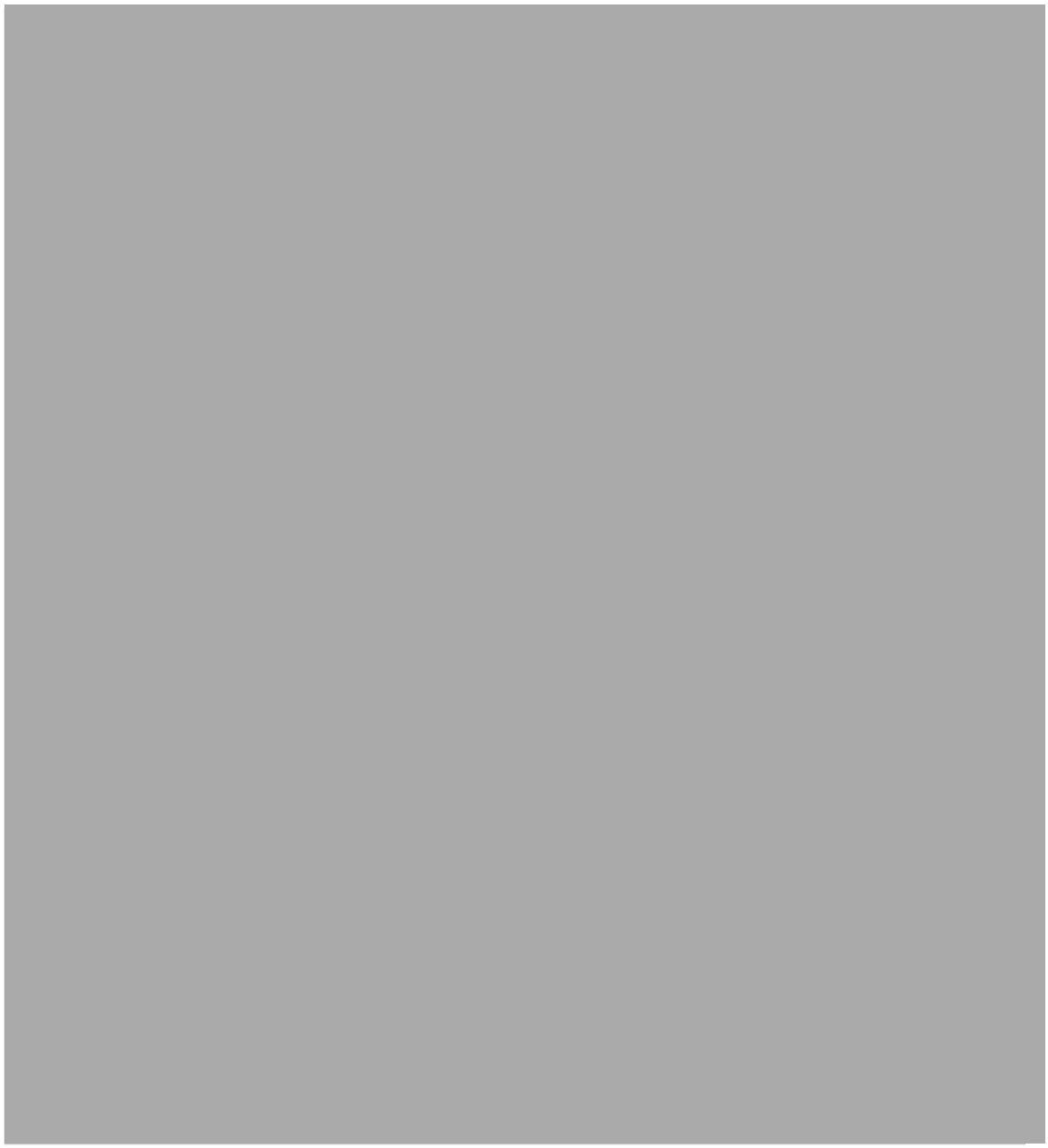
Appendix 5:

