

PSYCHOSOCIAL PATHWAYS TO
PSYCHOLOGICAL WELLBEING AND MENTAL HEALTH
OF *NYAOPE* USERS IN
REHABILITATION: A MEDIATION STUDY

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DECLARATION

I, Evah Malebo Mashaba, declare that the thesis entitled “**Psychosocial pathways to psychological wellbeing and mental health of *Nyaope* users in rehabilitation: A mediation study**”, hereby submitted for the degree of Doctor of Philosophy in Psychology at the North-West University, has not previously been submitted by me for a degree at this or any other institution. I further declare that this is my own work in design and execution and that all materials contained herein have been duly acknowledged by means of complete references.

Mashaba E. M.

Date

DEDICATION

I dedicate this study to all the respondents who participated. Without you, this study would not have been completed. I learned a lot from all of your experiences and the time we spent together will forever be cherished. Throughout this study, I carried you in my heart and thoughts. I pray to God that you find healing and meaning to your existence. Thank you for your participation!

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Ndzi khense ngopfu!

ABSTRACT

Background: The poor mental health and psychological wellbeing of drug addicts, especially users of *Nyaope*, have continued to raise serious concerns among psychologists, health experts and stakeholders in South Africa. *Nyaope* has contributed to the development of different psychopathologies among young adolescents, which invariably have negative implications for the general and mental health of many South Africans. This study focused on the link between psychosocial factors (personality, self-esteem, gender, living arrangement and geographical location) and the mental health of *Nyaope* users. It further examined the mediating effect of psychological wellbeing in the association of personality and self-esteem with mental health. The researcher also sought to determine if users of *Nyaope* differ significantly from non-users with regard to psychological wellbeing and mental health.

Method: This study adopted a cross-sectional, *ex post facto* research design. A purposive sampling technique was used to select 438 users of *Nyaope* (273 males; 165 females, mean age = 22.48 ± 2.76) in rehabilitation in five municipalities in the Gauteng Province (Ekurhuleni, Johannesburg, Tshwane, Sedibeng District and West Rand District). Non-users were 443 high school students (218 males; 225 females, mean age = 19.04 ± 1.82) randomly selected from the province. Structured instruments were used to collect data comprising demographic variables, Eysenck Personality Questionnaire-Revised, Rosenberg Self-esteem Scale and Ryff's Psychological Wellbeing Scale. Seven hypotheses were tested using multivariate analysis of variance (MANOVA) and structural equation modelling (SEM).

Results: Result showed a significant difference in PWB between users and non-users [Pillai's $\eta^2 = .09$, $F(6, 874) = 15.18$, $p < .001$, multivariate $\eta^2 = .09$]. Comparisons of means on PWB subscales indicate that users of *Nyaope* had lower scores on autonomy, personal growth and self-acceptance than non-users. Also, outcomes showed significant differences in the mental health of users and non-users [Pillai's $\eta^2 = .35$, $F(4, 876) = 117.68$, $p < .001$, multivariate $\eta^2 = .35$].

Comparisons of means on mental health subscales indicate that users of *Nyaope* had higher scores on social dysfunction and more severe depression than non-users. Results of the SEM analyses indicate that self-esteem ($\beta = -.45, p < .001$) significantly predicted mental health, while neuroticism ($\beta = .10, p = .08$), extraversion ($\beta = .02, p = .74$) and psychoticism ($\beta = -.03, p = .59$) did not. Specifically, an increase in self-esteem predicted positive mental health. The control variable, gender ($\beta = -.16, p = .003$), also significantly predicted mental health. Specifically, being of the female gender predicted negative mental health. The model fit was absolute with a 25% variance in mental health, $\chi^2 (19) = 18.96, p = .46$; CFI = 1.00; RMSEA = .00 [90% CI = (.00, .04)], SRMR = .02. In addition, self-esteem ($\beta = .24, p < .001$) and psychoticism ($\beta = -.16, p = .01$) significantly predicted psychological wellbeing while extraversion ($\beta = -.04, p = .49$) and neuroticism ($\beta = .05, p = .46$) did not. Specifically, an increase in self-esteem predicted positive mental health while an increase in psychoticism predicted negative PWB. The model achieved a satisfactory fitness with 10% variance in PWB, $\chi^2 (28) = 86.01, p < .001$; CFI = .90; RMSEA = .069 [90% CI = (.05, .086)], SRMR = .06. Outcomes of one step mediation analysis showed that PWB significantly and partially mediates the direct effect of self-esteem on mental health. However, the associations of personality factors with mental health were not mediated by PWB. Results of a two-step mediation analysis further showed that self-esteem and psychological wellbeing successively mediated only the association between psychoticism and mental health. This two-step mediation model was found to be moderated by *Nyaope* use (yes/no), gender, and living arrangement. The main effect of geographical location [Pillai's $\eta^2 = .08, F (12, 796) = 2.87, p < .001$, multivariate $\eta^2 = .04$] was significant on the combined PWB dimensions while the main effects of gender [Pillai's $\eta^2 = .01, F (6, 397) = .44, p = .85$, multivariate $\eta^2 = .01$] and living arrangement [Pillai's $\eta^2 = .06, F (30, 2005) = .86, p = .68$, multivariate $\eta^2 = .01$] were not. Post hoc analyses indicated that *Nyaope* users in urban and semi-urban settings had higher scores on autonomy than *Nyaope* users in rural settings. However, users in rural and semi-urban settings had higher scores on environmental mastery and purpose in life than users in urban settings. The main

effect of geographical location (Wilks' $\lambda = .87$, $F(8, 798) = 7.18$, $p < .001$, multivariate $\eta^2 = .07$) was significant on the combined MH dimensions while the main effects of gender (Wilks' $\lambda = .99$, $F(4, 399) = .55$, $p = .70$, multivariate $\eta^2 = .01$) and living arrangement (Wilks' $\lambda = .96$, $F(20, 1324) = .85$, $p = .65$, multivariate $\eta^2 = .01$) did not. Post hoc analyses revealed that *Nyaope* users in rural and semi-urban settings had lower somatic symptoms, anxiety/insomnia and severe depression scores than users in urban settings. In contrast, users in urban settings had lower social dysfunction scores compared to users in rural and semi-urban settings.

Conclusion: It is concluded that *Nyaope* users have lower psychological wellbeing and poorer mental health outcomes compared to non-users. Higher levels of self-esteem predicted increased PWB and lower mental health problems among *Nyaope* users. Further, PWB partially mediated the relationship between self-esteem and mental health. Also, self-esteem and psychological wellbeing partly and successively mediated the positive relationship between psychoticism and mental health. This successive mediation was found to be specific for *Nyaope* users, females *Nyaope* users, and *Nyaope* users living under foster care. Lastly, *Nyaope* users in urban settings appear to have lower PWB and increased mental health challenges compared to users in rural/semi-urban areas.

Recommendations

Mental health experts and professionals should assess for *Nyaope* use among youths presenting with mental health problems so as to understand the aetiology of the problem and the formulation of appropriate treatment plan. Given that this study showed that self-esteem and psychoticism were significant factors in PWB and mental health of *Nyaope* users, psychologists and other mental health experts should assess for these variables and incorporate psychotherapies aiming at improving self-esteem and lowering manifestation of psychoticism trait especially among female *Nyaope* users, those living under foster care and in urban centres.

Keywords: Personality; self-esteem; geographical location; mental health; psychological wellbeing, *Nyaope* use

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Mental health issues in today's societies continue to be a major concern to psychologists and other health experts around the world and in South Africa in particular. This is understandable as the health of an individual may be a pre-requisite for all-round national growth and development since individuals make up the entire population of any nation. However, mental health problems continue to be an underestimated issue in Africa, with substance abuse as a major predisposing factor (Gordon, 2011). Globally, substance abuse as a socio-economic challenge is reported as an expanding issue (United Nations Office on Drugs and Crime [UNODC], 2012) and a major focus of research (Fischer, Cruz, Bastos, and Tyndall, 2013; Fischer, Keates, Bühringer, Reimer, and Rehm, 2014). In 2010, a global estimate of 153 million to 300 million people aged 15 to 64 had consumed on or more illicit psychoactive drugs in the preceding year (UNODC, 2012). Furthermore, 35 million people in the world are exposed to drug use disorders, while only 1 in 7 people affected by these disorders have access to treatment (UNODC, 2019). In 2017, 271 million people (that is an average of 5.5 per cent of people aged 15–64) reported that they had abused substances in previous years. While this is similar to the 2016 estimate, a longer-term view reveals that the ratio of drug users is now 30 per cent higher than it was in 2009 (UNODC, 2019). Given the persistent rise on substance abuse over the years, there is a need to pay more attention to the problem in South Africa (SA).

In SA, substance abuse is a severe and disturbing problem. It brings with it a series of multifaceted challenges that have continued to weaken the social fabric of society. It has had and continues to have a serious negative effect on many South African citizens and has contributed to domestic violence, increases in the cost of health care, social problems such as crime, family dysfunction, gangsterism and many other social menaces (Tuwani, 2013). One estimate is that the

problems of substance abuse alone costs about R10 billion annually in South Africa (Matzopoulos, Truen, Bowman, & Corrigan, 2014). Pasche and Myers (2012) report that alcohol, cannabis, benzodiazepines, slimming tablets and popular illicit drugs such as heroin and the recently emerging *Nyaope* are mostly frequently abused. Dagga, heroin and methamphetamine are some of the illicit drugs that make up *Nyaope* (Grant, 2014).

Presently in SA, *Nyaope* is relatively a new drug among young people and adolescents in the townships. *Nyaope* became frequently used in the Tshwane Metropolitan Municipality and specifically in the townships of Soshanguve, Atteridgeville and Mamelodi between 2000 and 2006. Mbanjwa (2014) states that since 2012 and 2013, many young poor black people have become dependent on *Nyaope*. It is reported to be highly addictive, has a poor prognosis of recovery and could be detrimental at higher doses for heart and lungs functioning, frequent infections, skin diseases and reduced immunity (Ridge Times, 2015). Other psychophysiological effects of *Nyaope* use include hallucinations, weight loss, paranoia, cold flushes, severe body aches, glazed eyes, anxiety, shivering and insomnia. *Nyaope* also has a profound effect on the social functioning of the user. Many *Nyaope* users start neglecting their jobs or schoolwork, and they may eventually abandon school and employment altogether. As a result of the addictive nature of the drug, users go to great lengths to get money and purchase the drug, and they may resort to violence and criminal behaviour against friends and family members when it becomes difficult to get money (Ridge Times, 2015). In addition, families of users experience financial distress as they try to provide care, and emotional distress such as stigma, shame, helplessness and despair (Nkosi, 2017).

Given the devastating effect of this drug on physical and mental health, this study aimed to examine the psychosocial factors predicting the psychological wellbeing and mental health of *Nyaope* users in rehabilitation. It further aimed to evaluate the mediating role of psychological wellbeing in the relationship between some of these psychosocial factors and mental health.

Psychosocial factors in this context include personality, self-esteem, gender, living arrangements and geographical locations which are discussed below:

Personality factors

Luthans (2005) defines personality as a structured set of features controlled by an individual that distinctively influences his or her thoughts, drives and behaviour in a different context. Schacter, Gilbert and Wegner (2009) assert that the personality of an individual can be understood from the manner in which the individual thinks, behaves or feels. This implies that personality encompasses both the covert and overt behaviour of an individual in everyday life. It includes the way we think, solve problems and relate with others around us. Among the various theories of personality, the “Big Five” dimensions (openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism) and the Eysenck three dimensions of personality (Neuroticism, extraversion and psychoticism) have gained popularity (Cattell & Kline, 1977; Eysenck, Eysenck & Barrett, 1985). Extraversion describes the use of psychic energy directed at the external environment and is defined by either having a low trait (introverts) or a high trait (extroverts). Costa and Widiger (1994) note that agreeableness is primarily a trait that is concerned with maintaining interpersonal relationship with others. A low score on the scale means an individual would tend to be irritable, rude, uncooperative and doubtful, catering for their own needs while a high a score reflects cooperativeness, altruism, trustworthiness, tender-mindedness, modesty and compliance (Edwards 1998; Rammstedt & John, 2007). Further, a high score on the conscientiousness trait is characterized by order, self-discipline, dutifulness, competence, achievement striving and deliberation, while a low score denotes laziness, lack of impulse control and direction, disorganization and incompetence (De Raad, 2000; Rammstedt & John, 2007).

