

SELF-EFFICACY IN THE RELATIONSHIP BETWEEN ILLNESS
PERCEPTION AND PREDICTED PSYCHOTROPIC TREATMENT
COMPLIANCE AMONGST ADOLESCENT INPATIENTS

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ADOLESCENTS

DECLARATION

I, Anneke Louise Franken (2007027200), hereby declare that the dissertation *Self-efficacy in the relationship between illness perception and predicted psychotropic treatment compliance amongst adolescent inpatients* submitted for the Magister Societatis Scientiae Clinical Psychology degree at the University of the Free State is my own independent work and has not previously been submitted to another university/faculty for assessment or completion of any other postgraduate qualification. I further cede copyright of the dissertation in favour of the University of the Free State.

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PROOF OF LANGUAGE EDITING

I, **Glenda Holcroft, (ID 5103060026082)**, a professional language practitioner, declare that I conducted the language editing of this dissertation, *Self-efficacy in the relationship between illness perception and predicted psychotropic treatment compliance amongst adolescent inpatients*, submitted by Anneke Louise Franken.

A handwritten signature in black ink, appearing to read 'G Holcroft', written in a cursive style.

Signature

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DEDICATION

This research study is dedicated to all the adolescent mental health care users in South Africa who have to face numerous and unique challenges. May you find the strength and support you need to become inspiring adults.

Healing doesn't mean the damage never existed. It means the damage no longer controls your life. ~ Akshay Dubey

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ABSTRACT

Mental illnesses are increasingly being diagnosed among adolescents, and as a result there is an increase in the prescription of psychotropic medication. Non-compliance with psychotropic treatment appears to be a growing problem amongst adolescent mental health care users. Treatment is frequently initiated during hospitalisation periods, which poses the risk that the in-patient may become non-compliant once responsibility for taking treatment is transferred to them on discharge. Though there are a multitude of factors that contribute to treatment compliance amongst adolescents, it appears that self-efficacy, participation in the decision-making process concerning the treatment pathway, and the ways in which mental illness is perceived are significant determinants of treatment compliance.

The aim of this study was to investigate which factors influence psychotropic treatment compliance among South African adolescent inpatients admitted to a psychiatric facility.

A quantitative, non-experimental, cross-sectional, survey-type research design was employed. Approximately 170 participants were selected through a nonprobability convenience sampling method.

Data was gathered by using self-report measures, namely the Drug Attitude Inventory, the Brief Illness Perception Questionnaire, and the Decision Self-Efficacy Scale.

The correlation between the variables was calculated through a Pearson Product correlation coefficient, and a hierarchical regression analysis was utilised to determine the role of self-efficacy in the relationship between illness perception and treatment compliance.

The results indicated that there is no significant relationship between treatment compliance and illness perception, but there is a significant relationship between illness perception and self-efficacy. Self-efficacy was identified as a moderator between illness perception and treatment compliance of male adolescent inpatients.

The findings of the study and the gender difference which surfaced may contribute towards a better understanding of the intricate processes related to treatment compliance in adolescents and help direct intervention aimed at promoting treatment compliance.

Keywords: treatment compliance, psychotropic treatment, illness perception, self-efficacy, adolescents

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Introduction and Literature Review

The occurrence of mental health conditions in the adolescent developmental age group is growing, which has triggered grave concern for the well-being of our future adults (WHO, 2003a; WHO, 2012). Poor treatment compliance, and the strain it places on health care services, have become an area of weakness for effective health management (DiMatteo, 2004; Golay, 2011; Osterberg & Blaschke, 2005; WHO, 2003b). The effects of poor treatment compliance have been experienced on personal, community, and national levels (Martin, Williams, Haskard, & DiMatteo, 2005; WHO, 2003b, 2013). In order to investigate what qualifies as poor treatment compliance, one must first define the concept. In more recent years, there have been discussions about the correct term for the behaviour of a person who uses treatment according to the prescribing practitioner's prescription. This question, therefore, is: "Do we refer to treatment compliance or treatment adherence?"

Terminology is not very clear. Until recently, the terms had been used interchangeably and were regarded as synonyms (Cramer et al., 2008; De las Cuevas, 2011; Hack & Chow, 2001). Farooq and Naeem (2014) pointed out that both terms continued to be frequently used, but that there is ongoing disagreement regarding the definitions. The preferred term appears to be 'adherence', as it recognizes the patient's choice and influence in the decision-making process and, unlike 'compliance', does not suggest that the patient passively follows the physician's orders (Cortet & Bénichou, 2006; Felzmann, 2012). 'Compliance', therefore, refers to the patient's following the physician's prescription, whereas 'adherence' indicates the extent to which the patient follows through with the decisions about treatment as agreed with the physician (De las Cuevas, 2011; Cramer, et al., 2008). Non-adherence to treatment includes complete failure to take medication, terminating the use of medication prematurely, and not taking the prescribed dosages, all of which may be deliberate or accidental (Bulloch & Patten, 2010). However, Dean, Walters, and Hall (2010) defined treatment adherence as merely the degree to which a patient takes medication according to the treating physicians' prescription. In contrast, Mitchell and Selmes (2007) defined both adherence and compliance as the extent to which a patient changes their health behaviour according to the physician's medical advice. One can therefore see that there may be various opinions regarding the notions of treatment adherence and treatment compliance, and what it is that distinguishes one from the other.

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In the midst of the confusion regarding the definitions of the terms, the World Health Organization (WHO) (2003b) found that the idea of non-compliance had a negative association with blame and indicated that the term ‘adherence’ might be more favourable when referring to the intricate processes required to maintain optimal health. They indicated further that the main difference between the terms ‘adherence’ and ‘compliance’ is that adherence to treatment implies that the patient has to be in agreement with the physician’s recommendations and treatment plan, which is not implied by compliance.

For the purpose of this study, although the terms may be used interchangeably, ‘treatment compliance’ will be used, as it cannot be established or assumed that the adolescent participants who make up the sample population are in agreement with the treating physician’s treatment plan, or that the prescribed psychotropic medication is being taken completely voluntarily and with freedom from coercion.

Treatment Non-compliance. Tendencies are observed regardless of the condition being treated (WHO, 2003b). Literature, however, indicates that patients treated for a psychiatric disorder are more likely to be non-compliant with treatment than patients with medical conditions (Bulloch & Patten, 2010; Chapman & Horne, 2013; Patel & David, 2007; Mert, Turgut, Kelleci, & Semiz, 2015). Rates of compliance seem to be even lower when the patient is being treated for both a psychiatric and a medical condition (Reist, Dogin, Van Halderen, Peregrin, & Surlis, n.d.). Treatment non-compliance pertaining to psychiatric treatment undoubtedly has a significant impact on mental health care services (WHO, 2003b, 2013). This is because treatment non-compliance is the main reason for readmissions to mental health care facilities due to relapse. It further accounts for the decline in patients’ overall functioning (WHO, 2013). Psychotropic medication forms the basis of treatment in the mental health care setting and is in most cases unavoidable (Carrier, Banayan, Boley, & Karnik, 2017).

Psychotropic medication aims to reduce the symptoms of the psychiatric condition in order to stabilize the patient and enable them to function at an optimal level in society (Shaddel, Ghazirad, O’Leary, & Banerjee, 2015). Psychotropic medications are medicinal agents (stimulants, antidepressants, anxiolytics, antipsychotics and mood stabilizers) specifically used in the treatment of mental or clinical disorders (Huefner & Griffith, 2014). Unfortunately, psychotropic medication can lead to incapacitating side effects, which can be challenging to manage for both the treating physician and the patient (DiBonaventura, Gabriel, Dupclay, Gupta, & Kim, 2012). Several other factors were identified that contribute to patients

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becoming non-compliant with psychotropic medication, with debilitating side effects being the main reason why patients fail to continue with their treatment (Taj et al., 2008). Treatment compliance seems to be affected by the patient's being in the first episode of a psychiatric illness, poor treatment efficacy, poor therapeutic alliance, a lack of insight into the diagnosed condition, a negative attitude towards medication, and the comorbidity of substance use disorder (Weiden, Kozma, Grogg, & Locklear, 2004; Lui-Seifert, Adams, & Kinon, 2005; Taj et al., 2008). Other factors associated with non-compliance are concerns about becoming dependent on psychotropic medication and the potential effects thereof, and the possibility of over-prescription or misuse of medication by physicians (Mert et al., 2015; Mitchell & Selmes, 2007; Patel & David, 2007).

The consequences of non-compliance with psychotropic medication can be devastating, not only for the patient, but also for their loved ones, while further affecting the community to which the individual belongs (WHO, 2003b, 2013). Associated consequences include substance use (Farooq & Naeem, 2014), as well as violence and suicide (Acar, Bademli, & Lök, 2017; Farooq & Naeem, 2014). Poor compliance with psychotropic medication has a substantial impact on treatment outcomes and the course of the psychiatric condition (Semahegn, et al., 2018). It is therefore not surprising that an estimated 33-69% of all medication-related hospital admissions are due to poor treatment compliance (Osterberg & Blaschke, 2005). This gives rise to what is referred to as the revolving door phenomenon (Garrido & Saraiva, 2012), which is the term used to describe the frequent readmission of patients with psychiatric conditions to mental health facilities, as they remain mentally healthy for only limited periods before relapse occurs. Non-compliance with psychotropic medication poses a higher risk for patients who are readmitted, as a number of psychiatric conditions have a high frequency of relapse (Botha et al., 2010; Garrido & Saraiva, 2012).

When considering non-compliance, one must take into account the unique characteristics of certain patient populations. In recent years there has been an increased focus on adolescent mental health. Adolescence, which is the developmental period between childhood and adulthood, is often described as a period of vulnerability (Steinberg, 2005). This may be due to the increase in risk-taking behaviour and the increased emotional reactivity associated with adolescence (Casey, Jones, & Hare, 2008). Risk-taking behaviour is any behaviour that may result in adverse short or long-term physical, psychological, or social consequences (Flisher & Gevers, 2010). Adolescents tend to make suboptimal decisions and

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choose actions associated with negative outcomes such as unintentional injuries, violence, substance abuse, crime and unprotected sex that may result in unplanned pregnancy and the contraction of sexually transmitted diseases (Casey et al., 2008; Steinberg, 2005). Flisher and Gevers (2010) pointed out that mental illness and risk behaviour are certainly associated. Psychiatric disorders are increasingly being diagnosed in adolescents and even in children under the age of 12 (Kessler et al., 2005). Since adolescence is a developmental period that is also characterized by important transitions and acquisitions, mental disorders may have a significant impact on the young individual's overall functioning – physical, emotional, and social (Loureiro et al., 2013). Mental illness is a major contributor to the disease burden in the age group 10 to 24 years (Sawyer et al., 2012). WHO (2005; 2012) estimates that 20 percent of children and adolescents are likely to be suffering from some disabling psychiatric condition. More recently, Polanczyk, Salum, Sugaya, Caye, and Rohde (2015) indicated that the worldwide prevalence of mental illness among children and adolescents is estimated at 13.4%. According to an estimate, approximately 241 million children and adolescents globally appear to be affected by some form of mental illness (Polanczyk et al., 2015).

In South Africa, the percentage of adolescents treated at mental health outpatient facilities is unknown owing to poor data collecting and logistical procedures (WHO, 2011). Flisher et al. (2012) stated that, though prevalence studies regarding mental illness among youth in South Africa have been conducted, these studies had small and unrepresentative samples. Nevertheless, according to Jack et al. (2014), it is possible that one in three South Africans will meet the criteria for a mental disorder in their lifetime. The lifetime prevalence estimate of DSM-IV disorders in South Africa was 30.8%, and the 12-month prevalence estimate was 18.8% (Herman et al., 2009). The South African National Youth Risk Behaviour Survey conducted in 2008 indicated that 24% of high school learners reported having experienced depressive feelings, specifically hopelessness and sadness (Reddy et al., 2010). Though not indicative of the prevalence of all mental illnesses, this finding does allude to the high prevalence of depressive mood symptoms amongst South African youth. In the National Adolescent and Youth Health Policy 2017 (Hodes et al., 2017), the mental health of South African youth has been identified as a priority area, which implies that it remains an area of great concern. The lack of recent surveys regarding the state of adolescent mental health appears problematic in South Africa but also in more developed nations, such as the United Kingdom and the United States of America (Hagell, Coleman, & Brooks, 2015).

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It has been determined that a number of mental illnesses first appear during the adolescent years (Kessler et al., 2005; Jaworska & MacQueen, 2015). As mentioned, this is due to adolescence being a period in which various life changes occur, which increases vulnerability to the emergence of mental illness (Patel & David, 2007). According to Kim-Cohen et al. (2003), it is estimated that more than 50 percent of mental health disorders in adults were diagnosed in childhood, with fewer than half of these disorders being treated successfully at the time of diagnosis. This has remained relatively unchanged in recent years, as WHO indicated that it is likely that up to 50% of mental disorders diagnosed in adults started before the age of 14 years (WHO, 2013). Mental conditions diagnosed in childhood tend to become more complex and symptomatically intensify as the child transitions into adolescence (Patel, Flisher, Hetrick, & McGorry, 2007).

The consequences of such inappropriately treated or untreated mental illnesses increase the likelihood of negative health, relationship, and behavioural outcomes (Kapphahn, Morreale, Rickert, & Walker, 2006). With inadequate treatment, the adolescent patient is at risk of developing more severe psychiatric symptoms which may result in a decline in academic performance as well as interpersonal problems with peers and family members (Hamrin, McCarthy, & Tyson, 2010). Seeing that there appears to be an increase in the prevalence of psychiatric disorders amongst adolescents, it is not surprising that there is an increase in the prescription of psychotropic medication for individuals under the age of 19 years (Steinhausen, 2015; Zito et al., 2008).