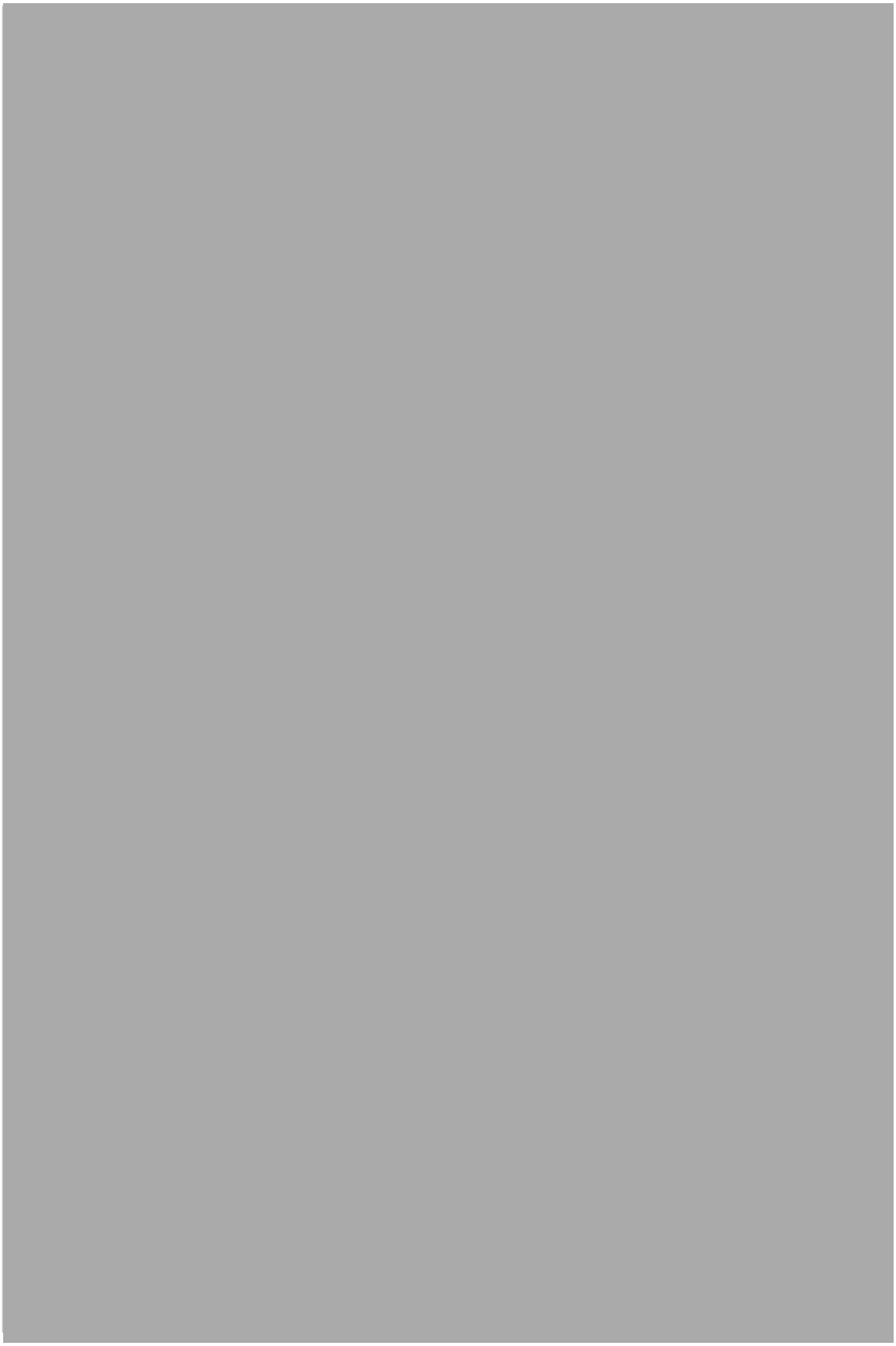
NHS ethics & NHS R&D permission to proceed with the study











Appendix 6:

Participant Information Pack

(1) Participant Invitation Letter

UNIVERSITY OF BIRMINGHAM

[redacted]

Participant Invitation Letter Study 1 (Version 2 – 25/07/14)

[redacted]

Date:

Invitation to Participate in a Research Study: Attachment and Emotion Regulation in Psychosis

Dear Service User,

We would like to invite you to take part in the research study above. **The study will involve completing some questionnaires and a short structured clinical interview.** However, before you decide if you would like to take part, you need to understand why this research is being done and what it would involve for you. Please take the time to read the following Participant Information Sheet carefully. You can talk to others about the study if you wish, including your Care Coordinator from the Early Intervention Team.

The following information will explain more about this particular research project and what it will involve if you decide to take part. Please ask us if there is anything you would like us to explain further. This is a research project and it has no direct link to the care that you receive from the Early Intervention Service.

If you are happy for the main researcher to contact you about the possibility of taking part in the project, please inform your care coordinator if you can be contacted to learn more about this study.

Many thanks for taking the time to read this information.

Julia Jones
Main Researcher

[redacted]

(2) Participant Information Sheet

UNIVERSITY OF BIRMINGHAM

[redacted]

PIS – Participant Information Sheet Version 2 – 25/07/14

PARTICIPANT INFORMATION SHEET

Title of Project: Attachment and Emotion Regulation in Psychosis
Researchers: Julia Jones (Main Researcher) and [redacted]

Julia Jones is a Trainee Clinical Psychologist with the University of Birmingham. She will be working within Birmingham and Solihull Mental Health Trust as part of her clinical psychology training as well as carrying out research within the Trust.

[redacted]

- **What is the purpose of this research?**

  Research is generally carried out for three main reasons:
  - to find out more about the people we are trying to help
  - to find out how helpful our services are
  - to find out what we should change about the services that we provide

  The specific purpose of this research is to help further understand the development and maintenance of psychosis. In this study, you will be asked to complete a questionnaire looking at your attachment style. This will involve questions looking at your relationships with close others, such as with friends or romantic partners. We are also particularly interested in how you regulate your emotions at times of distress. For example, at times of upset, some people may talk to somebody about how they feel. Other people may keep their feelings locked up inside. We are interested in how the strategies you use to regulate your emotions may impact on difficulties with low mood, anxiety and symptoms of psychosis. A short interview between you and the researcher will help find answers to some of these questions. The interview will take no longer than 1 hour to complete.

