Existential Concerns as Predictors of Spiritual Emergency and Psychosis

Maximilian Inglis

Supervisor: Dr. Lance Storm

Co-Supervisor: Dr. Nicholas Burns

School of Psychology, University of Adelaide

This thesis is submitted in partial fulfilment of the Honours degree of Bachelor of Psychological Science (Honours)

November 13, 2020

Word Count: 9491

Table of Contents

List of Figures

Figure

List of Tables

Table

Abstract

The cause of psychosis remains uncertain, and the current biological model for treating psychosis is somewhat ineffective, with the efficacy of antipsychotic drugs to reduce psychotic symptoms and prevent relapse being 41%. As such, calls have been made for new hypotheses to be examined to aid in the understanding and treatment of psychosis. This study explored two complementary hypotheses: 'Spiritual Emergency' (SE), and 'psychosis as a coping mechanism for existential distress'. SE is similar in presentation to psychosis, but evidence suggests that SE can be psychologically healing and can be differentiated from psychosis by its divergent relationship with alogia and depression. Existential psychologists have posited a relationship between psychosis and existential distress, but presently there has been no quantitative research conducted on the relationship between existential distress and SE/psychosis. This present study aimed to confirm alogia and depression as differentiating variables between psychosis and SE, in addition to exploring the relationship that the two constructs have with existential concerns (ECs). Results confirmed that alogia and depression predict psychosis only, and there was no overlap in the ECs that predicted each construct. Psychosis was predicted by increased death anxiety, existential loneliness, and identity distress, while increased meaning [search for and presence of], reactance, and decreased death anxiety predicted SE. The results indicate that SE may have a psychological healing effect through a reduction in existential distress, while psychosis can be predicted by increases in existential distress. The findings have implications for the diagnosis of and potential treatments for psychosis.

Keywords: psychosis, spiritual emergency, existential concerns, existentialism, spirituality.

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any University, and, to the best of my knowledge, this thesis contains no material previously published except where due reference is made. I give permission for the digital version of this thesis to be made available on the web, via the University of Adelaide's digital thesis repository, the Library Search and through web search engines, unless permission has been granted by the School to restrict access for a period of time.

Contribution Statement

In writing this thesis, my supervisor and I collaborated to generate the hypotheses, design the appropriate methodology, and prepare the ethics proposal. I conducted the literature review, wrote the survey that was used to gather data, recruited participants, managed the online survey, collected, filtered and organized data, and self-funded the advertising that was necessary to reach the required number of participants. My supervisor and I collaborated in choosing the type of analyses that would be conducted (primarily correlational, MANOVA, and MRA). As I had minimal experience with SPSS, my supervisor aided in teaching me how to use the program and we co-conducted the necessary analyses. I wrote all aspects of the thesis, including figures, tables, and thesis layout.

Acknowledgements

This year has been particularly challenging for me, as it has for many across the whole world, and I could not have completed this thesis without the help of all of those around me.

I firstly give thanks to Dr. Matt Dry and The University of Adelaide's School of Psychology for their support and generosity in allowing me extra time on this thesis so that I could overcome my hardships before returning to study, without which I could not have completed this project.

I express enormous gratitude to Dr. Lance Storm, who was incredibly supportive, helpful, and understanding throughout this entire year. I have learned an enormous amount from him this year, and I feel honoured and privileged to have been fortunate enough to have him as my supervisor during this endeavour.

Lastly, I give tremendous love and thanks to my incredible family. Their love and support of all that I do is a blessing that I will forever be thankful for and never take for granted.

Existential Concerns as Predictors of Spiritual Emergency and Psychosis

Psychosis is a highly debilitating psychological disorder that causes the individual to experience a phenomenal break from reality. There are five key symptoms prevalent in psychosis outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-V): (i) delusions, (ii) hallucinations, (iii) disorganized thinking and speech (i.e. alogia), (iv) grossly disorganized or abnormal motor behaviour, and (v) negative symptoms, such as diminished emotional expression, decrease in self-motivated purposeful activities and asociality (American Psychiatric Association, 2013). The global prevalence of psychotic disorders is estimated to be between 3.8 to 4.6 per 1000 persons and is ranked among the top 15 leading causes of disability worldwide (Moreno-Küstner, Martín, & Pastor, 2018).

The severe impact of psychosis necessitates a comprehensive understanding of the cause and ideal treatments for the disorder, yet currently the aetiology of psychotic disorders is not well understood (Moncrieff, 2009). The prevalent explanatory hypothesis is the “dopamine hypothesis”, a biological explanation that proposes psychosis is triggered by a dysregulation of dopaminergic activity in the brain (Tost, Alam & Meyer-Lindenberg, 2010). This operational theory has been the dominant theory since the discovery of the first effective antipsychotic agents in the early 1950s, but the reasons why this dysregulation occurs and what influences play a role in its development are still uncertain (Howes & Kapur, 2009).

The dopamine hypothesis is pragmatically useful due to the ease of using biological treatments such as antipsychotic medication, but it has limitations. Currently there is no clear biological marker that we can use to identify psychosis, and there are numerous cases of psychosis which cannot be explained biologically (Shields, 2014). Additionally, the efficacy of biological treatments using antipsychotic drugs to reduce psychotic symptoms and prevent

relapse is only 41% (Leucht, Arbter et al., 2009). The dopamine hypothesis also lacks cultural sensitivity as it fails to account for religious and spiritual variables, leading to the potential misdiagnosis of spiritual experiences and harmful iatrogenic (treatment related) effects (Bowman, 2009; Cashwell & Young, 2005; Chirban, 2001; Johnson, Hayes, & Wade, 2007). Consequently, calls have been made for new hypotheses to be investigated regarding the aetiology and potential treatments of psychosis (Moncrieff, 2009).

The aims of this exploratory and confirmatory study are complementary, and concern the nature of psychosis, 'spiritual emergency' (SE), and 'existential distress' (ED). Specifically, the study is an investigation of: (i) psychosis as a coping mechanism for existential distress, and (ii) spiritual emergency as a healing mechanism for existential distress. The former posits that when one's ED becomes too great, the psyche produces an alternative more bearable reality to help one cope (Shields, 2014). The latter posits that certain types of psychosis that are not biologically explainable may be due to the psyche experiencing an SE that may lead to healing seen through a reduction in ED; in other words, spiritual awakening/emergence (Grof & Grof, 1990).

Psychosis as a Coping Mechanism for Existential Distress

Existential psychology is a humanistic approach to understanding psychopathology as uniquely individual experiences and draws on concepts from existential philosophy to explain psychological conditions in terms of the impact one's existential beliefs have on their psychological well-being (Hunot et al., 2013). The principles of existentialism are applied to psychology to allow for a holistic view of human beings by considering our unique capacity for consciousness, and the relationship that our existential concerns have with mental well-being.

Existential psychologists argue the aetiology of psychosis from a psychological and phenomenological perspective — that is, as subjectively experienced by each individual (Yalom, 1980). Specifically, they suggest that as conscious beings we need to contend with, accept and find meaning within our existential reality (Saunders, 1988). Coming to terms with our existential reality is regarded as so important, that existential psychotherapists see the avoidance of existential issues as a cause of psychopathology (Frankl, 1979; Shields, 2014; Yalom, 1980). Research suggests that existential issues are so profoundly important to us that we value the significance and meaning of life events in relation to our existential beliefs (Hirsh, 2010).

In the field of existential psychology, it has been proposed that psychosis is a coping mechanism against overwhelming ED (Shields, 2014). Under this hypothesis, psychosis occurs when individuals become overwhelmed by existential concerns (ECs) but refuse to acknowledge these concerns or change their behaviour. The refusal to contend with one's ECs leads to a build-up of ED, and if ED becomes too great the psyche copes by generating an alternative, more bearable reality. The psychotic episode, therefore, is a mechanism for coping with ED, as it allows an individual to escape existential realities that the individual could not otherwise avoid.

While existential psychologists agree that ED has a negative impact on one's mental wellbeing, ED as a theoretical construct still lacks a concrete definition (LeMay & Wilson, 2008). For some, ED is a 'spiritual pain' or 'suffering' that affects an individual's entire being (Cassel, 1982; Kearney, 2000; Millspaugh, 2005; Saunders, 1988), with the spiritual aspect of this pain understood to be a connection to the transcendent (i.e., referring to broader questions about existence). Cassel (1982) describes this suffering as "... the state of severe distress associated with events that threaten the intactness of the person" (p. 640). Kissane (2000) suggests that ED is experienced as an overwhelming mental turmoil, stemming from a feeling

that one cannot cope, or does not know what to do to alleviate one's current life situation. While definitions vary, the recurring theme is that ED is an overwhelming aversive emotional state caused by the inability to deal or cope with ECs which threaten the integrity of the individual. Existential psychologists Koole, Greenberg, Pyszczynski (2006) refined existential issues down to the 'Big Five' ECs: death; isolation; identity; freedom and meaning — these will be discussed in detail later.

If the coping mechanism hypothesis is true it would aid in the explanation of psychotic symptoms that the biological hypothesis has yet to explain. For example, the reason why one particular type of positive symptom occurs, grandiose delusions, continues to elude researchers (McKay & Kinsbourne, 2010). If psychosis is a coping mechanism for managing ED, then grandiose delusions are the psyche generating an alternative more bearable reality to cope, whereas negative symptoms are a withdrawal from the unbearable reality (Shields, 2014).

Neurological research on the effects of antipsychotic drugs on brain activity suggests support for the coping mechanism hypothesis. Exposure to ED generates a significant increase of activity within the amygdala, right caudate nucleus and left anterior cingulate, the areas of the brain that antipsychotic drugs target to decrease neural activity (Quirin et al., 2011). Antipsychotic drugs also increase activity in areas of the brain that allow the individual to repress unwanted thoughts, including existential angst (Blasi et al., 2009).

Qualitative evidence stems from interviews with patients who have recovered from psychosis who reported that creating a new self-narrative was integral for their recovery (Roe & Davidson, 2005). In another study, six individuals who suffered from psychotic disorders were interviewed, and each revealed they had incurred an existential threat just before their psychotic break (Williams, 2011).

Researchers argue that the current model for psychosis treatment does not allow for subjective experiences, motivations, and beliefs of the patient to be considered (Yip, 2004; Grof & Grof, 1990). Interviews with psychotic patients suggest they are unhappy with their clinicians because they wish to discuss their subjective experiences, but such themes are thought to be irrelevant (McCabe et al, 2002; Van Meer et al., 2003). When psychotic patients in a care facility were interviewed about which issues were most important to them they consistently expressed existential needs such as autonomy, beliefs about existence and the meaning of their illness in their lives as most pressing (Wagner & King, 2005). These studies strongly suggest that the subjective experiences and existential needs of psychotic patients may provide insight into developing our understanding of psychosis, and that further research into the relationship between ED and psychosis is necessary.

Spiritual Emergency

The second aim of this study is to investigate the construct 'spiritual emergency' (SE) and explore whether SE can act as a psychological healing mechanism for ED. SE is not currently recognised in the DSM-V due to its similarity with psychosis in its presentation, but proponents of SE argue that it is a unique construct as it can be psychologically healing and treated without medication (Bronn & McIlwain, 2015; Grof & Grof, 1990).

Grof and Grof (1990) define SE as "critical and experientially difficult stages of a profound psychological transformation that involves one's entire being" (p. 31). SE is thought to occur when one experiences a rapid and dramatic onset of personal crisis that leads to 'spiritual emergence' — a naturally occurring psychological phenomenon that is transformational in nature. Spiritual emergence involves a gradual unfolding of spiritual awareness, with the

movement of an individual to a more "expanded way of being" that involves enhanced emotional and psychosomatic health, greater freedom of personal choices, and a deeper connection with other people, nature and the cosmos (Grof & Grof, 1990, p. 34). Spirituality in spiritual emergence should be thought of as situations and personal experiences of certain dimensions of reality that give one's life and existence, in general, a numinous quality (Grof & Grof, 1990; Jung, 1968). Typically, spiritual emergence is gradual and subtle, lasting months or years. However, if spiritual emergence is suppressed, or one experiences a dramatic life event, then spiritual emergence can be dramatic, rapid and dominate the phenomenal experiences of the individual; this is an SE (Kane, 2005).

The phenomenal experiences of SE are similar to symptoms of psychosis and may include certain manifestations of delusions, hallucinations, and disorganized/abnormal motor behaviour (Grof & Grof, 1990). As SE symptoms correspond with the DSM-V criteria for psychosis, proponents of SE argue it is often mislabelled as psychosis (Bragdon, 2013). Additionally, conventional understandings of psychosis have been criticised for overlooking or dismissing the spiritual experiences often reported during psychosis; and by labelling spiritual experiences as delusions, conventional psychiatry may be conflating multiple constructs (Goretzki, Thalbourne, & Storm, 2009; Grof, 1985; Phillips, Lukoff, & Stone, 2009). Indeed, recent findings from Bronn and McIlwain's (2015) research led them to conclude that SE is a distinct construct and "should be differentiated from psychopathology" (p. 367).

Differentiating Psychosis from Spiritual Emergency

It is difficult to differentiate between psychosis and SE as the term psychosis is not accurately and objectively defined in contemporary psychiatry due to psychosis manifesting

phenomenally in a wide multitude of forms (Grof & Grof, 1990, p. 43). While psychosis and SE can be similar in their presentation, studies have found that SE can be differentiated from psychosis by its divergent relationship with alogia and depression (Bronn & McIlwain, 2015; Storm & Goretzki, in press). Alogia is the disfluency of thought and speech and is a common negative symptom of psychosis, but Bronn and McIlwain (2015) found that alogia is absent for individuals experiencing an SE. Psychosis also tends to be correlated with depression, yet Bronn and McIlwain found depression using DASS-21 (Lovibond & Lovibond, 1995) did not correlate significantly with SE, as measured on the Spiritual Emergency Scale (SES; a 30-item measure of SE constructed by Goretzki, Storm, and Thalbourne, 2014); and Storm, Drinkwater, and Jinks (2017) found that scores on the SES did not correlate significantly with depression as measured on Beck's Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). As the DSM-V specifies disorganized thinking and speech (i.e. alogia) and negative symptoms (i.e., depression) for the diagnosis of psychotic episodes, these two symptoms are hypothesised to be able to differentiate between the two constructs.

Healing Potential of Spiritual Emergency

Research indicates that therapeutic approaches that are effective for SE, are not suitable for treating psychosis. In contrast to psychosis, if SE is treated using a transpersonal approach (i.e., SE is left to run its course in a safe environment under supervision) it has been shown to be a transformational healing process (Cooper, Rock, Harris & Clark, 2015; Grof & Grof, 1990). Individuals who experience an SE successfully have reported a wide variety of benefits that they attribute to the experience, including but not limited to: alleviating various forms of emotional and psychosomatic disorders, aiding interpersonal relationships, reducing aggressive tendencies,

improving self-image, increasing tolerance towards others, building a deep sense of connection with other people and nature, and enhancing general quality of life (Grof & Grof, 1990, p. 41). As SE may act as a psychological healing process, the use of antipsychotic drugs would hinder the healing potential of the experience and may introduce harmful iatrogenic effects, potentially leading to worse health outcomes for the patient (Bronn & McIlwain, 2015). Therefore, to improve patient outcomes, it is imperative to identify variables that allow clinicians to differentiate between psychosis and SE.