Neuroticism can be depicted as a high degree of enthusiastic change and flimsiness. This implies that individuals who score high on neuroticism show indications of enthusiastic shakiness, peevishness and tension. Such people for the most part feel stressed and emotionally down. Lower scorers can manage stress well and are less vulnerable to depression and anxiety. The openness to

experience trait is typified by receptiveness to encounter and effectively looking for and acknowledging new encounters (Costa & Widiger, 1994). Interest, fantasy, looking for sensation, imagination, bravery and being free are qualities of individuals who score high on the openness trait (Goldberg, Johnson, Eber, Hogan, Cloninger, and Gough, 2006; Edwards 1998). Low scorers on this trait are less imaginative, less creative and prefer routine. The psychoticism trait according to Eysenck et al. (1985) is characterized by cold, aggressive, egocentric, risk-taking, irresponsible and egocentric behaviours.

Literature has established that there are certain personality traits that are more inclined to certain mental health conditions than others, and even when equally open to health threats, act in different ways when confronted with certain experiences (Roberts, Smith, Jackson & Edmonds, 2009). For instance, McCrae and Costa (2008) posit that adolescents who score high on traits of neuroticism, tend to experience a higher level of impaired mental health or psychopathology. In addition, Quevedo and Abella (2011) suggest that high scorers on the trait of extraversion exhibit low levels of psychopathology. Eysenck and Eysenck (1991) further theorize that high scores on extraversion, neuroticism and psychoticism are more likely to be offenders, delinquent in behaviours and manifest psychopathologies. Given the role of personality factors in psychopathology and delinquent behaviours, it is important to examine traits that could influence the mental health of *Nyaope* users.

Self-esteem

Lightfoot, Cole and Cole (2009) define self-esteem as a personal evaluation of self-worth. Self-esteem is vital to healthy human development and considered one of the basic human motivations (Maslow, 1970). Self-esteem could be positive (high) or negative (low) and either level can be emotionally and socially harmful for the individual. For instance, adolescents with low self -esteem are often depressed and paranoid. They may be prone to social anxiety and low levels of social confidence (Portia, 2010). Adolescents who report high self-esteem appreciate themselves more and think of themselves as worthy partners, capable of solving problems or

challenges and are more likely to be joyful. Adolescents believe they have characteristics and skills they can impart to other young people and view themselves as worthy of being appreciated and accepted by others, including significant others and friends. An optimum level of self-esteem lies on a continuum, that is, between low and high self-esteem. Individuals operating within this range are thought to be more socially dominant within relationships. Studies have found that people with high self-esteem experience good general mental health (Sharma, Sharma & Yadava, 2004; Ogunyemi & Mabekoje, 2007; Chamanabad, Mirdoraghi, & Pakmehr, 2011).

Gender

Gender is a person's status with reference to those social and cultural roles explicit to males and females (Ogungbamila & Fajemirokun, 2016). Hannan (2001) considers gender as the social features and privileges linked to being male or female or the biological distinction (or features) of being either male or female. These features are socially built and are acquired through the course of socialization. Hannan (2001) is of the view that gender determines what is expectedly allowed and cherished in a woman or a man in any given situation. Studies on gender, mental health and psychological wellbeing have yielded mixed results and there is a distinct lack of consensus (Bramness & Tverdal 2013; Marks 2013; Stephens, Dulberg & Joubert, 1999). While some studies suggest gender differences in mental health and psychological wellbeing (e.g. Muller, Hicks, & Winocur, 2007; Onuoha & Bada, 2016), others show that gender differences do not exist as a variable (e.g. Okeke & Okeke, 2018; Kantariya, 2017; Oyewumi, Akangbe, & Adigun (2013); Akosile, Adegoke, Ezeife, Maruf, Ibikunle, Johnson, Ihudiebube-Splendor & Dada, 2013).

Living arrangement

Living arrangement is another socio-demographic factor that could have an influence on mental health and psychological wellbeing. In this study living arrangement refers to the type of significant others *Nyaope* users reside with. It could be both parents, only a father, only a mother, grandparent(s), members of the family or friends. Despite the benefits of living with others, there are also some costs to such relationship that may influence the mental health and psychological

wellbeing. For example, growing up in a single-parent family may have a negative effect on the quality of the rearing practices a child is exposed to when compared to an intact family. Past studies have shown that rearing children in a single parent family may adverse effect on mental health on both the parent and the child (e.g. Moilanen & Rantakallio, 1988; Loanna, Niki, & Alexandros-Stamatios, 2018; Rousou, Kouta, Middleton & Karanikola, 2019).

Geographical location

Geographical location is another important socio-demographic factor identified in this study that could influence the mental health and psychological wellbeing of users of *Nyaope*. In this study, geographical location refers to the physical setting where users do their daily activities. This setting could be rural, semi/peri-urban or urban in nature. The environment or setting in which an individual resides could go a long way in determining whether an individual has a healthy mental state and a psychological wellbeing or not. Users of *Nyaope* who live in a semi/peri-urban or urban area may differ in mental health and psychological wellbeing compared to those in rural settings because of differences in communal and socio-economic factors. Using *Nyaope* may be dependent on its increased available and common use in a geographical location compared to the others. Thus, it may be assumed that geographical location is related to mental health and psychological wellbeing of users of *Nyaope*.

1.1.1 Historical background of *Nyaope*

Nyaope can be regarded as a new and peculiar drug in the South African market that is currently trending among the youth in many townships. It first appeared in the Tshwane Metropolitan Municipality, in the townships of Atteridgeville, Mamelodi and Soshanguve, from 2000 and 2006. Over the last couple of years, many young poor black people have become dependent on the substance (Mbanjwa, 2014). The South African Depression and Anxiety Group ([SADAG], 2012) states that *Nyaope* has not yet turned into the medication of choice among a large number of youngsters across SA, defending the idea that the individuals who use *Nyaope* might be constrained by something. A few media productions report that *Nyaope* rose in mid-2000.

The drug comes in a powder, regularly smoked by mixing it with cannabis. It has a great impact on those with mental health issues (Modisane, 2010). The composition *Nyaope* is currently unknown, although many believe that heroin remains one of the main ingredients used in making *Nyaope*. A rumour of the inclusion of anti-retroviral (ARV) drugs has also been documented in the literature (Davis & Steslow, 2014).

Statistics show that a significant number of South Africans youths in peri-urban areas use *Nyaope*, with devastating effects on families and communities (Grelotti, Closson, Smit, Mabude, Mathews, Safren,... Mimiaga, 2014; UNODC, 2012). Mahlangu (2016) released statistics in the South African Community Epidemiology Network on Drug Use (SACENDU), revealing that users of *Nyaope* continue to be a major cause for concern, with an average of 4% of patients in the Gauteng province diagnosed and admitted for using *Nyaope*. Moodley, Matjila and Moosa (2012) conducted a study in Atteridgeville on the use of *Nyaope* and found a prevalence rate of about 2.9% in the area. Mothiba and Malema (2009) report that substance use by young people result in poor educational achievements due to physical and psychological dependence.

The South African Department of Justice and Constitutional Development (as of 28 May 2014) is still in the process of adjusting the Drug Trafficking Act 140 of 1992 to declare the use of *Nyaope* illegal. A great number of abusers utilize weed as a strategy to consume it. Thus, it often happens that the marijuana dealers also sell *Nyaope*. There are different ways of using *Nyaope* (ranging from dangerous to deadly – especially in the City of Tshwane, in Gauteng). The most common method is to roll *Nyaope* with dagga (the South African term for marijuana or cannabis) in a type of cigarette called a ‘joint’ to smoke, since it is difficult to smoke *Nyaope* in its powder form. The amount of dagga determines the strength of the roll. Since 2017, a new method of sharing the drug has been minor blood transfusions, known by local media houses as “bluetoothing” (named after the Bluetooth wireless technology).

The “bluetoothing” method involves the addict mixing *Nyaope* with a small amount of water and pulling it into a syringe, then injecting him- or herself. The user then draws blood from

his or her own veins and injects fellow addicts for them to become “high” as well. The process is done by injecting the arms, necks and even male reproductive parts. This practice of sharing blood and needles is said to be more popular in the city of Tshwane, Gauteng (Mabena, 2017) and may increase the spread of HIV/AIDS and/or hepatitis. This method was introduced to overcome the issue of lack of money, which makes it difficult for users to access *Nyaope*. By ‘bluetoothing’ blood among others, addicts get to feel “high” with a single dose and at a lower cost. The blood can be bought from the first user for R10 (for about 10 millilitres of blood). The effects of *Nyaope* have been documented to wear off between 6 and 24 hours, allowing for the onset of unpleasant side-effects. Some of the side-effects include sweating, chills, diarrhoea, anxiety, restlessness, depression, nausea, agonizing stomach cramps and backache. Thus, the outcome is likely to further add to the increased number of users in Gauteng.

According to van Wijk and Harrison (2013), as a lower middle income country (LMIC), SA is experiencing an escalation in the problem of illicit and licit drugs that appear to exceed the global situation (Plüddemann, Flisher, McKetin, Parry, & Lombard, 2010; Whiteford, Degenhardt, Rehm, Baxter, Ferrari, Erskine,... Vos, 2013). According to the United Nations Office on Drugs and Crime (UNODC), substance abuse and poverty contribute to mental illnesses, further leading to unproductive members of society who have no capacity to gain or sustain employment due to poor performance or poor symptom control.

1.2 Problem statement

Mental health, especially of drug addicts and/or users, has continued to generate research interest among psychologists and concerned stakeholders in the world and in SA. This is because optimal mental health has been associated with an individual’s overall wellbeing and effective functioning in society (WHO, 2012; Sankar, Wani & Indumathi, 2017; Mabunda & Idemudia 2012; Elegbeleye, 2015).

Dada, Erasmus, Burnhams, Parry, Bhana, Timol,... Weimann, (2015) assert that out of all nine provinces of SA, the Western Cape has the most common cases of substance abuse, such as

alcohol and heroin. In KwaZulu Natal, *dagga* (cannabis) has been reported to be the most abused substance, representing 40%. It could therefore be concluded that the abuse of substances, especially *Nyaope*, has contributed to the emergence of different chronic diseases, psychological problems, as well as cognitive problems, which invariably have continued to harm the mental health of users of the drug in SA. Despite many intervention programmes and rehabilitation centres created by the South African government to help improve the mental health of users of *Nyaope*, their psychological health continue to deteriorate on a daily basis. It is essential to note that mental health cannot be studied in isolation as there are several factors that determine individual mental health.

Studies (Bekele, Evan, Maunder, Gardner, Rueda and Globerman 2018; Bello, 2016; Wehner Schils and Borghans, 2016; Mangold, Veraza, Kinkler, & Kinney 2015) have revealed different factors that affect mental health. In a bid to proffer ways and strategies of improving mental health to substance abusers, studies have focused on variables such as coping styles, social support, psychological distress and life satisfaction as early predictors of the mental health of individuals (Elegbeleye, 2015; Garlovsky, Overton & Simpson 2016; Ran, Mendez, Leng, Bansil, Reyes, Cordero, Carreon, Faust, & Maminta, 2016). However, to the researcher's knowledge, no scholarly work has been done to investigate the roles of personality, self-esteem and demographic factors on mental health of *Nyaope* users. This is because the *Nyaope* drug and its use is a relatively new phenomenon in SA.

Many studies investigating the mental health of drug users focused on secondary school students, employees, patients and vulnerable children (Mabunda & Idemudia 2012; Elegbeleye, 2015; Bello 2016; Wehner Schils & Borghans, 2016), with little or no research on the mental health and psychological wellbeing of *Nyaope* users. This calls for studies that examine the mental and psychological wellbeing of *Nyaope* users. In addition, no existing study has examined the role of psychological wellbeing or the successive mediation effect of self-esteem and psychological wellbeing on the relationship between psychosocial factors and the mental health of drug abusers.

The current study assumes that the identified psychosocial factors would influence psychological wellbeing of *Nyaope* users, which will in turn predict whether users will experience negative or positive mental health. It is also assumed that the influence of psychosocial factors mental health through the sequential mediation of self-esteem and psychological wellbeing.