- **Why have I been invited to take part?**

  If you have been invited to take part, it means you have been identified by one of your care co-ordinators from the Birmingham Early Intervention Service as someone that may be interested in taking part.

- **Do I have to take part?**

  No, you do not have to take part as the choice to take part is entirely up to you. Your decision will not affect the service you receive from the Early Intervention Team in any way. Even if you decide to take part and then later change your mind, you are

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free to withdraw at any point in time without having to give a reason. We will then remove any information you have given us from the study. If you want to withdraw, all you have to do is contact the main researcher, Julia Jones on 0121 3011850 and let her know you want to withdraw.

- **What will happen to me if I agree to take part?**

  If you are interested in participating in the study, you will be contacted by Julia Jones who will arrange a meeting. This meeting can be held at your home or one of the clinical bases used by the Early Intervention Service. At this meeting the researcher will go through this information sheet again with you and answer any questions you have. You can then consider if you want to take part. If you do not want to take part you can tell the researcher and they will leave. This will have no effect on the service you receive from the Early Intervention Service. If you do decide to take part, the researcher will ask you to sign a consent form to show you have agreed to participate in the study. This allows us to show that we have explained the details of the study to you and given you time to choose whether you want to participate.

  If you consent to the study, the researcher will first ask you to provide some basic information about yourself, e.g. your age, living arrangements, education etc. They will then start the main interview by asking you to complete some questionnaires about your relationship style with close others such as your friends or romantic partners, and the strategies you use to regulate your emotions in times of distress. You will also be asked to complete a questionnaire and a short interview to assess your experience of depression, anxiety and symptoms of psychosis. The questionnaires and interview will take no longer than 1 hour to complete. You will be able to stop the questionnaires at any time if you want. There are no right or wrong answers. Once the researcher has gone through all the questionnaires with you and answered any questions you may have, your participation will be completed and the researcher will leave.

- **What are the disadvantages of taking part?**

  Answering questions about some of the difficulties you may experience may cause you some upset, and may bring back bad memories. If the questionnaires or interview becomes too difficult or tiresome, you will be able to stop and have a break until you feel ready to carry on. Alternatively, you can ask the researcher to stop the questions. If you have questions during the interview you will be able to ask them once the interview is finished. If you require some added support following the interview, you will be able to receive this through the Early Intervention Service as your care coordinator will know you are taking part. Alternatively, you can be seen by a Clinical Psychologist with the service.

- **What are the possible benefits to taking part?**

  You may find it rewarding to talk about your experiences of having a psychotic illness with someone interested in your point of view. You will also be contributing to service development and improvement through your contribution thereby enhancing the knowledge of clinical staff working with people who have had similar experiences to yourself.

- **Expenses and payments**

  To compensate for your time and any inconvenience, and to offer a token of appreciation for your involvement in the study, we are able to offer you a cash sum of £5.00 for taking part. Should you choose to withdraw from the study at any point, you will still receive payment for appreciation of your time and any undue inconvenience.

- **What if something goes wrong?**

  If you become concerned with any aspect of your participation then you can contact Julia Jones on **0121 3011850** who will try and address your concerns. Should you wish to talk to someone else in the team about your concerns, you can contact your care-coordinator or [redacted] If this is not effective and you remain concerned or upset with any treatment you have received while participating in the study, you will be able to make a formal complaint. To do so, you can contact PALS Complaints Department who can offer you advice and support throughout the process. PALS can be contacted on **0800 953 0045** (available Monday to Friday, 8am to 8pm).

- **What happens if I have a relapse?**

  If your mental health significantly deteriorates or if you relapse you will be withdrawn from the study and none of your responses will be used for research purposes as your capacity to consent will be compromised. However, if you relapse or your condition deteriorates after your participation in the study is complete, your responses will still be used in the research and your consent to participate will still be valid.

- **Is the information I give confidential?**

  Only the researcher interviewing you (Julia Jones) will have access to the information you provide in the interviews, it will not be disclosed to any of the staff from the Early Intervention Team. This is important as you may feel that some of the information you disclose in the questionnaires are confidential. **However, you need to remember that your name will never be linked up with the questionnaire. You will only be identifiable through a confidential number system separating you from your information. Interview Questionnaires will all be placed in blank envelopes upon completion.** The only instance in which this confidentiality will be broken is if you tell us something that means that either you or someone else is at risk of harm. If this occurs, we have a duty to inform your care team. Also, if you disclose information about current criminal activity, then the researcher would be obliged to discuss this with your care team. If this happens, we will tell you what we are going to do first. When the research study is completed and the results are written up the consent forms will be destroyed after 12-months and the questionnaires will be destroyed after 24-months.

- **What will happen to the results of the research study?**

  The data collected from you will be anonymised and stored confidentially and securely at the University of Birmingham or on site [redacted]

[redacted] The data will then be analysed by Julia Jones and [redacted] and presented as part of Julia Jones' academic requirements for her University of Birmingham's Clinical Psychology Doctoral thesis. The results will be presented to the staff team at the Early Intervention Service. The data may also be presented to an academic journal for publication and potentially to other researchers at psychological conferences. However, **there will be no way of identifying your information from the results when they are presented**. You will also be able to receive a summary of the results through the post or through your care coordinator.