Existential Concerns and Psychosis

There is a vast number of ECs that have been proposed to contribute to ED, but Koole, Greenberg and Pyszczynski (2006) narrowed these down to the 'Big Five' ECs, nominally labelled: death; isolation; identity; freedom and meaning [search for and presence of]. These six ECs (six as meaning includes both 'search for' and 'presence of' subscales) were all found to be correlated with one another by Kretschmer and Storm (2017), supporting the notion that the ECs are fundamentally related to each other and contribute to the proposed superordinate construct ED. The properties of each EC along with their potential relationship to psychosis and SE are summarised in the following paragraphs.

Death

ECs relating to death contend with the awareness of the inevitability of death vs. the desire for a continued existence (Koole et al., 2006). Most individuals sooth ECs surrounding death in two ways: through a worldview that provides hope of a literal immortality, or through a symbolic immortality of enhanced self-esteem through exceeding societal expectations (Burke,

Martens, & Faucher, 2010). Meta-analyses have shown that death anxiety is strongest in late adolescence, and these individuals are the most likely to develop psychosis (Harrop & Trower, 2001). Existential psychologists argue that this age group is particularly vulnerable because during this time-period individuals are capable of understanding their own mortality, but do not yet have a consolidated worldview to buffer against their fear of death, leading to overwhelming ED and consequently psychosis (Shields, 2014, p. 146).

Isolation

Isolation concerns relate to the need to feel connected to others vs. experiences of rejection and the knowledge that our subjective experience of reality can never be fully shared (Koole et al., 2006). Social exclusion, separation from others and ostracism serve to remind us that we are fundamentally separate from others, and our unbridgeable phenomenological gap reminds us that we are fundamentally alone in this world. As such, the more socially isolated we become, the more ED we incur.

Research reveals that social isolation significantly increases the likelihood of developing psychosis (Lim & Gleeson, 2014; Reininghaus et al., 2008), and has been posited to be a prime cause of psychosis according to the ‘social deafferentation hypothesis’ (Hoffman, 2007). This hypothesis suggests that high levels of social withdrawal/isolation in vulnerable individuals prompt social cognition programs to produce spurious social meaning in the form of complex, emotionally compelling hallucinations and delusions representing other persons or agents.

Identity

Personal identity concerns stem from the sense of who one is and how one fits into the world vs. uncertainties due to conflicts of self-identity (Koole et al., 2006). While particularly prevalent in adolescence, ED arises when one struggles to integrate one's vast range of experiences to create and maintain a consistent sense of self and how one fits in the world throughout one's lifespan.

To alleviate the threat to identity posed by undesirable or inconsistent information about the self, people use a wide variety of tactics, including distorting their perceptions of self and affirming or exaggerating unrelated but valued aspects of the self (McGregor, 2006). If identity distress were to become too great, these distortions of the perception of self may become severe enough to develop psychosis. In support of this claim, researchers have found substantial overlap between symptoms of identity disorders and psychosis, such as depersonalization, derealization, delusions and auditory hallucinations (Laddis & Dell, 2012; Steinberg, 1994).

Freedom

Freedom concerns relate to the experience of free will vs. external forces on behaviour, and the burden of responsibility for one's choices in response to a complex array of alternatives (Koole et al., 2006). Research inspired by reactance theory has shown that threats to freedom create an aversive psychological state (reactance) that motivates people to restore and reassert their freedom (Brehm & Brehm, 1981). If one's perceptions of autonomy is threatened in response to regulations or impositions, reactance is directed towards restoring the behaviour that is threatened through oppositional behaviour to reassert their perception of freedom.

The links that reactance may have with psychosis is conflicted. Higher levels of reactance are predictive of increased non-compliance of patients with psychotic conditions and consequently associated with greater psychopathology (Hoge et al., 1990; Kasper et al., 1997). Joubert (1990) found that happiness is negatively correlated with reactance, and Dowd et al. (1994) showed that reactance was associated with aggression, a construct they argue to be similar to depression. In contrast, reactance is positively correlation with personality variables such as 'internal locus of control', meaning one believes they have control over their life outcomes (Brehm & Brehm, 1981). Individuals with greater internal locus of control tend to have increased confidence in oneself, are happier and have better life outcomes (Phares, 1976). As there is conflicting research, the presence or absence of depression alongside reactance may be indicative of whether higher levels of reactance intensifies or lessens ED.

Meaning

Meaning concerns stem from the desire to believe life is meaningful vs. life events that seem random or inconsistent with one's bases of meaning (Koole et al., 2006). Existential psychologists argue that meaning is the greatest defence against ED (Saunders, 1988; Yalom 1980). Frankl (1959) emphasises that meaning is our primary motivation in life, and if meaning is absent then we are left with an existential vacuum that leads to psychopathology. Indeed, when treating psychosis in a psychiatric setting, it is acknowledged that in the first episode of psychosis it is imperative that the patient find meaning in the experience to increase the likelihood of successful treatment (McGorry, 1995).

Interviews with psychotic patients reveal that the desire to find meaning in their lives is their primary concern, suggesting an absence of presence of meaning, and the existence of

Frankl's existential vacuum (Wagner & King, 2005). Other studies have found that psychotic patients were able to overcome their disorders by finding existential explanations (meaning) for their psychosis through individual agency, social influences, and cultural resources (i.e., spirituality/religion) (Larsen, 2004). Additionally, broad measures of religiosity have significant negative correlations with psychoticism, suggesting a protective relationship that increased meaning has against psychosis (Francis & Wilcox, 1996; Roman & Lester, 1999).

Existential Concerns and Spiritual Emergency

Currently, SE as a construct is almost exclusive to the transpersonal psychological literature despite increasing evidence for psychosis and SE being unique constructs (Harris, Rock & Clark, 2019). As such, there is currently no substantive quantitative research to draw on that examines the relationship between ED and SE. Although quantitative research is lacking, subjective accounts from individuals who experience SE strongly suggest a connection between SE and ECs. For example, Grof and Grof (1990) in their decades of research found that individuals who experience an SE often have a fundamental change in their existential outlook. These changes include, but are not limited to: finding more meaning and purpose in life, feeling freer (less bound or restricted) and interconnected with the universe, being less fearful of death and discovering a new identity, all of which coincide with the 'Big Five' ECs.

The potential link between SE and ED is also evident in how ED and SE are described. As previously mentioned, ED has been described as a 'spiritual pain' or 'suffering' that affects an individual's entire being. This description of ED is remarkably similar to Grof and Grof's (1990) description of SE, described as a "critical and experientially difficult stage of a profound psychological transformation that involves one's entire being" (p. 31). The similarities between

ED and SE are so cogent that SE researchers Viggiano and Krippner (2010) have identified 'Existential Crisis' as a potential type of SE (p. 123). As such, we expect experiences of SE to have relationships with the ECs, but as this is the first study to quantitatively link the two constructs, we can only hypothesize how they might be related.

Design of the Current Study

This study aims to determine whether the six ECs are related to psychosis or SE, and to determine whether alogia, depression and the six ECs can be used to differentiate between the two constructs. Specifically, this study tests (i) the individual relationships of the ECs with each other, and the ECs with both psychosis and SE; (ii) the potential of the ECs, alogia, and depression to predict psychosis and SE; and (iii) whether ECs, alogia or depression can be used to differentiate between psychosis and SE. Bivariate correlational analyses will be conducted to test whether there are relationships between each variable. Hierarchical Multiple Regression Analyses (MRAs) will be conducted to test the predictive power of the ECs, depression and alogia, with psychosis and SE as criterion variables. Accordingly, the following hypotheses have been proposed:

1. There are relationships (i) between the six ECs (i.e., amongst each other), and (ii) between the six ECs and SE and Psychosis.
2. The six ECs (Death, Isolation, Identity, Freedom, Meaning [Search for and Presence of]), Depression and Alogia predict Psychosis.
3. The six ECs (Death, Isolation, Identity, Freedom, Meaning [Search for and Presence]) predict Spiritual Emergency (SE), but Depression and Alogia do not predict SE.

Method

Participants

399 participants were recruited through The University of Adelaide's School of Psychology's Research Participation System and Facebook advertising. The University of Adelaide's participants consisted of first-year psychology students that are enrolled in the 2020 study year. All participation was voluntary, and the first-year psychology students received course credit for participation with no reward offered for non-university students. Participants were required to complete the survey online via computer, had to be fluent in English, and be 18 years or older.

Measures

Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996)

The BDI-II is a 21-item forced-choice self-report measure of depression designed to rate the severity of depression based on depression characteristics defined by the DSM-IV (American Psychiatric Association, 2000). Each item measures the cognitive, affective, and somatic symptoms associated with depression, with scores ranging from 0-3 for each item. The measure has been found to have strong internal consistency (Cronbach's $\alpha = .92$), and high level of test-retest reliability coefficients that range from .72 to .93 (Hill, Musso, Jones, Pella, & Gouvier, 2012).

Templer Death Anxiety Scale (DAS; Templer, 1970)

The DAS is a 15-item self-report 'true' or 'false' forced-choice questionnaire that measures death anxiety, with item scores summed to quantify the severity of death anxiety. The

DAS has been validated through use in prior existential research for measuring existential death concerns and has been found to have strong psychometric properties (Weems et al., 2004). The scale reported a high test-retest reliability (.83) and has good internal consistency (Cronbach's α = .77; Kretschmer & Storm, 2017).

Existential Loneliness Questionnaire (ELQ; Mayers et al., 2002)

The ELQ was chosen as it was the only scale identified in the literature to specifically measure existential isolation. There are 22 items, with each item measured on a 6-point Likert scale reflecting how true the statement is for the individual (1 = not at all true of me, to 6 = very much true of me). The ELQ has strong internal consistency (.90) and good reliability (α = .78) (Brandstatter, Baumann, Borasio, & Fegg, 2012). Initially, the scale was designed to measure existential loneliness in HIV-infected women. In the current study references in three questions to HIV specifically were removed to be suitable for the general population. For example: "because I am HIV+ I feel hopeless about having a romantic relationship" was altered to "I feel hopeless about having a romantic relationship".

Identity Distress Survey (IDS; Berman et al., 2004)

The IDS was selected to measure identity as it has been shown to be a valid tool for measuring existential identity concerns in prior existential research (Weems et al., 2004). The IDS is a 10-item self-report measure. Each item is answered on a 5-point Likert scale, with higher scores indicating higher identity distress (ranging from 1 = none, to 5 = very severely). The measure was found to have strong internal consistency (Cronbach's α = .87; Kretschmer & Storm, 2017), with a test-retest coefficient of .82 (Berman et al., 2004).

Revised Hong Psychological Reactance Scale (HPRS-R; Hong & Faedda, 1996)

This scale was selected as reactance theory has been illustrated as a paradigm reflective of existential freedom (Koole et al., 2006), and the scale has been used successfully to measure existential freedom in prior research (Kretschmer & Storm, 2017). The HPRS-R is an 11-item self-report measure of psychological reactance. Item responses are recorded on a 5-point Likert scale (1 = strongly disagree, to 5 = strongly agree). The scores from the 11 items are summed for analysis, with high scores indicating reactant personalities. It is a reliable measure of the reactance construct as 78% of the variance in HPRS scores can be attributed to reactance (Brown, Finney & France, 2010), and has been found to have strong internal consistency (Cronbach's $\alpha = .86$; Kretschmer & Storm, 2017).

Meaning in Life Questionnaire (MLQ; Steger et al., 2006)

The MLQ was selected as it consists of two subscales that measure two aspects of existential meaning: (i) presence of meaning in life (MLQ-P), and (ii) search for meaning in life (MLQ-S) (Kretschmer & Storm, 2017). The MLQ consists of a 10-item self-report measure, with each item answered on a 7-point Likert scale (1 = absolutely untrue, to 7 = absolutely true). The MLQ has been found to have good reliability, with a test-retest coefficient of .70, and strong internal consistency being reported for both the MLQ-S ($\alpha = .87$) and MLQ-P ($\alpha = .86$) subscales.

Experiences of Psychotic Symptoms Scale (EPSS; Goretzki, Thalbourne & Storm, 2009)

The EPSS was selected as it is the only scale designed specifically to discriminate between the symptoms of psychosis outlined in the DSM-IV and spiritual experiences.

Additionally, the measure has two subscales that differentiate between the positive symptoms of psychosis and the negative symptom of alogia that will be used to test the hypotheses. The EPSS is a 15-item true/false questionnaire, with higher scores on the EPSS indicating an increased likelihood of having experienced psychosis. The measure has good reliability (Cronbach's α = .92; Storm & Goretzki, in press) and good test-retest reliability of .84 (Harris, Rock & Clark, 2015).

Spiritual Emergency Scale (SES; Goretzki, Storm and Thalbourne, 2014)

The SES was selected as it is currently the only known measure of Spiritual Emergency (Cooper et al., 2015). The SES is a 30-item yes/no questionnaire and contains items from eight different subscales that were identified by Grof (1985) as the major themes of Spiritual Emergency. The SES has been shown to have good internal reliability (Cronbach's α = .96) and test-retest reliability (.67 to .88) (Storm & Goretzki, in press).

Procedure

Ethics approval was obtained from the Human Research Ethics Committee at The University of Adelaide (approval number #20/13*)*. Participants from The University of Adelaide accessed the survey through the research participation webpage. The study was posted as an advertisement to Australian users of Facebook until the planned number of participants was reached. Participants had to read the participant information page (Appendix A) and sign their consent before commencing (Appendix B). Each measure was presented sequentially in random order, and participants answered all questions until the survey was complete.

Results

Preliminary Findings

Six participants were removed from analysis for completing the study faster than the questionnaires could plausibly be read (six minutes), leading to 393 participants analysed. The descriptive statistics for all scales and subscales can be found in Table 1. Cronbach's alphas (indicating reliability) were very good for all scales, although Alogia was only .58 (not reliable as it falls below .70, but considered "sufficient to permit valid theory-based research" (Smith, 1992, p. 136). The descriptive statistics of Gender, Religion, Income and Education for the dependent variables (DVs) 'Psychosis' (EPSS) and 'Spiritual Emergency' (SES), including the two EPSS subscales of 'Positive Symptoms of Psychosis' (EPSS-POS) and 'Alogia', can be found in Table 2.

Five demographic variables were investigated: Sex, Age, Education, Income, and Religion. As the study has a significantly large sample size (n = 393) discussion with Dr. Nicholas Burns led to the decision to use parametric testing as "the choice of non-parametric correlation vs parametric is a non-issue in the sense that [the data] has sufficient power" (N. Burns, personal communication, September 1, 2020). A multivariate analysis of variance (MANOVA) was conducted to determine any demographic differences on psychosis, SE, depression, and the ECs. Significant effects were found for Income, Religion and Age, with results listed in Table 3.