For many disorders, and based on the severity of the diagnosed mental disorder, pharmacotherapy or psychotropic medication is recommended as the first line of treatment, as it has been proven to be effective for the management of psychiatric disorders (Charach, Volpe, Boydell, & Gearing, 2008; Nagae, Nakane, Honda, Ozawa, & Hanada, 2015). Regardless of the controversy surrounding the prescribing of psychotropic medication for minors, it undeniably remains an invaluable regime in the treatment approach to mental health disorders (Huefner & Griffith, 2014; Jensen, Buitelaar, Pandina, Binder, & Haas, 2007; Vitiello, 2008). According to the American Academy of Child and Adolescent Psychiatry (AACAP, 2012), there is both over- and under-prescription of psychotropic medication in children and adolescents, but there has been a clear increase in their use over the past two decades. Regardless of effectiveness, the occurrence of poor compliance with psychotropic medication

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is prevalent amongst adolescents and remains a major problem (Dean et al., 2010; Pogge, Singer, & Harvey, 2005; Townsend, Floersch, & Findling, 2009).

A study conducted by Bulloch and Patten (2010) indicated that the 15-24-year age group has the highest estimate (68,3%) of non-compliance, particularly for antidepressants. Adolescent compliance rate with prescribed psychotropic medication is estimated to range from 34% to 54 % (Hamrin et al., 2010). Readmission to adolescent psychiatric facilities is strongly associated with non-compliance with medication, which corresponds with studies involving adult psychiatric patients (Bobier & Warwick, 2005; Fontanella, 2008). Investigating compliance with psychotropic medication among adolescents, Moses (2011) concluded that the majority of adolescent mental health care users (62%) would discontinue the use of psychotropics if they could choose to do so unopposed. Compliance amongst adolescents appears to be dependent on a range of factors and differs between individuals. These factors include the class of medication, the nature of the mental disorder, and the method used to evaluate adherence (Moses, 2011).

The problem of non-compliance extends beyond adolescence into adulthood, as a common treatment goal involves adolescents resuming more responsibility for and ownership of their condition and adherence to treatment (Moses, 2011). From a biomedical perspective, a number of mental disorders require long-term treatment, usually involving psychotropic medication, which the patient will have to maintain for an extended period throughout his or her lifetime (Insel & Scolnick, 2006; National Collaborating Centre for Mental Health UK, 2011; WHO, 2019). During adolescence, individuals are largely under parental control but increasingly seek independence and autonomy (Munson, Floersch, & Townsend, 2009; Townsend et al., 2009). While parents may initially be responsible for ensuring that their adolescent is compliant with psychotropic medication, the responsibility gradually transfers to the adolescent as many take full control in continuing to manage their treatment (Nagae et al., 2015).

Floersch et al. (2009) emphasised that, in order to improve compliance with psychotropic medication in adolescents, one must understand the interpretive and psychosocial aspects that accompany having to use psychotropic medication. The attitudes and beliefs of patients are said to influence their medication compliance in a meaningful, though complex, manner (Martin, et al., 2005). Adolescents diagnosed with mental disorders develop beliefs and attitudes toward their diagnoses and the treatments used that significantly influence compliance (the decision to initiate and maintain pharmacological treatment) (Hamrin et al.,

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2010; Longhofer & Floersch, 2010; Townsend et al., 2009, 2010). As the responsibility for treatments is transferred to the adolescents, Nagae et al. (2015) argue that their views on psychotropic medication may differ from those of their parents, which has been found to impact decisions regarding the continuation of their medication. Molteni et al. (2014) concluded that attitude towards medication is a major component in understanding treatment compliance in the adolescent population. They further indicated that the early detection of a negative attitude towards psychotropic medication would aid in the identification of other factors that contribute to non-compliance. In a study focusing particularly on adolescent psychiatric inpatients, Timlin, Riala, and Kyngäs (2013) indicated that most adolescent patients who were non-compliant with their treatment regimens had negative attitudes towards taking psychotropic treatment. Misconceptions amongst adolescents regarding psychotropic medication were highlighted as one of the main contributing factors towards a negative attitude or pessimistic view of psychiatric treatment (Imran, Azeem, Chaudhry, & Butt, 2015). The negative attitude is largely influenced by the adolescents' views of psychotropic medication as not being entirely helpful (Imran et al., 2015). Compliance with psychotropic medication amongst adolescents improves if they regard the treatment as effective and beneficial (Moses, 2011; Timlin et al., 2013).

Attitudes can influence Treatment Compliance. While adolescents' attitude towards medication appears to be one component related to compliance with psychotropic treatment, it may be influenced by their acknowledgement and acceptance of their mental illness diagnosis. Patients form cognitive as well as emotional representations of their illness, which assist in creating an illness perception (Broadbent, Petrie, Main, & Weinman, 2006; Petrie & Weinman, 2012). Illness perception as a construct is based on Leventhal's model of self-regulation, which illustrates the process of a person's reaction to a perceived health threat (Leventhal, Nerenz, & Steele, 1984). The particular model implies that when a person experiences a situational stimulus or symptom, cognitive and emotional representations of an illness or health threats are formed, and the person then responds with certain coping behaviour which is later evaluated as effective or not (Broadbent, et al., 2006; Leventhal et al., 1984; Leventhal & Diefenbach, 1991). Illness perception as a psychological construct, therefore, refers to a patient's self-definition of his or her health status, which is influenced by previous illness-related experience (Petrie, Broadbent, & Kydd, 2008). Illness perception is comprised of the individual's view of his or her illness with regard to its identity, cause, timeline, consequences, cure or control, concern, emotional response, and comprehensibility (Broadbent, et al., 2006). Identity entails

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the label that is attached to the illness and the illness-related symptoms, as well as the link between the two. Cause is the patient's perspective on the aetiology, in other words, what they believe caused their illness. Timeline is the cognitive component regarding how long the patient believes the illness in question will last. Consequences are the patient's belief regarding the possible effects and outcome of the illness, as well as the severity of the illness and its impact on the various areas of functioning. Lastly, cure or control comprises the individual's perception on how he or she can control or recover from the illness. It is important to note that, although each of these components has a different effect on coping with an illness, they are not independent of one another, but rather interrelated (Petrie & Weinman, 2012; Weinman, Petrie, Moss-Morris, & Horne, 1996).

These various components of a patient's illness perception are said to be significantly related to his or her medication compliance (Atorkey, Doku, Danquah, Owiredua, & Akwei, 2017; Averous, Charbonnier, Lagouanelle-Simeoni, Prospero, & Dany, 2018). Patients' illness perception and their view of their prescribed treatment have been identified as significant areas for intervention aimed at improving treatment compliance (Petrie & Weinman, 2012). In order to improve medication compliance, one can improve patients' understanding of their illness, the prescribed treatment, or both (Petrie & Weinman, 2012). As with adult patients, adolescents may deny that they have a mental illness and need treatment (Timlin et al., 2013). Averous et al. (2018) found that illness perception impacts on and is impacted by a person's attitude towards psychotropic medication in particular. Their study showed that medication compliance behaviour is associated with one's illness perceptions. With reference to adolescent psychiatric inpatients, Timlin et al. (2013) found that a poor understanding of a diagnosed mental illness may have a negative impact on treatment compliance.

Even though caregivers generally influence their adolescent's decisions regarding his or her health care, it is during this developmental period that adolescents become more independent when making decisions regarding the management of their illness (Munson et al., 2009). Adolescents have the capacity to be involved in decisions about their treatment, thereby mediating negative attitudes towards and beliefs about the diagnoses and prescribed medication (Alderson, Sutcliffe, & Curtis, 2006; Dilallo & Weiss, 2009). Health care professionals are progressively realising and acknowledging that patients are able to, and should, make confident, informed decisions regarding their treatment (Knapp, Raynor, Thistlethwaite, & Jones, 2009). In a study comparing adult and adolescent psychiatric inpatients' knowledge and

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understanding of their condition and treatment, it was found that the adolescent inpatients demonstrated better understanding and more comprehensive knowledge (Lurie et al., 2009). They emphasised that, on the basis of adolescent inpatients' knowledge levels, they should be regarded and treated as competent partners in the therapeutic decision-making process and should, therefore, be considered competent to participate in the therapeutic decision-making process.

Self-efficacy and its influence on Treatment Compliance. Self-efficacy, which is a perceived control construct, has been identified as one of the strongest psychosocial variables related to health care behaviour and has a definite impact on compliance (De las Cuevas & Peñate, 2014; Frank, Heiby, & Lee, 2007). A person's self-confidence, or the belief in his or her ability to make informed decisions in the shared decision-making process, is referred to as decision self-efficacy (O'Connor, 2002). Decision self-efficacy, which therefore refers to the individual's confidence in participating in clinical discussions and decisions, plays an important role in his or her inclination to follow the prescribed medication and treatment (Moncrieff, et al., 2016). Decision self-efficacy can thus enhance the patient's engagement and empowerment, specifically regarding the use of psychotropic medication (O'Brien, Crickard, Lee, & Holmes, 2013). According to Dixon, Holoshitz, and Nossel (2016), it has been established that self-efficacy is associated with better clinical outcomes in patients with mental illness. They further hypothesised that if patients believe that they play a role in the decision-making process, they tend to have a more positive view of the proposed treatment and experience a higher sense of self-efficacy. It has been found that patients who have a more active role in their treatment tend to have better results with fewer health care expenses (James, 2013). Furthermore, relating specifically to adolescent patients, participation in the decision-making process regarding treatment has been found to affect motivation, as well as the perceived results of the initiated therapy (Tan & Fegert, 2004).

In view of the above literature, it appears that adolescent attitudes towards medication, their perceptions of their diagnosis, including the extent to which they feel able to direct the course of their treatment and have an opportunity to participate in decisions regarding their clinical management, are factors to be considered in how adolescents' experience psychotropic treatment and respond to treatment compliance. Exploring the subjective experiences related to taking medication may improve our understanding of why adolescent psychiatric patients often fail to comply with prescribed medication (Charach et al., 2008). The aim of this study

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was, therefore, to investigate which factors influence psychotropic treatment compliance in adolescent inpatients.

From the above aim the following research questions were formulated:

Research question 1

Is there a significant relationship between illness perceptions and predicted psychotropic treatment compliance amongst adolescent inpatients?

Research question 2

Does self-efficacy mediate or moderate the relationship between illness perceptions and predicted psychotropic treatment compliance amongst adolescent inpatients?

Methodology

Research Design

In order to obtain a more comprehensive understanding of factors underlying adolescents' perceptions of taking psychotropic medication, a quantitative, non-experimental, cross-sectional, survey-type research design utilizing self-report measures was selected to investigate the posed research questions. A survey-type research design usually consists of administering a series of self-report measures, which may be administered to the participants either through interviews or by means of written questionnaires (Stangor, 2015). For this study, fixed-format written questionnaires were administered. With the use of questionnaires, in comparison to interviews, participants tend to have a greater sense of anonymity, and more honest responses to questions may be obtained (Stangor, 2015). Limitations regarding self-report questionnaires used in survey-type research include the possibility that participants may provide invalid responses or respond in a socially desirable manner (Demetriou, Ozer, & Essau, 2015).

Participants and Sampling Procedures

A nonprobability convenience sampling method was used. The advantage of using this sampling method is that identifying and obtaining participants is fairly easy and convenient, with the disadvantage being the inability to make inferences about the population based on the

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results (Creswell et al., 2013). Adolescent inpatients between the ages of 12 and 18 years were approached in private psychiatric hospitals in the Free State that had adolescent in-patient units. To qualify to participate in the study, the adolescents had to be proficient in English, as measuring instruments were presented in English. Adolescents had to be fully oriented and able to provide informed assent. The participants had all been admitted to a private psychiatric hospital. All participants had to have a DSM-5 diagnosis (American Psychiatric Association, 2013) and at the time of data collection had to be using psychotropic medication as per their specific diagnosis. Those admitted but not receiving psychotropic treatment at the time of the survey were excluded from the study. Patients who had been diagnosed with any form of psychosis, a pervasive developmental disorder or intellectual disability were excluded from participation in the study.

An estimated sample of 200 participants was aimed at, however sample collection only proceeded until 170 adolescent inpatients. The number of participants obtained was influenced by the timeframe set out for this study. The characteristics of the sample are as follows: 82 male, 88 female; 36.5% African, 50.6% White, 12.9% Coloured; $M_{\text{age}} = 15.2$ years, $SD = 1.5$ years. As indicated, the sample is fairly equally distributed between male and female participants (48.2% male and 51.8% female). It may be further noted that there is an almost equal distribution between participants of colour (49.5%) and white participants (50.6%). In terms of diagnoses, participants reported mood disorders as the most frequently experienced diagnosis (59.4%). The second largest group (20%) of participants reported the condition they were being treated for as not known to them. Approximately 35.3% of participants stated that they had been using psychotropic medication for more than two weeks but less than a month.