- **Who is organising and funding the research?**

  The study is being organised by Julia Jones and Dr Chris Jones from the University of Birmingham and [redacted]
  No payment is being received by any of the organisers for conducting this study. Julia Jones will be using the information from this study to complete academic demands required to complete her training at the University of Birmingham.

- **Will my care co-ordinator or GP be informed?**

  Yes, it will be through your care co-ordinators that we will first hear that you might be interested in participating in the study. Should you decide to participate, we will be informing your GP and your care co-ordinator. This will allow us to provide support should you need it and to learn from them how to make your participation as convenient to you as possible. The Early Intervention Service has a wide range of professionals involved in your care including psychiatric nurses, psychologists and a consultant psychiatrist whom will be able to offer you support should you require it.

- **Who has reviewed this study?**

  All research in the NHS is looked at by an independent group called a 'Research Ethics Committee. Additionally, this study will also have passed the University of Birmingham's Ethic Committee. It has been their role to ensure that the study protects your safety, rights, wellbeing and dignity.

- **Contacts for further information**

  We hope that this information is helpful and reassuring, and that after reading it you feel able to help us with our research. If you have any questions or concerns about this project, please contact Julia Jones on **0121 3011850**. If you have any concerns about this study and wish to contact someone independent, you may telephone [redacted] or the University of Birmingham's School of Psychology Clinical Doctorate Programme on **0121 414 7124**

(3) Participant Consent Form

UNIVERSITY OF BIRMINGHAM

Participant Consent Form (Version 2 – 25/07/14)

Study Title: Attachment and Emotion Regulation in Psychosis

Participant Identification Number:

Title of Project: The role of attachment and emotion regulation in first episode psychosis: Relationships to emotional distress and symptomatology
Researcher: Julia Jones

Please initial box

1. I confirm that I have understood the information sheet (version 1) 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 during the research interview, without giving any reason, without my own mental health care or legal rights being affected. ☐
3. I understand that the research interview and questionnaires used within the interview will be kept confidential and in a secure place. ☐
4. I understand that I might find some of the questions upsetting. ☐
5. I agree that the researcher can access my clinical notes to get information for this study. ☐
6. I agree for the researcher to inform my GP and my Care Coordinator about my participation in this study. ☐
7. I understand that the data collected during this study will be looked at by the researcher and relevant others at the University of Birmingham to ensure that the analysis is a fair and reasonable representation of the data. Parts of the data will also be available to the NHS team responsible for my care but only if issues of risk to me or another person's safety or health should be disclosed. ☐
8. I understand that information from my interview may be published in any write-up of the data, but that my name will not be attributed to any such information and that I will not be identifiable by my information. ☐
9. I agree to take part in the above study. ☐

.....	.....	.....
Name of participant	Date	Signature
.....	.....	.....
Name of researcher	Date	Signature

(4) Participant Debrief Sheet

UNIVERSITY OF BIRMINGHAM

[redacted]

Participant Debrief Sheet Version 1 – 14/03/14

Title of study: Attachment and Emotion Regulation in Psychosis
Name of main researcher: Julia Jones (Trainee Clinical Psychologist)

Thank you for taking part in this study. We really value hearing about your experiences and thank you for sharing them with us. The information you have given us will be used to help mental health services and clinical staff to have a better understanding of the needs and issues that are important to those in your situation.

What will happen now?
Your responses will be entered into a database with a lot of other people's responses. This data will then be analysed to look at links between people's early and later life experiences and how people cope with stressful things in their life. Your name will not be linked with this data at any point.

What will happen to the results?
If you would like a summary of the research findings, please inform the main researcher who will send you one by post or give a summary to your care coordinator to pass on to you. The results of the study will also be presented to the staff teams at the Early Intervention Service. In addition, a report of the study will be put forward for publication in psychology and/or other mental health journals. **You will not be personally identifiable in any publications, reports or presentations.**

What if I have any questions about the study?
If you have any questions or concerns about this study then please contact Julia Jones or [redacted]

What if I feel distressed from taking part in the study?
Although the interview was not intended to cause you distress, you may find that talking about difficult issues has left you with some uncomfortable feelings. If these persist after the interview and you are concerned, please contact your Care Coordinator on [redacted]. If you require further support, they will be able to arrange for you to access a Clinical Psychologist at the Early Intervention Service.