1.3 Aims and objectives of the study

The aim of this study is to examine the predictive abilities of personality factors, self-esteem, gender, living arrangement and geographical location on mental health of *Nyaope* users and the mediating role of psychological wellbeing in the relationship between some these predictors and mental health. It is further aimed to examine the successive mediation effect of self-esteem and psychological wellbeing on the relationships between psychosocial factors and mental health. The following are the specific objectives of the study:

- To evaluate the difference between users and non-users of *Nyaope* in relation to mental health;
- To examine the difference between users and non-users of *Nyaope* in relation to psychological wellbeing;
- To assess whether personality factors and self-esteem predict the mental health of *Nyaope* users;
- To determine whether personality factors and self-esteem predict the psychological wellbeing of *Nyaope* users;
- To test the mediating role of psychological wellbeing in the associations of personality factors and self-esteem with mental health of *Nyaope* users;
- To examine the successive mediating roles of self-esteem and psychological wellbeing in the association of personality factors and mental health of *Nyaope* users;

- To assess whether *Nyaope* use/non-use will moderate the successive mediated path between personality factors and mental health.
- To assess whether gender, living arrangement and geographical location will moderate the successive mediated path between personality factors and mental health among *Nyaope* users.
- To investigate the differences of gender, living arrangement and geographical location on the psychological wellbeing of *Nyaope* users and;
- To examine the differences of gender, living arrangement and geographical location on mental health of *Nyaope* users.

1.4 Scope of the study

This study was exclusive to users of *Nyaope* in rehabilitation in Gauteng. This province is being known (especially in the media) for its high concentration of users of *Nyaope* (Conway-Smith, 2013; Ghosh, 2013). The province was selected for the study because it has the highest number of *Nyaope* users in SA (Masombuka, 2013). However, non-users of a similar age group were included in the study for comparative analyses of users and nonusers of *Nyaope* in relation to psychological wellbeing and mental health. The independent variables were psychosocial factors (personality, self-esteem, gender, living arrangement and geographical location), while the dependent variable was mental health. Psychological wellbeing was specified as a mediating variable.

1.5 Significance of the study

1.5.1 Theoretical significance

Given that *Nyaope* is a new and hard substance in the market with attendant detrimental effect on users (Mokwena & Morojele, 2014), the current study contributes to the scarceness of literature examining the roles of psychosocial factors on psychological wellbeing and the mental

health of *Nyaope* users. The study also contributes to the theoretical conceptualization of the best practices for a rehabilitation programme for users. Understanding the psychological consequences of *Nyaope* use would assist in the development of future theories to conceptualize the complexities involved and ways of managing it.

1.5.2 Practical significance

The recommendations of this investigation are practical and open to all mental health stakeholders in the general public and in the prevention and management of mental health issues associated with the use of *Nyaope*. Study outcomes are likewise helpful to all users of *Nyaope* and prevent would-be users from using the drug. Study outcomes are also useful in formulating policies that may help prevent the availability and distribution of *Nyaope* among the youths and the general public.

1.5.3 Methodological significance

This study is a cross-sectional survey in which data were collected at a moment in time. Specifically, the study adopts the ex post facto design in which the goal was to do an after-the-fact clarification of the psychological consequences associated with the use of *Nyaope*. This design is best suited for this study since the researcher cannot actively manipulate the use of *Nyaope* and observe its psychological outcomes. In addition, advanced statistical methods such as multivariate analysis of variance (MANOVA) and structural equation modelling (SEM) were used to analyse data to ensure more accuracy in results. The use of MANOVA and SEM allows for multiple variables to be combined in a single analysis, which yields more statistical powers and minimization of Type 1 error.

CHAPTER TWO

THEORETICAL FORMULATIONS AND PERSPECTIVES

2.1 Theoretical framework

The previous chapter focused on mental challenges faced by users of *Nyaope* in S.A. This chapter presents relevant theories explaining study variables in the context of *Nyaope* use. Theories reviewed include the General strain theory of delinquency, Ryff's six-factor psychological wellbeing model, the General Health Questionnaire (GHQ) Model, Eysenck personality theory and the social learning theory.

2.2 Mental health theory

2.2.1 General strain theory of delinquency

The development of the general strain theory (GST) was based on the initial idea of Merton (1938) who proposed that criminal behavior emanated from strain encountered by the people. Such strain emanates from the difference that ensued between one's financial desires or aspirations and the available means to achieve them. The theory posited that when people are unable to achieve their economic target through legal means, they resort to illegal means to accomplish them. However, severe criticisms against the theory forced it to lose its relevance around 1960. Part of the argument against the theory was that it focused on people of low economic standing, even though all categories of people engaged in criminal behavior at the time. Also, the definition of crimes focused solely on financial crime and could not explain why some people engaged in crime when faced with strain while others did not. The loss of relevance of the theory propelled Robert Agnew, a criminologist, to revise the GST. Agnew (1984) revised the GST by having a recourse to the frustration-aggression hypothesis.

In the revised theory, Agnew asserts that adolescents do not essentially pursue the desired end but, rather, constantly seek ways to avoid painful experiences. For example, adolescents who are maltreated by their guardians or parents will seek ways of escape from the unfavorable

situation. Avoiding a negative stimulus such as this can be thwarted as does positively valued goals. Frustration may result if serious obstacles make it difficult to avoid negative situations. Adolescents only resort to delinquent acts when it is impossible to avoid a negative stimulus through socially desirable ways. Delinquency is one way of avoiding a harsh condition and accomplishing goals that are valued positively. Thus, there are two different ways through which negative stimuli can be avoided. It could involve individuals either committing anti-social behavior in order to escape from distressing conditions or eliminate the source of the condition.

Agnew also verified his reviewed strain theory by assessing the role of environmental aversion on delinquency. He hypothesized that factors such as autocratic parenting and displeasures with learning conditions in school may induce anger and add to environmental hardships. Other factors such as social control, occupational aspirations and amount of time spent on homework, parental attachment, school attachment and priority given to academic accomplishment were later included in the revised GST.

In applying this theory to *Nyaope* use and addiction, factors such as absence of a parental figure, poor parenting and strenuous conditions in both home and school environments could be attributed to why youths and adolescents indulge in *Nyaope* use. Although these factors may not directly lead to delinquent behaviors among *Nyaope* users, it is believed that they play significant role in the onset of *Nyaope* use. This theory can also be useful in redesigning both the school and home environments for avoidance of pain and gaining of reward so as to prevent general drug use among adolescents and youths.

2.2.2 The General Health Questionnaire (GHQ) and the Mental Health Construct

The GHQ was developed by Goldberg to assess the current mental health status of individuals in an objective, easy to administer manner through the use of more practical approach rather than a theoretical style (Goldberg, 1972; Goldberg & Williams, 1988). The questionnaire was designed to distinguish non-psychiatric patients from the general population on mental fluctuations and functioning rather than diagnosing a particular disorder (Carvalho, Patrick, Jorge,

& Andreoli, 2011). As a screening tool for identifying general psychiatric morbidity, the GHQ has undergone several validations in different cultures and populations worldwide to confirm its factorial structure and improve its reliability and validity (Werneke, Goldberg, Yalcin & Ustun, 2000).

The underlying theoretical orientation of the GHQ approach the concept of mental health as one general factor with four specific sub factors (Goldberg & Williams, 1988). These factors include anxiety/insomnia, social dysfunction, somatic symptoms, and severe depression. Somatic symptoms are feelings of pains in some parts of the body and general complaints about physical health. The anxiety insomnia dimension addresses issues related to feelings of apprehension, uneasiness, nervousness, insomnia and feeling constantly under strain. The social dysfunction subscale of the GHQ model considers lack of capacity in carrying out daily tasks and functioning effectively in social situation as part of mental health problems while the severe depression facet focuses on themes related to feelings of sadness, worthlessness, hopelessness, helplessness and suicidal ideation. Several studies have confirmed the four-dimensional approach of the GHQ in understanding individual mental and general health in various cultures (Carvalho, Patrick, Jorge, & Andreoli, 2011). The GHQ model is adopted in the present study to assess the mental health of *Nyaope* users in relation to specific psychosocial factors.

2.3 Psychological wellbeing theory

2.3.1 Ryff's six-factor Model

Ryff (1989) developed a model of psychological well-being. According to Ryff, psychological wellbeing can be measured from six dimensional perspectives namely autonomy, personal growth, environmental mastery, purpose in life, positive relations and self-acceptance

Autonomy: It is a person's capacity to direct one's own thoughts and actions using an internal locus of control (Ryff and Keyes, 1995). Autonomy is the desire for self-rule with little control from others. The individual has the ability of making personal decisions without relying or

seeking the endorsement of others. Persons high on autonomy are less governed by the beliefs of others and have increased need to rule their world.

Personal growth: This is the desire to grow and develop to full functioning. Personal growth is the quest for self-actualization and reaching one's full potential in life. Individuals with high scores on this dimension have cravings for new experiences, less routine in carrying out daily tasks, take risks, and challenge themselves in accomplishing major life goals. They have the feeling that they have developed as an individual and have improved in a significant manner over the years with greater opportunities for change, growth and learning.

Environmental mastery: This dimension emphasizes the ability of taking charge of one's environment at an optimal level. It pertains to choosing and modifying one's environment for satisfaction and comfort. Individuals high on environmental mastery are socially connected with the community and the people around them, capable in effectively handling responsibilities of daily lives, and derive much pleasure at home, work or school.

Purpose in life: This involves having the sense that one's life has meaning and purpose with a clear direction. The individual sees his/her daily life as important and always working towards making future plans a reality. To those with high feelings of life purpose, living is constantly defined by planning, self-direction and task accomplishments.

Positive relations with others: This involves the development of trust and enduring relationship with others. The dimension underscores the importance of forming caring, warm, intimate relationships with others. Persons high on positive relations are affectionate, loving, empathic and easily share their time and belongings with others. Family and friends describe them as loving, trusting and less frustrated with people. The ability to have a good human relationship is one of the important areas of mental health (APA, 2000).

Self-acceptance: Self-acceptance is considered a key element of psychological well-being. It is having a realistic perception of oneself either positively or negatively. Persons high in self-acceptance are self-acknowledging, satisfied with their lives, have high self-esteem, able to

favorably compete with others, love their personality, and feel less frustrated with the conditions of their lives. Despite personal flaws and disappointments, the individual is still able to accept himself for who he is.

This theory was adopted to understand the psychological wellbeing of Nyaope users and nonusers. As a result of their delinquent behaviors, Nyaope users may have lower psychological wellbeing compared to nonusers. Besides, the use of *Nyaope* may be a consequence of poor psychological wellbeing along the Ryff's dimension.

2.4 Personality theory

2.4.1 Eysenck Personality theory- the PEN model

Originally, Eysenck (1967) approached the conceptualization of personality from two dimensional perspectives which he referred to as the two super-traits: introversion/extroversion and stability/neuroticism. Later in the 1970s, Eysenck added a third dimension which he termed psychoticism. Understanding human personality traits from three dimensions - Psychoticism, Extraversion and Neuroticism (PEN) would come to dominate personality theories and assessment in later ages to come.

To Eysenck, these traits are biologically or anatomically driven and form the fundamental or the unique differences among individuals. For him, a greater level of extraversion is associated with lower arousal of the nervous system while a higher degree of introversion is related to higher arousal of the nervous system. Because extroverts have lower level of cortical arousal, they seek high stimulation in the environment to maintain equilibrium. This accounts for why extroverts are more sociable, talkative and warm. On the other hand, given that introverts have greater level of cortical arousal, they seek for low stimulation in the environment to achieve a balance. The over-arousal level of the nervous system predisposes introverts to be more withdrawn, restrictive, reserved, and quiet in order to achieve an optimal balance between internal and external environments. The link between extraversion and biological characteristics has been demonstrated empirically by dropping some quantities of lemon juice on the tongue (Eysenck & Eysenck, 1967).

In this experiment, introverts were found to have higher level of salivation compared to extroverts, thus confirming increased arousal level of introverts. Other studies carried out by utilizing electroencephalography (EEG) also associated extraversion to lower brain activities (Gale, 1981).

The autonomic nervous system is considered the biological basis of neuroticism. Those high in neuroticism have overactive autonomic nervous system, and thus respond strongly to depressive, anxious and distressing prone events. Although the nexus between neuroticism and the autonomic nervous system seems to be intuitively correct, empirical studies have generally failed to confirm such relationship (Miles & Hempel, 2003). Characteristics of neurotic personality include excessive worry, lower inability in managing life stressors, focusing more on the negative, and maladaptive perfectionism.

Unlike extraversion and neuroticism, the latter addition to the Eysenckian theory – psychoticism – has the weakest model associating it with any biological underpinnings. However, Eysenck attempted to link hormonal imbalance to higher composition of psychoticism traits. This trait is characterized by impulsivity and sensation seeking (e.g. Zuckerman, 1994). Individuals high on psychoticism tend to be delinquent, reckless and careless in behavior. Such people also contradict conventional social norms of the society and usually motivated by an immediate gratification of needs without considering its consequences.