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Table 1

Frequency Distribution of Sample According to Biographical Variables

Biographical variable	N	%
<i>Gender:</i>		
Male	82	48.2
Female	88	51.8
<i>Ethnicity:</i>		
African	62	36.5
White	86	50.6
Coloured	22	12.9
<i>Home Language:</i>		
Afrikaans	97	57.1
English	21	12.4
Sesotho	22	12.9
Setswana	15	8.8
IsiXhosa	3	1.8
Other	12	7.1
<i>Diagnosis:</i>		
Mood disorder	101	59.4
Anxiety disorder	6	3.5
ADHD	17	10.0
Other diagnoses	12	7.1
Diagnosis unknown	34	20.0
<i>Period on treatment:</i>		
Less than 2 weeks	38	22.4
More than 2 weeks, Less than a month	60	35.3
More than 1 month, Less than 6 months	19	11.2
More than 6 months, Less than 1 year	12	7.1
More than 1 year	28	16.5
No response	13	7.5
<i>Number of admissions</i>		
First admission	137	80.6
Two admissions	22	12.9
More than two admissions	11	6.5

Data Collection Method

Consent from the guardians of the participants was obtained by the nursing staff as part of the admission procedure. The researcher personally obtained assent from the adolescent participants prior to participation.

Participants were asked to complete three questionnaires as part of their discharge procedure after the completion of their two-week in-patient and therapeutic program, as

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arranged with the hospital managers. The administration of the questionnaires upon discharge was at times not feasible owing to time constraints on the part of nursing staff and the researcher as well as the unpredictability of the timing of a patient's discharge. Therefore, participants completed the questionnaires at various points during their admission and not necessarily towards discharge.

The three questionnaires, as well as a form on which participants were requested to indicate basic biographical information, were presented in booklet format. The measuring instruments used in the study were selected conveniently. No South African questionnaires were appropriate for obtaining the required information, hence non-South African questionnaires were used.

Administration of the questionnaires was done mostly by the researcher, with the exception of a few that were administered by nursing staff who had received training on the data collection process. Completion of the questionnaires took participants approximately 20-30 minutes, depending on the participants' speed. Data collection started in April 2018 and was completed in March 2019.

Measuring Instruments

The shortened form of the *Drug Attitude Inventory* (DAI-10; Hogan, Awad, & Eastwood, 1983) was used in order to obtain information regarding the adolescents' views of their medication as well as their compliance with the prescribed treatment. The questionnaire consists of ten dichotomous (true/false) questions indicative of the participants' subjective medication compliance or non-compliance (Awad, 1993). A correct answer was scored a value of 2, while an incorrect response is scored 1. The minimum and maximum scores for this measure ranged between 10 and 20. The final score was the sum of the responses for these 10 items. The higher the score the more the participant is in compliance (Sajatovic & Ramirez, 2012). In reviewing subjects who were receiving neuroleptic medications, Kampman et al. (2000) reported a Cronbach's alpha coefficient of 0.798 and test-retest reliability of 0.92 (Nielsen, Linström, Nielsen, & Levander, 2012). No studies could be found in which the measure was used in the South African context (EBSCOhost, 5 February 2019).

The *Brief Illness Perception Questionnaire* (BIPQ; Broadbent, Petrie, Main, & Weinman, 2006) was used to obtain insight into how the adolescents perceive their current mental diagnosis and the experience thereof. The scale has been used across a variety of mental

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disorders with different population groups, and across various ages ranging from eight to over 80 years (Broadbent, et al., 2015). The scale consists of eight questions that measure the individual's perception of his or her illness on an 11-point Likert scale that ranges from zero (e.g. no affect at all) to 10 (e.g. severely affects my life). In order to obtain an overall score, items three, four, and seven on the questionnaire, which are negatively formulated, were reverse-scored as per scoring instructions and added to the sum of the rest of the items (Broadbent, n.d.). High total scores are indicative of a more threatening perception of the illness in question (Broadbent, et al., 2006; Broadbent, n.d.). A ninth question asks respondents to list the three most important factors they view as possible causes of their illness or disorder (Broadbent et al., 2006). The response to item nine can be grouped into categories in order to perform categorical analysis (Broadbent et al, 2006). In a systematic review of the BIPQ, Broadbent et al. (2015) found that most studies that make use of the particular questionnaire omit the causal item. They further indicated that studies that did include the ninth item categorized the responses and indicated those most commonly stated. It is suggested that responses be coded into causal categories (Broadbent et al., 2015; Broadbent et al., 2006). For the purpose of this quantitative study, a categorical identification was done. Owing to the nature of question nine, the Biopsychosocial-Spiritual model (BPSS; Engel, 1977) was used to categorize the various responses in a basic format (Katerndahl, 2008; Saad, de Medeiros, & Mosini, 2017; Sulmasy, 2002). The themes were calculated in percentage form and reported. No further in-depth analysis was conducted on this item as it falls beyond the boundary of the research objectives. The BIPQ has shown good concurrent, predictive, content, and discriminant validity in numerous studies (Broadbent, et al., 2015). Acceptable test-retest reliability was demonstrated by a Pearson's correlation between 0.42 and 0.73, as assessed in renal patients attending outpatient clinics (Broadbent et al., 2006). The measure has not been used within the South African context (EBSCOhost, 5 February 2019).

The *Decision Self-Efficacy Scale* (DSE; O'Connor, 2002) is indicative of an individual's self-confidence or belief in his or her ability to make informed decisions regarding the illness or disorder and the treatment thereof (O'Connor, 2002). The reviewed alternative format of the scale consists of 11 items that are answered along a 5-point Likert scale ranging from zero (not confident at all) to four (very confident). The obtained scores were totalled and ranged between 0 and 44. A low score is indicative of extremely low levels of decision self-efficacy, while higher scores show good to more effective levels of decision self-efficacy (O'Connor, 2002). The instrument has been validated in the context of mental illness, as

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demonstrated by Bunn and O'Connor (1996) with a Cronbach's Alpha coefficient of 0.86 in subjects diagnosed with schizophrenia who were considering the continuation of treatment with long-acting antipsychotic injections. According to the psychometric properties, the scale is correlated with decisional conflict ($r = 0.55$), focusing strongly on feeling informed and supported (O'Connor, 2002). The measure has not been used within the South African context (EBSCOhost, 5 February 2019).

The reliability of all scales was investigated by calculating Cronbach's alpha coefficients with the use of the SPSS computer software (SPSS Incorporated, 2017). The reliabilities along with descriptive statistics of the relevant variables are presented in Table 2.

Table 2

Descriptive Statistics and Reliability Coefficients for the Three Measuring Instruments

Measures	N	Mean	SD	α	Skewness	Kurtosis
Treatment compliance	170	14.62	2.18	0.641	-0.533	-0.393
Illness perception	170	40.80	11.54	0.655	-0.378	0.243
Self-efficacy	170	30.70	8.03	0.818	-0.572	0.459

From Table 2 it is evident that, with the exception of Self-efficacy, the reliability coefficients for Treatment compliance and Illness perception fall below the 0.70 reliability indicator for non-cognitive constructs (Nunnally & Bernstein, 1994). This may be attributed to the length of the measurements used, as both instruments were short regarding the number of items. The alpha value is affected by the length of the measuring instrument, i.e. the value may be reduced if the measurement is short (Cortina, 1993; Tavakol & Dennick, 2011; Streiner, 2003). Taber (2018) emphasised that Cronbach's alpha coefficient applies to the specific sample and should not be viewed as a fixed feature of the instrument. Therefore, one must take into account that the use of the particular instruments is not standardized for the South African population, which may contribute to the lower reliability coefficients.

Regarding Self-efficacy, a good reliability coefficient was found. Additionally, Table 2 also indicates the skewness and kurtosis coefficients. Guideline values were used in the rating of these coefficients. For skewness, a range between -1 and +1 indicated slight skewness, and values between -2 and +2 indicated moderate skewness (Peat & Barton, 2008),

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and for kurtosis, normal distribution was between -3 and +3 (Brown, 1997). From Table 2, it is clear that there is no occurrence of excessive skewness or kurtosis. This implies that the data meets the requirements for the assumption of normality.

Statistical Procedures

In order to appropriately analyse the data gathered the following research questions were formulated:

Research question 1

Is there a significant relationship between illness perception and predicted psychotropic treatment compliance amongst adolescent inpatients?

Research question 2

Does self-efficacy mediate or moderate the relationship between illness perception and predicted psychotropic treatment compliance amongst adolescent inpatients?

For the statistical exploration of the first research question, a correlation between the variables was calculated. For the interpretation of the correlation coefficient, the following effect ranges were used as guideline values: 0.1 = small, 0.3 = medium, and 0.5 = large.

To answer the second research question, a moderated hierarchical regression-analysis was done. This procedure comprised of three steps. In the first step, the analysis of a single variable was dealt with, during which the independent variable (illness perception) was added to the regression equation to determine its unique contribution, after which the intervening variable (self-efficacy) was included in the equation in order to determine its unique contribution. During step two, both the independent and the intervening variables were added to the equation. In this way, the significant *proportional* contribution to the criterion variable (treatment compliance) of each of the predicting variables was determined. Lastly, in step three, the *product* between the independent variable (Illness perception) and the intervening variable (Self-efficacy) in the regression model was investigated. When working with the product between two variables, it is important to prevent multi-colonialism. For this purpose, the variance settings of the relevant variables were first calculated and then the product was calculated between the two sets of variance scores.

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With step one, it is determined whether illness perception indicates a significant direct relationship with adolescent inpatients' predicted psychotropic treatment compliance. If the variables are subsequently added to the equation, the following can be deduced:

- If the calculated *Beta*-coefficient of illness perception is significant in step one but nonsignificant in step two, it can be concluded that self-efficacy is a mediator variable. (Mediator variable serves as an intervening variable to the extent to which it can explain the relationship between the predictor and the criterion variable.) (Baron & Kenny, 1986).
- If the calculated *Beta*-coefficient of self-efficacy is significant in step one but nonsignificant in step two, it is an indication of entanglement of variables (Gravetter & Wallnau, 2000).
- If the calculated *Beta*-coefficient of the product term (step 3) is significant, it can be deduced whether there is a significant interaction, which would then be indicative of a moderator effect (Howell, 2017). (A moderator variable influences the direction and/or the strength of the relationship between the predictive and criterion variables.) (Baron & Kenny, 1986).

All analysis was performed using the SPSS program software (SPSS Incorporated, 2017) and both the 1% and 5% levels of significance were used.

Ethical Considerations

Ethical clearance was obtained from the Research Ethics Committee of the Faculty of the Humanities, University of the Free State (Ethical clearance number: UFS-HSD2017/0282). Permission to conduct the study at the specific private psychiatric facilities, M-Care Optima Psychiatric Hospital and Bloemcare Psychiatric Hospital, was obtained from the board of directors, who then informed the treating mental health team complement. Arrangements were made with the management of the facilities regarding data collection, and team members in the relevant units were thoroughly oriented regarding the data collection process. Informed consent was obtained from the participants' parents or guardians, and assent was obtained from the participants themselves prior to completion of the above-mentioned questionnaires. The researcher throughout the data collection process remained aware of the potential impact the professional status of the questionnaire administrators (researcher and nursing staff) may have on the participants' willingness to participate. It was emphasised to the participants that

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participation was completely voluntary, and the decision to participate or the refusal would not have any effect on the length of hospitalization or the course of treatment. It was reiterated that there would be no negative consequences should they decline to participate. Assent was therefore authentic and not merely compliance with the request from the researcher or nursing staff. Confidentiality regarding the identifying particulars of the participants was maintained throughout the duration of the study and thereafter. The collected data was stored according to the HPCSA guidelines (Health Professions Council of South Africa, 2008). Electronic data files were stored on the researcher's personal computer, which remains password protected. During data collection, the participants were informed, as part of the assent process, that should any of the items in the questionnaires trigger uncomfortable emotions, they should report this to the nursing staff. The nursing staff were trained in debriefing the participants and instructed to inform the treating psychiatrist or psychologist at the hospital if any changes in their symptom picture or behaviours occurred. Participants completed the questionnaire no less than a day prior to discharge. Thereafter they were monitored and seen by their treating psychiatrist at least once more after completing the questionnaire. The nursing staff were asked to inform the researcher if any negative consequences were reported by participants. No such feedback was received. The researcher also monitored participants' reactions whilst completing the questionnaires and inquired as to how they felt after completion thereof. As far as the researcher is aware, no adverse effects resulted from participation in the study. Feedback regarding the results of the study was provided to the facilities.

Results and Discussion

Results

To investigate the first research question, the Pearson Product Moment correlation coefficient was calculated for the three variables. The results are indicated in Table 3.

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Table 3

Intercorrelations between Variables for Total Sample (N=170)

Variables	Illness perception	Self-efficacy
1 Treatment compliance	0.012	0.146
2 Illness perception	-	-0.298**
3 Self-efficacy		-

** p <= 0.01

From Table 3, it can be seen that a correlation between treatment compliance and illness perception is reported, however not found to be statistically significant (0.012). This correlation will be discussed in more detail in the next section. There was a significant negative relationship between illness perception and self-efficacy (0.298; $p \leq 0.01$) for the total group on the 1% level of significance. This correlation was of medium effect size, indicating reasonable practical significance. From this result it could, therefore, be understood that participants who lacked commitment to acknowledge the seriousness of their illness are less likely to think of or see themselves as being able to cope or succeed with treatment.

Thunander Sundbom and Bingefors (2012) emphasised that there are differences between the treatment compliance behaviour of men and that of women, and that if one were aiming to improve compliance, one would have to gain an understanding of the impact of gender on treatment compliance. Though gender differences do occur, there appear to be inconsistencies in the results (Seal, Cave, & Atkinson, 2017; Thunander Sundbom & Bingefors, 2012). In light of this, gender differences were considered in the analysis of the data obtained. Table 4 illustrates the intercorrelation between the variables for males and females respectively.