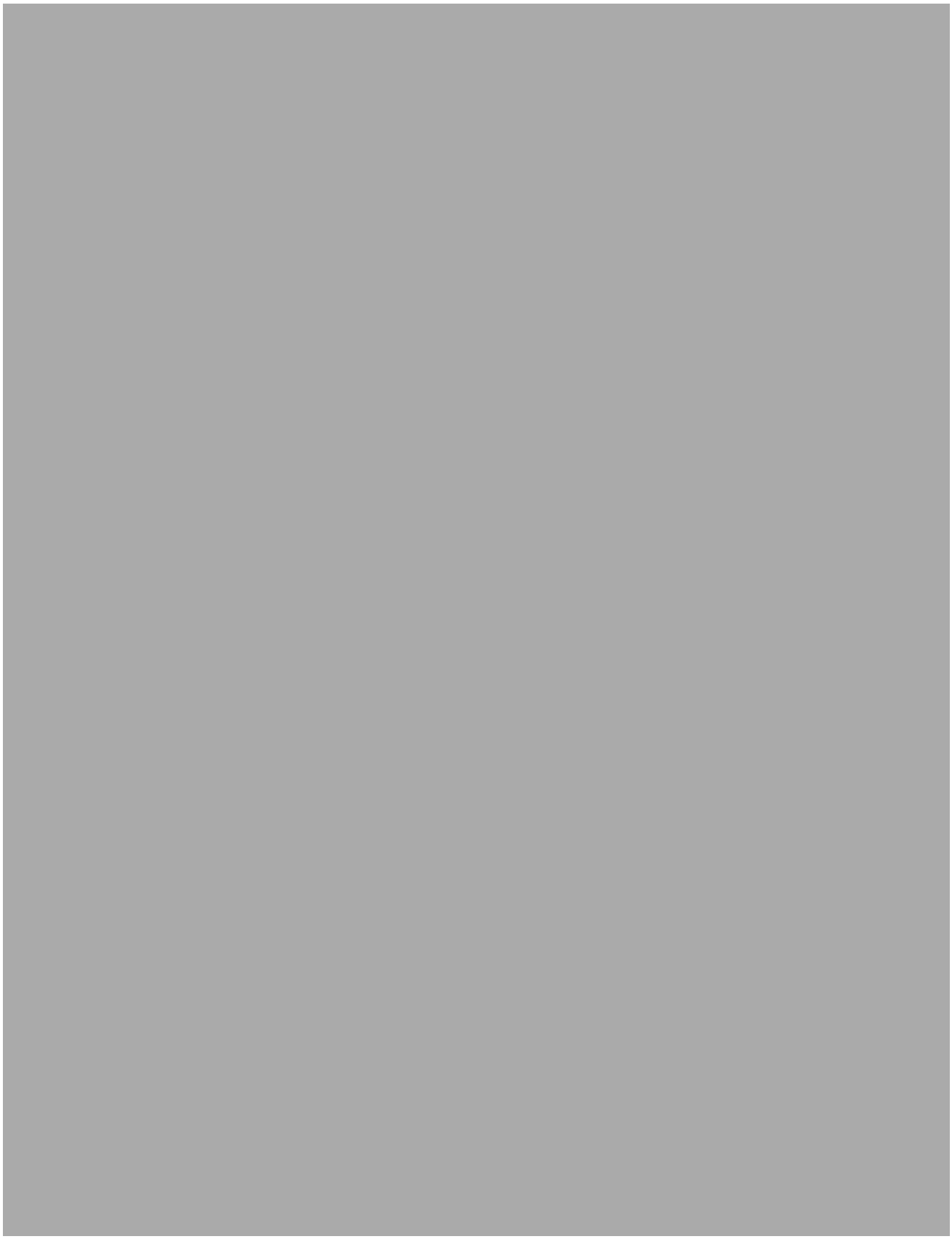
Thank you for taking the time to participate in this research study

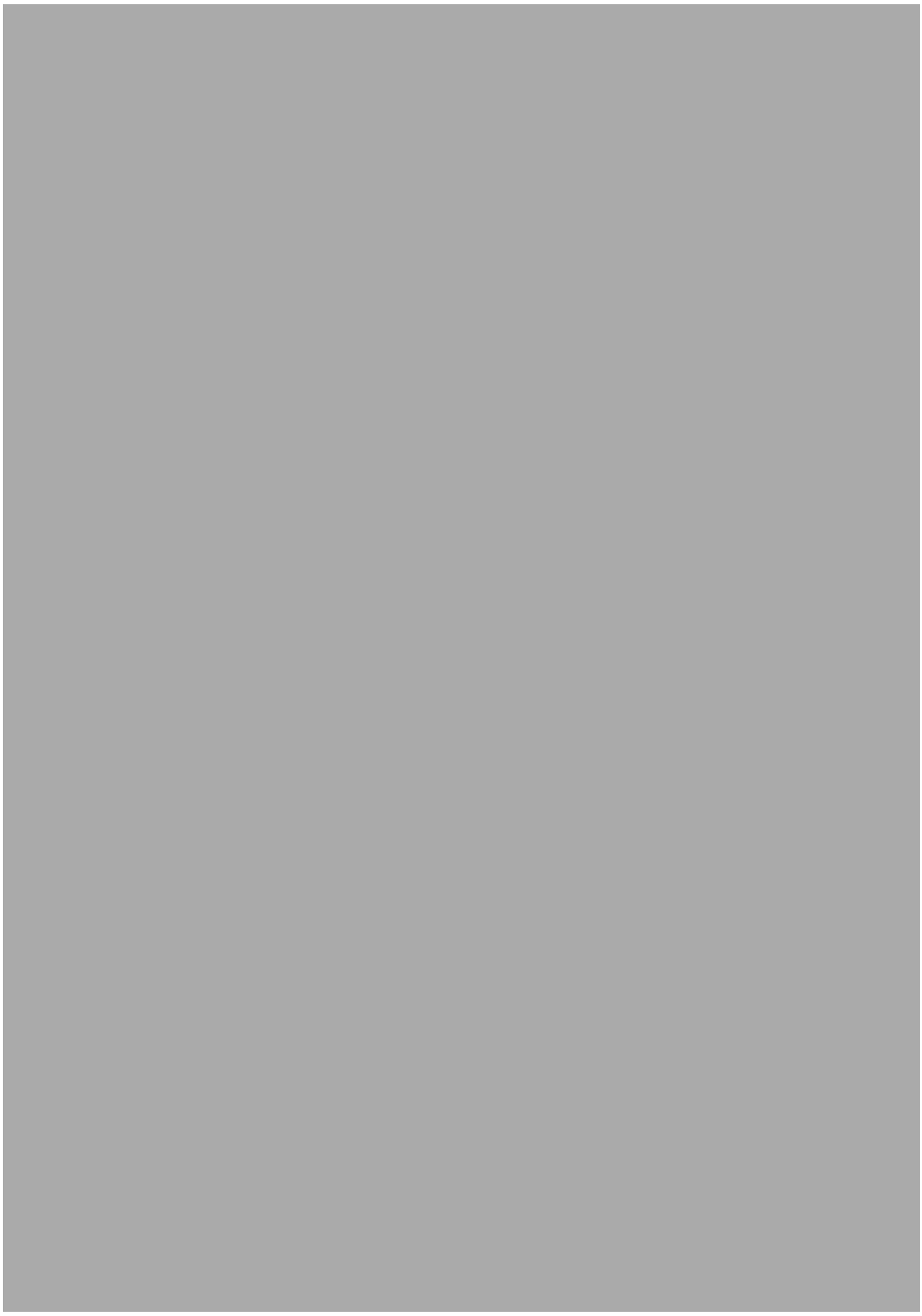
Julia Jones
(Main Researcher)