The Eysenck Personality Questionnaire (EPQ: Eysenck and Eysenck, 1975) was developed to assess the PEN. The EPQ has both adult and adolescent versions, and had undergone several revisions over the years to improve its psychometric properties. Eysenck & Gudjonsson (1989) hypothesized that individuals high on the PEN are more likely to exhibit delinquent behaviors. Although results (e.g. van Dam, Bruyn & Janssens, 2007; Morizot & Le Blanc, 2003) have been mixed in the confirming this hypothesis, one study (Daderman, 1999) in particular found juvenile offenders to be higher on the PEN compared to a control group with non-delinquent participants. Drawing from this finding, the present study adopts the PEN model in understanding and assessing

the personality make-up of *Nyaope* users since the use of the *Nyaope* is a sign of delinquency among this group. Thus, users of *Nyaope* are more likely to be individuals with potential high PEN scores.

2.5 Gender theory

2.5.1 Gender stratification theory

The theory of gender stratification provides a framework for understanding gender differences in mental health and psychological well-being, and has been considered to robustly explain why women tend to exhibit higher levels of mental health problems compared to men (Hill & Needham, 2013). This theory proposes that gender variations in status, resources, opportunities and power partly explain the gender differences found in mental health (Bird & Rieker, 2008; Read & Gorman, 2010). Misery is a direct product of psychological distress, and disparity in the level of misery is inevitable in everyday life as created by unequal opportunities, demands, resources and limitations (Mirowsky & Ross, 2003). In most societies, women seem to be more socially disadvantaged than men, and this may make women report higher levels of depression and anxiety compared to men (Hill & Needham, 2013).

Drawing from the gender stratification theory, female *Nyaope* users are expected to manifest greater levels of social dysfunction, severe depression, somatic symptoms and anxiety/insomnia than men. In addition, females are anticipated to report lower psychological wellbeing compared to males. This is because social stratification in terms of income, employment, autonomy, sexual abuse, sense of control, involvement in domestic care, self-esteem and *Nyaope* use itself make females more vulnerable to higher mental distress and lower wellbeing than males.

2.5.2 The gendered-response hypothesis

Another perspective to understanding the gender difference found in mental health and psychological wellbeing is offered by the gendered-response hypothesis. This hypothesis posits that females and males diverge in the way they emotionally respond to stressful conditions

(Dohrenwend & Dohrenwend, 1976). While men tend to be angrier and more hostile, women feel sad, anxious and depressed. According to this hypothesis, anger, hostility, sadness and depression surface when there is frustration of aspirations and desires. Depression is considered to emerge when someone turns anger inward, thus inflicting punishment on the self for inadequacy and disappointment. Given that males are socialized for combative and competitive roles which predispose and encourage them to vent out hostility and anger, they are less likely to report depression compared to females. On the other hand, since females are socialized to perform supportive and nurturing roles, they are less likely to express anger, but turn it inward to make them susceptible to depression. As a result of the differences in emotional response to frustration, females are more likely to report higher levels of psychological distress (depression and anxiety) compared to men.

Similar to the gender stratification theory, the gendered-response hypothesis suggests higher mental health problems for women than men. Based on the view of the gendered-response hypothesis, the present study also proposes that female *Nyaope* users are likely to exhibit lower psychological wellbeing and higher mental difficulties than male users.

2.6 Social learning theory

The social learning theory (Bandura, 1973) postulates that observational learning is a more powerful learning process in understanding human behavior. People acquire experiences and learn how to behave through imitating and observing others in the social environment. Bandura empirically demonstrated this theory in various classic experiments in which young children imitated and displayed aggressive behaviors after they were made to observe aggressive models. For example in one experiment, children were found to hit a “Bobo” doll after watching an aggressive actor doing the same. Bandura (1965) also developed a model of vicarious learning of aggression in which he concluded that children were most likely to imitate an aggressive model who was rewarded for being aggressive. According to him, imitation and modelling are key to understanding human learning. He further argued that humans don’t just imitate specific actions

in the social environment but also apply their cognition in processing observed behaviors and then generalize their behaviors based on inferences made from such observations. The interpretations attributed to a particular social event and the manner of responding (in different ways) to such event are central to social learning (Bandura, 1986).

The social learning theory provides an understanding of the basis of antisocial acts. Through the socialization process, children learn to become aggressive because they obtained direct reward for doing so or saw others being rewarded for their aggressive behaviors. The reinforcement principle governs the notion of learning by direct experience: maintaining a behavior in a child is dependent on rewards and punishment. The core of the social learning theory is that a behaviour can only be imitated if it has been rewarded in one way or another (Hogg & Vaughan, 2008). Social models for the child may include peers, parents, siblings, significant other and media images. However, these models can have varied effects on the child. The social learning theory is also applicable in understanding the mechanism of adult learning later in life (Hogg & Vaughan, 2008).

Drawing from the social learning, young individuals may engage in the use of *Nyaope* after observing a peer using it with accompanied physical or psychological reward. In addition, the living arrangement and the geographical location of users may continue to serve as reinforcing factors to accessibility repeated use of the drug. For example, if an elderly family member uses *Nyaope*, there is a higher risk for adolescents and young adults in such family to indulge in the use of the drug if he or she finds it rewarding. This may also apply to a geographical location where the distribution and sales of the *Nyaope* drug are relatively common.

CHAPTER THREE

REVIEW OF RELATED EMPIRICAL STUDIES AND HYPOTHESES

Introduction

This section focuses on the review of previous studies examining the physical and mental health problems associated with *Nyaope* and drug use in general. In addition, this chapter presents a review of predictors of mental health and psychological wellbeing among drug users, and the general population. The present study's conceptual framework and hypotheses were also put forward after the review.

3.1 Review of related studies

3.1.1 *Nyaope* and mental health challenges in S.A

Nyaope use is predominant among youthful and jobless black individuals living in poor socioeconomic neighbourhood in South Africa (Venter, 2014). This substance is exceptionally addictive and its withdrawal symptoms are pulverizing and dangerous with accompanying excruciating stomach problems (Tuwani, 2013; Ephraim, 2014). The utilization of *Nyaope* assumes control over the lives of users as evident in their withdrawal from school and occupation, and persistence in seeking for procurement of the drug (Ghosh, 2013). Users forsake their typical life routine and assemble around open spots where they spend the whole day smoking or savouring the euphoria provided by the drug (Conway-Smith, 2013). In a report gathered in Gauteng, Mpumalanga and North West territories of S.A, unemployment and negative social situations were identified as possible contributory factors to the onset of *Nyaope* use (Mokwena and Huma, 2014; Mokwena and Morojele, 2014).

Nyaope remains a drug containing mixtures of various substances. However, it is a fact that the basic substance in *Nyaope* is heroin from the information gathered in the townships of Gauteng and Mpumalanga territories. Other assorted mixtures include caffeine, sedatives, methyl-dioxymethylamphetamine (MDMA), anti-infection agents, focal sensory system (CNS)

depressants such as phenobarbitone and benzodiazepines, and stimulants which include pipradol and dextromethorphan (National Institute on Drug Abuses, 2017). The effects of some of these drugs are as follows (Ritter, Lewis, Mant, & Ferro, 2008):

Heroin: Diamorphine (heroin) like morphine relieves pain perception and attendant emotional responses, and produces intense euphoria. However, it has adverse effect on respiratory rate, can induce vomiting, constipation and pupillary constriction. At chronic use, it leads to circulatory collapse, cardiopulmonary arrest, convulsions and immediate apnoea. It may eventually lead to death as a result of hypoxia after depression of the direct respiratory centre with mechanical asphyxia. Heroin causes high level of tolerance and withdrawal symptoms.

Caffeine: This substance triggers an excitatory effect on the central nervous system by manifesting restlessness, anxiety, tremor, sleep interference and irritability. Dependence on caffeine is not clinically important and there is low grade of tolerance.

MDMA: MDMA or “ecstasy” is a hallucinogenic central stimulant and serve as agonists to serotonin receptor. In high doses, it can result into hepatic damage, rhabdomyolysis, hyperpyrexia, seizures, trismus, hyponatraemia, coma and death. Serious long term effects include impaired memory and impulsivity.

Benzodiazepines: These are anticonvulsant muscle relaxants and anxiolytic drugs that produce sleepiness, and are used for treatment of anxiety and insomnia. Adverse effects include confusion, drowsiness, paradoxical aggression and disinhibition. Prolonged use with higher doses can result into dependence, tolerance and withdrawal symptoms.

Dextromethorphan (DXM): It is an over-the-counter drug used for pharmacological treatment of cough and commonly found in cold medications. At higher doses, it can produce auditory and visual hallucinations, and euphoria. Some adolescents use the drug to generate these aforementioned effects. The adverse effect of DXM is rare but it can induce dizziness, drowsiness and nausea (National Center for Biotechnology Information, n.d.).

Anti-Retroviral Virus (ARV) drugs: ARV facilitates the achievement of a long-term reduction of HIV-1 disease through suppression viral loads in the plasma. The drug is shown to have adverse effects. Among these are nausea, bloating, diarrhea, hepatic steatosis, and hepatotoxicity, bleeding disorders, hyperlactatemia, hyperglycemia and osteoporosis (Montessori, Press, Harris, Akagi, & Montaner, J. S. (2004)

Nyaope users experience significant psychological distress after consuming the drug and fellow users usually provide help when encountering the withdrawal side effects of taking the drug (Stuurman, 2014; Morebudi and Mukhari, 2014). Frequent consumption of *Nyaope* has been reported in literature to have both short and long term effects in the cerebrum functioning, and thus resulting into emotional distress such sadness, uneasiness, animosity, visualizations etc. Therefore, a number of *Nyaope* dependents are likely to report mental health issues as presenting problems during rehabilitation.

3.1.2 USE AND ABUSE OF DRUGS

Types of drugs commonly used

Drugs are compound substances that influence the ordinary working of the body and the mind (UNODC, 2007). Not all drugs with psychoactive agents are unlawful. For example, caffeine, nicotine and liquor are legitimate medications. Unlawful medications are those that are considered to be severely damaging to both physical and mental health of the user.

Cannabis: Cannabis is a form of greenish tobacco made up of dried blossoming tops and leaves of the cannabis plant. The drug is given different names in South Africa such as Ganja, Grass, Weed and Pot. Most users of *Nyaope* initially smoked cannabis before shifting to *Nyaope*.

Cocaine: Cocaine is portrayed by the UNODC (2007) as a fine white or greyish powder that act as stimulant in the brain. The street language for cocaine include “Break”, “Bazooka”, “Blanche”, “Cake”, “Coke” and “Woman.”

Ecstasy: Ecstasy is a psychoactive stimulant made in illegal research facilities (UNODC, 2007). The substance provides intense euphoria and excitement after use. While this drug is

generally dispersed as a tablet, it can likewise be found in powder or container structure. This powder is likewise stored and included as one of the substances used in synthesizing *Nyaope*.

Heroin: Heroin is an addictive drug derived from morphine that acts as a pain suppressor. It is a psychoactive substance obtained from the opium poppy plant. Unadulterated heroin is a white powder (UNODC, 2007). Street names for heroin in the S.A. are “Smack”, “Horse,” “Garbage,” “Harry” and “White Woman”. These names are further used to camouflage and conceal illicit use of the drug.

Hallucinogens: Hallucinogens, or ‘psychedelics’, are forms of drugs that modifies one’s state of functioning and produce different kinds of hallucinations. The main types of hallucinogens are d-lysergic acid diethylamide (LSD), phencyclidine (PCP), hallucinogenic amphetamines, mescaline and psilocybin mushrooms (UNODC, 2007).

Methamphetamine

Methamphetamine also referred to as “crack,” “Meth,” “Ice”, “Crystal meth,” “Tik,” “Shabu,” and “Yaba” is part of the group of drugs called amphetamine-type stimulants (ATS). It is a synthetic drug that is usually manufactured in illegal laboratories. Methamphetamine comes as a powder, tablet or crystals and look like shards of glass (UN, 2007).

Nyaope: *Nyaope* is a substance that is for the most part prevalent in use and wide spread in townships. It comprises a blend of either heroin or dagga and other substances such as antiretroviral tablets. Asides the addition of Anti-Retroviral Virus (ARV) drugs in the production of *Nyaope*, milk powder, rodent poison, bicarbonate of pop and pool cleaner are also part of the secondary substances found in *Nyaope* (Masombuka, 2013).