Table 4

Intercorrelations between Variables per Gender (N=170)

Variables	Illness perception		Self-efficacy	
	Males	Females	Males	Females
1 Treatment compliance	0.122	-0.085	0.126	0.163
2 Illness perception	-	-	-0.128	-0.422**
3 Self-efficacy	-0.128	-0.422**	-	-

** p <= 0.01

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As illustrated in Table 4, it is noted that no significant correlation between treatment compliance and illness perception for either the male or female participants was found. However, a significant negative relationship was reported between illness perception and self-efficacy on the 1% level of significance for female participants. In contrast to this, there was no significant relationship between the two mentioned variables for male participants. The first mentioned relationship indicated a medium to large effect size and is therefore of practical value. In line with the current findings, it could be deduced that participants who show a lack of knowledge and understanding of their illnesses are more likely to have lower levels of self-efficacy.

To investigate the second research question, a series of subtests regression analyses were conducted with psychotropic treatment compliance as the dependent variable, illness perception as the independent variable, and self-efficacy as the intervening variable. The analysis for the two genders was done separately. The results for male participants are indicated in Table 5.

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Table 5

Hierarchical Multiple Regression between Treatment Compliance, Illness Perception and Self-Efficacy for Male Participants

Model	Unstandardized		Standardized	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	R Square	Adjusted R Square
	Coefficients		Coefficients						
	B	Std. error	<i>Beta</i>						
1 _a	13.83	0.79		17.60	0.00	1.22	0.12	0.015	0.003
1 _b	0.02	0.02	0.12	1.10	0.27				
2 _a	12.51	1.29		9.73	0.00	1.45	0.19	0.036	0.011
2 _b	0.03	0.02	0.14	1.26	0.21				
	0.04	0.03	0.14	1.30	0.20				
3 _a	10.97	1.40		7.83	0.00	2.97	0.32	0.102	0.068
3 _b	0.03	0.02	0.18	1.65	0.10				
	0.08	0.03	0.31	2.42	0.02				
	0.01	0.002	0.31	2.41*	0.02				

Model 1: Predictor: 1_a = constant; 1_b = Illness perception

Model 2: Predictors: Predictor: 2_a = constant; 2_b = Illness perception; Self-efficacy

Model 3: Predictors: Predictor: 3_a = constant; 3_b = Illness perception; Self-efficacy; Illness perceptionXself-efficacy

** $p \leq 0.01$

* $p \leq 0.05$

Firstly, from Table 5, it appeared that self-efficacy cannot be identified as a mediator in the relationship between illness perception and treatment compliance for male participants. This inference or assumption could be made, seeing as the independent variable, illness perception, delivered nonsignificant *Beta*-coefficient ($\beta = 0.12$; $p = 0.27$) in model 1 as well as in model 2 ($\beta = 0.14$; $p = 0.20$). Secondly, it further appeared that, according to model 3, the interaction between the independent variable (illness perception) and the intervening variable (self-efficacy) does provide a significant result ($\beta = 0.31$; $t = 2.41$; $p = 0.02$) on the 5%-level. Consequently, it could be concluded that self-efficacy moderates the relationship between illness perception and psychotropic treatment compliance of male participants.

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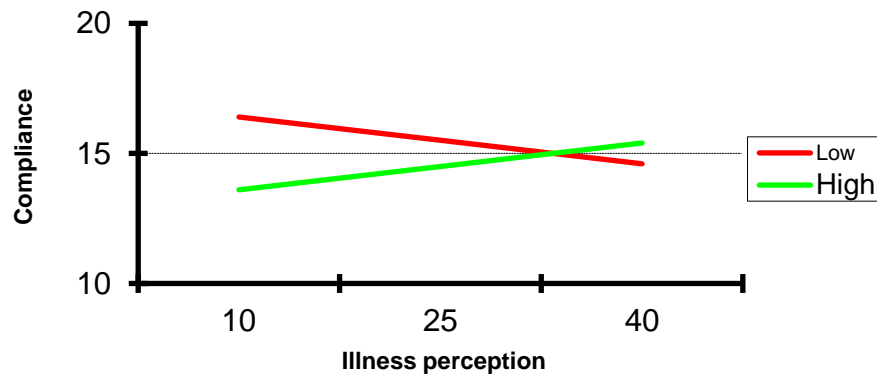


Figure 1: Regression lines for low and high self-efficacy with illness perception as predictor of psychotropic treatment compliance in male participants

Based on the findings from Table 4, the nature of this moderator effect was investigated to determine the relationship between illness perception and psychotropic treatment compliance for those who were low and high respectively on the moderator variable (self-efficacy). For this purpose, two separate regression lines were calculated – one for those who obtained high scores on self-efficacy (on or higher than the 75th percentile, N=21; a score of 39 or higher) and another for those who scored low on self-efficacy (on or lower than the 25th percentile, N=20; a score of 26 or lower). The regression lines are illustrated in Figure 1.

From figure 1, it was clear that male participants with high levels of self-efficacy show a relative increase in the regression line (slope = 0.064) leading to a positive relationship (0.169) between illness perception and psychotropic treatment compliance. For the male participants with low levels of self-efficacy, there was a slight decrease in the slope (-0.064) of the regression line. This indicated that for male participants with low levels of self-efficacy there was an increase in illness perception (deficiency in admission of or commitment to the severity of the illness) with the occurrence of a decrease in treatment compliance.

The results of the hierarchical regression analyses for the female participants are indicated in Table 6.

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Table 6

Hierarchical Multiple Regression of Treatment Compliance, Illness Perception and Self-Efficacy for Female Participants

Model	Unstandardized		Standardized	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	R Square	Adjusted R Square
	Coefficients		Coefficients						
	B	Std. error	<i>Beta</i>						
1 _a	15.42	1.08		14.23	0.00	0.62	0.09	0.007	-0.004
1 _b	-0.02	0.02	-0.09	-0.79	0.43				
2 _a	13.46	1.85		7.28	0.00	1.17	0.16	0.027	0.004
2 _b	-0.01	0.03	-0.02	-0.16	0.87				
	0.05	0.03	0.15	1.31	0.19				
3 _a	13.59	1.95		6.97	0.00	0.79	0.17	0.027	-0.007
3 _b	-0.01	0.04	0.14	1.09	0.28				
	0.04	0.003	0.03	0.23	0.82				

Model 1: Predictor: 1_a = constant; 1_b = Illness perception

Model 2: Predictors: Predictor: 2_a = constant; 2_b = Illness perception; Self-efficacy

Model 3: Predictors: Predictor: 3_a = constant; 3_b = Illness perception; Self-efficacy; Illness perceptionXself-efficacy

** $p \leq 0.01$

* $p \leq 0.05$

From Table 6, it appears that self-efficacy was not identified as a mediator in the relationship between illness perception and psychotropic treatment compliance for female participants. This deduction could be made because the independent variable, namely illness perception, provided a non-significant *Beta*-coefficient ($\beta = -0.09$; $p = 0.43$) with model 1 as well as model 2 ($\beta = -0.02$; $p = 0.87$). The results obtained with model 3 further reinforced the result that self-efficacy does not moderate the relationship between illness perception and psychotropic treatment compliance for female participants ($\beta = 0.03$; $t = 0.23$; $p = 0.82$).

Lastly, as indicated, the Brief Illness Questionnaire also consisted of a more qualitatively oriented question, which required participants to indicate three possible causes that they believed had led to the development of their diagnosed mental illness. Not all participants provided the three causes. Fifteen of the participants (8.92%) did not respond to the question, although they completed the rest of the questionnaire. The remaining participants' response rate was as follows: one cause 12.94%, two causes 17.06%, and the majority of 61.79% indicated the requested three causes. As previously indicated, a categorical

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identification was done with the use of the BPSS-model. The smallest number of responses (8.86%) referred to a Biological factor being the cause of the diagnosed condition, followed by Spiritual aspects (13.92%). The majority of the causes could be categorised as Psychological (35.19%) and Social factors (42.03%). These results are mentioned only briefly, as they form part of the questionnaire; however, an in-depth analysis was not done as this forms part of qualitative methodology. The obtained results should be explored in a follow-up qualitative research report.

Discussion

As stated, the aim of this study was to investigate some factors that may influence psychotropic treatment compliance, specifically amongst adolescent inpatients admitted to a psychiatric facility. The study focused on their experiences and perceptions regarding the use of prescribed psychotropic medication, their diagnosis, as well as how their levels of self-efficacy influence health decisions. Flowing from these aims, the following research questions were formulated, namely:

Research question 1

Is there a significant relationship between illness perceptions and predicted psychotropic treatment compliance amongst adolescent inpatients?

Research question 2

Does self-efficacy mediate or moderate the relationship between illness perceptions and predicted psychotropic treatment compliance amongst adolescent inpatients?

The descriptive statistics yielded satisfactory results. Demographically the participants were predominantly female, from the white racial group and Afrikaans-speaking. This finding seems to concur with a recent study conducted among adolescents in Johannesburg that reported that mood disorders, specifically depression, are highest amongst adolescent females (Cheng et al., 2014). In this study, most participants had also been diagnosed with a mood disorder. A study by Burger, Van der Westhuizen, Lubbe, & Serfontein (2009), which focused on South African children and adolescents, found that antidepressants are more frequently prescribed for females than for males. Females are said to be more at risk of developing a mood or anxiety disorder, and these are hence more prevalent amongst females (Stein et al.,

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2008; Williams, et al., 2008). With regard to race, the majority of the sample consisted of white participants. This may be ascribed to the fact that white South Africans are more likely to make use of Western medicine than black South Africans, who are more frequently to make use of complementary and alternative medicine (CAM – Traditional and spiritual healers etc.) in keeping with many traditional African belief system. (Seedat, et al., 2009; Sorsdahl et al., 2009).

In order to answer the posed research questions, three questionnaires were used to investigate each of the three variables respectively (DAI, BIPQ, and DSES). The mean scores obtained from each of the instruments compared reasonably well with those obtained in previous studies. The mean score on the DAI was lower than the mean score as indicated by Nielsen et al., (2012). This implies that participants in the current study may have had a more negative attitude towards their medication and may, therefore, be less compliant in future. This may be due to the acute nature of the mental disorders of the current study participants, as the measure does not take into account any adverse physical effects of the medication that the participants might have been experiencing, as most had only recently been initiated on treatment, which in turn may have affected their view of the prescribed medication (Molteni et al., 2014; Pomykacz, Mao, Weiss, & Teter, 2007). Regarding the BIPQ, a mean score of 40.8 (SD 11.54) was obtained. Most studies reported on a single item mean score and not the summary score of the scale (Broadbent et al., 2015). The mean score compared well with a previous study on adolescents with allergic rhinitis, which was 34.69 (SD = 11.89) (Pesut, et al., 2014). Lastly, the mean scores of the DSES could not be compared to the results of the study by Bunn and O'Connor (1996), as the instrument was adjusted for the investigated population. The obtained mean score, 30.7 (SD = 8.03), was similar to the mean scores of a study that focused on patients taking antipsychotic medication, in which the mean scores of multiple administrations were between 29 and 32 (Moncrieff, et al., 2016).

Regarding the skewness and kurtosis, the analysis indicated that all the scores fell within the acceptable ranges and did not adversely influence the results. This implies that the requirements for the assumption of normality were met by the obtained data. With the exception of the DSES (measuring self-efficacy), the other two measures, namely the DAI (predicted treatment compliance) and the BIPQ (illness perception) fell below the 0.70 guide for non-cognitive instruments (Nunnally & Bernstein, 1994). As mentioned earlier, this may

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be attributed to the small item load of the measurement, which may result in reduced alpha coefficient values (Cortina, 1993; Tavakol & Dennick, 2011; Streiner, 2003).

In order to answer the first research question, a Pearson Product Moment correlation coefficient was calculated among the three variables. The second research question was answered by doing a moderated hierarchical regression-analysis, which comprised three steps, as described under the statistical procedure. All analysis was performed using the SPSS program software (SPSS Incorporated, 2017) and both the 1% and 5% levels of significance were used.

Firstly, a significant negative relationship between illness perception and self-efficacy for the total group (male and female adolescent inpatients) was found. From this result, it could be understood that adolescent inpatients who were unable to grasp or understand the nature and dynamics of their diagnosis were less likely to think of or see themselves as being able to cope or manage with the consequent treatment process. This was in keeping with previous results, which indicated that patients who have a more negative illness perception tend to view the illness as uncontrollable and may view themselves as unable to successfully manage their illness (Petrie, Jago, & Devcich, 2007; Steca et al., 2013). Self-efficacy and illness perception are considered to be cognitive dimensions and were identified as integral to the self-management of an illness (Steca et al., 2013).

By contrast, no significant relationship was found between illness perception and treatment compliance, as posed by the first research question. This was not in keeping with results from previous studies that found a significant relationship between illness perception and medication compliance (Atorkey et al., 2017; Averous et al.; 2018; Hussain, Imran, Hotiana, Mazhar, & Asif, 2017). Various factors may have affected the lack of correlation between illness perception and predicted medication compliance. With regard to illness perception, it may be important to note that 20 percent of the participants had minimal understanding of their diagnosis, as well as the prescribed treatment. It appears that there is a lack of awareness raising and other psychoeducational initiatives in the area of mental health and wellness, that may impact on participants' illness perception and treatment compliance. Existing health information initiatives seem to share an over-riding focus on psycho-education and raising awareness of HIV and its negative impact on attitudes towards medication and treatment compliance among South African youth (Bikaako-Kajura et al., 2006; Mahloko & Madiba, 2012; Okawa et al., 2017).