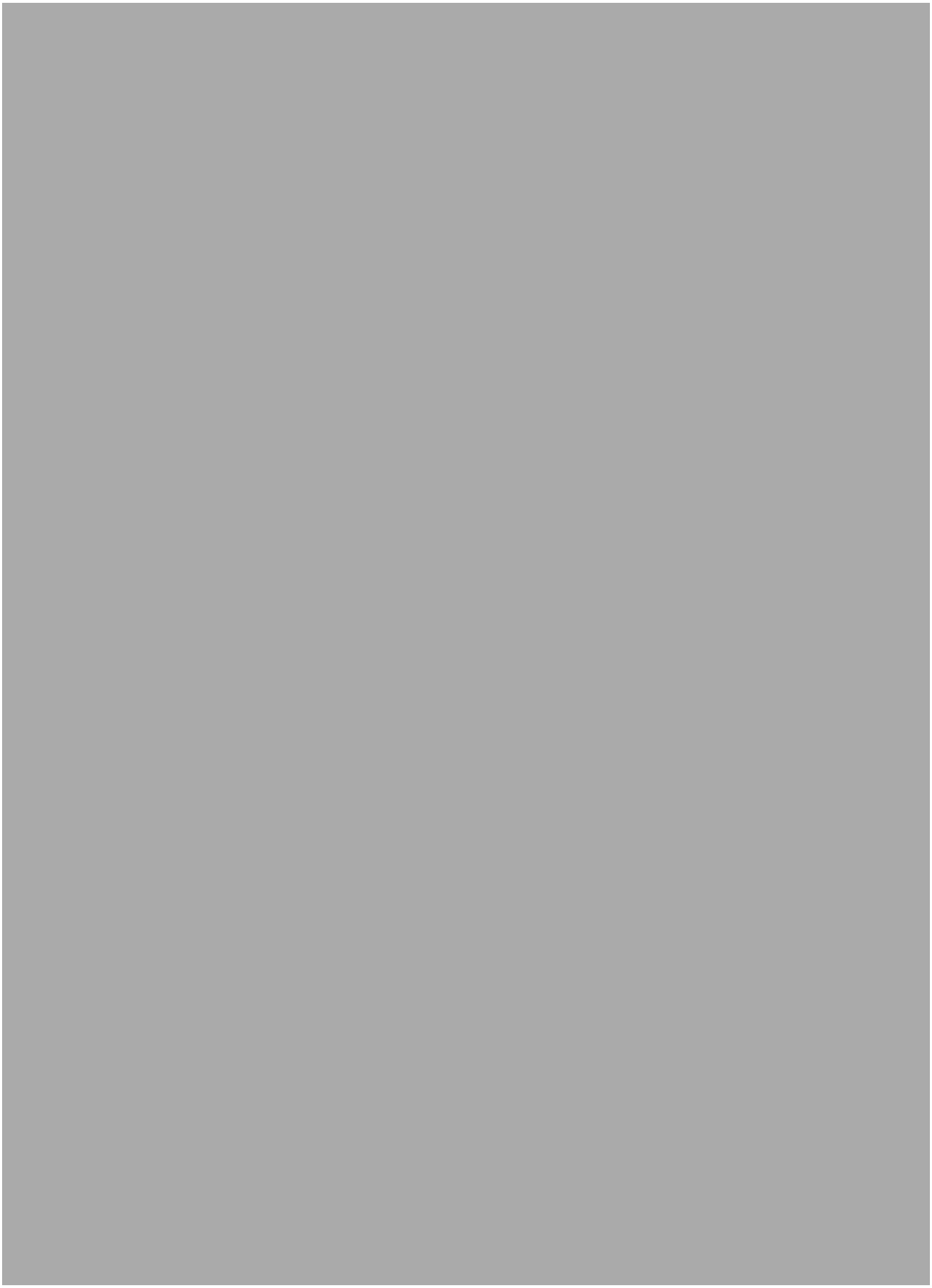
[redacted]