Table 1

Descriptive Statistics: Psychosis, Spiritual Emergency Scale (SES), and the Existential Concerns

				Range		
Variable	*M*	*SD*	α	Potential	Actual	Mean 95% CI
EPSS	4.82	3.77	.85	0-15	0-15	4.45 - 5.19
EPSS-POS	3.78	2.98	.80	0-12	0-12	3.49 - 4.08
ALOGIA	1.04	1.00	.58	0-3	0-3	0.94 - 1.14
SES	6.82	6.20	.90	0-30	0-30	6.21 - 7.44
BDI	34.9	12.4	.95	21-74	21-70	33.64 - 36.10
ELQ	57.8	20.3	.76	22-132	22-115	55.80 - 59.82
IDS	21.4	7.70	.85	10-50	10-42	20.61 - 22.14
HPRS	32.6	7.34	.82	11-55	13-54	31.82 - 33.27
DAS	6.91	3.36	.76	0-15	0-15	6.58 - 7.24
MLQ	43.4	8.48	.71	10-70	19-64	42.52 - 44.20
MLQ-P	23.1	7.44	.90	5-35	5-35	22.34 - 23.81
MLQ-S	21.9	8.15	.92	5-35	35-35	21.05 - 22.66

Note. EPSS = Experiences of Psychotic Symptoms Scale; EPSS-POS = Experiences of Psychotic Symptoms Scale (positive symptoms only); ALOGIA = Experiences of Psychotic Symptoms Scale (alogia symptoms only); SES = Spiritual Emergency Scale; BDI = Beck Depression Inventory-II; ELQ = Existential Loneliness Questionnaire; IDS = Identity Distress Scale; HPRS = Hong's Psychological Reactance Scale; DAS = Templer's Death Anxiety Scale; MLQ = Meaning In Life Questionnaire; MLQ-P = Meaning in Life Questionnaire (presence of meaning only); MLQ-S = Meaning in Life Questionnaire (search for meaning only).

Table 2

Demographic Statistics: Psychosis (EPSS, EPSS-POS, & Alogia), & Spiritual Emergency (SES)

		EPSS		EPSS-POS		ALOGIA		SES	
Variable	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Gender									
Female	294	4.78	3.77	3.77	3.00	1.00	0.98	6.64	6.06
Male	99	4.94	3.81	3.80	2.96	1.14	1.06	7.32	6.60
Religion									
Christian	134	4.54	3.65	3.60	2.91	0.95	0.98	6.78	5.94
Islam	3	6.00	3.60	4.00	2.65	2.00	1.00	6.00	7.00
Hinduism	6	6.83	5.91	5.33	4.55	1.50	1.38	9.67	10.23
Buddhism	15	5.40	4.82	4.20	3.71	1.20	1.32	11.80	7.74
Spiritual	81	5.68	4.16	4.49	3.34	1.19	1.03	4.76	4.67
Atheist	71	3.70	3.31	2.92	2.58	0.79	0.93	3.39	4.06
Agnostic	27	5.67	3.71	4.41	2.94	1.26	0.94	4.04	3.46
Unaffiliated	34	5.03	3.42	3.82	2.66	1.21	1.07	4.76	4.67
Other	23	4.48	2.81	3.52	2.35	0.96	0.77	7.96	7.06
Income									
< $20,000	48	6.81	3.96	5.27	3.10	1.54	1.05	7.70	6.41
$21-50,000	113	5.26	3.73	4.14	2.95	1.12	1.02	7.64	6.30
$51-75,000	78	4.23	3.36	3.37	2.80	0.86	0.85	6.94	6.47
$76-100,000	58	5.15	3.91	3.97	3.09	1.19	1.00	7.26	6.32
$101-150,000	59	3.59	3.30	2.78	2.50	0.81	0.99	4.75	5.24
$151-200,000	23	3.48	3.47	2.83	2.73	0.65	0.94	4.87	4.59
$200,000 +	15	3.80	4.20	3.13	3.54	0.67	0.98	6.67	7.14
Education									
Under Year 12	25	4.60	3.56	3.64	2.84	0.96	0.94	6.16	5.02
Year 12	119	5.86	3.84	4.41	3.08	1.45	1.01	5.97	5.86
TAFE	70	5.34	3.78	4.19	2.97	1.16	1.00	7.69	6.63
Graduate	93	4.57	3.94	3.69	3.18	0.88	0.95	7.74	6.56
Post-graduate	86	3.35	2.98	2.77	2.40	0.58	0.82	6.53	6.16

Table 3

MANOVA: Demographic Variables by Dependent Variables (EPSS, SES, & ECs)

Demographic Variable	*F*	*df*	*p*
Income			
EPSS	2.34	6, 155	.035
SES	2.63	6, 155	.019
HPRS	2.30	6, 155	.037
Religion			
SES	5.18	8, 155	< .001
Age Group			
ELQ	9.67	2, 155	< .001
MLQ-P	3.88	2, 155	.023
MLQ-S	5.53	2, 155	.005
IDS	9.06	2, 155	< .001
BDI	3.07	2, 155	.049
EPSS	7.09	2, 155	.001

Planned Analysis

Pearson's Correlation Coefficients

H1: There are relationships (i) between the six ECs (i.e., amongst each other), and (ii) between the six ECs and SE and psychosis.

Pearson's correlation coefficients (two-tailed) were calculated to explore relationships between the six ECs amongst each other, and between the six ECs with SE and psychosis (see Table 4).

(i) All six ECs were significantly correlated with one another, giving a total of 15 significant correlations (see Table 4). The hypothesis was supported.

Table 4

Pearson's Correlations: Psychosis (EPSS), Spiritual Emergency (SES), and the Six ECs

Variable	1.	2.	3.	4.	5.	6.	7.
1. EPSS	–						
2. SES	.51**	–					
3. DAS	.23**	-.08	–				
4. ELQ	.46**	.09	.21**	–			
5. IDS	.48**	.11*	.38**	.65**	–		
6. HPRS	.34**	.29**	.13**	.35**	.31**	–	
7. MLQ-P	-.27**	.09	-.29**	-.60**	-.45**	-.17**	–
8. MLQ-S	.35**	.17**	.35**	.36**	.49**	.16**	-.26**

Note. * $p < .05$; ** $p < .01$

(ii) SE significantly correlated with three of the ECs: IDS, HPRS and MLQ-S. These correlations were all positive. Psychosis was significantly positively correlated with SE and all ECs apart from MLQ-P which had a negative correlation. The hypothesis was fully supported for psychosis and partially supported for SE. Table 4 shows that 25 of 28 correlations are significant, and even if we discount 5% (i.e., < 2) as the result of chance due to multiple analysis, the majority of these correlations are not Type I errors (Foster et al., 2018). Due to the significant overlap between SE and psychosis found in the correlations and in prior literature, it was decided that they would be entered as predictor variables of each other in the relevant MRAs.

Multiple Regression Analyses (MRA)

A series of MRAs were conducted to determine which variables would be predictors of the DVs psychosis and SE. In each model the hierarchical block-wise sequential regression (i.e., 'Entry' method) was used. The hierarchical regression is a sequential process involving the entry of predictor variables into the MRA in separate steps.

Variables that were found to be predictive of SE or psychosis in prior literature (BDI, EPSS, EPSS-POS, Alogia and SES) were to be added in the first step (Model 1). The EC measures: death anxiety (DAS), existential loneliness (ELQ), identity distress (IDS), reactance (HPRS), presence of meaning (MLQ-P), and search for meaning (MLQ-S) were added in the second step (Model 2) to see whether adding the ECs would significantly improve the model's ability to predict the relevant criterion variable. This hierarchical method enabled the study to confirm findings from prior research in addition to exploring whether ECs can predict psychosis and SE.

The five assumptions of multiple regressions of (i) normality, (ii) linearity, (iii) independence, (iv) no outliers, and (v) homoscedasticity, were assessed in each model. The assumptions of normality, linearity and homoscedasticity were examined through visual inspection of the histogram, P-P plot, and scatter plots with locally weighted smoothing lines (LOESS) grafted onto the scatter plots to aid visual interpretation. Additionally, the Shapiro-Wilk (S-W) test of normality was deployed to test the residuals (critical alpha was set to .001 due to the sample being very large and sensitive tests like S-W tend to report statistically significant results when they do not actually exist; Hahs-Vaughn, 2016).

The Mahalanobis Distance (MD) was used to find outliers. MD identifies significant outliers by determining if the maximum observed value exceeds the critical value given by a chi-

square distribution (see Appendix C), using the relevant degrees of freedom to determine the number of predictors in the model (probability level set for MD was $\alpha < .001$). Independence of variables was determined by analysing the Tolerance values, with Tolerance values larger than .2 indicating no multicollinearity.

H2: The Six ECs (Death, Isolation, Identity, Freedom, Meaning [Search for and Presence of]), Depression, and Alogia predict Psychosis.

Two MRA's were conducted to test H2 (MRA_{1a}; MRA_{1b}). This step was taken because the measure used for alogia is a subscale of the EPSS. Therefore, to test whether alogia was a predictor of psychosis (MRA_{1a}), the 'Alogia' subscale was included as a predictor variable and the 'positive symptoms of psychosis' (EPSS-POS) subscale was used as the DV. As the DSM-V includes alogia as a symptom of psychosis, MRA_{1a} would only partially test the EC hypothesis, so MRA_{1b} was conducted using the full EPSS as the DV, which includes the 'Alogia' items.

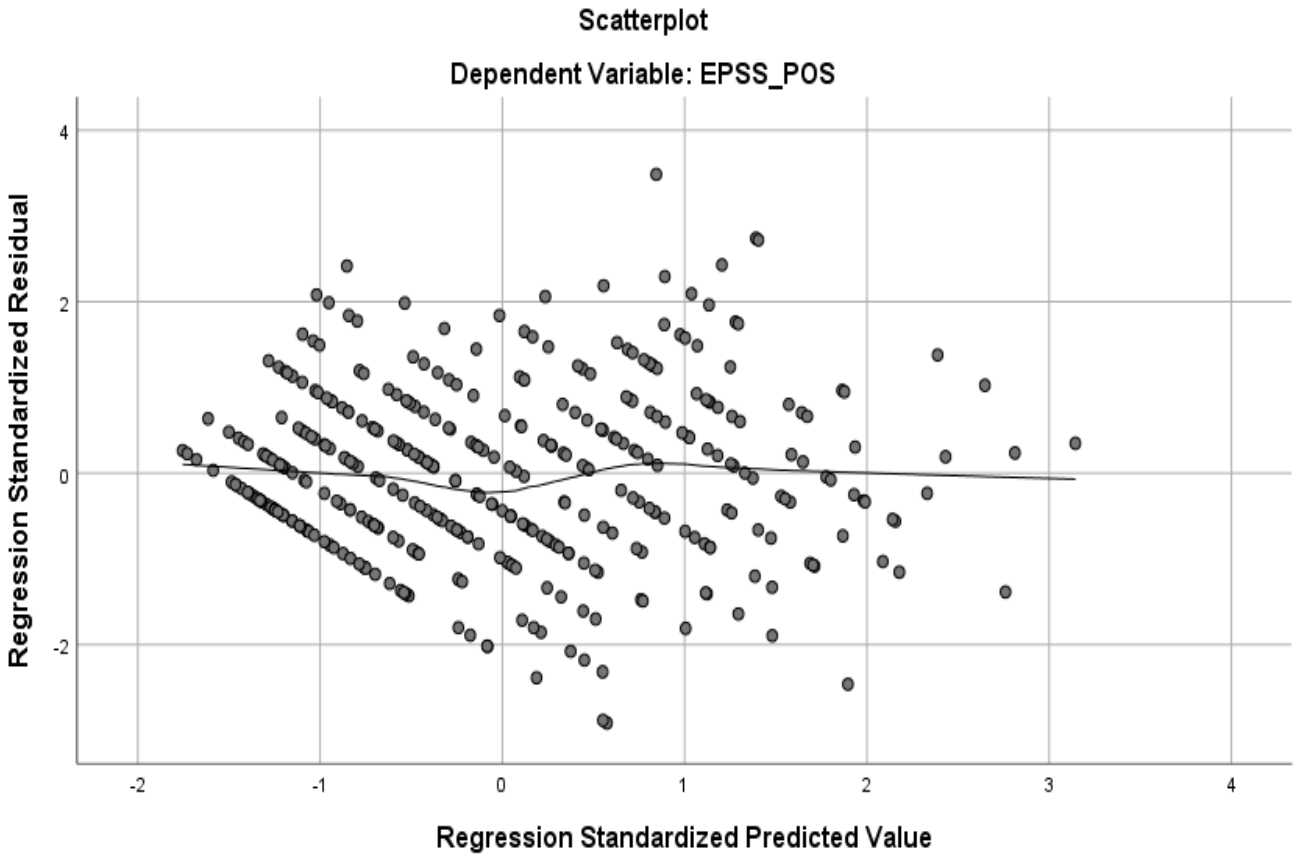
Multiple Regression Analysis - Positive Symptoms of Psychosis (MRA_{1a})

For MRA_{1a} the EPSS was separated into its two sub-measures: (i) EPSS-POS and (ii) 'Alogia', with EPSS-POS being the DV. Depression (BDI), spiritual emergency (SES) and Alogia were entered in the first step of the regression, followed by ECs in the second step. The five assumptions of normality, linearity, no-outliers, independence of variables and homoscedasticity were assessed for the model. Visual inspection of the histogram and P-P plot indicated that the normality and linearity assumptions had not been violated (see Appendix D). For outliers, the MD critical statistic is 27.88 for nine predictors. One case exceeded the critical value and was removed. The LOESS line was relatively flat, and the scatter plot showed no evidence of heteroscedasticity (see Figure 1). The S-W test confirmed normality, finding a non-

significant departure from normality in residuals, W(392) = .99, p = .325. Independence of variables was confirmed as Tolerance was greater than .2 for all variables.

Figure 1

MRA_{1a} Scatter Plot with LOESS Line for Positive Symptoms of Psychosis (EPSS-POS)



In Model 1, Alogia, SES, and BDI entered as predictors. This model was significant, with the adjusted R^2 value indicating 64% of the variance was explained by alogia, SE, and depression (see Table 5).

In Model 2, Alogia, SES, and BDI remained. This model was also significant, $F(9, 383) = 81.09$, $p < .001$. Additionally, one EC entered: DAS (excluded were ELQ, MLQ-P, MLQ-S, IDS, and HPRS). MRA_{1a} shows the association between the explanatory variables and the

criterion variable (EPSS-POS) was strong and significant (Multiple R = .81). The addition of DAS in the second step increased the adjusted R^2 value significantly by .017, increasing the variance explained to 65%. Table 6 lists the standardized regression coefficients (β) for the two steps: Alogia was the strongest predictor of EPSS-POS, followed by SES, BDI, and DAS.