3.1.3 Common effects of Nyaope use

Use of drugs among teens poses several risks like violence and HIV/AIDS. Responding to these risks before they become issues may be a major challenge. Substance abuse has serious consequences in homes, faculties and communities. For instance, aggressive behaviour often displayed as a result of drug use could breed behavioural issues like rejection by

peers, penalty by academics and poor academic performance in school (UNODC, 2003). With respect to Nyaope, users usually experience feelings of elation (fervour) and unwinding; however these impacts wears off before long and another hit (portion of medications) is required to feel the same effect (Division of Equity and Sacred Improvement Advertorial, n.d.). As indicated by Maughan and Eliseev (2006), one fix is regularly enough to trap a youngster into dependence with withdrawal manifestations including skin wounds, unbearable muscle and bone agony, heaving and a sleeping disorder. Some reactions include an excruciating stomach, muscle spasms and the sense of being incapacitated.

Radebe (2015) examined the use of illicit drugs in selected high schools in Mamelodi Township, east of Pretoria, S.A. The purpose of the study was to highlight the rampant illegal use and abuse of drugs by learners and also to empower education authorities to holistically address the scourge since drug abuse by learners has debilitating effects. Among the numerous impacts of medications such as Nyaope, “Tik” or “Mandrax” is the actuation of “crazy” symptoms such as seeing or hearing things that are not there, and display of brutal behaviours in the neighbourhood. As a drug readily available to learners, *Nyaope* becomes a scourge among youths in S.A. In communities such as Mamelodi, Nyaope is becoming a sought after drug, leaving those involved in the fight against violent crime and criminality with an uphill task.

3.1.4 Profile of users of *Nyaope*

Profiling of users of *Nyaope* in the current study was done in accordance with current literature and demographic information of addicts as provided by Dintwe (2017). Information on age, gender, educational background and lifestyle of users are presented below:

Age: South African youths of ages 14-35 have been described as common abusers of Nyaope (Mokwena, 2015). Dintwe (2017) conducted a study on addicts of *Nyaope* aged 15 and 29. The findings revealed that majority of participants started using *Nyaope* when they were between 14 and 15 years of age. The age of onset of *Nyaope* usage cuts across all racial, ethnic and language groups, as well as different socio-economic spheres (Dintwe, 2017). Grelotti,

Closson, Smit, Mabude, Mathews, Safren,...Mimiaga (2014) also confirmed that young people start taking drugs at the age of 14.

Gender: The concept of ‘gender’ is used in its most simplistic form in this study to differentiate between being a male or a female. Although, it is acknowledged that there could be gays, lesbians and/or trans-genders. There is a general view that drug abuse is predominantly the problem of males, however a significant number of females have been found to use *Nyaope* (Dintwe, 2017). Nevertheless, the fact still remains that drug addiction is more prevalent among men compared to women (e.g. McCann, Harker Burnhams, Albertyn & Bhoola, 2011; Myers & Fakier, 2007; Shisana, Rehle, Simbayi, Parker, Zuma, Bhana, ... Pillay, 2005).

Educational background: Given that most users of *Nyaope* are between the ages of 15 and 19, they are mostly students (Dintwe, 2017). In addition, they are likely to be students in grades 10-12 and most would have dropped out of school before matric (Dintwe, 2017). Various factors may be attributed to why *Nyaope* users drop out of school. These perhaps include inability to concentrate in school resulting in poor performance, absenteeism from school to procure and satiate their cravings for the drug, quit schooling entirely to focus on *Nyaope* use, and serving as sales agents for drug barons (Dintwe, 2017). These factors have also been confirmed in other studies (e.g. Mokwena, 2015; Ghosh, 2013; Conway-Smith, 2013).

Lifestyle of *Nyaope* users: Understanding the lifestyle style of *Nyaope* consists in examining the frequency of usage of the drug, physical appearance and eating habits of users (Dintwe, 2017). Based on frequency of usage, *Nyaope* can be used habitually and non-habitually. Non-habitual users only smoke *Nyaope* occasionally such as once a day or even four times a week. Non-habitual users can still live and function effectively at school, home and work places despite consuming *Nyaope* (Dintwe, 2017). They also do not pose problems to the police as they do not necessarily commit crimes. In contrast, habitual users are the real *Nyaope* addicts who may smoke *Nyaope* as frequently up to 15 times a day (Dintwe, 2017). Users may find it very difficult to sleep

without smoking *Nyaope* and that majority of them usually sleep in their smoking dens. The frequency of usage of *Nyaope* is consistent with the literature given that an addict will have an average frequency of ten fixes (smokes) of *Nyaope* per day (Grelotti, Closson, Smit, Mabude, Mathews, Safren,...Mimiaga, 2014; Mokwena 2015; Tuwani 2014).

As reported by Dintwe (2017), the vast majority of *Nyaope* users may not take their baths for a number of days. Their clothes may grease and showed obvious stains and dirt. Identifying *Nyaope* users may not be difficult for law enforcement agents given that addicts usually appear disengaged, in trance, physically tired and apathetic with slurred speech in some instances. Further, *Nyaope* addicts seldom eat and if they do, their meal is not nutritional or capable of sustenance. *Nyaope* addicts may indicate that they spend about 95 percent of their income and allowance on *Nyaope* purchase and the remaining on food (Dintwe, 2017). Many at times they go to sleep without eating dinner, which further suggests that *Nyaope* addicts do not eat healthily and do not have fixed eating patterns. This nutritional deficiency can result into loss of iron, vitamin deficiencies, anemia (National Institute of Health & National Heart Lung and Blood Institute, 2011) heart disease, stroke, type 2 diabetes and cancer (Center for Diseases Control and Prevention, 2020). Dintwe (2017) argues that *Nyaope* affects the appetite of addicts, thus the reason why they sometimes skip meals or eat only once a day.

Research conducted in 2000 by the Southern African Region of the UN Workplace on Medicine and Crime on grades 7, 10 and 11 students from 35 secondary faculties in the capital of S.A discovered that over one quarter of respondents had witnessed illegal drugs sold-out in class, whereas 42% reported they had seen illegal drugs sold-out in their neighbourhood.

It should be acknowledged that many of the factors that contribute to substance use and abuse by the youth lie beyond the school premises. Hanson (2009) observed that accessibility to drugs and alcohol within the society, as well as the culture of using and abusing drugs with impunity generally contribute to the problem. There are psychosocial factors that increase an individual's propensity to substance use. According to Campos (2009), these factors are referred

to as high-risk situations - situations where there is an increased desire to use drugs. According to Radebe (2015), some of factors that contribute to substance abuse are inherent in users. The age group mostly exposed to *Nyaope* ranges from 16 years and above, and more males are affected than females. In addition, most users are children who have dropped out from school with majority get involved in drugs during their later years of schooling. Peer pressure also plays a significant role in adolescents getting exposed to the use of *Nyaope*. According to Morojele, Parry, Brook and Kekwaletswe (2012), the use of psychoactive substances by children and adolescents globally is of major concern, considering the fact that young people have increased access to legal and illegal substances resulting in unintentional and intentional injuries, among others.

3.1.5 FACTORS RESPONSIBLE FOR THE USE OF NYAOPE

Dintwe (2017) proposes two factors that play a major role in the use of *Nyaope* among young people: personal and environmental factors. Personal factors are those that users of *Nyaope* can control such as peer pressure and experimentation while environmental factors are those that are external, and thus users do not have control over. Environmental factors such as accessibility and availability of *Nyaope*, the price and socio-economic factors are discussed below.

Accessibility and availability of *Nyaope*: Research has shown that *Nyaope* dealers could be easily located with little or no effort needed in order to buy the drug from them. Some addicts in Berea and Joubert Park were able to point out and indicate retailers of *Nyaope* in these areas (Dintwe, 2017). This clearly confirms the fact that *Nyaope* is easily accessible in certain areas. Thus, the ease with which people can locate sellers and buy the drug is a factor that contributes to the use of *Nyaope* and addiction thereof. Compared to other drugs like cocaine and heroin, *Nyaope* remains a drug that can be easily accessed by youths. Despite the easy accessibility of *Nyaope* in the streets, it is always difficult for the Police to apprehend pushers because they are always forewarned by other corrupt Police officials (Dintwe, 2017).

Cost of *Nyaope*: The cost of *Nyaope* sets it apart from other illegal drugs. The relatively lower cost of the drug accounts for the high level of indulgence by users and addicts. Users

concentrate more on the use of *Nyaope* because they are not able to afford other drugs like the “cheese boys” who are mostly referred to as children from better socio-economic backgrounds. Although, the cost of *Nyaope* differ according to geographical location, users and addicts could purchase a straw at a very reasonable and cheap price as low as R20.00 in Berea, R25.00 in Joubert Park and R40.00 in the township. Mokwena (2015) also argued that *Nyaope* can be very cheap with cost as low as US\$2 to US\$3 (approximately R26 and R40 at current exchange rates).

Living arrangements: According to Mathibela (2017), family circumstances are said to play an important role in the abuse of chemical substances due to inconsistent family and living environments. For example, single parenting, blended families and inconsistent caretaking may predispose teenagers to unlimited freedom and less control in using the drug (Lander, Howsare & Byre, 2013). In Mathibela’s (2017) study, many of the users were found to come from divorced and estranged families in which one of the parents was reported be uninvolved in the nurturing process. Among those that come from homes where the parents were married, reports showed their partners were partially involved in the upbringing of the teenagers. Other users were found to reside with step father or father or foster parents altogether. These findings show that an unstable family environment may be associated with substance use and abuse among teenagers.

Thus, it is likely that challenges of family detachments could expose the teenager to experimenting and being addicted to chemical substances (Hamilton, Danielson, Mann & Paglia-Boak, 2012). According to Segal, Gerdes and Steiner (2009), divorce and marital problems have a negative impact on children, especially teenagers who struggle to deal with the loss of the intact family life. This might lead to maladaptive behaviours, including abuse of substances. Paxton, Valois and Drane (2006) and Dreyer (2012) highlight the fact that the problem of dysfunctional families could lead to abuse of chemical substances by teenagers since they may lack love and care from parents.

With this background, it can therefore be concluded that challenges in relationships bring about disruptions within families, especially for teenagers. This is because teenagers would need to adapt to new family circumstances which can bring about instability and sense of insecurity. The challenge of single parenting threatens the emotional growth of children, especially in their teenage years. However, there are some teenagers raised by both parents who (for various other reasons) still end up being addicted to chemical substances (Venter and Rambau, 2011). Nevertheless, single parents face a number of challenges and this applies mostly to women with profound impact on the children (Kail & Cavanaugh, 2007; Ceballo & Borquez, 2008).

Socio-economic factors

According to Dintwe (2017), there is a relationship between usage of *Nyaope* and the socio-economic status of addicts and their families. Some of the addicts indicated that 'life is not fair' as their parents were not working and not able to provide their daily needs. Some users reported that they had to leave school so that they could become *Nyaope* pushers and get some finances, but unfortunately ended up using the drug. They further indicated that their family could not buy them nice clothes and shoes, thus felt alienated from the other school children. Moreover, Dintwe (2017) conceded that some addicts started by indulging in drug use because they wanted to cope with the harsh realities of life, as well as coping with stress and societal pressures.

Academics and scientists have different views on whether poor socio-economic factors could influence addiction or not. This is because there are also individuals from affluent families that are addicted to *Nyaope*. However, Sutherland and Burns (2012) contend that people with low financial status are progressively vulnerable to substance misuse. This is reverberated by Njuho and Davids (2010) in which they stated that "unlawful medication use which results in clinical reliance is firmly identified with youth financial status." *Nyaope* is exceptional to S.A and is for the most part pervasive among youthful and jobless black individuals who live in poor socioeconomic zones (Mokwena, 2015). The notion that poor socioeconomic condition could

influence drug use was also buttressed by Ramlagan, Peltzer, Johnson, & Phaswana-Mafuya (2010). When drug users and abusers were asked about what might help them to stop or lessen their dependence on substances, they referenced an improvement of their financial conditions (Ramlagan et al., 2010).

Peer pressure: It is evident that some addicts of *Nyaope* started using the substance and consequently became addicted as a result of imitating other peers. This emerged from the interviews with most *Nyaope* addicts who reported that they initiated drug use during high school through the influence of their friends (Dintwe, 2017). Participants indicated that they started using the drug after pressure from friends since they wanted to fit in with the group and gain respect among their peers. Masombuka (2013) suggests that the use of medication and their accessibility by peers in a friendship group predispose new members to experimenting with drugs or being initiated into the use of drugs. Children use psychoactive drugs so as to be accepted within the cluster, match into the cluster, impress friends, “slot in” and “be cool” before the whole friendship group (UNODC, 2004). Once peers settle for and encourage drug and alcohol use, a teenager might feel pressure to try and conform in order to feel accepted (Golden, Conroy, Bruce, Denihan, Greene, Kirby & Lawlor 2009). Moreover, the 2001 survey by the Bench Foundation showed that 82% of those surveyed mentioned peer pressure as crucial to whether or not to use drug.