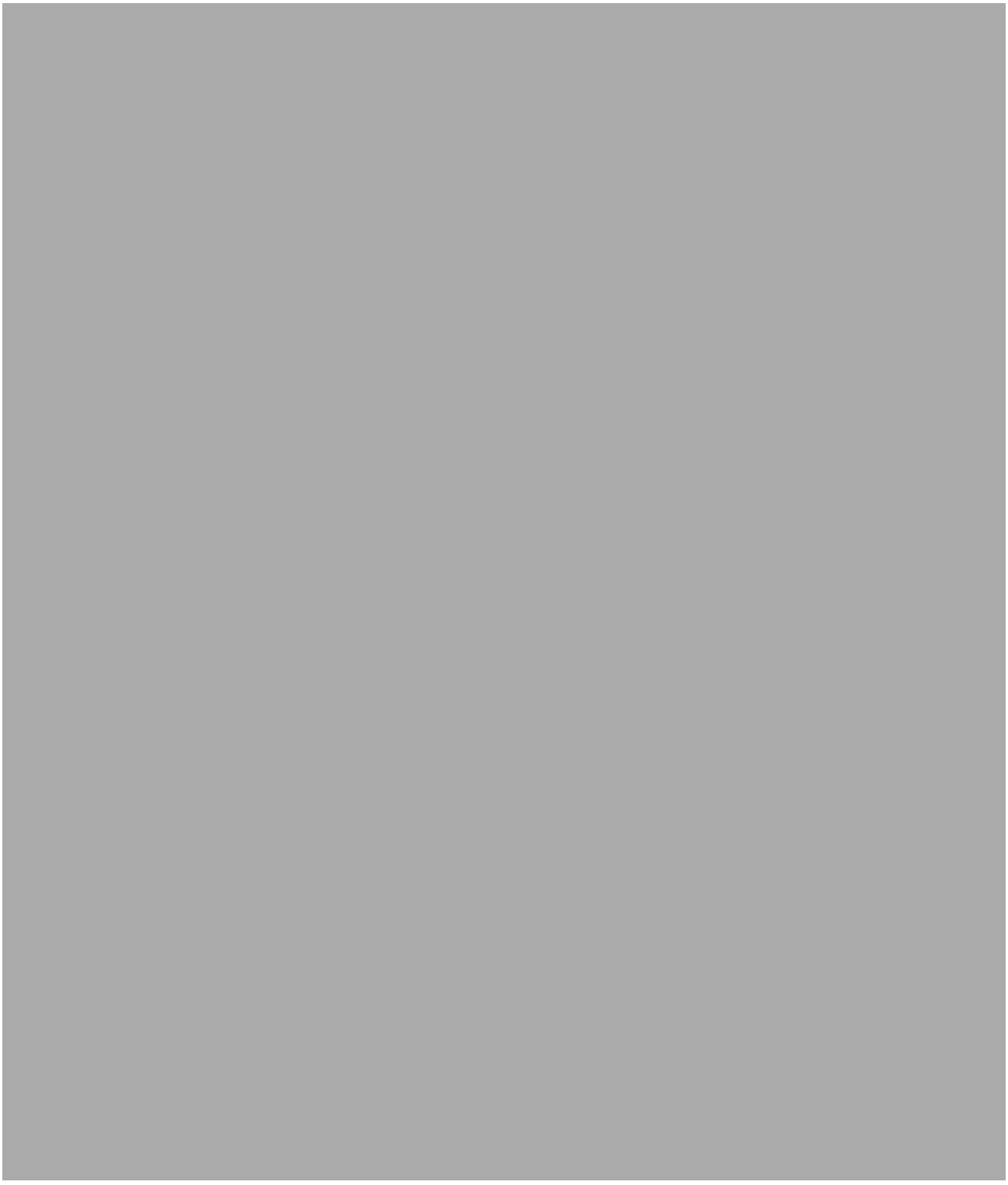
Appendix 7:

Journal Instructions for Publication









Appendix 8:
Public Briefing Document

The role of attachment, emotion regulation and recovery style in psychosis

This thesis was submitted as part of the Doctorate in Clinical Psychology at the School of Psychology, University of Birmingham. This document will describe Volume 1 that comprises of two parts; a review of the literature and a research or empirical study.