Table 5

MRA_{1a} Model Summary for Positive Symptoms of Psychosis (EPSS-POS)

Model	*df*	*F*	*R*	R^2	Adjusted R^2	Std. Error	R^2 Change	*p*
1	3, 389	229.43	.80	.64	.64	1.80	.639	< .001
2	6, 383	3.14	.81	.66	.65	1.77	.017	.005

Multiple Regression Analysis – Psychosis (EPSS) (MRA_{1b})

For MRA_{1b} the full scale of the EPSS was used as the DV. The BDI and SES were entered in the first step of the regression, followed by ECs in the second step. The five assumptions of normality, linearity, no-outliers, independence of variables and homoscedasticity were assessed for the model. Visual inspection of the histogram and P-P plot indicated that the normality and linearity assumptions had not been violated (see Appendix D). For outliers, the MD critical statistic was 26.12 for eight predictors. One case exceeded the critical value and was removed. The LOESS line was relatively flat, and the scatterplot showed no evidence of heteroscedasticity (see Figure 2). The S-W test confirmed normality, finding a non-significant departure from normality, W(392) = .99, p = .002 (α set at .001). Independence of variables was confirmed as Tolerance was greater than .2 for all variables.

Table 6

MRA_{1a} Coefficients for Positive Symptoms of Psychosis (EPSS-POS)

						Correlations		
Block	B	SE	β	*t*	*p*	Zero-Order	Partial	Part
Step 1								
Alogia	1.58	.11	.53	14.86	< .001	.72	.60	.45
SES	0.16	.02	.34	10.37	< .001	.53	.47	.32
BDI	0.04	.01	.18	5.19	< .001	.45	.26	.16
Step 2								
Alogia	1.48	.11	.50	13.18	< .001	.72	.56	.40
SES	0.17	.02	.35	10.09	< .001	.53	.46	.30
BDI	0.02	.01	.10	2.17	.031	.45	.11	.07
DAS	0.08	.03	.08	2.47	.014	.22	.13	.07

In Model 1 of MRA_{1b}, SES and BDI entered as predictors. The model was significant, with the adjusted R^2 value indicating the model explained 43% of the variance in EPSS scores (see Table 7).

In Model 2, BDI and SES entered, as well as three ECs: ELQ, IDS, and DAS (excluded were MLQ-P, MLQ-S, and HPRS). This model was significant, $F(8, 384) = 49.82$, $p < .001$. MRA_{1b} shows the association between the explanatory variables and the EPSS was strong and significant (Multiple $R = .71$). The addition of the ECs in the second step increased the adjusted R^2 value by .08, and the total variance explained to 50%. Table 8 lists the β values for the two

steps: SES was the strongest predictor of EPSS, followed by BDI. The ECs predictive from strongest to weakest, were IDS, ELQ and DAS.

Figure 2

MRA_{1b} Scatter Plot with LOESS Line for Psychosis (EPSS)

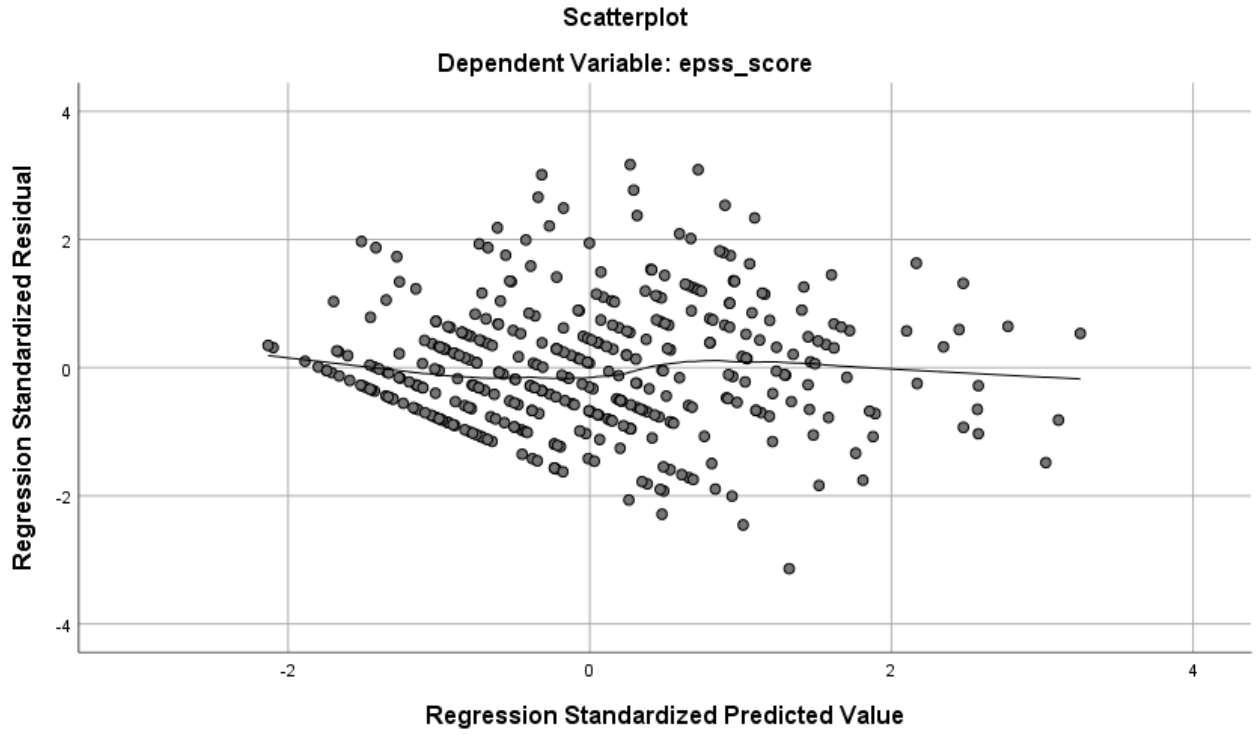


Table 7

MRA_{1b} Summary for Predictors Psychosis (EPSS)

Model	*df*	*F*	*R*	R^2	Adjusted R^2	Std. Error	R^2 Change	Sig. *F* Change
1	2, 390	147.87	.66	.43	.43	2.85	.43	< .001
2	6, 384	10.18	.71	.51	.50	2.67	.08	< .001

Table 8

MRA_{1b} Coefficients for Predictors of Psychosis (EPSS)

						Correlations		
Block	B	SE	β	*t*	*p*	Zero-Order	Partial	Part
Step 1								
SES	.28	.02	.46	11.96	< .001	.51	.52	.46
BDI	.13	.01	.42	10.86	< .001	.47	.48	.42
Step 2								
SES	.27	.02	.44	11.31	< .001	.51	.50	.40
BDI	.06	.02	.19	3.52	<.001	.47	.18	.13
IDS	.08	.03	.16	3.12	.002	.48	.16	.11
ELQ	.02	.01	.12	2.01	.045	.46	.10	.07
DAS	.12	.05	.11	2.71	.007	.23	.14	.10

Multiple Regression Analysis (MRA_2) – SES

H3: The Six ECs (Death, Isolation, Identity, Freedom, Meaning [Search for and Presence of]) predict Spiritual Emergency (SE), but Depression, Anxiety and Alogia do not predict SE.

To determine which of the explanatory variables were the strongest predictors of SE, MRA_2 was performed. MRA_2 had the variables EPSS-POS, Alogia and BDI selected for the first step of the regression, followed by ECs in the second step.

After analysing the scatterplot and LOESS lines for MRA_2 it was determined that the normality and linearity assumptions had been violated (see Appendix D). The SES data

underwent a square-root transformation as this was shown to be a valid form of transformation in previous SE research (Bronn & McIlwain, 2015, p. 359). MRA_2 was repeated with the transformed data. Visual inspection of the histogram, P-P plot and scatterplot for the transformed SES data indicated that the assumptions of normality, linearity and heteroscedasticity were no longer violated (Figure 3, and Appendix D).

The critical value for the MD was 27.88 for nine predictors. Three outliers exceeded the critical value and were removed. A S-W test of the residuals confirmed the visual inspection and found a non-significant departure from normality, $W(390) = .99$, $p = .617$. Independence of variables was confirmed as Tolerance was greater than .2 for all variables.

In Model 1 of MRA_2, EPSS-POS and BDI entered as predictors. This model was significant, with the adjusted R^2 value indicating 30% of the variance was explained by the EPSS-POS and BDI (see Table 9).

In Model 2, EPSS-POS entered, but BDI was excluded. Additionally, four ECs entered: MLQ-P, MLQ-S, HPRS, and DAS (excluded were ELQ and IDS). This model was significant, $F(9, 381) = 28.60$, $p < .001$. MRA_2 shows the association between the explanatory variables and the SES was strong and significant (Multiple $R = .64$). The addition of the ECs in the second step increased adjusted R^2 by .09, and the total variance explained to 40%. Table 10 lists the β values for the two steps: EPSS-POS was the strongest predictor of SES, followed by the HPRS, MLQ-P, DAS, and MLQ-S.

Figure 3

MRA_2 Scatter Plot and LOESS Lines Following Square-Root Transformation of SES Data.

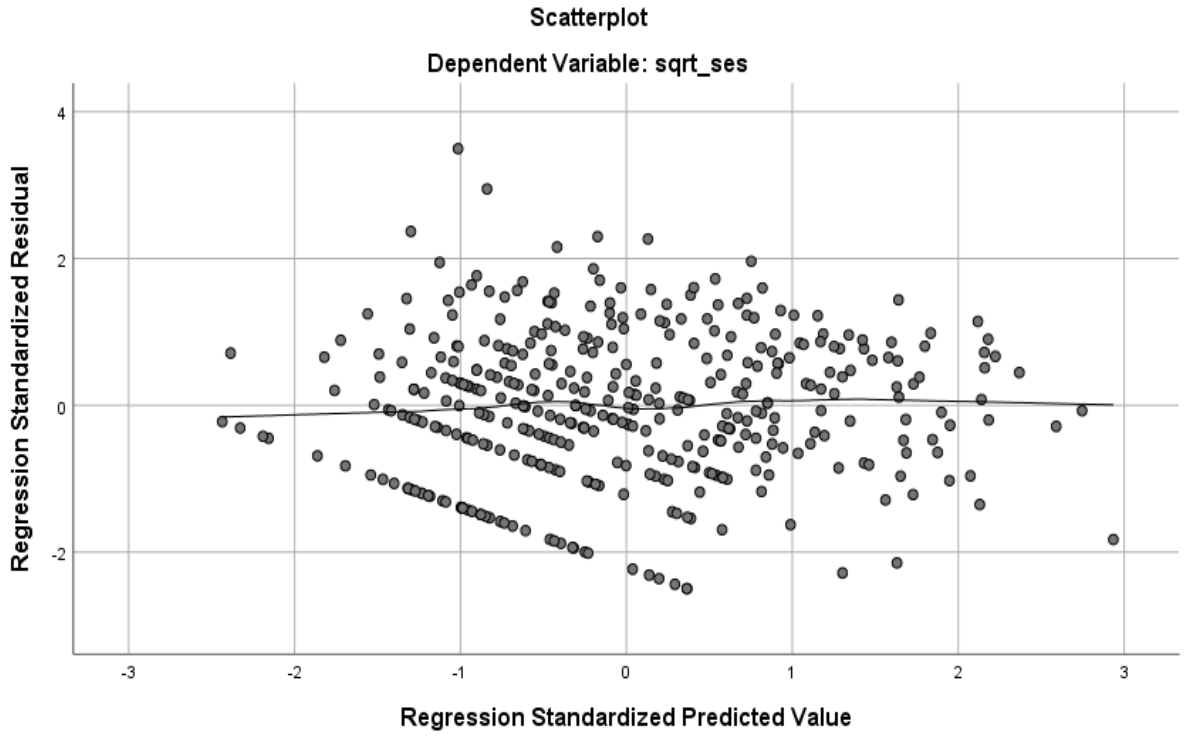


Table 9

MRA_2 Summary for Predictors of Spiritual Emergency (SES) - Transformed

Model	*df*	*F*	*R*	R^2	Adjusted R^2	Std. Error	R^2 Change	Sig. *F* Change
1	3, 387	56.59	.55	.31	.30	1.10	.31	< .001
2	6, 381	27.01	.64	.40	.39	1.03	.09	< .001

Table 10

MRA_2 Coefficients for Predictors of Spiritual Emergency (SES) – Transformed

						Correlations		
Block	B	SE	β	*t*	*p*	Zero-Order	Partial	Part
Step 1								
EPSS-POS	.28	.03	.63	10.07	< . 001	.54	.46	.43
BDI	-.01	.01	-.11	-2.31	.021	.14	-.12	-.10
Step 2								
EPSS-POS	.26	.03	.59	9.80	< .001	.54	.45	.39
HPRS	.04	.01	.20	4.48	< .001	.31	.22	.18
MLQ-P	.04	.01	.20	3.72	< .001	.10	.19	.15
MLQ-S	.02	.01	.10	2.20	.028	.17	.11	.09
DAS	-.06	.02	-.14	-3.18	.002	-.05	-.16	-.13

Review of the MRAs

A summary of significant predictors for each MRA can be found in Table 11. Alogia predicted positive symptoms of psychosis only. Depression predicted both measures of psychosis, but not SE. SE predicted both measures of psychosis, with only the positive symptoms of psychosis predicting SE.

For the ECs, only one EC (DAS) predicted positive symptoms of psychosis. Three ECs (ELQ, IDS, & DAS) predicted the full scale of psychosis, and four ECs (MLQ-P, MLQ-S, HPRS, & DAS) predicted SE. The only EC that predicted both SE and psychosis was DAS.

Table 11

Significant Predictors in the Three Hierarchical MRAs

Variable	MRA Model		
	MRA_{1a} (EPSS-POS)	MRA_{1b} (EPSS)	MRA_2 (SES)
Alogia	✔	—	×
SES	✔	✔	—
BDI	✔	✔	×
EPSS-POS	—	—	✔
ELQ	×	✔	×
MLQ-P	×	×	✔
MLQ-S	×	×	✔
IDS	×	✔	×
HPRS	×	×	✔
DAS	✔	✔	✔

Note. × = non-significant; ✔ = significant; — = not applicable

As DAS was found to be a significant predictor of both psychosis and SE, comparisons of respective correlations were conducted to determine whether the DAS relationships with psychosis were significantly stronger than the corresponding SE correlations. There were significant differences at the $p < .001$ level using the Fisher *r*-to-*z* transformation for correlations in the same sample with one variable in common (see Table 12; Lee & Preacher, 2013).

Additionally, there were differences in the directional relationships for the six DAS correlations as DAS had positive relationships with psychosis, but negative relationships with SE. These differences mean DAS relates to psychosis in a way that is unique and clearly discernible from the way it relates to SE, which is to say psychosis and SE diverge at this point.

Table 12

Death Anxiety (DAS) as a Predictor of Psychosis and Spiritual Emergency

Variable	Psychosis	Spiritual Emergency	*z*	*p*
DAS				
Zero-order	.22†	-.05	5.60	< .001
Partial	.13†	-.16	5.59	< .001
Semi-partial	.07†	-.13	3.36	< .001
DAS				
Zero-order	.23‡	-.05	5.69	< .001
Partial	.14‡	-.16	6.01	< .001
Semi-partial	.10‡	-.13	4.18	< .001

Note. N = 392; DAS = Templer's Death Anxiety Scale; † EPSS-POS = Experience of Psychotic Symptoms Scale - Positive symptoms subscale (12 items); ‡ EPSS = Experience of Psychotic Symptoms Scale - Full scale (15 items).