Experimentation: Golden *et al.* (2009) opined that the reward for using *Nyaope* is more intrinsic among users and addicts. Majority of users reported that they wanted to experiment during their first use of *Nyaope*. Participants maintained that they “wanted to feel if it will take them to heaven and back.” Therefore, it may be concluded that experimentation plays a critical role in a significant number of *Nyaope* addicts. This is consistent with the literature given that young people may imitate the behaviour of a drug addict and experiment initially with substances like alcohol, cigarettes and marijuana which may subsequently lead to the use of increasingly addictive drugs (Golden *et al.*, 2009). Ramlagan et al. (2010) reiterated experimentation as one of the main reasons

for using drugs. This factor is recurrent in many studies that seek to establish the reasons for drug use.

Curiosity: According to Masombuka (2013), adolescents use drug for various reasons which include reduction of stress; to feel fully grown up; or to conform in a group. UNODC (2004) stated that children may use drug to feel good, have a nice time, get high, feel on top of the world, be happy, relieve boredom and acquire energy.

3.1.6 Self-esteem and mental health

Previous studies have also shown that self-esteem may be associated with mental health. In a sample of 383 undergraduates, Mahdavi, Ahmadi, Nadermohamad, Adham (2013) found that all dimensions of the General Health Questionnaire (GHQ) negatively and moderately correlated with scores on the Rosenberg Self-esteem scale. Correlation coefficient was higher between self-esteem and total GHQ scores, and between self-esteem and severe depression compared to other GHQ dimensions. Similarly, Duraku, Kelmendi & Jemini-Gashi (2018) suggested that higher self-esteem was associated with lower psychological distress in a sample of 200 Kosovar adolescents. In the study, self-esteem was found to be third strongest predictor of psychological stress after bed time worries and insomnia. In a total sample of 80 sexually and non-abused adolescents, Henriques & Shivakumara (2013) demonstrated that self-esteem was negatively correlated with psychological distress among the sexually abused. However, no correlation exist between the two variables among non-sexually abused adolescents. The study further showed that adolescents who were sexually abused reported higher level of psychological distress compared to the non-sexually abused. Among 257 dental students in Malaysia, Radeef and Faisa (2019) indicated that self-esteem was negatively correlated with mental health problems. The study additionally reported that females have elevated scores on mental health difficulties than males. In the same way, Puuskari, Aalto-Setälä, Komulainen, & Marttunen (2017) reported that self-esteem was negatively associated with depressive symptoms among 138 adolescents undergoing treatment in a paediatric

emergency unit in a Finnish hospital. Sharma, Sharma and Yadava (2004) suggested that people with high self-esteem have better general mental health than those with low self-esteem. However, Okwaraji, Onyebueke, Nduanya and Nwokpoku (2016) assessed depression, loneliness and self-esteem among 610 university students and found no significant association among these variables.

3.1.7 Self-esteem and psychological wellbeing

Paradise and Kernis (2002) assessed the relationship of self-esteem with the dimensions of Ryff Psychological Wellbeing (PWB) scale. Findings showed that higher level of self-esteem predict increase in all PWB dimensions. In a one longitudinal study and four cross-sectional studies, Du, King and Chi (2017) investigated the predictive abilities of collective self-esteem and relational self-esteem on PWB facets which include positive affect, life satisfaction, meaning in life and subjective wellbeing when controlling personal self-esteem. Outcomes show that while controlling for personal self-esteem, relational self-esteem was a positive predictor of all facets of PWB. However, collective self-esteem did not. In testing the mediating role of self-esteem in the relationship between perceived discrimination and PWB of 853 Colombians and Peruvians living in Chile, Urzúa, Ferrer, Godoy, Leppes, Trujillo, Osorio & Caqueo-Úrizar (2018) found self-esteem (as measured by the Rosenberg Self-esteem scale) as a positive predictor of all dimensions of the Ryff's PWB.

Also using the Rosenberg Self-esteem scale and the Ryff measure, Awan and Sitwat (2017) investigated the roles of self-esteem and workplace spirituality on PWB in a sample of 120 health professionals which included psychologists, psychiatrist, nurses and attendants. Results showed increase in self-esteem predicted an increase in PWB. Findings further showed that the predictive influence of self-esteem was greater than that of workplace spirituality. Similar findings were found for the relationship between self-esteem and PWB in the study of Rahmawati and Handarini (2017). Furthermore, Bruce and Larweh (2017) examined the association between self-esteem and psychological wellbeing among 155 respondents in a prison Accra, Ghana. The findings also revealed a significant positive relationship between self-esteem and psychological wellbeing

among respondents. Dogan, Totan and Sapmza's (2013) investigated the mediating role of self-esteem in the associations of emotional self-efficacy, psychological wellbeing and affect balance with happiness among 340 university students. Results of correlation analyses suggested that self-esteem was positively associated with PWB. Self-esteem had highest coefficient with PWB as compared to the coefficients for happiness, emotional self-efficacy and affect balance.

Using a sample of 267 secondary school teachers, Mabekoje (2003) examined the roles of extraversion, agreeableness, self-esteem, self-efficacy and social support on psychological wellbeing. The author concluded that self-esteem, social support and agreeableness have a joint prediction on the psychological wellbeing. However, among all variables, self-esteem independently accounted for variance in PWB. Similarly, Nwankwo, Okechi and Nweke (2015) found significant relationship between perceived self-esteem and psychological wellbeing among student-athletes. Conversely, in a longitudinal study on the role of self-esteem in psychological wellbeing among 197 students, Malinauskas and Dumciene (2015) found no influence of self-esteem on psychological wellbeing.

3.1.8 Personality and mental health

Using data from the British Cohort Study, Wehner Schils and Borghans (2016) examined the relationship between personality factors and mental health from ages 10-42. The results showed that extraversion and neuroticism scores obtained at age 16 positively predicted mental ill-health score across all ages. Conscientiousness was found to predict mental ill-health score between ages 16-34 while agreeableness only predicted mental ill-health at age 30. Similarly, Mustafa, Nasirb and Yusooffb (2010) examined the relationship between personality and depression among 1029 medical students from seven institutions in Malaysia. The results revealed a significant negative association of depression with extraversion and conscientiousness. The results further showed a significant positive correlation between neuroticism and depression. Sadeghi, Ofoghi and Azizi (2015) also examined the relationship between personality

characteristics and mental health of 196 students at the University of Guilan. The results also confirmed a significant relationship between personality characteristic and mental health.

Shirazi, Khan and Ansari (2012) investigated the emotional well-being and character attributes among 300 undergraduates in sample of college students in India and found a strong connection between psychological wellness and character qualities. The outcomes further demonstrated that qualities such as pleasantness and receptiveness were noteworthy indicators of emotional wellness. Goodwin and Friedman (2006) also found that character qualities were connected with psychological well-being. Sharma, Sharma and Yadava (2010) assessed the connection between personality factors and psychological well-being among 105 youthful of ages 22 to 26. They found out that neuroticism had strong positive relationship with uneasiness and extreme discouragement. Bello (2016) also investigated personality traits as predictors of psychological health. Participants involved in the study consisted of 614 secondary school adolescents from five secondary schools in Nigeria. The results suggested that the joint influence of personality traits significantly predicted the psychological health. However, among all personality traits, only neuroticism independently predicted worse psychological health. Löckenhoff, Sutin, Ferrucci and Costa (2008) also examined the link between personality traits and subjective mental and physical health. The researchers found that respondents with high neuroticism scores displayed negative emotions and felt easily overwhelmed by stressful experiences. However, Bogg and Roberts (2013) found that individuals who scored high on conscientiousness had a greater chance of practicing health-promoting behaviors.

Gallant and Connell (2014) established that there was an indirect link of neuroticism with poor mental health through unhealthy related practices. Mangold, Veraza, Kinkler and Kinney (2015) conducted a study among one hundred and twenty-two (122) Mexican-American college students on the role of personality traits in subjective stress and found that depression was somewhat linked with neuroticism while extraversion was associated with cheerfulness. Another study conducted by Steel and Ones (2002) revealed a negative correlation between neuroticism

and subjective wellbeing. Likewise, DeNeve (1999) found that neuroticism was negatively correlated with subjective wellbeing. Sayeeda, Fareeda and Hameeda (2013) examined the role of personality traits on mental health of eighty randomly selected postgraduate students in a Muslim University in India. They found out that conscientiousness dimension of the “Big Five” had a significant positive relationship with better mental health.

Zarei, Zeinalipour, Sough, Adli and Sough (2013) also examined the role of personality traits on general health among university students. Results showed positive associations of extraversion, openness to experience, agreeableness and conscientiousness with general health while a negative relationship was found between neuroticism and general health. In another related study, Uzma (2016) investigated the influence of personality traits on mental health among 314 university students in Pakistan. The results showed a positive relationship between extraversion and mental health. Goodwin and Friedman (2009) found that elevated levels of extraversion diminishes poor mental health, while higher level of introversion was associated to dysfunctional behaviors. Similarly, Wismeijer and Assen (2008) found that extraversion forms a positive relationship with emotional wellness in a sample of college students. Other studies have also replicated similar findings (e.g. Farsani, Aroufzad & Farsani, 2012; Habibia, Sadeghib, Haghrangbarc, Madanipourc & Azarnooshd 2013; Lenzi, Fernie, Nikčević and Spada, 2018). A more recent finding showed association between the EPN traits (extraversion, psychoticism and neuroticism) and psychological distress among Chinese and Australian adolescents (Liu, Gillespie, Ye, Zhu, Duffy, & Martin, 2018). However, there is dearth of literature on the role of openness and agreeableness on mental health. Notwithstanding, there may be lower mental health problems and higher psychological wellbeing among individuals who scored high on these traits (Steel, Schmidt, & Shultz, 2008).

3.1.9 Personality and psychological wellbeing

In a sample of 180 psychology undergraduates, Haslam, Whelan and Bastian (2009) investigated the link between “Big Five” personality traits and subjective well-being using scales

measuring positive and negative effects and satisfaction with life. Outcomes showed that neuroticism was positively associated with negative affect while showing negative association with positive affect and satisfaction with life. Extraversion and conscientiousness were found to positively relate with positive affect and satisfaction with life while showing negative relationship with negative affect. Results further demonstrated that conscientiousness and openness formed positive association with positive affect but were not related to negative affect and satisfaction with life. In a similar study, Wismeijer and Assen (2008) found that extraversion and neuroticism were associated with subjective wellbeing among students of social and behavioral sciences in a Dutch university. Specifically, the study demonstrated that wellbeing was positively related with extraversion while negatively associated with neuroticism. The correlation coefficient of the association between neuroticism and wellbeing was stronger than the coefficient between wellbeing and extraversion.

Ullah (2017) also examined personality factors as correlates of psychological wellbeing among 312 university students. He found that all the Big “5” personality dimensions except agreeableness predicted psychological wellbeing. While extraversion, openness, and conscientiousness were positively associated with psychological wellbeing, neuroticism was found to negatively relate with wellbeing. Similar to Wismeijer and Assen (2008) findings, the influence of neuroticism on wellbeing was stronger than that of other personality traits. In the same way, Mobarakeh, Yaacob, Redzuan and Mobarakeh (2015) examined the relationship between personality traits and psychological wellbeing among Iranian adolescent migrants in Malaysia. The results revealed a statistically negative relationship between neuroticism trait and adolescent's psychological wellbeing, while extroversion and agreeableness had positive correlations with psychological wellbeing. The results also indicated that openness to experience and conscientiousness did not have statistical significant relationships with psychological wellbeing.

Among a sample of Italian adolescents, Tommasi, Grassi, Balsamo, Picconi, Furnham, and Saggino (2018) investigated the relationship between the EPN traits and psychological well-being.