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Another possibility (lack of correlation between illness perception and predicted medication compliance) that this could be related to is the length of time participants have been on treatment. With reference to the period in which participants had been taking treatment, 57.7% of them had been taking medication for less than a month (35.3% more than two weeks but less than a month; while 22.4% less than two weeks). The larger group started medication just prior to admission or on admission, as the study focused on inpatients. In addition to this, it was the first admission to a psychiatric facility for 80.6% of the participants. The adolescent patient has not necessarily accepted or processed the diagnosis. Part of the adolescent developmental phase is the need to belong and to be accepted, which is accompanied by a fear of rejection. Being diagnosed with a mental illness may result in the adolescent questioning his or her normalcy and therefore rejecting the diagnostic label (Wisdom, Clarke, and Green, 2006). For adolescent mental health care users, taking medication contradicts their views of themselves as normal adolescents (Kranke, Floersch, Kranke, & Munson, 2011; Wisdom et al., 2006). This is further supported by the impact of self-stigma, which is the internalization of societal and cultural stigmatizing views of mental illness (Corrigan & Rao, 2012; Corrigan, Watson, & Barr, 2006), which has been identified as one of the factors hindering adolescents from engaging in treatment related behaviour and accepting the help provided (DeLuca, 2019). The recent diagnosis and initiation of treatment could thus impact their perception of their illness, as well as their attitude towards their prescribed medication.

In the analysis of gender, a significant negative relationship between illness perception and self-efficacy for female adolescent inpatients, but no significant relationship for the two variables, was found for male adolescent inpatients. Pesut, et al. (2014) found similar gender differences in a study investigating illness perception in a medical condition. They attributed these differences to females having a tendency to worry more about health concerns and hence to perceive the experienced symptoms as more threatening. Laurier, Lafortune, and Collin (2010) also found significant differences with regard to male and female adolescents' attitudes towards, and behaviour related to, psychotropic medication. They also indicated that anxiety regarding their illness plays a role in compliance behaviour amongst adolescent females. Furthermore, their study illustrated that, for adolescent males, coping strategies and how they perceive the relationship with the prescribing physician, as well as their readiness to change, were more prominent when exploring compliance behaviour, while anxiety did not play a role.

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The second research question was answered by performing a regression analysis with psychotropic treatment compliance as the dependent variable, illness perception as an independent variable, and self-efficacy as an intervening variable. The analysis for the two genders was again done separately.

In the initial analysis a significantly positive result interaction between illness perception (independent variable) and self-efficacy (intervening variable) was found. From this result, self-efficacy seems to moderate the relationship between illness perception and psychotropic treatment compliance of male adolescent inpatients. The nature of the moderator effect of self-efficacy for male adolescent inpatients was investigated further, using regression lines. This illustrated that male participants with low levels of self-efficacy had higher levels of illness perception and showed lower levels of treatment compliance. Male participants having high levels of self-efficacy reported greater commitment toward treatment compliance and seemed to understand their mental conditions much better (illness perception).

Bandura (2004) emphasized that self-efficacy beliefs influence and are influenced by one's outcome expectations. Individuals with high levels of self-efficacy tend to expect positive outcomes, and in contrast, individuals with low levels of self-efficacy would expect that their efforts will not result in a good outcome, as linked to their doubt in their abilities to effect change (Bandura, 2004; Moeini et al., 2008). Bandura (2004) went on to highlight that one's belief in one's ability to exercise control, as would be the case with decision self-efficacy related to health decisions, will affect personal change in one's health-related behaviour, which treatment compliance may be regarded as. In contrast with these findings, Hou, Cleak, and Peveler (2010) stated that especially younger patients with a negative perception of their medications may still view themselves as having the ability to handle their condition on their own, without medication. Concurring with current findings regarding male participants with low levels of decision self-efficacy, James (2013) concluded that, even if patients received the necessary comprehensive health information, they may feel overwhelmed and consequently doubt their abilities to make choices about their health care. This may account for the moderating effect of low self-efficacy resulting in increased illness perception and the consequent decrease in treatment compliance. Gender differences were again identified. It has been found that boys tend to have less knowledge and experience regarding mental health and, accompanying this, be less likely to willingly make use of mental health services (Chandra & Minkovitz, 2006). The lack of knowledge accompanied by a lack of engagement in the

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treatment may account for the decrease in treatment compliance with a low level of self-efficacy. Adolescence as a developmental phase is a period during which the adolescent has the need to gain more independence, make their own choices, and exert control over their lives. Adolescents who are diagnosed with a psychiatric condition that necessitates taking medication are at greater risk of feeling powerless and not taking medication, in the hope that they can still exercise control over the situation (Taddeo, Egedy, & Frappier, 2008). Consequently, attitudes and perceptions may be negatively affected by the age-old stigma surrounding mental illnesses.

Limitations

Several challenges were encountered, and limitations revealed, during the research process. As previously indicated, the administration of the questionnaires was not consistently done upon discharge of the participants as initially planned, owing to various logistical constraints. The implication thereof was that patients were at different stages of their treatment process and may still have been adjusting to the new environment. It would have been preferable to have participants' views regarding the variables upon discharge, as the responsibility for medication compliance was then completely transferred to the participants. This also implicated the length of treatment. Some of the participants had been taking treatment for less than two weeks, which could have had an effect on their attitude towards their treatment as well as their diagnosed illness, as this might not have sunk in and the participant might still have been adjusting and might not have had the opportunity to ask questions and realize the implication of the diagnosis.

The participants had all been admitted to private psychiatric facilities, and the length of admission was not likely to exceed two weeks as per the hospitals' policy and the nature of the treatment programmes. All the participants were on medical aid or their parents or guardians had the means to pay for the treatment. It may be assumed that the participants were in the middle-income group or higher. It may be of interest to conduct similar research with adolescent patients who have been admitted to public psychiatric facilities, who find themselves in a different socio-economic context and may be exposed to a longer hospitalization period.

The study relied on self-report questionnaires, which provided subjective data that may be influenced by the emotional and psychological state of the patient. It might be of value to the study if the questionnaires were re-administered after a period once the patient has been discharged, to see the effect that stabilization on medication and manifestation of treatment

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side-effects has subsided. Furthermore, all three of the questionnaires used in this study were not South African standardized instruments. First world nations, for which the instruments were standardized, may differ from developing countries in a number of ways, which would include their experiences of mental health.

Conclusion and Recommendations

A decade ago, Floersch et al. (2009) emphasized that it cannot be assumed that adolescents understand their diagnosed condition and comprehend their prescribed treatment in order to be treatment compliant. This study aimed to shed light on how adolescent inpatients admitted to a psychiatric facility perceived their prescribed psychotropic treatment and viewed their diagnosed illness, and how confident they were in their abilities to make health decisions in an attempt to manage and cope with their condition. I support the view of Charach et al. (2008), who suggested that if one were to investigate treatment compliance, it would be preferable to complement quantitative data with the use of qualitative methods in order to obtain a more holistic view of the intricacy involved. The current study did warrant mixed method approach, but due to the time-consuming nature of the inpatient programme the participants were involved in and the limitation it therefore places on the availability of the participants, this was deemed not feasible.

A mixed-method approach may thus be recommended for future research, as this would provide insight into why adolescents would become non-compliant with psychotropic treatment. Furthermore, it may be of value to investigate treatment compliance for specific mental disorders, as this study did not differentiate between the prevalent disorders amongst the population of interest. It appeared that limited literature is available that focuses specifically on adolescent psychiatric inpatients, even though perspective and behaviour related treatment compliance appears to be multifaceted.

The focus of the study was not to compare male and female adolescent inpatients with regard to psychotropic medication compliance. Correlational and regression analyses, as well as the analyses of group differences on variables that are said to impact treatment compliance, have proved to be of great value (Rapoff, 2010). Therefore, the differences identified with regard to attitude towards medication, illness perception, and decision self-efficacy between males and females may be of value. Interventions aimed at improving medication compliance need to be adjusted and gender differences need to be considered. The relationship between

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treatment compliance and demographic variables such as gender may help guide interventions aimed at improving compliance, though the nature of said interventions is not clear (Horne, Weinman, Barber, Elliott, & Morgan, 2005). This could be explored further, as the developmental age of maturation supports longitudinal follow-up studies aimed at determining whether perceptions and treatment compliance behaviour changes.

The contributions of this study assist researchers in understanding the impact of self-efficacy on treatment compliance and health care perceptions of the adolescent mental health care users, as a definite need exists to better understand how self-efficacy is impacted upon and henceforth affects medication compliance in adolescents. It is only through acknowledging and exploring the intricacy of psychotropic treatment compliance in adolescents that we will be able to meet their needs and assist them on their journey towards adulthood.

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Reference List

- AACAP. (2012). A guide for community child serving agencies on psychotropic medications for children and adolescents. Retrieved from http://www.aacap.org/App_Themes/AACAP/docs/press/guide_for_community_child_serving_agencies_on_psychotropic_medications_for_children_and_adolescents_2012.pdf
- Acar, G., Bademli, K., & Lök, N. (2017). Medication non-adherence in chronic mental illness: management strategies. *ARC Journal of Psychiatry*, 2(1), 23-25. Retrieved from <https://www.arcjournals.org/pdfs/ajp/v2-i1/5.pdf>
- Alderson, P., Sutcliffe, K., & Curtis, K. (2006). Children's competence to consent to medical treatment. *The Hastings Center Report*, 36(6), 25-34. doi:10.1353/hcr.2006.0000
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.). Washington, DC: American Psychiatric Association.
- Atorkey, P., Doku, P. N., Danquah, S. A., Owiredua, C., & Akwei, M. (2017). Illness perceptions and medication adherence in adolescents with Sickle Cell Disease in two selected hospitals in Greater Accra. *IFE Psychologia*, 25(2), 180-194. Retrieved from <https://0-web.a.ebscohost.com/wagtail.ufs.ac.za/ehost/pdfviewer/pdfviewer?vid=11&sid=d3ae231d-d0c5-4fcb-971b-83415e4639f4%40sessionmgr4010>
- Averous, P., Charbonnier, E., Lagouanelle-Simeoni, M. C., Prospero, A., & Dany, L. (2018). Illness perceptions and adherence in bipolar disorder: an exploratory study. *Comprehensive Psychiatry*, 80, 109-115. doi:10.1016/j.comppsy.2017.10.003
- Awad, A. G. (1993). Subjective response to neuroleptics in schizophrenia. *Schizophrenia Bulletin*, 19(3), 609-618. doi:10.1093/schbul/19.3.609
- Bandura, A. (2004). Health promotion by social cognitive means. *Health Education and Behavior*, 31(2), 143-164. doi:10.1177/1090198104263660
- Baron, R.M. & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of*

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

Personality and Social Psychology, 51(6), 1173-1182. doi:10.1037//0022-3514.51.6.1173

Bikaako-Kajura, W., Luyirika, E., Purcell, D. W., Downing, J., Kaharuzza, F., Mermin, J., . . . Bunnell, R. (2006). Disclosure of HIV status and adherence to daily drug regimens among HIV-infected children in Uganda. *AIDS and Behavior*, 10(4), S85–S93. doi:10.1007/s10461-006-9141-3

Bobier, C., & Warwick, M. (2005). Factors associated with readmission to adolescent psychiatric care. *The Australian and New Zealand Journal of Psychiatry*, 39(7), 600-606. doi:10.1080/j.1440-1614.2005.01632.x

Botha, U. A., Koen, L., Joska, J. A., Parker, J. S., Horn, N., Hering, L. M., & Oosthuizen, P. P. (2010). The revolving door phenomenon in psychiatry: comparing low-frequency and high-frequency users of psychiatric inpatient services in a developing country. *Social Psychiatry & Psychiatric Epidemiology*, 45(4), 461-468. doi:10.1007/s00127-009-0085-6

Broadbent, E. (n.d.). *Scoring the Brief-IPQ*. Retrieved from The Illness Perception Questionnaire: <https://www.uib.no/ipq/index.html>

Broadbent, E., Petrie, K. J., Main, J., & Weinman, J. (2006). The Brief Illness Perception Questionnaire. *Journal of Psychosomatic Research*, 60(6), 631-637. doi:10.1016/j.jpsychores.2005.10.020

Broadbent, E., Wilkes, C., Koschwanez, H., Weinman, J., Norton, S., & Petrie, K. J. (2015). A systematic review and meta-analysis of the Brief Illness Perception Questionnaire. *Psychology & Health*, 30(11), 1361–1385. doi:10.1080/08870446.2015.1070851

Brown, J.D. (1997). Skewness and kurtosis. *Shiken: JALT Testing & Evaluation SIG Newsletter*, (1)1, 20-23. Retrieved from <http://jalt.org/test/PDF/Brown1.pdf>

Bulloch, A. M., & Patten, S. B. (2010). Non-adherence with psychotropic medications in the general population. *Social Psychiatry & Psychiatric Epidemiology*, 45(1), 47-56. doi:10.1007/s00127-009-0041-5