Post Hoc Analysis – Demographic Variables as Predictors

As shown in Table 3, significant EPSS scoring differences were found between Income groups, and between Age Groups, and significant SES scoring differences were found between Income groups, and between Religions. It was considered worthwhile entering these demographic variables into their respective hierarchical MRAs (MRA_{1b} & MRA_2) as a third step in each, to determine their possible predictive powers. For MRA_2, Income and Religion were excluded.

For MRA_{1b}, Income and Age Group entered. For outliers, the MD critical statistic is 29.59 for ten predictors. Two cases exceeded the critical value and were removed. Models 1 and 2 were effectively the same (see Table 7). The LOESS line was relatively flat, and the scatter plot showed no evidence of heteroscedasticity (see Figure 4). The S-W test confirmed normality, finding a non-significant departure from normality, $W(391) = .99$, $p = .003$ (α set at .001).

The value of adjusted R^2 in Model 3 indicates 53% of the variance was explained by the addition of the Income and Age Group (see Table 13). This model was significant, $F(10, 380) = 44.05$, $p < .001$.

Table 13

MRA_{1b} with Post-Hoc Step 3 Demographics for Predictors Psychosis (EPSS)

Model	*df*	*F*	*R*	R^2	Adjusted R^2	Std. Error	R^2 Change	Sig. *F* Change
1	2, 388	146.00	.66	.43	.43	2.85	.43	< .001
2	6, 382	10.63	.72	.51	.50	2.66	.08	< .001
3	2, 380	10.60	.73	.54	.53	2.60	.03	< .001

Step 1 and 2 predictors were as reported in Table 8. Model 3 shows the association between the explanatory variables and EPSS was strong and significant (Multiple R = .73). Table 14 lists the β values for the three steps: In Model 3, SES was the strongest predictor of EPSS, followed by BDI, IDS and DAS (ELQ was excluded), plus Age Group and Income, both of which have negative β values. The correlations for Age Group and Income were negative.

Figure 4

MRA_{1b} Scatter Plot and LOESS lines following EPSS Data

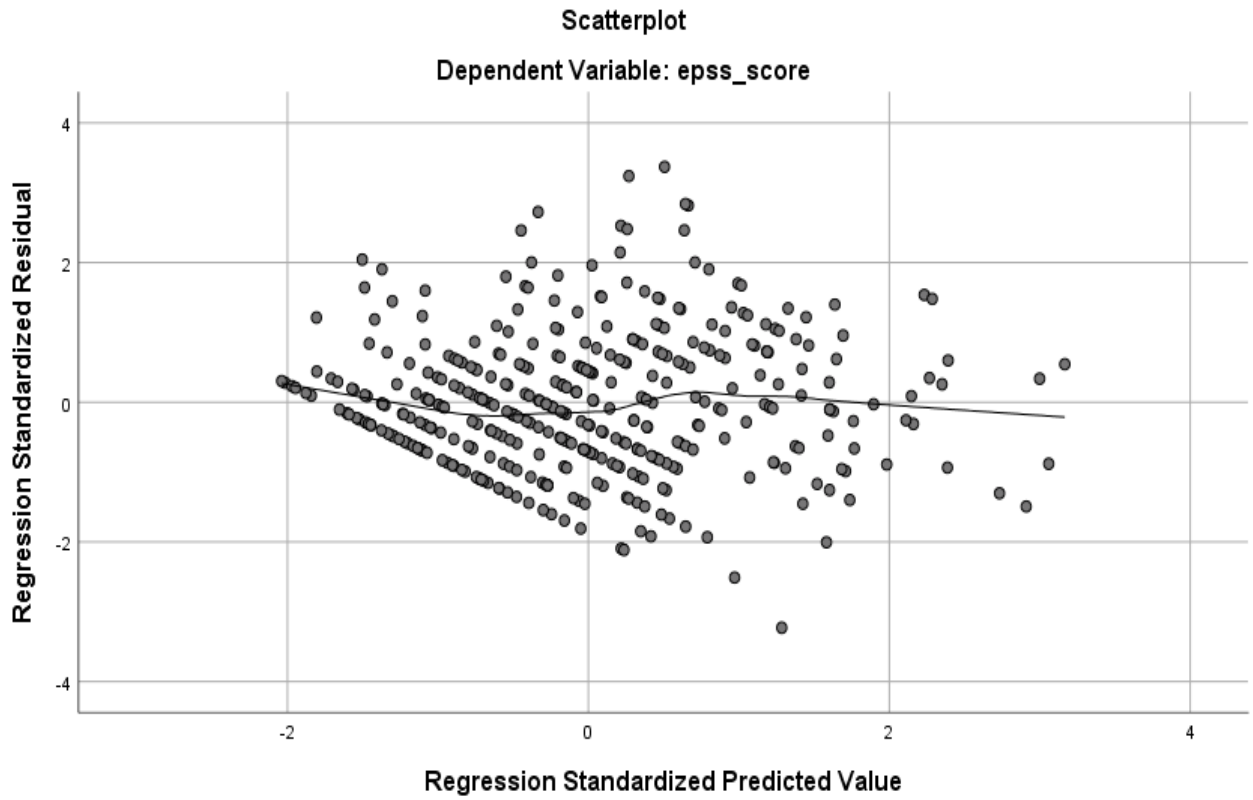


Table 14

MRA_{1b} Revised Coefficients for Predictors of Psychosis (EPSS)

						Correlations		
Block	B	SE	β	*t*	*p*	Zero-Order	Partial	Part
Step 1								
SES	.28	.02	.46	11.92	< .001	.51	.52	.46
BDI	.13	.01	.42	10.76	< .001	.47	.48	.41
Step 2								
SES	.27	.02	.44	11.22	< .001	.51	.50	.40
BDI	.05	.02	.18	3.28	.001	.47	.17	.12
IDS	.09	.03	.18	3.44	.001	.49	.17	.12
ELQ	.02	.01	.12	2.02	.044	.46	.10	.07
DAS	.11	.05	.10	2.49	.013	.22	.13	.09
Step 3								
SES	.27	.02	.45	11.51	< .001	.51	.51	.40
BDI	.06	.02	.20	3.83	< .001	.47	.19	.13
IDS	.06	.03	.11	2.08	.038	.49	.11	.07
DAS	.11	.05	.10	2.45	.015	.22	.13	.09
Age Grp	-.64	.17	-.15	-3.74	< .001	-.24	-.19	-.13
Income	-.27	.09	-.12	-3.13	.002	-.21	-.16	-.11

Discussion

Overview

This study aimed to investigate two hypotheses relating to the nature of psychosis, spiritual emergency (SE) and existential distress (ED): (i) psychosis as a coping mechanism for ED, and (ii) SE as a healing mechanism for ED. The findings were of considerable interest as there was no comparable overlap in the ECs that predicted each construct, suggesting experiences of SE and psychosis result in differences in ED.

The Hypotheses

H1: There are relationships (i) between the six ECs (i.e., amongst each other), and (ii) between the six ECs and SE and psychosis.

(i) The significant correlations between each of the ECs supported the hypothesis and corroborated Kretschmer and Storm's (2017) findings. Presence of meaning in life (MLQ-P) was the only EC that negatively correlated with all other ECs, indicating a lack of meaning in life is associated with increases in other ECs. These results suggest that existential loneliness, identity distress, death anxiety, reactance, and *search* for meaning in life are all ameliorated by the *presence* of meaning in life. This finding supports the ethos of Frankl (1959), as it suggests that the presence of meaning in life is paramount to existential well-being, with a lack of meaning leading to an existential vacuum that can induce ED.

(ii) The significant correlations of all ECs with psychosis supported the hypothesis. Identity distress (IDS) had the strongest correlation with psychosis, corroborating findings by Laddis and Dell (2012) that identity disorders and psychosis have significant overlap. Existential loneliness (ELQ) had the second strongest correlation, coinciding with Lim and Gleeson's (2014) research and lends support for Hoffman's (2007) 'social deafferentation hypothesis'.

Positive correlations for psychosis with search for meaning (MLQ-S) and negative correlations with MLQ-P is consistent with interviews with psychotic patients who consistently report that the desire for meaning is their most pressing concern (Wagner & King, 2005). Positive correlations of reactance (HRPS) with psychosis concur with previous literature that found higher levels of HPRS to be associated with greater psychopathology (Hoge et al., 1990; Kasper et al., 1997). The positive correlation psychosis had with death anxiety (DAS) in addition to the significant predictive relationship that Age Group had in MRA_{1b} (Table 14) corroborates Harrop and Trower's (2001) and Burke, Martens and Faucher's (2010) research, suggesting younger individuals have increased death anxiety due to not having developed a consolidated existential worldview.

The SES significantly correlated with three of the ECs, providing partial support for the hypothesis. The SES had the strongest correlation with the EPSS, supporting previous research showing significant overlap between psychosis and SE (Goretzki, Thalbourne & Storm, 2013; Storm & Goretzki, in press). While the two constructs have much overlap, in contrast to psychosis, the SES only correlated with IDS, HPRS, and MLQ-S. This contrast suggests that those who experience an SE have less ED than those with psychosis, lending preliminary support to Shields' (2014) notion that psychosis and ED are related, as well as Grof and Grof's (1990) hypothesis that SE is different to psychosis and can be psychologically healing.

H2: The six ECs (Death, Isolation, Identity, Freedom, Meaning [Search for and Presence of]), Depression, and Alogia predict Psychosis.

H2 Confirmatory Analysis. Step 1 MRA_{1a}. The significant predictors of Alogia, SES and BDI for EPSS-POS in Step 1 of MRA_{1a} confirmed previous studies showing that alogia and depression predict psychosis, and that SE and psychosis have significant overlap (Bronn &

McIlwain, 2015; Storm, Drinkwater & Jinks, 2017; Storm & Goretzki, in press). In total, these predictors were able to explain 64% of the variance in EPSS-POS scores.

H2: Exploratory Analysis. Step 2 MRA_{1a}. The ECs did little to increase the explanatory power of the model, increasing the variance explained by 1% to 65%. The DAS was the only EC to enter the regression. While the H1 correlational findings indicate that ED is present in those who have experienced psychosis, MRA_{1a} suggests ED is not predictive of positive symptoms of psychosis. As Shields' hypothesis proposed that the psyche generates alternative realities (i.e., positive symptoms) to cope with ED, the lack of a predictive relationship between the ECs and EPSS-POS failed to support Shields' hypothesis.

H2: Confirmatory Analysis. Step 1 MRA_{1b}. MRA_{1b} revealed similar results to MRA_{1a}, with the SES and BDI explaining 43% of the variance. Of note is the considerable increase in the partial (.48) and semi-partial (.42) correlations of the BDI in MRA_{1b} in comparison to the partial (.26) and semi-partial (.16) correlations in MRA_{1a}, suggesting a potential overlap that depression and alogia have for predicting psychosis (i.e., alogia has considerable influence on depression, which cannot be gauged when alogia items are put back into the psychosis scale, EPSS).

H2: Exploratory Analysis. Step 2 MRA_{1b}. The addition of the ELQ and IDS in the model increased the amount of variance explained by 7% to 50%. The high zero-order correlations for the ELQ and IDS reveal why loneliness (social isolation) and identity distress have been linked to psychosis in the past (Laddis & Dell, 2012; Lim & Gleeson, 2014; Reininghaus et al., 2008). The DAS had the lowest zero-order correlation in the model, but the

least reduction in partial and semi-partial correlations, suggesting that death anxiety has a unique influence on psychosis, and perhaps why it was the only EC predictor in MRA_{1a}.

H3: The six ECs (Death, Isolation, Identity, Freedom, Meaning [Search for and Presence of]) predict Spiritual Emergency, but Depression and Alogia do not predict Spiritual Emergency.

H3: Confirmatory Analysis. Step 1 MRA_2. Alogia was not found to be a predictor of the SES, with EPSS-POS and BDI explaining 30% of the variance in SES scores. It was predicted that EPSS-POS would be the only predictor of SE in Step 1 of MRA_2, but BDI also entered. This prediction was based on Bronn and McIlwain's (2015) findings that the BDI was not related to SE, and therefore depression could be used to differentiate between SE and psychosis. While unexpected, the predictive relationship that depression had with SE was opposite to psychosis, as β for BDI is *positive* in MRA_{1a} and MRA_{1b}, but *negative* in MRA_2, meaning lower BDI scores predicted higher SES scores. The findings strengthen Bronn and McIlwain's (2015) proposal that depression and alogia can be used to differentiate psychosis from SE.

H3: Exploratory Analysis. Step 2 MRA_2. With the introduction of ECs in Step 2 the BDI was excluded, supporting Kretschmer and Storm's (2017) findings that ECs and depression are interrelated. The MLQ-P and HPRS were the strongest EC predictors of SE with DAS and MLQ-S following. The large predictive capability of MLQ-P suggests that those who experience SE find substantial meaning after the ordeal. The increase in MLQ-S alongside MLQ-P suggests that the positive experience of finding meaning led individuals to search for more ways to make their life meaningful. This would coincide with Frankl's (1959) notion that meaning in life corresponds with happiness and wellbeing.

Higher levels of HPRS predicting SE, with no significant influence from depression, may suggest an increase in personal responsibility, increased confidence, and greater willingness to defend personal freedom (as indicated by level of reactance). The negative relationship SE has with death anxiety supports Grof and Grof's (1990) research, suggesting an SE gives individuals insight into transcendent issues, thereby allowing them to accept their existential circumstances. The findings suggest that SE has a psychological healing potential through the beneficial aspects of the relevant ECs.

MRA Summary: Differentiating SE from Psychosis

The confirmatory aspect of this study sought to verify whether the presence of alogia and depression can differentiate psychosis from SE. The difference in alogia's predictive capability was unmistakable, as alogia was the strongest predictor of positive symptoms of psychosis by a large margin with high zero-order, partial and semi-partial correlations, whereas alogia did not register as a significant predictor for the SES. For depression, BDI was a positive predictor of psychosis in MRA_{1a} and MRA_{1b}, whereas MRA_2 found BDI to be a negative predictor in Step 1, only to be excluded in Step 2 when the ECs were added.

The exploratory aspect of this study sought to investigate whether ECs could differentiate SE from psychosis. For psychosis, ELQ, IDS and DAS were all positive predictors. In direct contrast, higher levels of MLQ-P, MLQ-S, HRPS and lower levels of DAS predicted SE. The findings revealed that levels of ECs could reliably differentiate SE from psychosis, as no individual EC predicted both constructs in the same direction (see Table 11).

The MRAs confirmed that SE and psychosis are similar constructs as they were the strongest predictors of one another. However, the different predictors for each indicate that SE

and psychosis are unique constructs and can have different psychological health outcomes. As such, the findings corroborate the SE literature, and strengthen the claim that SE is a distinct construct and "should be differentiated from psychopathology" (Bronn & McIlwain, 2015, p. 367).