Outcomes showed that neuroticism negatively predicted all dimensions of Ryff PWB. Extraversion was found to positively predict only positive relations, environmental mastery and personal growth while psychoticism positively predicted only positive relations and purpose in life. In a study conducted by Cheng and Chan (2012), extraversion and neuroticism were found to be the strongest predictors of psychological wellbeing. Pudrovskaya, Hauser and Springer (2005) found that extraversion, neuroticism, conscientiousness and agreeableness had a significant relationship with psychological wellbeing. Likewise, Busari (2015) examined the relationships between personality traits and wellbeing among 1200 students in some Nigerian universities. Results suggest significant relationship between agreeableness, conscientiousness, emotional stability, extroversion and psychological wellbeing. However, personality factors only accounted for 9.6% variance in psychological wellbeing. Bello (2016) also investigated personality traits as predictors of psychological health in a sample 614 adolescents. The study revealed that extroversion, agreeableness, conscientiousness, neuroticism and openness all predicted psychological health. Other studies have also found similar results (e.g. Mangold, Veraza, Kinkler & Kinney, 2007; Ebert, Tucker & Roth, 2012).

3.1.10 Psychological wellbeing and mental health

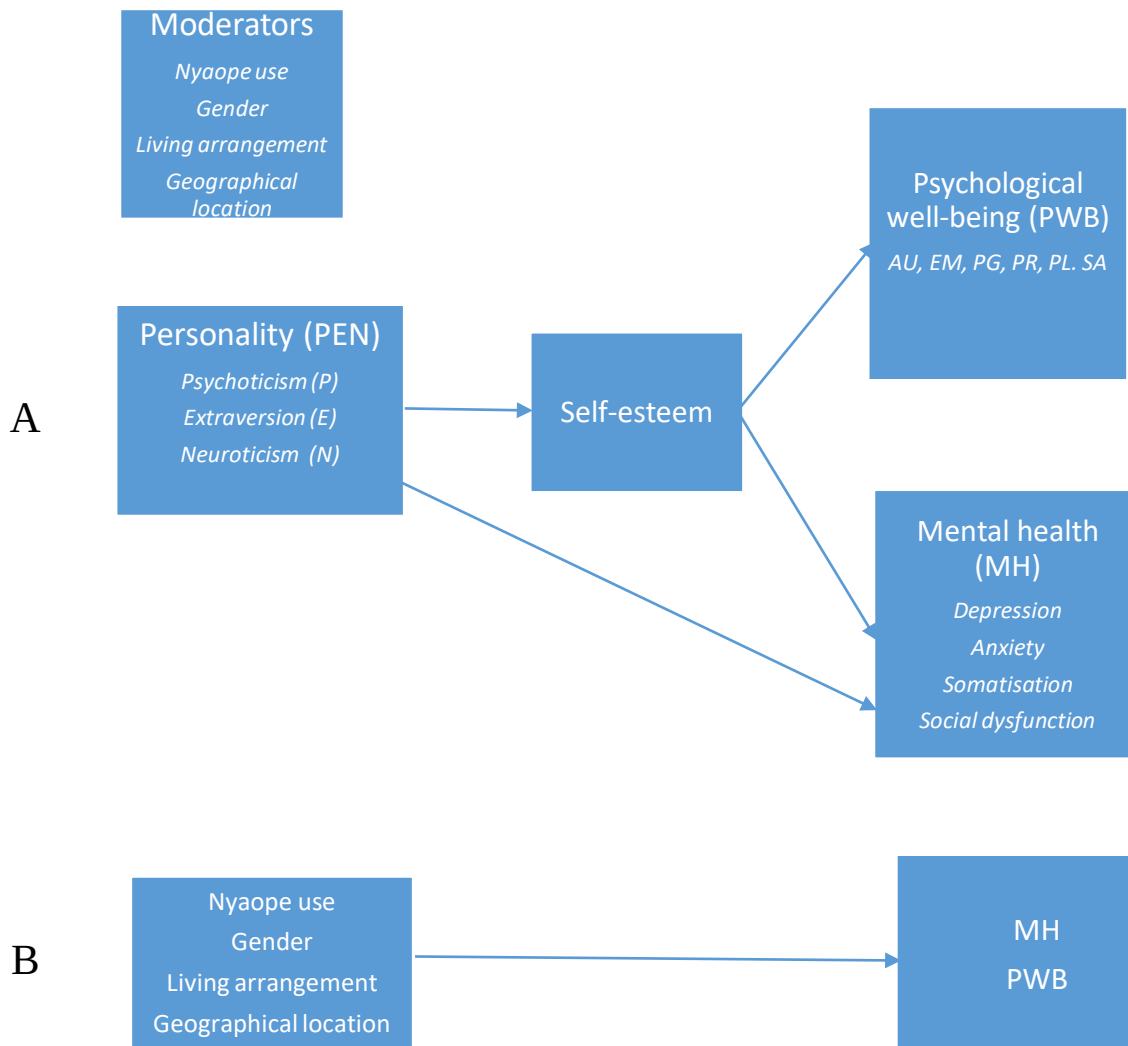
Some past studies have also examined the relationship between mental health and psychological wellbeing. For instance, Johal and Pooja (2016) in a sample of 150 teachers showed that PWB (in terms of sociability, happiness, emotional stability, jovial and self-esteem) was significantly associated with mental health. Using Ryff PWB scale and GHQ- 28, Khodabakhsh, Kiani and Ahmedbookani (2014) demonstrated that higher PWB predicted lower mental health problems in a sample of secondary students. In the study, PWB full score was found to correlate with insomnia/anxiety, social dysfunction and severe depression but not somatic symptoms. Highest correlation coefficient was found between PWB and severe depression. Parto and Besharat (2011) also indicated a negative relationship between PWB and psychological distress in a sample of seven hundred and seventeen high risk college students.

3.2 Summary of the literature and gaps identified

The focused of this review was present literature on Nyaope use and demonstrate the existing relationships among personality factors, self-esteem, PWB and mental health. Literature search revealed that significant relationships exist among these variables. However, majority of these studies were conducted among adolescents, university students with little or no study among drug users and abusers in particular. In addition, the researcher did not find any study investigating the mediating role of PWB in the associations of self-esteem and personality factors with mental health. Out of all the personality factors, extraversion and neuroticism assume greater importance in the prediction of PWB and mental health. Self-esteem was also found to associate more with mental health and PWB compared to other variables like happiness, self-efficacy, affect balance, social support, personality factors and spirituality.

3.3 Conceptual framework

The conceptual framework that informed this study is presented in Figure 3.1.



AU = Autonomy; EM = Environmental mastery; PG =Personal growth, PR = Positive relations; PL = Purpose in life; SA = Self-acceptance

Figure 3.1: Conceptual model of psychosocial pathways to psychological wellbeing and mental health among users of Nyaope

Note: Model A is based on Baron and Kenny's (1986) mediation theory. The direct arrows show a direct relationship between the variables.

Model A hypothesizes that psychoticism, extraversion, neuroticism and self-esteem will have direct effect on mental health (MH). It also shows that the direct effect of psychoticism, extraversion, and neuroticism on mental health will be successively mediated by self-esteem and

psychological wellbeing (PWB). Lastly, it demonstrates that PWB will mediate the direct effect of self-esteem on MH. In model B, *Nyaope* use, gender living arrangement and geographical location are expected to influence both PWB and MH.

3.4 Hypotheses

The following hypotheses were stated and tested in the study:

1. Users of *Nyaope* will differ significantly from non-users on psychological wellbeing.
2. Users of *Nyaope* will significantly differ from non-users on mental health.
3. Psychoticism, extraversion, neuroticism and self-esteem will significantly predict the mental health of *Nyaope* users.
4. Psychoticism, extraversion, neuroticism and self-esteem will significantly predict the psychological well-being of *Nyaope* users.
5. Psychological wellbeing will significantly mediate the effects of psychoticism, extraversion, neuroticism and self-esteem on mental health among *Nyaope* users.
6. The direct effect of psychoticism, extraversion and neuroticism on mental health will be successively mediated by self-esteem and psychological wellbeing among *Nyaope* users.
7. *Nyaope* use will moderate the direct effect of psychoticism, extraversion, neuroticism and self-esteem on mental health as successively mediated by self-esteem and psychological wellbeing.
8. Gender, living arrangement and geographical location will moderate the direct effect of psychoticism, extraversion, neuroticism and self-esteem on mental health as successively mediated by self-esteem and psychological wellbeing among *Nyaope* users.
9. Gender, living arrangement and geographical location will significantly influence the psychological wellbeing of users of *Nyaope*.

10. Gender, living arrangement and geographical location will significantly influence the mental health of users of Nyaope.

3.5 Operational definition of terms

Personality: In this study, personality refers to stable personal features that are revealed in a particular pattern of behaviour in diverse situations. Personality in this study is conceptualized based on Eysenck's Personality Theory (1973) that identifies three dimensions of personality: Psychoticism, Extraversion and Neuroticism (PEN). It postulates that a high score in PEN leads to unstable psychological state, thus, affecting mental health. The scale is measured using 48-items of the Eysenck Personality Questionnaire-Revised (EPQ).

Self-esteem: It is defined as an evaluation of oneself by measuring both negative and positive feelings about the self. The construct was captured using the 10-item self-esteem scale developed by Rosenberg (1965). A high score on the scale means high self-esteem while a low score on the scale means low self-esteem.

Mental Health: In this study, it refers to a state of wellbeing in which users of *Nyaope* recognize their own abilities and are able to cope with daily stresses in life on a daily basis. Mental health was assessed using the 28-items General Health Questionnaire (GHQ) developed by Goldberg (1978). The GHQ assists in evaluating somatic symptoms, anxiety, insomnia, social dysfunction and severe depression, which could inhibit the mental health of users. High scores on the scale reflect negative mental health and presence of psychological distress.

Psychological wellbeing: In this study, it refers to the perception users of *Nyaope* have about life and existence, the ability to enjoy life and participate in society. This variable was measured using the 42-items Ryff's psychological wellbeing scale developed by Ryff and Keyes (1995). These consist of autonomy, environmental mastery, personal growth, positive relation with others, purpose in life and self-acceptance. High scores indicate positive psychological wellbeing.

Nyaope users/nonusers: These include persons diagnosed as using *Nyaope* at least for a year and presently undergoing rehabilitation. Nonusers are those of comparable age from the general population who have not used *Nyaope* before.

Living arrangement: In this study, it refers to where users of *Nyaope* live, which could either be with the father, mother, both parents, grandparents, members of the family or other relatives of the family.

Gender: In this study, it refers to male or female.

Geographical location: In this study, it refers to the location of users of *Nyaope*, which could be rural, semi/peri-urban or urban.

CHAPTER FOUR

RESEARCH DESIGN AND METHODOLOGY

4.1 Research design

This study is a cross-sectional survey where data was collected at a moment in time using structured psychological instruments. Specifically, the study adopts the ex post facto design in which the goal is to do an after-the-fact clarification of the psychological consequences associated with the use of *Nyaope* and to investigate the psychosocial predictors of psychological wellbeing and mental health of *Nyaope* users. This design is best suited for this study since the researcher cannot actively manipulate the use of *Nyaope* and observe its psychological outcomes. The independent variables include use/non-use of *Nyaope*, psychoticism, extraversion, neuroticism and self-esteem. The dependent variable was mental health while the mediator variable was psychological wellbeing.

4.2 Setting

This study was conducted in Gauteng Province. The Province has three city municipalities, namely; City of Ekurhuleni; City of Johannesburg; City of Tshwane Metropolitan Municipality and two district municipalities (Sedibeng and West Rand Districts). Respondents were selected from all the municipalities.

4.3 Sampling

Purposive sampling was used to select 438 *Nyaope* users based on the inclusion criteria from rehabilitation centers in Gauteng Province. Four hundred and forty-three (443) non-users of *Nyaope* (grades 8 to 12) were selected using simple random sampling with the balloting system option from current group of learners in schools within the Province. The inclusion criteria in this study were as follows: (i) must have used *Nyaope* for at least one year; (ii) must have been diagnosed as a user of *Nyaope* on admission; (iii) be undergoing rehabilitation; (iv) must be 15 years and above; (v) be a male or female; (vi) resident in Gauteng Province; (vii) must be in an

awareness state to be able to respond to questionnaires administered; and (viii) be able to understand English. The exclusion criteria were as follows: (i) learners who had never used *Nyaope* before; (ii) had never been diagnosed as users of *Nyaope*; (iii) not undergoing rehabilitation; (iv) below the age 15; (v) residing outside Gauteng Province; and (vi) those learners who could not communicate and/or understand English.

4.4 Respondents

Eight hundred and eighty-one (881) users and non-users of *Nyaope* were selected to participate in the study and their socio-demographic characteristics are given below.

Socio-demographic characteristics of respondents

The socio-demographic characteristics of respondents are presented in Table 4.1.