Literature review

Recovery style refers to the individual differences associated with coping with or adjusting to a diagnosis of psychosis. McGlashan and colleagues initially explored the concept during the 1970's and suggested that individuals recovering from psychosis often display tendencies towards two distinct styles of coping, 'integration' and 'sealing-over'. Integrators are thought to show awareness of the psychosis originating in the self. They display curiosity about their illness and treat it as a source of new information about their life. In contrast, individuals who seal-over may minimise or deny their experience of psychosis. They are less interested in talking about their illness, ask for less help and prefer to return to the life they had prior to their psychotic episode. Early empirical research with individuals with severe mental health disorders such as psychosis, bipolar, and personality disorders, found that integrators had overall better functioning and reduced relapse rates in the longer-term. Since then, the literature on recovery styles has gathered pace, and this review provides a timely opportunity to be the first paper to review empirical literature on recovery styles in individuals with a diagnosis of psychosis. The review aimed to establish how many individuals were reported to display sealing-over and integrating styles of recovery. Furthermore, the review aimed to understand why an individual may develop a particular style of coping, and what might be the

consequences of adopting a specific style of recovery. The review found that an overwhelming majority of individuals with psychosis demonstrate a tendency towards integration (72%) rather than sealing-over (28%). However, it was wondered whether these results actually reflected a tendency for individuals with integrating recovery styles, to agree to participate in research, given their willingness to discuss and explore their psychosis. Therefore these numbers may not be an actual representation of the population with a diagnosis of psychosis, with a potential for sealing-over to be represented in individuals who refuse or dropout of research studies. In exploring why an individual may develop a tendency towards a specific style of recovery, the review found that individuals who seal-over were more likely to report insecure relationships during early developmental and adult years. Additionally, individuals who seal-over were found to hold more negative self-evaluations (e.g. judging one's self as worthless or inadequate). The findings from the review challenged McGlashan's original concept of recovery styles representing stable and enduring personality traits. Instead, research indicates that individual recovery styles can change over time, may vary at different stages of the recovery process, and can be influenced by psychotherapeutic interventions. Individuals with integrative styles were found to be more likely to experience symptoms of post-traumatic stress disorder (PTSD) following psychosis. This suggests that the initial process of sealing-over may be adaptive, psychologically protecting the individual from the perceived negative realities of the psychosis. However, continued use was found to be problematic in the longer-term with poorer quality of life and social functioning, and increased likelihood of future episodes of psychosis. The impact of recovery styles on outcomes such as depression, anxiety and engagement with services remains inconclusive, largely due to methodological limitations within the studies. The review suggests that future research requires larger and more rigorous quantitative methods that assess recovery style

over time. Qualitative studies that explore personal narratives of adapting to and recovering from an experience of psychosis may also be a beneficial addition to the literature.

Empirical paper

Background: Symptoms of psychosis are typically categorised as 'positive symptoms' (e.g. hallucinations, delusions, paranoia), and 'negative symptoms' (e.g. social withdrawal). In addition, different types of emotional dysfunction including depression, social anxiety and psychosis related trauma is common in individuals with a diagnosis of psychosis. Historically, emphasis has been placed on the role of organic and genetic factors on the development of psychosis. However, current literature recognises the role of early developmental experiences and emotional dysfunction. Childhood adversities such as abuse, neglect or problems in attachment are considered a vulnerability marker for first-episode psychosis. In infancy, a caregiver's responsiveness and sensitivity to the infant's distress is thought to help the individual develop a secure and positive self-image, sense of autonomy, closeness in relationships and an ability to manage distress. On the other hand, if caregivers are unresponsive and insensitive to an infant's distress, the individual will go on to learn to either escalate their level of distress in order to get their attachment needs met (e.g. catastrophise situations or become angry) or they will inhibit their distress (e.g. withdraw from others and keep the feelings locked up inside). The current study aimed to further understand how attachment relationships with close others may influence how individuals regulate their emotions at times of upset. Furthermore, the study examined how specific strategies used to regulate emotions may impact on difficulties with low mood, anxiety and positive symptoms of psychosis.

Method: Fifty-one people who were recovering from their first psychotic episode were asked to fill in a number of questionnaires about their attachment or relationship style with close others, and identify strategies they may use to regulate their emotions at times of distress. They were also asked to fill in a questionnaire and take part in a short interview to assess their experience of depression, anxiety and symptoms of psychosis.

Results: The results found a higher proportion of insecure attachment (82%), largely represented by dismissing and fearful attachment styles, in first-episode psychosis population. Consistent with expectations, secure attachment styles were found to be associated with more functional and less dysfunctional strategies of regulating emotions, and experienced significantly less depression, stress and positive symptoms of psychosis. In contrast, insecure-fearful attachments were found to have significantly more dysfunctional strategies, and more severe levels of depression, stress and positive symptoms of psychosis. A unique finding of the study was the mediating role of emotion regulation in the relationship between attachment styles and the severity of distress and positive symptoms of psychosis.

Conclusions: Insecure adult attachment styles are related to how an individual may regulate their emotions at times of distress, and it is these dysfunctional ways of coping that is potentially influential in the severity of low mood, anxiety, delusions, hallucinations and paranoia. Moreover, secure attachment appears to be a protective factor against the severity of emotional distress and symptoms of psychosis. These findings are of importance to clinical practice. Knowledge of an individual's attachment style may help identify individuals who are more or less vulnerable to emotional distress following a psychotic episode, potentially due to dysfunctional or functional emotion regulation. Psychotherapeutic interventions aimed at reducing dysfunctional strategies such as rumination and self-criticism may be effective in alleviating distress and positive symptoms of psychosis