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- Bunn, H., & O'Connor, A. M. (1996). Validation of client decision-making instruments in the context of psychiatry. *Canadian Journal of Nursing Research*, 28(3), 13-27. Retrieved from <http://cjr.archive.mcgill.ca/article/view/1344/1344>
- Burger, J. R., Van der Westhuizen, E., Lubbe, M. S., & Serfontein, J. H. (2009). Prescribing patterns of medicine classified as 'antidepressants' in South African children and adolescents. *Health SA Gesondheid*, 14(1). doi:10.4102/hsag.v14i1.453
- Carrier, F., Banayan, D., Boley, R., & Karnik, N. (2017). Ethical challenges in developing drugs for psychiatric disorders. *Progress in Neurobiology*, 152, 58-69. doi:10.1016/j.pneurobio.2017.03.002
- Casey, B. J., Jones, R. M., & Hare, T. A. (2008). The adolescent brain. *Annals of the New York Academy of Sciences*, 1124, 111-126. doi:10.1196/annals.1440.010
- Chandra, A., & Minkovitz, C. S. (2006). Stigma starts early: gender differences in teen willingness to use mental health services. *Journal of Adolescent Health*, 38(6), e1-8. doi:10.1016/j.jadohealth.2005.08.011
- Chapman, S. E., & Horne, R. (2013). Medication nonadherence and psychiatry. *Current Opinion in Psychiatry*, 26(5), 446-452. doi:10.1097/YCO.0b013e3283642da4
- Charach, A., Volpe, T., Boydell, K. M., & Gearing, R. E. (2008). A theoretical approach to medication adherence for children and youth with psychiatric disorders. *Harvard Review of Psychiatry*, 16(2), 126-135. doi:10.1080/10673220802069715
- Cheng, Y., Li, X., Lou, C., Sonenstein, F., Kalamar, A., Jejeebhoy, S., . . . Ojengbede, O. A. (2014). The association between social support and mental health among vulnerable adolescents in five cities: findings from the study of the well-being of adolescents in vulnerable environments. *Journal of Adolescent Health*, 55(6), S31-S38. doi:10.1016/j.jadohealth.2014.08.020&
- Corrigan, P. W., & Rao, D. (2012). On the self-stigma of mental illness: stages, disclosure, and strategies of change. *The Canadian Journal of Psychiatry*, 57(8), 464-469. doi:10.1177/070674371205700804

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- Corrigan, P. W., Watson, A. C., & Barr, L. (2006). The self-stigma of mental illness: implications for self-esteem and self-efficacy. *Journal of Social and Clinical Psychology, 25*(8), 875-884. doi:10.1521/jscp.2006.25.8.875
- Cortet, B., & Bénichou, O. (2006). Adherence, persistence, concordance: do we provide optimal management to our patients with osteoporosis? *Joint Bone Spine, 73*(5), e1-e7. doi:10.1016/j.jbspin.2006.02.006
- Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology, 78*(1), 98-104. doi:10.1037/0021-9010.78.1.98
- Cramer, J. A., Roy, A., Burrell, A., Fairchild, C. J., Fuldeore, M. J., Ollendorf, D. A., & Wong, P. K. (2008). Medication compliance and persistence: terminology and definitions. *Value Health, 11*(1), 44-47. doi:10.1111/j.1524-4733.2007.00213.x.
- Creswell, J. W., Ebersohn, L., Eloff, I., Ferreira, R., Ivankova, N. V., Jansen, J. D., . . . Van der Westhuizen, C. (2013). *First steps in research* (Revised ed.). (K. Maree, Ed.) Pretoria: Van Schaik.
- De las Cuevas, C. (2011). Towards a clarification of terminology in medicine taking behavior: compliance, adherence and concordance are related although different terms with different uses. *Current Clinical Pharmacology, 6*(2), 74-77. doi:10.2174/157488411796151110
- De las Cuevas, C., & Peñate, W. (2014). To what extent psychiatric patients feel involved in decision making about their mental health care? Relationships with socio-demographic, clinical, and psychological variables. *Acta Neuropsychiatrica, 26*(6), 372-381. doi:10.1017/neu.2014.21
- Dean, A. J., Walters, J., & Hall, A. (2010). A systematic review of interventions to enhance medication adherence in children and adolescents with chronic illness. *Archives of Disease in Childhood, 95*(9), 717-723. doi:10.1136/adc.2009.175125
- DeLuca, J. S. (2019). Conceptualizing adolescent mental illness stigma: youth stigma development and stigma reduction programs. *Adolescent Research Review, 5*, 153-171. doi:10.1007/s40894-018-0106-3

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- Demetriou, C., Ozer, B. U., & Essau, C. A. (2015). Self-report questionnaires. In R. L. Cautin, & S. O. Lilienfeld (Eds.), *The Encyclopedia of Clinical Psychology* (1st ed., pp. 1-6). Hoboken, NJ: John Wiley & Sons. doi:10.1002/9781118625392.wbecp507
- DiBonaventura, M., Gabriel, S., Dupclay, L., Gupta, S., & Kim, E. (2012). A patient perspective of the impact of medication side effects on adherence: results of a cross-sectional nationwide survey of patients with schizophrenia. *BMC Psychiatry, 12*(20), 1-7. doi:10.1186/1471-244X-12-2
- Dilallo, J. J., & Weiss, G. (2009). Motivational interviewing and adolescent psychopharmacology. *Journal of American Academy of Child and Adolescent Psychiatry, 48*(2), 108-113. doi:10.1097/CHI.0b013e3181930660
- DiMatteo, M. R. (2004). Variations in patients' adherence to medical recommendations: a quantitative review of 50 years of research. *Medical Care, 42*(3), 200-209. doi:10.1097/01.mlr.0000114908.90348.f9
- Dixon, L. B., Holoshitz, Y., & Nossel, I. (2016). Treatment engagement of individuals experiencing mental illness: review and update. *World Psychiatry, 15*(1), 13-20. doi:10.1002/wps.20306
- Engel, G. L. (1977). The need for a new medical model: a challenge for biomedicine. *Science, 196*(4286), 129-136. Retrieved from <https://pdfs.semanticscholar.org/417b/d1c34d776d0e7d6a2c4f6e512cbd67047a05.pdf>
- Farooq, S., & Naeem, F. (2014). Tackling nonadherence in psychiatric disorders: current opinion. *Neuropsychiatric Disease and Treatment, 10*, 1069–1077. doi:10.2147/NDT.S40777
- Felzmann, H. (2012). Adherence, compliance, and concordance: an ethical perspective. *Nurse Prescribing, 10*(8), 406-411. doi:10.12968/npre.2012.10.8.406
- Flisher, A. J., Dawes, A., Kafaar, Z., Lund, C., Sorsdahl, K., Myers, B., . . . Seedat, S. (2012). Child and adolescent mental health in South Africa. *Journal of Child & Adolescent Mental Health, 24*(2), 149-161. doi:10.2989/17280583.2012.735505
- Flisher, A. J., & Gevers, A. (2010). Mental health and risk behaviour. In M. Kibel, L. Lake, S. Pendlebury, & C. Smith (Eds.), *South African Child Gauge 2009/2010* (pp. 53-57).

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

Cape Town: Children's Institute. Retrieved from <http://pmg-assets.s3.amazonaws.com/docs/100811childgauge.pdf>

Floersch, J., Townsend, L., Longhofer, J., Munson, M., Winbush, V., Kranke, D., . . .

Findling, R. L. (2009). Adolescent experience of psychotropic treatment.

Transcultural Psychiatry, 46(1), 157-179. doi:10.1177/1363461509102292

Fontanella, C. A. (2008). The influence of clinical, treatment, and healthcare system characteristics on psychiatric readmission of adolescents. *The American Journal of Orthopsychiatry*, 78(2), 187-198. doi:10.1037/a0012557

Frank, M. R., Heiby, E. M., & Lee, J. H. (2007). Assessment of determinants of compliance to twelve health behaviors: psychometric evaluation of the Health Behavior schedule II. *Psychological Reports*, 100(3,Pt2), 1281-1297. doi:10.2466/pr0.100.4.1281-1297

Garrido, P., & Saraiva, C. (2012). Understanding the revolving door syndrome. *European Psychiatry*, 27(1). doi:10.1016/A0924-9338(12)74768-5

Golay, A. (2011). Pharmacoeconomic aspects of poor adherence: can better adherence reduce healthcare costs? *Journal of Medical Economics*, 14(5), 594-608. doi:10.3111/13696998.2011.597808

Gravetter, F.J. & Wallnau, L.B. (2000). *Statistics for the Behavioural Sciences* (5th ed.). New York, NY: Wadsworth.

Hack, S., & Chow, B. (2001). Pediatric psychotropic medication compliance: a literature review and research-based suggestions for improving treatment compliance. *Journal of Child and Adolescent Psychopharmacology*, 11(1), 59-67. doi:10.1089/104454601750143465

Hagell, A., Coleman, J., & Brooks, F. (2015). *Key data on adolescence*. London, UK: Association for Young People's Health.

Hamrin, V., McCarthy, E. M., & Tyson, V. (2010). Pediatric psychotropic medication initiation and adherence: a literature review based on social exchange theory. *Journal of Child and Adolescent Psychiatric Nursing*, 23(3), 151-172. doi:10.1111/j.1744-6171.2010.00237.x

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- Health Professions Council of South Africa. (2008). *Booklet 6: general ethical guidelines for health researchers*. Retrieved from HPCSA:
http://www.hpcsa.co.za/downloads/conduct_ethics/rules/generic_ethical_rules/booklet_6.pdf
- Herman, A. A., Stein, D. J., Seedat, S., Heeringa, S. G., Moomal, H., & Williams, D. R. (2009). The South African Stress and Health (SASH) study: 12-month and lifetime prevalence of common mental disorders. *South African Medical Journal*, *99*(5pt2), 339-344. Retrieved from
<http://www.samj.org.za/index.php/samj/article/viewFile/3374/2375>
- Hodes, R., Cluver, L., Barron, P., Dlamini, N. R., Madisha, L., Mazibuko, N., . . . Schultz, L. (2017). *National Adolescent and Youth Health Policy*. National Department of Health. Retrieved from <http://aviwe.wrhi.ac.za/national-adolescent-youth-health-policy-2017/>
- Hogan, T. P., Awad, A. G., & Eastwood, R. (1983). A self-report scale predictive of drug compliance in schizophrenics: reliability and discriminative validity. *Psychological Medicine*, *13*(1), 177-183. doi:10.1017/S0033291700050182
- Horne, R., Weinman, J., Barber, N., Elliott, R., & Morgan, M. (2005). *Concordance, adherence and compliance in medicine taking*. London: National Co-ordinating Centre for NHS Service Delivery and Organisation (NCCSDO). Retrieved from http://www.netscc.ac.uk/hsdr/files/project/SDO_FR_08-1412-076_V01.pdf
- Hou, R., Cleak, V., & Peveler, R. (2010). Do treatment and illness beliefs influence adherence to medication in patients with bipolar affective disorder? A preliminary cross-sectional study. *European Psychiatry*, *25*(4), 216-219. doi:10.1016/j.eurpsy.2009.09.003
- Howell, D.C. (2017). *Statistical Methods for Psychology* (8th ed.). New York, NY: Wadsworth.
- Huefner, J. C., & Griffith, A. K. (2014). Psychotropic medication use with troubled children and youth. *Journal of Child and Family Studies*, *23*(4), 613-616. doi:10.1007/s10826-014-9941-4

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- Hussain, S., Imran, N., Hotiana, U. A., Mazhar, N., & Asif, A. (2017). Illness perceptions in patients of schizophrenia: a preliminary investigation from Lahore, Pakistan. *Pakistan Journal of Medical Sciences*, 33(4), 829-834. doi:10.12669/pjms.334.13128
- Imran, N., Azeem, M. W., Chaudhry, M. R., & Butt, Z. (2015). Illness perceptions in adolescents with a psychiatric diagnosis in Pakistan. *BJPsych Bulletin*, 39(4), 174-178. doi:10.1192/pb.bp.114.04829
- Insel, T. R., & Scolnick, E. M. (2006). Cure therapeutics and strategic prevention: raising the bar for mental health research. *Molecular Psychiatry*, 11, 11-17. doi:10.1038/sj.mp.4001777
- Jack, H., Wagner, R. G., Petersen, I., Thom, R., Newton, C. R., Stein, A., . . . Hofman, K. J. (2014). Closing the mental health treatment gap in South Africa: a review of costs and cost-effectiveness. *Global Health Action*, 7(23431). doi:10.3402/gha.v7.23431
- James, J. (2013). Health policy brief: patient engagement. *Health Affairs*, 1-6. doi:10.1377/hpb20130214.898775
- Jaworska, N., & MacQueen, G. (2015). Adolescence as a unique developmental period. *Journal of Psychiatry and Neuroscience*, 40(5), 291-293. doi:10.1503/jpn.150268
- Jensen, P. S., Buitelaar, J., Pandina, G. J., Binder, C., & Haas, M. (2007). Management of psychiatric disorders in children and adolescents with atypical antipsychotics: a systematic review of published clinical trials. *European Child and Adolescent Psychiatry*, 16(2), 104-120. doi:10.1007/s00787-006-0580-1
- Kampman, O., Lehtinen, K., Lassila, V., Leinonen, E., Poutanen, O., & Koivisto, A. M. (2000). Attitudes towards neuroleptic treatment: reliability and validity of the Attitudes towards Neuroleptic Treatment (ANT) questionnaire. *Schizophrenia Research*, 45(3), 223-234. doi:10.1016/S0920-9964(99)00204-2
- Kapphahn, C., Morreale, M., Rickert, V., & Walker, L. (2006). Financing mental health services for adolescents: a position paper of the society for adolescent medicine. *Journal of Adolescent Health*, 39(3), 456-458. doi:10.1016/j.jadohealth.2005.12.013