Review of Aims

(i) Psychosis as a Coping Mechanism for Existential Distress

Identity distress, existential loneliness and death anxiety were predictive of psychosis, suggesting an unhealthy psychological state due to increased ED. The absence of presence of meaning as a negative predictor for psychosis was unexpected and conflicts with the previous literature positing that a lack of meaning is a cause of psychopathology (Frankl, 1979; Larsen, 2004; Shields, 2014; Yalom, 1980). The lack of search for meaning as a predictor conflicts with Wagner and King's (2005) subjective patient interviews who reported that the search for meaning was their most important concern. As both the presence of and search for meaning were strong predictors of SE, it suggests the possibility that the desire for meaning found within psychotic patients in the literature may be due to individuals being misdiagnosed with psychosis when they are instead experiencing an SE, as Bragdon (2013) posited. As higher levels of identity distress, existential loneliness and death anxiety predicted experiences of psychosis, the findings of this study indicate that ED does play a role in psychosis, and Shields' (2014) hypothesis was partially supported.

(ii) Spiritual Emergency as a Healing Mechanism for Existential Distress

SE was predicted by higher levels of meaning [both search for and presence of], reactance (freedom), and lower levels of death anxiety, all of which indicate lower levels of ED. Reactance was the only EC that could be seen as inducing ED, as Dowd et al. (1994) found that it is correlated with anger, a similar construct to depression, and Joubert (1990) found that happiness is negatively correlated with the construct. However, reactance is also positively correlated with increased internal locus of control, which corresponds with higher levels of independence, confidence in oneself, and better life outcomes (Brehm & Brehm, 1981). Given that higher levels of meaning and lower levels of death anxiety predict SE, and depression was a negatively predictor of SE in Step 1 of MRA_2, it seems more plausible that higher levels of reactance indicated increased confidence in oneself and valuing independence rather than being indicative of anger, depression, or unhappiness.

Existential psychologists agree that meaning is the greatest defence against ED (Frankl, 1979; Saunders, 1988; Yalom 1980), and this study provided evidence for this through the negative correlations that presence of meaning had with all other ECs. As high levels of meaning and valuing freedom, plus lower levels of death anxiety predict SE, the findings of this study provide substantial evidence for the claim that SE can reduce ED. As ED is seen as a type of "spiritual pain" or "suffering" that affects an individual's entire being (Cassel, 1982; Kearney, 2000; Millspaugh, 2005), the reduction in ED supports Grof and Grof's (1990) hypothesis that SE can be a psychological healing process as opposed to a coping mechanism claimed of psychosis.

MANOVA and Post-Hoc Analysis

The negative relationship that psychosis has with age lends preliminary support to Shields' (2014) suggestion that younger individuals are more prone to psychosis due to not having a consolidated worldview as a buffer against ED. The negative predictive relationship that psychosis has with income may also give support for the coping mechanism hypothesis, as wealthier individuals have greater access to support structures that can alleviate ED. As SE had no relationship with either age or income, the post-hoc analysis further suggests that psychosis and SE are different constructs.

Practical Applications and Implications

The findings have implications for how we view psychosis diagnostically and for treatment. Currently, biological treatments through medication has a reported efficacy rate of 41% (Leucht, Arbter et al., 2009). As SE is not currently recognised in clinical practice, this low efficacy rate could be due to many individuals with SE being misdiagnosed with psychosis and receiving medication, when instead a transpersonal approach would have been the better option for treatment. The findings of this study support advocates of SE who argue that that the current diagnostic criteria for psychosis is too broad and should be refined to include SE (Grof & Grof, 1990; Phillips et al., 2009).

The findings have implications for how we view the relationship that psychosis has to spiritual and existential needs. Currently, spiritual and existential needs are not considered to be related to psychosis, but the findings of this study suggest discussing the existential and spiritual concerns with clients could be beneficial in aiding their recovery. As ED is prevalent in psychotic patients, integrating therapies that focus on alleviating ED in addition to current treatments may aid in improving health outcomes for psychotic patients.

Limitations

As all measures were self-reports and the study was completed online, this method of data collection may be a potential limitation as it allows for the possibility of inauthentic responses. This study attempted to account for this limitation by including three control items (decoy questions) and removed responses that were completed too quickly to have been genuine.

The large sample size and parametric testing allowed for inferences to be made towards the general population, but the sample consisted solely of first-year psychology students and individuals recruited from Facebook. As such, selection bias may be a potential confound, as only individuals who were interested in the topic would have chosen to complete the study.

The 3-item Alogia scale produced a low Cronbach's alpha of .58. The questionable alogia item is "Have you ever believed that your thoughts were being interfered with in some way?" as this item produced a lower mean (.14) compared to the other two items (.42 and .47) and had lower inter-item correlations. This item did not cause psychometric problems in other studies (Bronn & McIlwain 2015; Storm & Goretzki, in press). It seems Facebook populations differ from other populations, e.g., alphas from Bronn and McIlwain (2015) were .70 for a "student sample" (p. 359), and .78 for a "spiritual sample" (p. 360). Therefore, test results involving alogia in this thesis should be treated with due caution.

Lastly, it was beyond the scope of this study to investigate all ECs potentially involved with ED, and the use of 'Big Five' ECs as individual measures of ED may be a limitation, though their validity is well defended (Koole et al., 2006). As ED is not clearly defined and there is no definitive measure, the 'Big Five' ECs were used as proxies for ED and may not be entirely representative of the construct. For the time being, these ECs might be regarded as subscales for

a more definitive measure, but their unique capacity to identify specific EDs, and the fact that they all correlate, stands in their favour as substantive measures of ED.

Future Research

As this study was the first of its kind to quantitatively examine the relationship between psychosis and spiritual emergency with existential distress, only further research along similar lines will confirm the validity of the findings reported above. If these results can be consistently replicated, investigations into other types of ECs should be conducted to determine the precise relationship that ECs and ED has with psychosis and SE.

Grof and Grof (1990) state that only individuals who are willing to accept their life circumstances, and are open to change, may be able to experience an SE. As reactance is related to the internal locus of control and predictive of SE, investigating personality characteristics such as internal locus of control may prove fruitful in furthering our understanding as to why some individuals experience SE and others psychosis.

As SE can be psychologically healing, future research should look at whether certain psychotic episodes may be transformed into less challenging SEs by alleviating the effects of the relevant ECs that predict those episodes. For example, as psychosis has been predicted in this study by increased existential loneliness and identity distress, but SE is not, perhaps reducing/treating loneliness and identity distress in a psychotic patient may induce an SE. Of course, the predictors of SE (i.e., reactance/freedom and meaning), and their absence in psychosis, would need addressing.

Summary

The findings of this study confirmed that alogia and depression can differentiate SE from psychosis. The investigation into the relationship psychosis and SE have with ED revealed that individual ECs could reliably differentiate between the two constructs. The differences in the ECs indicated that psychosis is predicted by increased ED, while SE is predicted by lower ED. The findings supported hypotheses positing a relationship between psychosis and ED, and that SE can as a psychological healing mechanism. The differences in existential outcomes reinforce prior studies which found that although psychosis and SE are similar in presentation, they are unique manifestations with different health outcomes. Further investigations into SE and ED is necessary as it may lead to the development of new treatment options and diagnostic criteria for incidents of psychosis that cannot be accounted for using biological explanations, potentially improving efficacy rates for psychosis treatments.

References

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.).

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.).

Beck, A. T., Steer, R. A., & Brown, G. (1996). Beck depression inventory–II. *Psychological Assessment*.

Berman, S. L., Montgomery, M. J., & Kurtines, W. M. (2004). The development and validation of a measure of identity distress. *Identity, 4*(1), 1-8.

Blasi, G., Popolizio, T., Taurisano, P., Caforio, G., Romano, R., Giorgio, A. D., . . . Bertolino, A. (2009). Changes in prefrontal and amygdala activity during olanzapine treatment in schizophrenia. *Psychiatry Research: Neuroimaging, 173*(1), 31-38.

Bowman, E. S. (2009). Teaching religious and spiritual issues. *Religion and spirituality in psychiatry*, 332-353.

Bragdon, E. (2013). *The call of spiritual emergency: From personal crisis to personal transformation.* Harper & Row.

Brandstatter, M., Baumann, U., Borasio, G. D., & Fegg, M. J. (2012). Systematic review of meaning in life assessment instruments. *Psychooncology, 21*(10), 1034-1052.

Brehm, S. S., & Brehm, J. W. (1981). *Psychological reactance: A theory of freedom and control*. Academic Press.

Bronn, G., & McIlwain, D. (2015). Assessing spiritual crises: Peeling off another layer of a seemingly endless onion. *Journal of Humanistic Psychology*, *55*(3), 346-382.

Brown, A. R., Finney, S. J., & France, M. K. (2010). Using the bifactor model to assess the dimensionality of the Hong Psychological Reactance Scale. *Educational and Psychological Measurement, 71*(1), 170-185.

Burke, B. L., Martens, A., & Faucher, E. H. (2010). Two decades of terror management theory: A meta-analysis of mortality salience research. *Personality and Social Psychology Review*, *14*(2), 155-195.

Cashwell, C. S., & Young, J. S. (2005). *Integrating spirituality in counseling: A guide to competent practice*. American Counseling Association.

Cassel, E. J. (1982). The nature of suffering and the goals of medicine. *The New England journal of medicine*, *306*(11), 639-645.

Chirban, J. T. (2001). Assessing religious and spiritual concerns in psychotherapy. *Faith and health: Psychological perspectives*, 265–290.

Cooper, E. J., Harris, K. P., & Clark, G. I. (2015). The factor analytic structure and personality correlates of 'spiritual emergency'. *Journal of Transpersonal Psychology, 47*(2), 242-258.

Dowd, E. T., Wallbrown, F., Sanders, D., & Yesenosky, J. M. (1994). Psychological reactance and its relationship to normal personality variables. *Cognitive Therapy and Research*, *18*(6), 601-612.

Foster, G. C.; Lane, D., Scott, D., Hebl, M., Guerra, R., Osherson, D., & Zimmer, H. (2018). An introduction to psychological statistics. *Open Educational Resources Collection*. https://irl.umsl.edu/oer/4

Francis, L. J., & Wilcox, C. (1996). Prayer, church attendance, and personality revisited: A study among 16-to 19-yr.-old girls. *Psychological Reports, 79*, 1265-1266.

Frankl, V. E. (1959). *Man's search for meaning*. Simon and Schuster.

Frankl, V. E. (1979). *The unheard cry for meaning: Psychotherapy and humanism*. Simon and Schuster.

Goretzki, M., Thalbourne, M. A., & Storm, L. (2009). The questionnaire measurement of spiritual emergency. *Journal of Transpersonal Psychology*, *41*(1).

Goretzki, M., Storm, L., & Thalbourne, M. A. (2014). Research note: Updating the Spiritual Emergency Scale. *The Journal of Transpersonal Psychology, 14*, 240-244.

Grof, S. (1985). *Beyond the brain: Birth, death, and transcendence in psychotherapy*. Suny Press.

Grof, S., Grof, C. (1990). *The Stormy Search for the Self. Understanding and Living with Spiritual Emergency.* Tarcher.

Hahs-Vaughn, D. (2016). *Applied multivariate statistical concepts*. Taylor & Francis.

Harris, K. P., Rock, A. J., & Clark, G. I. (2019). Religious or spiritual problem? The clinical relevance of identifying and measuring spiritual emergency. *The Journal of Transpersonal Psychology*, *51*(1), 89-108.

Harrop, C., & Trower, P. (2001). Why does schizophrenia develop at late adolescence? *Clinical Psychology Review, 21*(2), 241-265.

Hirsh, J. B. (2010). The weight of being: Psychological perspectives on the existential moment. *New Ideas in Psychology, 28*, 28-36.

Hoaglin, D. C., & Iglewicz, B. (1987). Fine tuning some resistant rules for outlier labeling. *Journal of American Statistical Association*, *82*, 1147-1149.

Hoffman, R. E. (2007). A social deafferentation hypothesis for induction of active schizophrenia. *Schizophrenia Bulletin*, *33*(5), 1066-1070.

Hoge, S. K., Appelbaum, P. S., Lawlor, T., Beck, J. C., Litman, R., Greer, A., ... & Kaplan, E. (1990). A prospective, multicenter study of patients' refusal of antipsychotic medication. *Archives of General Psychiatry*, *47*(10), 949-956.

Hong, S. M., & Faedda, S. (1996). Refinement of the Hong Psychological Reactance Scale. *Educational & Psychological Measurement, 56*(1), 173-182.

Howes, O. D., & Kapur, S. (2009). The dopamine hypothesis of schizophrenia: version III—the final common pathway. *Schizophrenia Bulletin, 35*(3), 549-562.

Hunot, V., Moore, T. H. M., Caldwell, D. M., Furukawa, T. A., Davies, P., Jones, H., Honyashiki, M., Chen, P., Lewis, G., & Churchill, R. (2013). 'Third wave' cognitive and behavioural therapies versus other psychological therapies for depression (review). *Cochrane Database of Systematic Reviews, 10*.

Johnson, C. V., Hayes, J., & Wade, N. G. (2007). Psychotherapy with troubled spirits: A qualitative investigation. *Psychotherapy Research, 17*, 450-460.

Joubert, C. E. (1990). Relationship among self-esteem, psychological reactance, and other personality variables. *Psychological Reports*, *66*(3), 1147-1151.

Jung, C. G. (1968). *The archetypes and the collective unconscious*. Princeton University Press.

Kane, B. A. (2005). *Spiritual emergency and spiritual emergence: Differentiation and interplay.* California Institute of Integral Studies.

Kasper, J. A., Hoge, S. K., Feucht-Haviar, T., Cortina, J., & Cohen, B. (1997). Prospective study of patients' refusal of antipsychotic medication under a physician discretion review procedure. *American Journal of Psychiatry*, *154*(4), 483-489.

McKay, R., & Kinsbourne, M. (2010). Confabulation, delusion, and anosognosia: Motivational factors and false claims. *Cognitive Neuropsychiatry, 15*(1-3), 288-318.

Kearney, M. (2000). Spiritual care of the dying patient. *Handbook of Palliative Medicine*, 357-373.

Kissane, D. W. (2000). Psychospiritual and existential distress. The challenge for palliative care. *Australian Family Physician*, *29*(11), 1022-1025.

Koole, S. L., Greenberg, J., & Pyszczynski, T. (2006). Introducing science to the psychology of the soul: Experimental existential psychology. *Current Directions in Psychological Science, 15*(5), 212-216.

Kretschmer, M., & Storm, L. (2017). The relationships of the five existential concerns with depression and existential thinking. *International Journal of Existential Positive Psychology, 7*(1), 20.

Laddis, A., & Dell, P. F. (2012). Dissociation and psychosis in dissociative identity disorder and schizophrenia. *Journal of Trauma & Dissociation*, *13*(4), 397-413.

Larsen, J. A. (2004). Finding meaning in first episode psychosis: Experience, agency, and the cultural repertoire. *Medical anthropology quarterly, 18*(4), 447-471.

Lee, I. A., & Preacher, K. J. (2013). *Calculation for the test of the difference between two dependent correlations with one variable in common*, http://quantpsy.org.