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- Katerndahl, D. A. (2008). Impact of spiritual symptoms and their interactions on health services and life satisfaction. *Annals of Family Medicine*, 6(5), 412–420. doi:10.1370/afm.886.
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distribution of DSM-IV disorders in the National Co-morbidity Survey replication. *Archives of General Psychiatry*, 62(6), 593-602. doi: 10.1001/archpsyc.62.6.593
- Kim-Cohen, J., Caspi, A., Moffitt, T. E., Harrington, H., Milne, B. J., & Poulton, R. (2003). Prior juvenile diagnoses in adults with mental disorder: developmental follow-back of a prospective-longitudinal cohort. *Archives of General Psychiatry*, 60(7), 709-717. doi:10.1001/archpsyc.60.7.709
- Knapp, P., Raynor, D. K., Thistlethwaite, J. E., & Jones, M. B. (2009). A questionnaire to measure health practitioners' attitudes to partnership in medicine taking: LATCon II. *Health Expectations*, 12(2), 175–186. doi:10.1111/j.1369-7625.2009.00545.x
- Kranke, D. A., Floersch, J., Kranke, B. O., & Munson, M. R. (2011). A qualitative investigation of self-stigma among adolescents taking psychiatric medication. *Psychiatric Services*, 62(8), 893-899. doi:10.1176/appi.ps.62.8.893
- Laurier, C., Lafortune, D., & Collin, J. (2010). Compliance with psychotropic medication treatment among adolescents living in youth care centres. *Children and Youth Services Review*, 32(1), 67–73. doi:10.1016/j.childyouth.2009.07.007
- Leventhal, H., & Diefenbach, M. (1991). The active side of illness cognition. In J. A. Skelton, & R. T. Croyle (Eds.), *Mental Representation in Health and Illness* (pp. 247-272). New York, NY: Springer-Verlag. Retrieved from https://www.researchgate.net/publication/279614983_The_Active_Side_of_Illness_Cognition
- Leventhal, H., Nerenz, D. R., & Steele, D. J. (1984). Illness representation and coping with health threats. In A. Baum, S. E. Taylor, & J. E. Singer (Eds.), *Handbook of Psychology and Health* (Vol. 4, pp. 213-252). Hillsdale, NJ: Erlbaum. Retrieved from https://www.researchgate.net/publication/246416053_Illness_Representations_and_Coping_with_Health_Threats

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

Longhofer, J., & Floersch, J. (2010). Desire and disappointment: adolescent psychotropic treatment and adherence. *Anthropology & Medicine, 17*(2), 159-172.
doi:10.1080/13648470.2010.493599

Loureiro, L. M., Jorm, A. F., Mendes, A. C., Santos, J. C., Ferreira, R. O., & Pedreiro, A. T. (2013). Mental health literacy about depression: a survey of Portuguese youth. *BMC Psychiatry, 13*(129), 1-8. doi:10.1186/1471-244X-13-129

Lui-Seifert, H., Adams, D. H., & Kinon, B. J. (2005). Discontinuation of treatment of schizophrenic patients is driven by poor symptom response: a pooled post-hoc analysis of four atypical antipsychotic drugs. *BMC Medicine, 3*(21).
doi:10.1186/1741-7015-3-21

Lurie, I., Aviram, S., Linder, M., Kalman, N., Ratzoni, G., Levkovitz, Y., & Bloch, Y. (2009). Understanding and knowledge of psychiatric treatment among adolescents and adults. *Clinical Child Psychology and Psychiatry, 14*(4), 589-594.
doi:10.1177/1359104509338426

Mahloko, J. M., & Madiba, S. (2012). Disclosing HIV diagnosis to children in Odi district, South Africa: reasons for disclosure and non-disclosure. *African Journal of Primary Health Care and Family Medicine, 4*(1), 1-7. doi:10.4102/phcfm.v4i1.345

Martin, L. R., Williams, S. L., Haskard, K. B., & DiMatteo, M. R. (2005). The challenge of patient adherence. *Therapeutics and Clinical Risk Management, 1*(3), 189-199.
Retrieved from
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1661624/pdf/tcrm0103-189.pdf>

Mert, D. G., Turgut, N. H., Kelleci, M., & Semiz, M. (2015). Perspectives on reasons of medication nonadherence in psychiatric patients. *Patient Preference and Adherence, 9*, 87-93. doi:10.2147/PPA.S75013

Mitchell, A. J., & Selmes, T. (2007). Why don't patients take their medicine? Reasons and solutions in psychiatry. *Advances in Psychiatric Treatment, 13*(5), 336-346.
doi:10.1192/apt.bp.106.003194

Moeini, B., Shafii, F., Hidarnia, A., Babaii, G. R., Birashk, B., & Allahverdipour, H. (2008). Perceived stress, self-efficacy and its relations to psychological well-being status in

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- Iranian male high school students. *Social Behavior and Personality: An International Journal*, 36(2), 257-266. doi:10.2224/sbp.2008.36.2.257
- Molteni, S., Giaroli, G., Rossi, G., Comelli, M., Rajendraprasad, M., & Balottin, U. (2014). Drug attitude in adolescents: a key factor for a comprehensive assessment. *Journal of Clinical Psychopharmacology*, 34(1), 99-108. doi:10.1097/JCP.0000000000000035
- Moncrieff, J., Azam, K., Johnson, S., Marston, L., Morant, N., Darton, K., & Wood, N. (2016). Results of a pilot cluster randomised trial of the use of a Medication Review Tool for people taking antipsychotic medication. *BMC Psychiatry*, 16(205), 1-11. doi:10.1186/s12888-016-0921-7
- Moses, T. (2011). Adolescents' commitment to continuing psychotropic medication: a preliminary investigation of considerations, contradictions, and correlates. *Child Psychiatry and Human Development*, 42(1), 93-117. doi:10.1007/s10578-010-0209-y
- Munson, M. R., Floersch, J. E., & Townsend, L. (2009). Attitudes toward mental health services and illness perceptions among adolescents with mood disorders. *Child & Adolescent Social Work Journal*, 26(5), 447-466. doi:10.1007/s10560-009-0174-0
- Nagae, M., Nakane, H., Honda, S., Ozawa, H., & Hanada, H. (2015). Factors affecting medication adherence in children receiving outpatient pharmacotherapy and parental adherence. *Journal of Child and Adolescent Psychiatric Nursing*, 28(2), 109-117. doi:10.1111/jcap.12113
- National Collaborating Centre for Mental Health UK. (2011). *Common mental health disorders: identification and pathways to care*. Leicester, UK: British Psychological Society. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK92254/>
- Nielsen, R. E., Linström, E., Nielsen, J., & Levander, S. (2012). DAI-10 as good as DAI-30 in schizophrenia. *European Neuropsychopharmacology*, 22(10), 747-750. doi:10.1016/j.neuroeuro.2012.02.008
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York, NY: McGraw-Hill.
- O'Brien, M., Crickard, E., Lee, J., & Holmes, C. (2013). Attitudes and experience of youth and their parents with psychiatric medication and relationship to self-reported

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

adherence. *Community Mental Health Journal*, 49(5), 567-575. doi:10.1007/s10597-012-9526-x

O'Connor, A. M. (2002). *User manual: Decision Self Efficacy Scale*. Retrieved from Ottawa Hospital Research Institute:
https://decisionaid.ohri.ca/docs/develop/User_Manuals/UM_Decision_SelfEfficacy.pdf.

Okawa, S., Mwanza-Kabaghe, S., Mwiya, M., Kikuchi, K., Jimba, M., Kankasa, C., & Ishikawa, N. (2017). Adolescents' experiences and their suggestions for HIV serostatus disclosure in Zambia: a mixed-methods study. *Frontiers in Public Health*, 5(236), 1-8. doi:10.3389/fpubh.2017.00326

Osterberg, L., & Blaschke, T. (2005). Adherence to medication. *The New England Journal of Medicine*, 353(5), 487-497. doi:10.1056/NEJMra050100

Patel, M. X., & David, A. S. (2007). Medication adherence: predictive factors and enhancement strategies. *Psychiatry*, 6(9), 357-361. doi:10.1016/j.mppsy.2007.06.003

Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: a global public-health challenge. *Lancet*, 369(9569), 1302-1313. doi:10.1016/S01406736(07)60368-7

Peat, J., & Barton, B. (2008). *Medical statistics: A guide to data analysis and critical appraisal*. Hoboken, NJ: John Wiley & Sons.

Pesut, D., Raskovic, S., Tomic-Spiric, V., Bulajic, M., Bogic, M., Bursuc, B., & Peric-Popadic, A. (2014). Gender differences revealed by the Brief Illness Perception Questionnaire in allergic rhinitis. *Clinical Respiratory Journal*, 8(3), 364-368. doi:10.1111/crj.12082

Petrie, K. J., Broadbent, E., & Kydd, R. (2008). Illness perceptions in mental health: issues and potential applications. *Journal of Mental Health*, 17(6), 559-564. doi:10.1080/09638230802523047

Petrie, K. J., Jago, L. A., & Devcich, D. A. (2007). The role of illness perceptions in patients with medical conditions. *Current Opinion in Psychiatry*, 20(2), 163-167. doi:10.1097/YCO.0b013e328014a871

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- Petrie, K. J., & Weinman, J. (2012). Patients' perceptions of their illness: the dynamo of volition in health care. *Current Directions in Psychological Science, 21*(1), 60-65. doi:10.1177/0963721411429456
- Pogge, D. L., Singer, M. B., & Harvey, P. D. (2005). Rates and predictors of adherence with atypical antipsychotic medication: a follow-up study of adolescent inpatients. *Journal of Child and Adolescent Psychopharmacology, 15*(6), 901-912. doi:10.1089/cap.2005.15.901
- Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: a meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology & Psychiatry, 56*(3), 345-365. doi:10.1111/jcpp.12381
- Pomykacz, B., Mao, M., Weiss, R. D., & Teter, C. J. (2007). A review of brief medication-adherence instruments used in patients with schizophrenia and bipolar disorder. *Harvard Review of Psychiatry, 15*(5), 259-263. doi:10.1080/10673220701650383
- Rapoff, M. A. (2010). *Adherence to pediatric medical regimens* (2nd ed.). New York, NY: Springer. doi:10.1007/978-1-4419-0570-3
- Reddy, S. P., James, S., Sewpaul, R., Koopman, F., Funani, N. I., Sifunda, S., . . . Omerden, R. G. (2010). *Umthente Uhlaba Usamila: The 2nd South African Youth Risk Behaviours Survey 2008*. Cape Town: South African Medical Research Council. Retrieved from http://www.mrc.ac.za/healthpromotion/yrbs_2008_final_report.pdf
- Reist, C., Dogin, J., Van Halderen, J., Peregrin, C., & Surlles, R. (n.d.). *Comprehensive review of medical literature on treatment adherence: mental illnesses and physical disorders*. Retrieved from Missouri Department of Mental Health: <https://dmh.mo.gov/docs/mentalillness/compreview.pdf>
- Saad, M., de Medeiros, R., & Mosini, A. C. (2017). Are we ready for a true Biopsychosocial-Spiritual Model? The many meanings of "spiritual". *Medicines, 4*(79), 1-6. doi:10.3390/medicines4040079
- Sajatovic, M., & Ramirez, L. F. (2012). *Rating scales in mental health*. Baltimore, MD: Johns Hopkins University Press.

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- Sawyer, S. M., Afifi, R. A., Bearinger, L. H., Blakemore, S., Dick, B., Ezeh, A. C., & Patton, G. C. (2012). Adolescence: a foundation for future health. *The Lancet: Adolescent Health*, 379(9826), 1630-1640. doi:10.1016/S0140-6736(12)60072-5
- Seal, F., Cave, A. J., & Atkinson, L. L. (2017). Primary non-adherence of prescribed pharmaceutical treatments and interventions: an investigative review to improve quality in primary care. *Quality in Primary Care*, 25(5), 344-359. Retrieved from <http://primarycare.imedpub.com/primary-nonadherence-of-prescribed-pharmaceutical-treatments-and-interventions-an-investigative-review-to-improve-quality-in-primary.pdf>
- Seedat, S., Williams, D. R., Herman, A. A., Moomal, H., Williams, S. L., Jackson, P. B., . . . Stein, D. J. (2009). Mental health service use among South Africans for mood, anxiety and substance use disorders. *South African Medical Journal*, 99(5pt2), 346–352. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3192004/pdf/nihms-327591.pdf>
- Semahegn, A., Torpey, K., Manu, A., Assefa, N., Tesfaye, G., & Ankomah, A. (2018). Psychotropic medication non-adherence and associated factors among adult patients with major psychiatric disorders: a protocol for a systematic review. *Systematic Reviews*, 7(10), 1-5. doi:10.1186/s13643-018-0676-y
- Shaddel, F., Ghazirad, M., O’Leary, D., & Banerjee, S. (2015). How psychotropic drugs are used; an explanatory paradigm. *Journal of Medical Hypotheses and Ideas*, 9(2), S24–S30. doi:10.1016/j.jmhi.2016.02.001
- Sorsdahl, K., Stein, D. J., Grimsrud, A., Seedat, S., Flisher, A. J., Williams, D. R., & Myer, L. (2009). Traditional healers in the treatment of common mental disorders in South Africa. *Journal of Nervous and Mental Disease*, 197(6), 434–441. doi:10.1097/NMD.0b013e3181a61dbc
- SPSS Incorporated. (2017). *SPSS user’s guide: Version 18.0*. New York, NY: Author.
- Stangor, C. (2015). *Research methods for the behavioral sciences* (5th ed.). Stamford, CT: Wadsworth Cengage Learning.