LeMay, K., & Wilson, K. G. (2008). Treatment of existential distress in life threatening illness: a review of manualized interventions. *Clinical Psychology Review*, *28*(3), 472-493.

Leucht, S., Arbter, D., Engel, R. R., Kissling, W., & Davis, J. M. (2009). How effective are second-generation antipsychotic drugs? A meta-analysis of placebo-controlled trials. *Molecular psychiatry*, *14*(4), 429-447.

Lim, M. H., & Gleeson, J. F. (2014). Social connectedness across the psychosis spectrum: current issues and future directions for interventions in loneliness. *Frontiers in Psychiatry, 5*, 154.

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, *33*(3), 335-343.

Mayers, A. M., Khoo, S. T., & Svartberg, M. (2002). The Existential Loneliness Questionnaire: Background, development, and preliminary findings. *Journal of Clinical Psychology, 58*(9), 1183-1193.

McCabe, R., Skelton, J., Heath, C., Burns, T., & Priebe, S. (2002). Engagement of patients with psychosis in the consultation: conversation analytic study. Commentary: Understanding conversation. *British Medical Journal*, *325*(7373), 1148-1151.

McGorry, P. D. (1995). Psychoeducation in first-episode psychosis: a therapeutic process. *Psychiatry*, *58*(4), 313-328.

McGregor, I. (2006). Offensive defensiveness: Toward an integrative neuroscience of compensatory zeal after mortality salience, personal uncertainty, and other poignant self-threats. *Psychological Inquiry, 17*(4), 299-308.

Millspaugh, C. D. (2005). Assessment and response to spiritual pain: part I. *Journal of palliative medicine*, *8*(5), 919-923.

Moncrieff, J. (2009). A critique of the dopamine hypothesis of schizophrenia and psychosis. *Harvard Review of Psychiatry, 17*(3), 214-225.

Moore, A., Sellwood, W., & Stirling, J. (2000). Compliance and psychological reactance in schizophrenia. *British Journal of Clinical Psychology*, *39*(3), 287-295.

Moreno-Küstner, B., Martin, C., & Pastor, L. (2018). Prevalence of psychotic disorders and its association with methodological issues. A systematic review and meta-analyses. *Plos One, 13*(4).

Phares, E. J. (1976). *Locus of control in personality* (Vol. 174). General Learning Press.

Quirin, M., Loktyushin, A., Arndt, J., Kustermann, E., Lo, Y., Kuhl, J., & Eggert, L. (2011). Existential neuroscience: A functional magnetic resonance imaging investigation of neural responses to reminders of one's mortality. *Social Cognitive and Affective Neuroscience.* Advance online publication. doi:10.1093/scan/nsq106

Phillips, R. E., Lukoff, D., & Stone, M. K. (2009). Integrating the spirit within psychosis: Alternative conceptualizations of psychotic disorders. *The Journal of Transpersonal Psychology*, *41*(1), 0.

Reininghaus, U. A., Morgan, C., Simpson, J., Dazzan, P., Morgan, K., Doody, G. A., ... & Fearon, P. (2008). Unemployment, social isolation, achievement–expectation mismatch and psychosis: findings from the ÆSOP Study. *Social Psychiatry and Psychiatric Epidemiology*, *43*(9), 743-751.

Roe, D., & Davidson, L. (2005). Self and narrative in schizophrenia: Time to author a new story. *Medical Humanities, 31*, 89-94.

Roman, R. E., & Lester, D. (1999). Religiosity and mental health. *Psychological Reports*, *83*(2), 1088.

Templer, D. I. (1970). The construction and validation of a Death Anxiety Scale. *The Journal of General Pscyhology, 82*(2), 165-177.

Tost, H., Alam, T., & Meyer-Lindenberg, A. (2010). Dopamine and psychosis: theory, pathomechanisms and intermediate phenotypes. *Neuroscience & Biobehavioral Reviews, 34*(5), 689-700.

Saunders, D. C. (1988). Spiritual pain. *Journal of palliative care*, *4*(3), 29-32.

Shields, G. S. (2014). Psychosis as a mechanism for coping with existential distress. *Existential Analysis*, *25*(1), 142-159.

Smith, C. P. (1992). Reliability issues. *Motivation and Personality: Handbook of Thematic Content Analysis*, 126–139.

Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The Meaning in Life Questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology, 53*(1), 80-93.

Steinberg, M. (1994). *Handbook for the assessment of dissociation: A clinical guide.* American Psychiatric Publishing.

Storm, L., Drinkwater, K., & Jinks, A. L. (2017). A Question of Belief: An Analysis of Item Content in Paranormal Belief Questionnaires. *Journal of Scientific Exploration*, *31*(2).

Storm, L., & Goretzki, M. (in press). *The psychology and parapsychology of spiritual emergency.* Journal of Scientific Exploration.

Wagner, L. C., & King, M. (2005). Existential needs of people with psychotic disorders in Porto Alegre, Brazil. *The British Journal of Psychiatry, 186*(2), 141-145.

Weems, C. F., Costa, N. M., Dehon, C., & Berman, S. L. (2004). Paul Tillich's theory of existential anxiety: A preliminary conceptual and empirical examination. *Anxiety, Stress & Coping, 17*(4), 383-399.

Williams, P. (2011). *A multiple-case study exploring personal paradigm shifts throughout the psychotic process from onset to full recovery.* (Doctoral dissertation, Saybrook University)

Van Meer, R., McCabe, R., & Priebe, S. (2003). Engaging patients with psychosis in consultations: to listen or not to listen. *British Medical Journal*, *326*(7388), 549-550.

Viggiano, D. B., & Krippner, S. (2010). The Grofs' model of spiritual emergency in retrospect: Has it stood the test of time?. *International Journal of Transpersonal Studies*, *29*(1), 118-127.

Yalom, I. (1980). *Existential psychotherapy*. Basic Books.

Yip, K. S. (2004). The importance of subjective psychotic experiences: Implications on psychiatric rehabilitation of people with schizophrenia. *Psychiatric Rehabilitation Journal*, *28*(1), 48.

APPENDIX A

Participant Information and Consent Form

Psychological Concerns as Predictors of Spirituality

Participant Information

What the project is about: The aim of this study is to assess people's psychological concerns and experiences and how these may relate to spirituality. In order to be eligible for participation in this study, you must be 18 years or over, able to speak/read English fluently, and have access to a computer and the internet.

What you will be asked to do: You will be required to complete 8 questionnaires and answer all questions, with each section having instructions on how to answer beforehand. The questionnaire should take between 15-30 minutes to complete, but there is no time limit and you may take as long as you like while completing the survey. Participants may find benefit in contributing to potentially valuable psychological research, as well as gaining experience and knowledge in methods of psychological testing. First-Year students studying psychology at The University of Adelaide will be granted research credit.

Risks associated with participation: There are no foreseeable risks associated with participating in this study. However, in the event that you do experience any discomfort or distress and believe you require support, please contact a help-line such as Beyond Blue (1300 22 4636) or Lifeline (13 11 44). Both of these are 24/7 free-call help-lines available to provide you with instant support. Also, if you are a student at The University of Adelaide, you are able to access the free counselling service at the North Terrace campus on 8313 5663. Students of other universities may have access to similar services. If you feel discomfort or distress while completing the survey and do not wish to continue, you may stop at any time by simply closing the survey.

Where the information will go: Your name will not be recorded and your answers will not be individually identifiable. If you are a psychology student at The University of Adelaide, you will be required to record your participant ID in order to receive your research credit. This information will not be attached to your individual results. All information stored will be accessible only by the researchers. All data will be aggregated for analysis and findings from those analyses will be published. You will in no way be identifiable throughout these processes. If you wish to receive a summary of the results, or have any questions in general regarding the study, please contact XXX via email (listed below).

Complaint or concerns: The study has been approved by the Human Research Ethics Committee at the University of Adelaide. For any questions concerning the ethical conduct of the research, please contact XXX, chair of the Human Research Ethics Sub-Committee in the School of Psychology, 8313 4936, or email: XXX

Yours sincerely,
XXX (Principal Investigator)

Contact: XXX

APPENDIX B
Participant Consent

Participant Consent

1. I have read the above participant information and agree to take part in this research program.

2. I have had the project, so far as it affects me, fully explained to my satisfaction by the research worker. My consent is given freely.

3. Although I understand the purpose of the research project it has also been explained that involvement may not be of any benefit to me.

4. I have been informed that, while information gained during the study may be published, I will not be identified and my personal results will not be divulged.

5. I understand that I am free to withdraw from the project at any time.

APPENDIX C
Critical Values for Chi Square Distribution

Table for chi-square Distribution

Critical Values for Chi-square Distributions

df	.001	.0025	.005	.01	.025	.05	.10
1	10.8276	9.1406	7.8794	6.6349	5.0239	3.8415	2.7055
2	13.8155	11.9829	10.5966	9.2103	7.3778	5.9915	4.6052
3	16.2662	14.3203	12.8382	11.3449	9.3484	7.8147	6.2514
4	18.4668	16.4239	14.8603	13.2767	11.1433	9.4877	7.7794
5	20.5150	18.3856	16.7496	15.0863	12.8325	11.0705	9.2364
6	22.4577	20.2494	18.5476	16.8119	14.4494	12.5916	10.6446
7	24.3219	22.0404	20.2777	18.4753	16.0128	14.0671	12.0170
8	26.1245	23.7745	21.9550	20.0902	17.5345	15.5073	13.3616
9	27.8772	25.4625	23.5894	21.6660	19.0228	16.9190	14.6837
10	29.5883	27.1122	25.1882	23.2093	20.4832	18.3070	15.9872
11	31.2641	28.7293	26.7568	24.7250	21.9200	19.6751	17.2750
12	32.9095	30.3185	28.2995	26.2170	23.3367	21.0261	18.5493
13	34.5282	31.8831	29.8195	27.6882	24.7356	22.3620	19.8119
14	36.1233	33.4260	31.3193	29.1412	26.1189	23.6848	21.0641
15	37.6973	34.9496	32.8013	30.5779	27.4884	24.9958	22.3071
16	39.2524	36.4557	34.2672	31.9999	28.8454	26.2962	23.5418
17	40.7902	37.9461	35.7185	33.4087	30.1910	27.5871	24.7690
18	42.3124	39.4221	37.1565	34.8053	31.5264	28.8693	25.9894
19	43.8202	40.8850	38.5823	36.1909	32.8523	30.1435	27.2036
20	45.3147	42.3357	39.9968	37.5662	34.1696	31.4104	28.4120
21	46.7970	43.7751	41.4011	38.9322	35.4789	32.6706	29.6151
22	48.2679	45.2041	42.7957	40.2894	36.7807	33.9244	30.8133
23	49.7282	46.6235	44.1813	41.6384	38.0756	35.1725	32.0069
24	51.1786	48.0337	45.5585	42.9798	39.3641	36.4150	33.1962
25	52.6197	49.4354	46.9279	44.3141	40.6465	37.6525	34.3816
26	54.0520	50.8291	48.2899	45.6417	41.9232	38.8851	35.5632
27	55.4760	52.2153	49.6449	46.9629	43.1945	40.1133	36.7412
28	56.8923	53.5943	50.9934	48.2782	44.4608	41.3371	37.9159
29	58.3012	54.9666	52.3356	49.5879	45.7223	42.5570	39.0875
30	59.7031	56.3325	53.6720	50.8922	46.9792	43.7730	40.2560
31	61.0983	57.6923	55.0027	52.1914	48.2319	44.9853	41.4217
32	62.4872	59.0464	56.3281	53.4858	49.4804	46.1943	42.5847
33	63.8701	60.3949	57.6484	54.7755	50.7251	47.3999	43.7452
34	65.2472	61.7381	58.9639	56.0609	51.9660	48.6024	44.9032
35	66.6188	63.0764	60.2748	57.3421	53.2033	49.8018	46.0588
36	67.9852	64.4098	61.5812	58.6192	54.4373	50.9985	47.2122
37	69.3465	65.7386	62.8833	59.8925	55.6680	52.1923	48.3634
38	70.7029	67.0630	64.1814	61.1621	56.8955	53.3835	49.5126
39	72.0547	68.3831	65.4756	62.4281	58.1201	54.5722	50.6598
40	73.4020	69.6991	66.7660	63.6907	59.3417	55.7585	51.8051

APPENDIX D
Histograms and P-P Plots of the MRAs

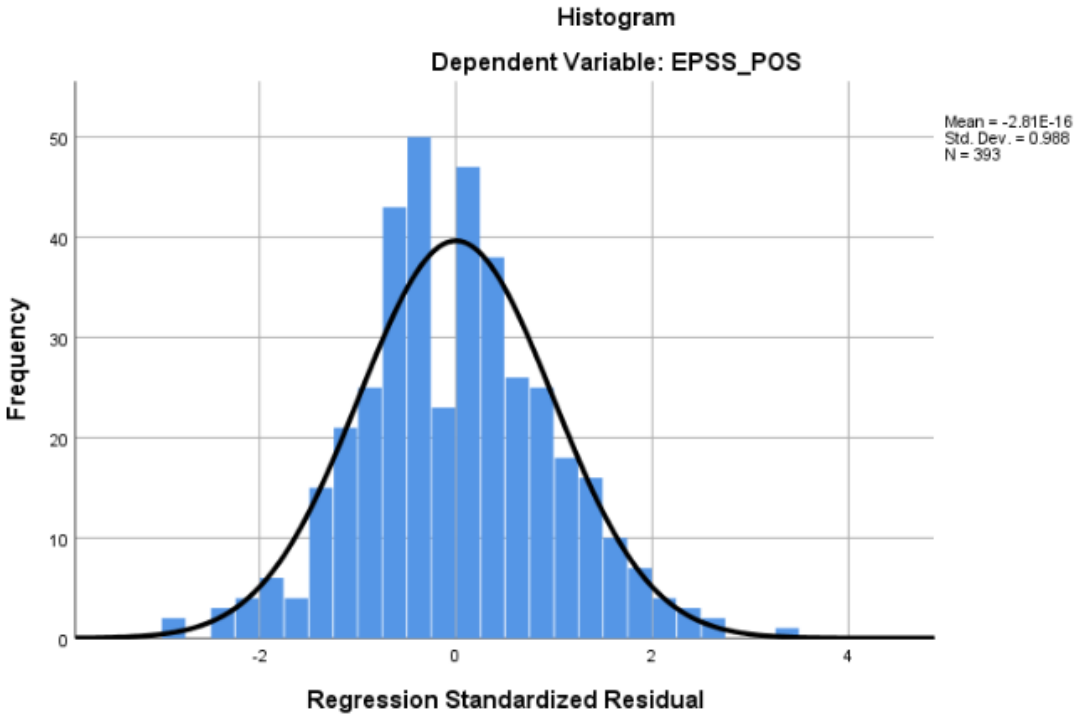


Figure D1. Histogram of Standardized Residuals for the EPSS-POS Model (MRA_{1a})