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- Steca, P., Greco, A., Monzani, D., Politi, A., Gestra, R., Ferrari, G., . . . Parati, G. (2013). How does illness severity influence depression, health satisfaction and life satisfaction in patients with cardiovascular disease? The mediating role of illness perception and self-efficacy beliefs. *Psychology and Health, 28*(7), 765-783. doi:10.1080/08870446.2012.759223
- Stein, D. J., Seedat, S., Herman, A., Moomal, H., Heeringa, S. G., Kessler, R. C., & Williams, D. R. (2008). Lifetime prevalence of psychiatric disorders in South Africa. *The British Journal of Psychiatry, 192*(2), 112-117. doi:10.1192/bjp.bp.106.029280
- Steinberg, L. (2005). Cognitive and affective development in adolescence. *Trends in Cognitive Sciences, 9*(2), 69-74. doi:10.1016/j.tics.2004.12.005
- Steinhausen, H. (2015). Recent international trends in psychotropic medication prescriptions for children and adolescents. *European Child and Adolescent Psychiatry, 24*(6), 635-640. doi:10.1007/s00787-014-0631-y
- Streiner, D. L. (2003). Starting at the beginning: an introduction to coefficient alpha and internal consistency. *Journal of Personality Assessment, 80*(1), 99-103. doi:10.1207/S15327752JPA8001_18.
- Sulmasy, D. P. (2002). A Biopsychosocial-Spiritual Model for the care of patients at the end of life. *The Gerontologist, 42*(Special Issue III), 24-33. doi:10.1093/geront/42.suppl_3.24
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education, 48*(6), 1273–1296. doi:10.1007/s11165-016-9602-2
- Taddeo, D., Egedy, M., & Frappier, J. (2008). Adherence to treatment in adolescents. *Paediatrics and Child Health, 13*(1), 19-24. doi:10.1093/pch/13.1.19
- Taj, F., Tanwir, M., Aly, Z., Khowajah, A. A., Tariq, A., Syed, F. K., . . . Shahzada, K. (2008). Factors associated with non-adherence among psychiatric patients at a tertiary care hospital, Karachi, Pakistan: a questionnaire based cross-sectional study. *Journal of Pakistan Medical Association, 58*(8), 432-436. Retrieved from <http://jpma.org.pk/PdfDownload/1478.pdf>

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- Tan, J. O., & Fegert, J. M. (2004). Capacity and competence in child and adolescent psychiatry. *Health Care Analysis, 12*(4), 285-294. doi:10.1007/s10728-004-6636-9
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53-55. doi:10.5116/ijme.4dfb.8dfd
- Thunander Sundbom, L., & Bingefors, K. (2012). Women and men report different behaviours in, and reasons for medication non-adherence: a nationwide Swedish survey. *Pharmacy Practice, 10*(4), 207-221. doi:10.4321/s1886-36552012000400005
- Timlin, U., Riala, K., & Kyngäs, H. (2013). Adherence to treatment among adolescents in a psychiatric ward. *Journal of Clinical Nursing, 22*, 1332-1342. doi:10.1111/jocn.12024
- Townsend, L., Floersch, J., & Findling, R. L. (2009). Adolescent attitudes toward psychiatric medication: the utility of the Drug Attitude Inventory. *Journal of Child Psychology and Psychiatry, 50*(12), 1523-1531. doi:10.1111/j.1469-7610.2009.02113.x
- Townsend, L., Floersch, J., & Findling, R. L. (2010). The conceptual adequacy of the Drug Attitude Inventory for measuring youth attitudes toward psychotropic medications: a mixed methods evaluation. *Journal of Mixed Methods Research, 4*(1), 32-55. doi:10.1177/1558689809352469
- Vitiello, B. (2008). Recent developments and strategies in pediatric pharmacology research in the USA. *Child and Adolescent Psychiatry and Mental Health, 2*(36). doi:10.1186/1753-2000-2-36
- Weiden, P. J., Kozma, C., Grogg, A., & Locklear, J. (2004). Partial compliance and risk of rehospitalization among California Medicaid patients with schizophrenia. *Psychiatric Services, 55*(8), 886-891. doi:10.1176/appi.ps.55.8.886
- Weinman, J., Petrie, K. J., Moss-Morris, R., & Horne, R. (1996). The Illness Perception Questionnaire: a new method for assessing the cognitive representation of illness. *Psychology and Health, 11*(3), 431-445. doi:10.1080/08870449608400270
- WHO. (2003a). *Caring for children and adolescents with mental disorders: setting WHO directions*. Geneva: World Health Organization. Retrieved from http://www.who.int/mental_health/media/en/785.pdf

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

- WHO. (2003b). *Adherence to long-term therapies: evidence for action*. Geneva: World Health Organization. Retrieved from <http://apps.who.int/iris/bitstream/handle/10665/42682/9241545992.pdf;jsessionid=BE882455CFC9CF3547E3BEE05F7F226C?sequence=1>
- WHO. (2005). *Atlas: child and adolescent mental health resources: global concerns, implications for the future*. Department of Mental Health and Substance Abuse. Geneva: World Health Organization. Retrieved from http://apps.who.int/iris/bitstream/10665/44697/1/9799241564359_eng.pdf
- WHO. (2011). *Mental Health Atlas*. Department of Health and Substance Abuse. Geneva: World Health Organization. Retrieved from http://apps.who.int/iris/bitstream/10665/44697/1/9799241564359_eng.pdf
- WHO. (2012). *Adolescent mental health: mapping actions of nongovernmental organizations and other international development organizations*. Geneva: World Health Organization. Retrieved from http://apps.who.int/iris/bitstream/10665/44875/1/9789241503648_eng.pdf
- WHO. (2013). *Comprehensive mental health action plan 2013–2020*. Geneva: World Health Organization. Retrieved from http://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R8-en.pdf?ua=1
- WHO. (2019). *Mental disorders fact sheet*. Geneva: World Health Organization. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/mental-disorders>
- Williams, D. R., Herman, A., Stein, D. J., Heeringa, S. G., Jackson, P. B., Moomal, H., & Kessler, R. C. (2008). Twelve-month mental disorders in South Africa: prevalence, service use and demographic correlates in the population-based South African Stress and Health Study. *Psychological Medicine*, 38(2), 211–220.
doi:10.1017/S0033291707001420
- Wisdom, J. P., Clarke, G. N., & Green, C. A. (2006). What teens want: barriers to seeking care for depression. *Administration and Policy in Mental Health*, 33(2), 133-145.
doi:10.1007/s10488-006-0036-4

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN
ADOLESCENTS

Zito, J. M., Safer, D. J., De Jong-van den Berg, L. T. W., Janhsen, K., Fegert, J. M., Gardner, J. F., . . . Valluri, S. C. (2008). A three-country comparison of psychotropic medication prevalence in youth. *Child and Adolescent Psychiatry and Mental Health*, 2(26), n.i. doi:10.1186/1753-2000-2-26

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APPENDIX A: LETTER OF ETHICAL CLEARANCE



Faculty of the Humanities

23-Mar-2018

Dear **Miss Franken**

Ethics Clearance: **Self-efficacy in the relationship between illness perception and predicted psychotropic treatment compliance amongst adolescent in-patients**

Principal Investigator: **Miss Anneke Franken**

Department: **Psychology (Bloemfontein Campus)**

APPLICATION APPROVED

With reference to your application for ethical clearance with the Faculty of the Humanities. I am pleased to inform you on behalf of the Research Ethics Committee of the faculty that you have been granted ethical clearance for your research.

Your ethical clearance number, to be used in all correspondence is: **UFS-HSD2017/0282**

This ethical clearance number is valid for research conducted from 23-Mar-2018 to 23-Mar-2019.

Should you require more time to complete this research, please apply for an extension.

We request that any changes that may take place during the course of your research project be submitted to the ethics office to ensure we are kept up to date with your progress and any ethical implications that may arise.

Thank you for submitting this proposal for ethical clearance and we wish you every success with your research.

Yours Sincerely

Dr. Asta Rau
Chair: Research Ethics Committee
Faculty of the Humanities

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APPENDIX B: DRUG ATTITUDE INVENTORY (DAI-10)

Drug Attitude Inventory

DAI-10

Developers: Hogan, Awad, & Eastwood (1983)

Please read the following statements. Next to each statement you will find T and F. If you feel you agree with the given statement, circle T (True). If you feel you disagree with the statement, circle F (False). The questions ask about your opinion. **There is no right or wrong.**

Please answer all the questions.

T = True F = False

1	For me, the good things about medication outweigh the bad	T	F		
2	I feel strange, "doped up", on medication	T	F		
3	I take medications of my own free choice	T	F		
4	Medications make me feel more relaxed	T	F		
5	Medication makes me feel tired and sluggish	T	F		
6	I take medication only when I feel ill	T	F		
7	I feel more normal on medication	T	F		
8	It is unnatural for my mind and body to be controlled by medications	T	F		
9	My thoughts are clearer on medication	T	F		
10	Taking medication will prevent me from having a breakdown	T	F		

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APPENDIX C: BRIEF ILLNESS PERCEPTION QUESTIONNAIRE (BIPQ)

Brief Illness Perception Questionnaire

BIPQ

Developers: Broadbent, Petrie, Main, & Weinman (2006)

For the following questions, please circle the number that best indicates your views. For example, question 1 is “How much do you feel your illness affects your life”. If you mark 0 it means that it has no affect at all, if you mark 10 it means it severely affects your life, and if you feel it is somewhere in between, you can mark the a number that best indicates how much it affects you. Please read the questions carefully and answer as honest as possible. Again, **there is no right or wrong answer**, it is about how you feel and experience your illness. Please answer all the questions.

1. How much does your illness affect your life?										
0	1	2	3	4	5	6	7	8	9	10
no affect at all										severely affects my life
2. How long do you think your illness will continue?										
0	1	2	3	4	5	6	7	8	9	10
a very short time										forever
3. How much control do you feel you have over your illness?										
0	1	2	3	4	5	6	7	8	9	10
absolutely no control										extreme amount of control
4. How much do you think your treatment can help your illness?										
0	1	2	3	4	5	6	7	8	9	10
not at all										extremely helpful

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5. How much do you experience symptoms from your illness?										
0	1	2	3	4	5	6	7	8	9	10
no symptoms at all										many severe symptoms
6. How concerned are you about your illness?										
0	1	2	3	4	5	6	7	8	9	10
not at all concerned										extremely concerned
7. How well do you feel you understand your illness?										
0	1	2	3	4	5	6	7	8	9	10
don't understand at all										understand very clearly
8. How much does your illness affect you emotionally? (e.g. does it make you angry, scared, upset, or depressed?)										
0	1	2	3	4	5	6	7	8	9	10
not at all affected emotionally										extremely affected emotionally
9. Please list in rank-order the three most important factors that you believe caused your illness.										
The most important causes for me:										
1)										
2)										
3)										

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

APPENDIX D: DECISION SELF-EFFICACY SCALE (DSES)

Decision Self-Efficacy Scale

DSES

Developer: O'Connor (2002)

Below are listed some things involved in making an informed choice. Please show how confident you feel in doing these things by circling the number from 0 (not at all confident) to 4 (very confident). Your answer will show how much you believe in your abilities to make decisions. **There is no right or wrong answer.** Please answer all the questions.

1. I feel confident that I can get the facts about the medication choices available to me						
not at all confident	0	1	2	3	4	very confident
2. I feel confident that I can get the facts about the benefits of each choice						
not at all confident	0	1	2	3	4	very confident
3. I feel confident that I can get the facts about the risks and side effects of each choice						
not at all confident	0	1	2	3	4	very confident
4. I feel confident that I can understand the information enough to be able to make a choice						
not at all confident	0	1	2	3	4	very confident
5. I feel confident that I can ask questions without feeling dumb						
not at all confident	0	1	2	3	4	very confident

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

6. I feel confident that I can express my concerns about each choice						
not at all confident	0	1	2	3	4	very confident
7. I feel confident that I can ask for advice						
not at all confident	0	1	2	3	4	very confident
8. I feel confident that I can figure out the choice that best suits me						
not at all confident	0	1	2	3	4	very confident
9. I feel confident that I can handle unwanted pressure from others in making my choice						
not at all confident	0	1	2	3	4	very confident
10. I feel confident that I can let the hospital team know what's best for me						
not at all confident	0	1	2	3	4	very confident
11. I feel confident that I can delay my decision if I feel I need more time						
not at all confident	0	1	2	3	4	very confident

SELF-EFFICACY, ILLNESS PERCEPTION, AND TREATMENT COMPLIANCE IN ADOLESCENTS

APPENDIX E: TURNITIN PLAGIARISM REPORT

Self-efficacy in the relationship between illness perception and predicted psychotropic treatment compliance amongst adolescent inpatients

ORIGINALITY REPORT

14%	7%	6%	11%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Eun-Jung Shim, Jong Won Lee, Yul Ha Min. "Does depression decrease the moderating effect of self-efficacy in the relationship between illness perception and fear of progression in breast cancer?", Psycho-Oncology, 2017 Publication	2%
2	Submitted to University of the Free State Student Paper	2%
3	scholar.ufs.ac.za:8080 Internet Source	1%
4	Submitted to North West University Student Paper	1%
5	Submitted to University of Johannesburg Student Paper	<1%
6	Submitted to University of Sheffield Student Paper	<1%
7	Megan O'Brien, Elizabeth Crickard, Jaehoon	