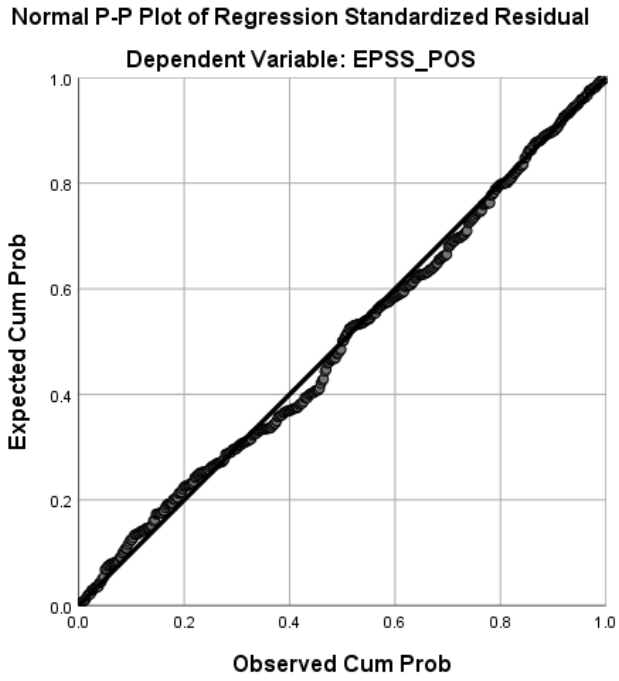


Figure D2. Normal P-P Plot of Standardized Residuals for the EPSS-POS Model (MRA_{1a})

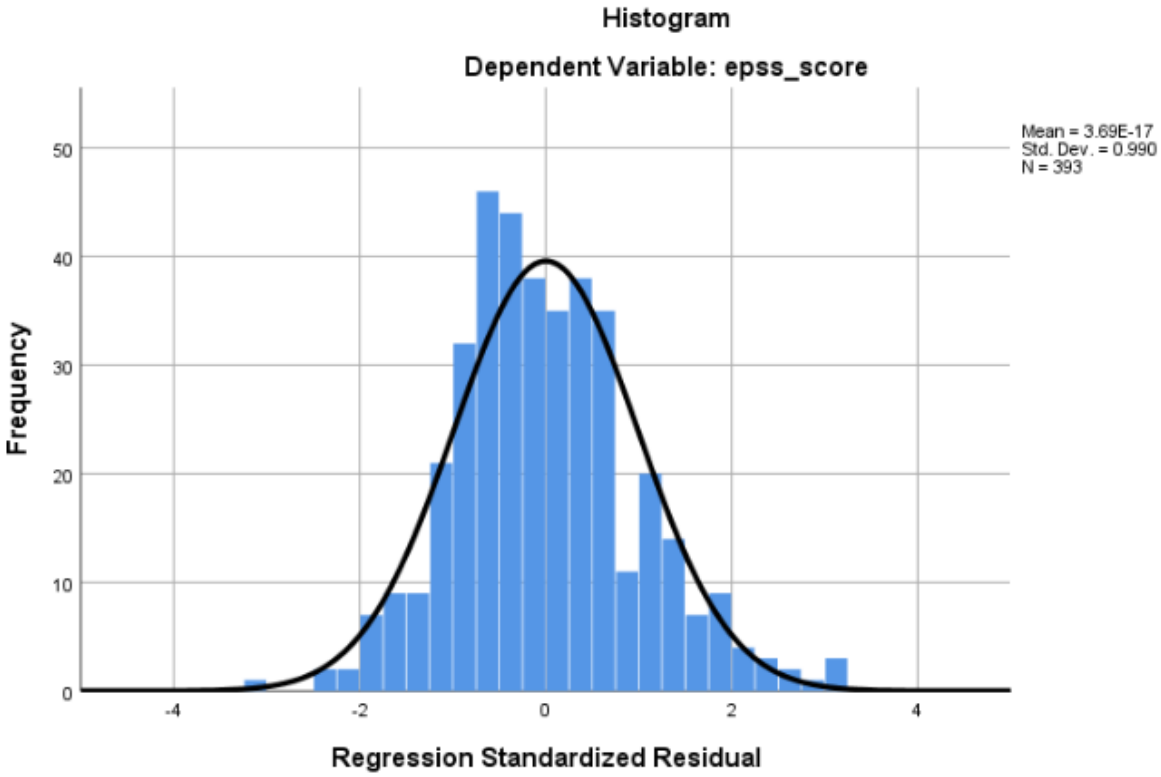


Figure D3. Histogram of Standardized Residuals for the full EPSS Model (MRA_{1b})

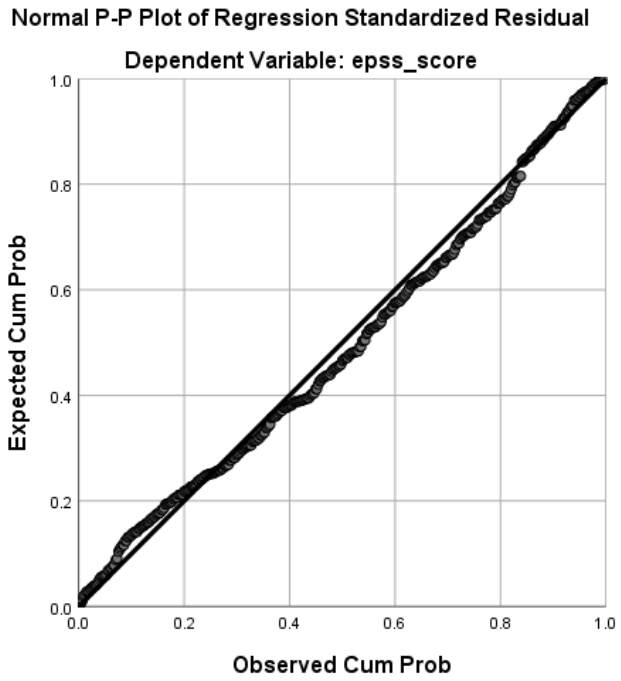


Figure D4. Normal P-P Plot of Standardized Residuals for the EPSS Model (MRA_{1b})

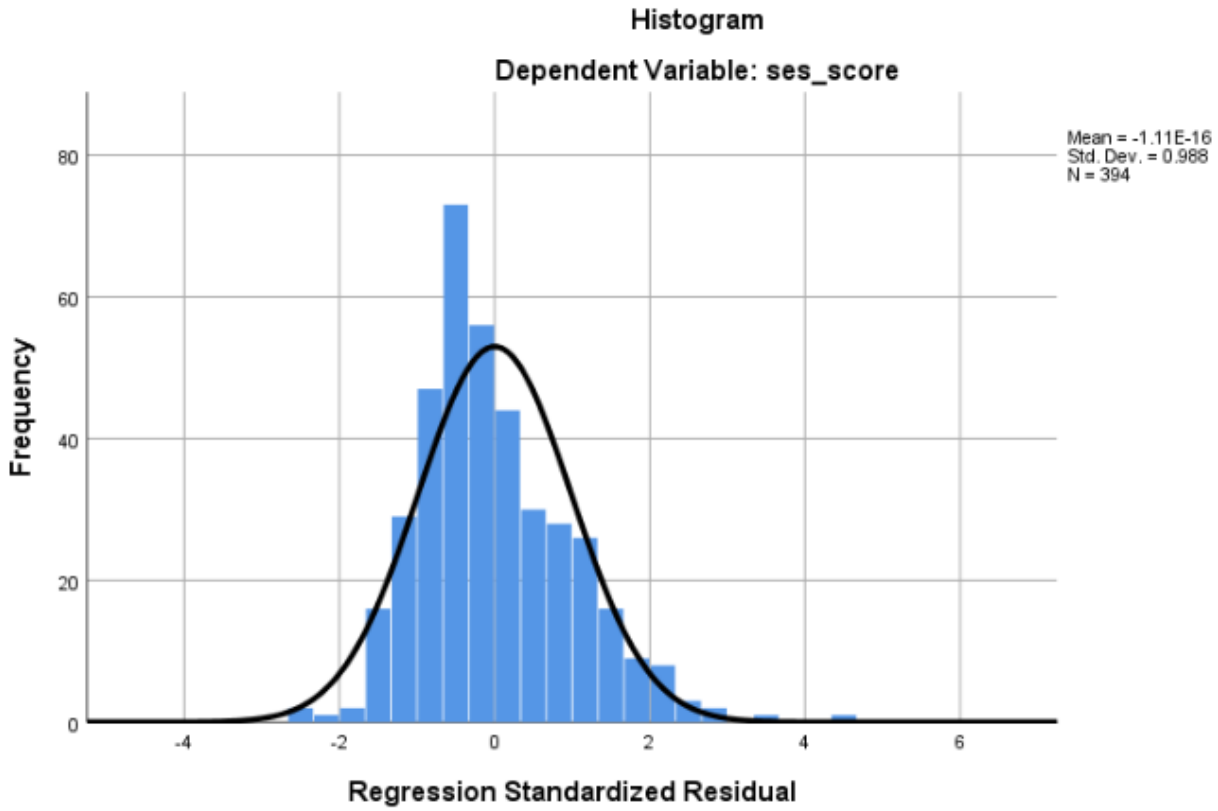


Figure D5. Histogram of SES scores before square-root transformation.

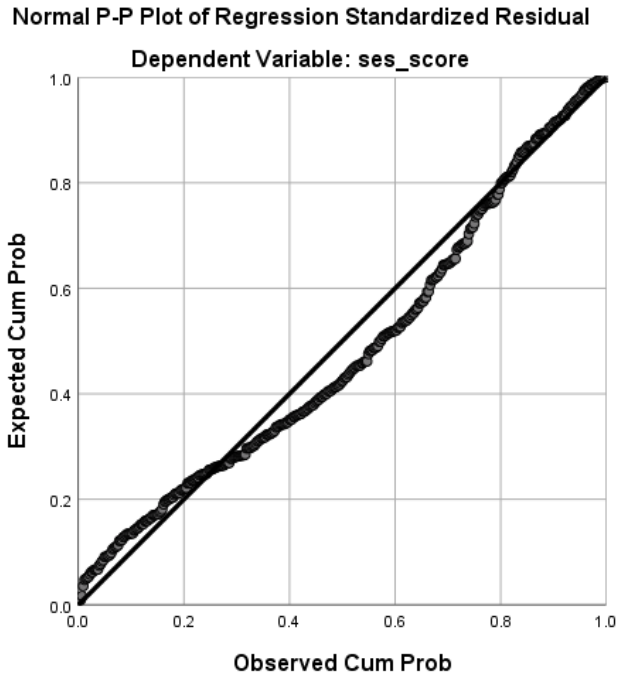


Figure D6. Normal P-P Plot of Standardized Residuals for SES before transformation.

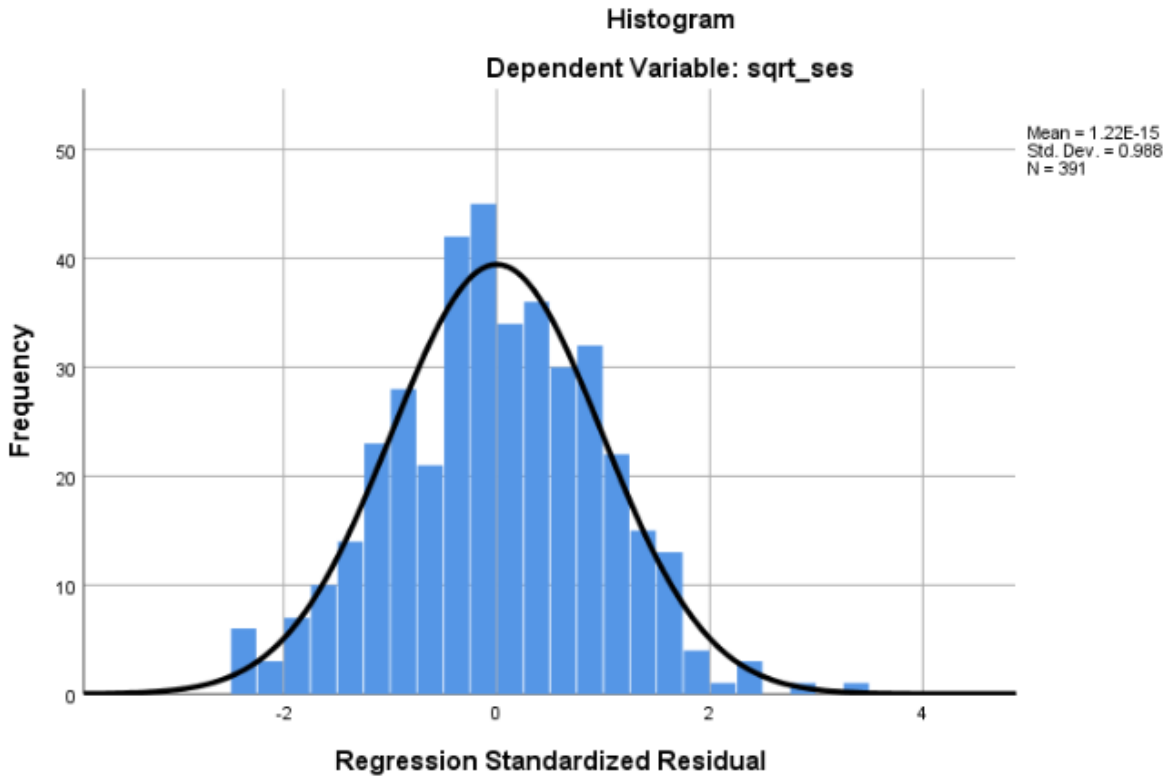


Figure D7. Histogram of SES scores after Square-Root Transformation (MRA_2)

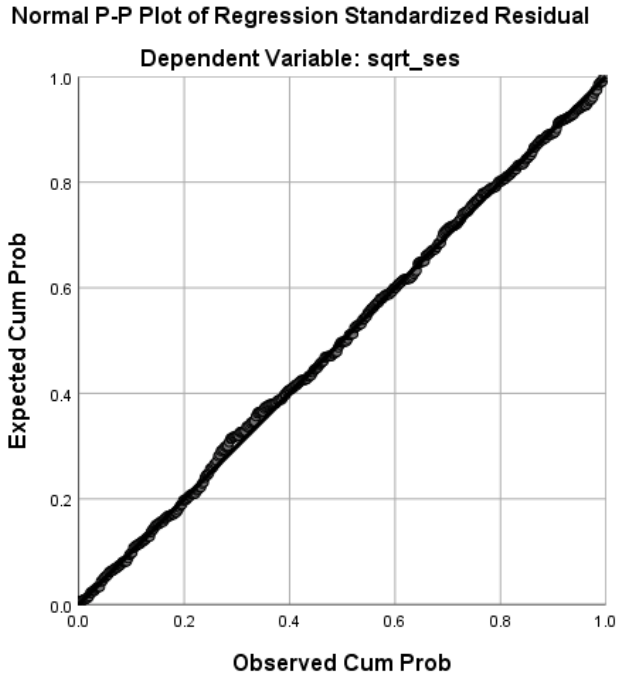


Figure D8. Normal P-P Plot of Standardized Residuals for SES after Square-Root Transformation (MRA_2)