Table 4.1:
Distribution of respondents according to age

	Respondents	Users	Non-users
N	881	438	443
Mean	20.75	22.48	19.04
Median	20	22	19
Std. Deviation	2.90	2.76	1.82
Minimum	17	17	17
Maximum	28	28	28

The age of respondents ranged between 17 and 28 years with a mean age of 20.75 and a standard deviation of 2.90. The ages of both users (M = 22.48, SD = 2.76) and non-users (M = 19.04, SD = 1.82) of *Nyaope* range from 17 to 28 years. This shows that users of *Nyaope* in the study were mostly adolescents and emerging adults.

The distribution of participants according to users and non-users is presented in Figure 4.1. The Figure shows that 49.72% were users of *Nyaope* while 50.28% were non-users.

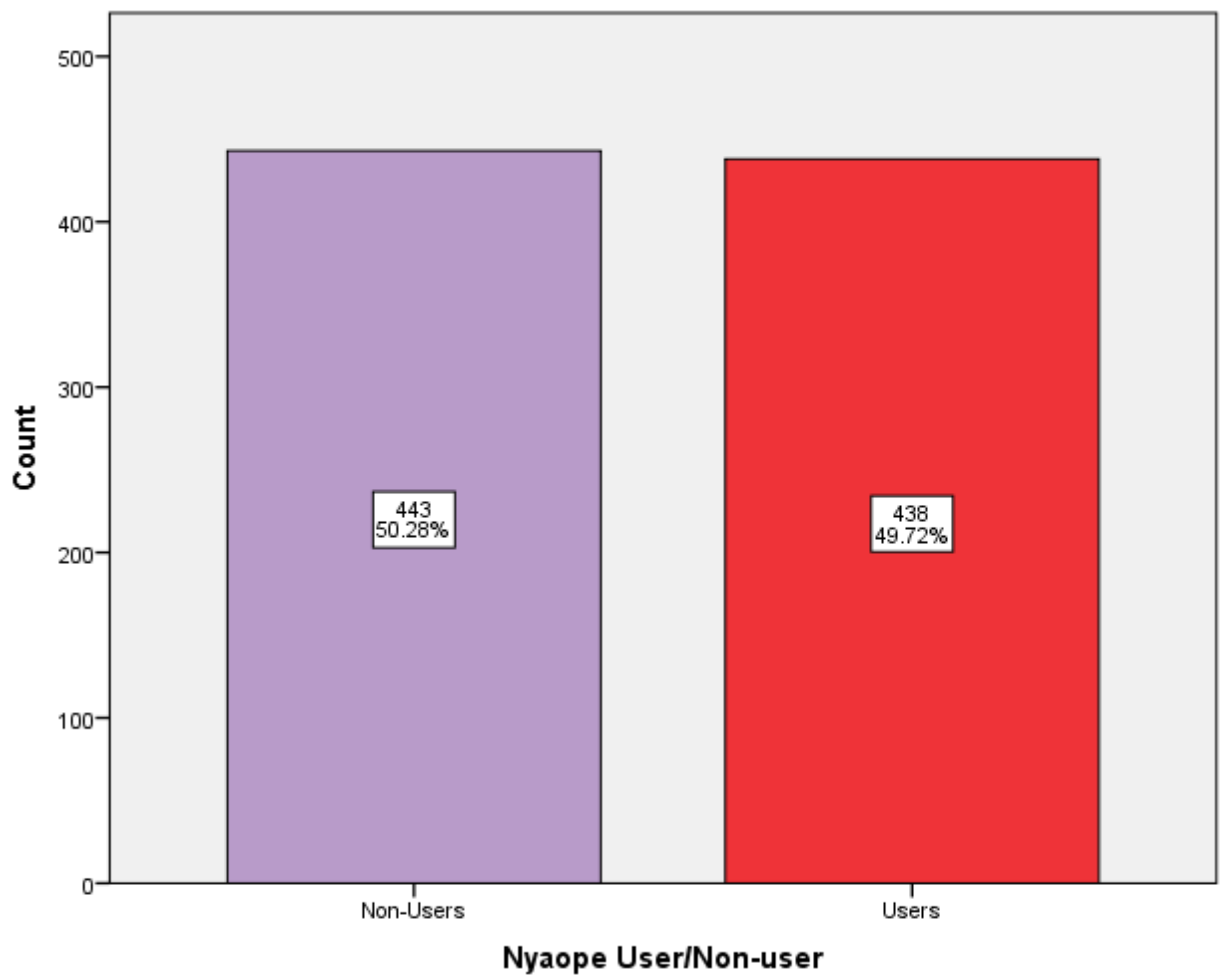


Figure 4.1: Distribution of respondents according to users and non-users

Figure 4.2 shows the data distribution according to gender. Sample consists 491 males (55.7%) and 390 females (44.3%). Almost 38% (165) of *Nyaope* users were females while about 62% (272) were males. In the overall sample, the proportion of male (24.74%) and female non-users (25.54%) were almost equal.

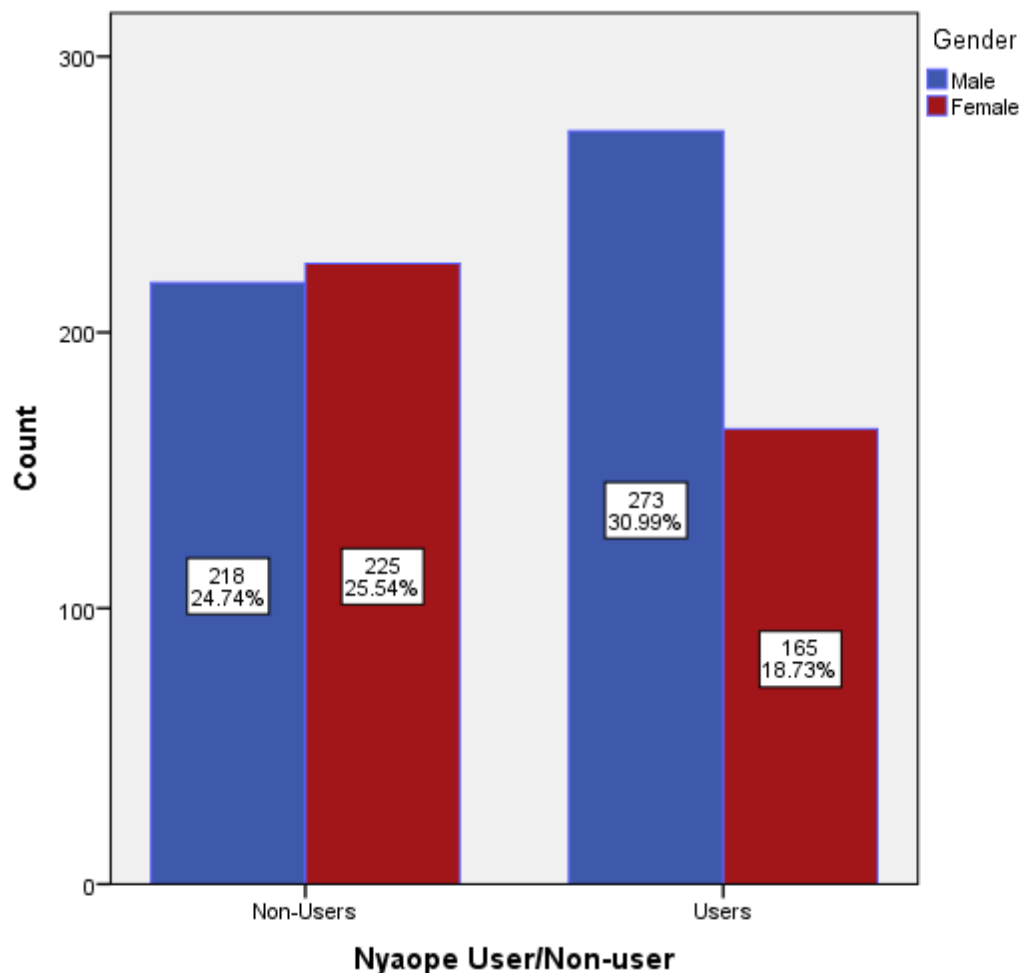


Figure 4.2: Distribution of respondents according to gender

Figure 4.3 shows the distribution of respondents according to marital status of parents. The overall data show that users of *Nyaope* had parents who were majorly unmarried (21.68%). In particular, almost half (44%) the number of *Nyaope* users had parents who were unmarried compared to non-users, where only 24% were unmarried. Almost equal proportion of participants had parents who were widowed among *Nyaope* users (7.15%) and non-users (6.58%).

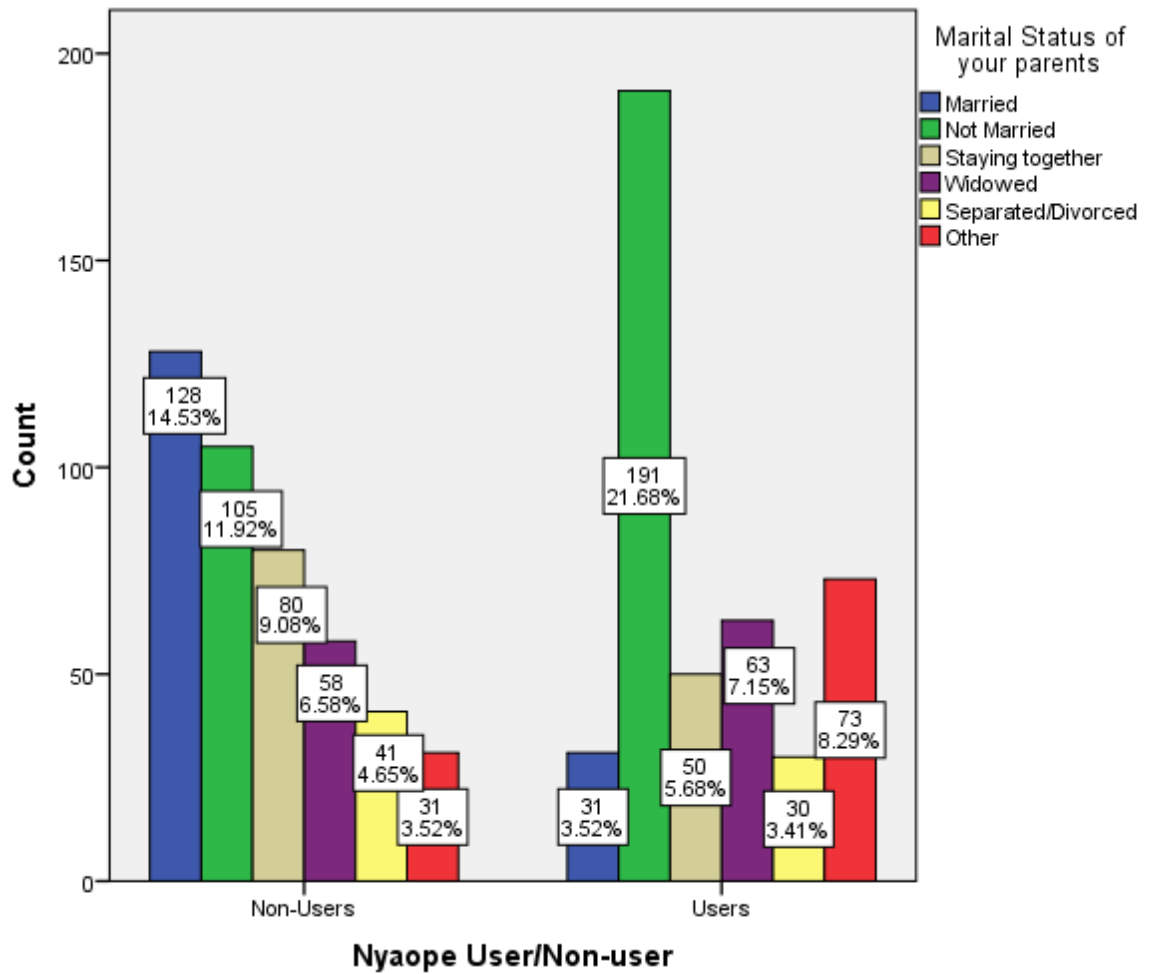


Figure 4.3: Distribution of respondents according to marital status of the parents

Figure 4.4 shows the distribution of respondents according to their living arrangements. Data shows only 8.2% (36) of *Nyaope* users live with both parents compared to non-users where over 40% (180) live with both parents. More of users (25.6%) tend to live with grandparents compared to non-users (10.6%). In addition, more of users (21%) tend to live with other family members than non-users (10.6%).

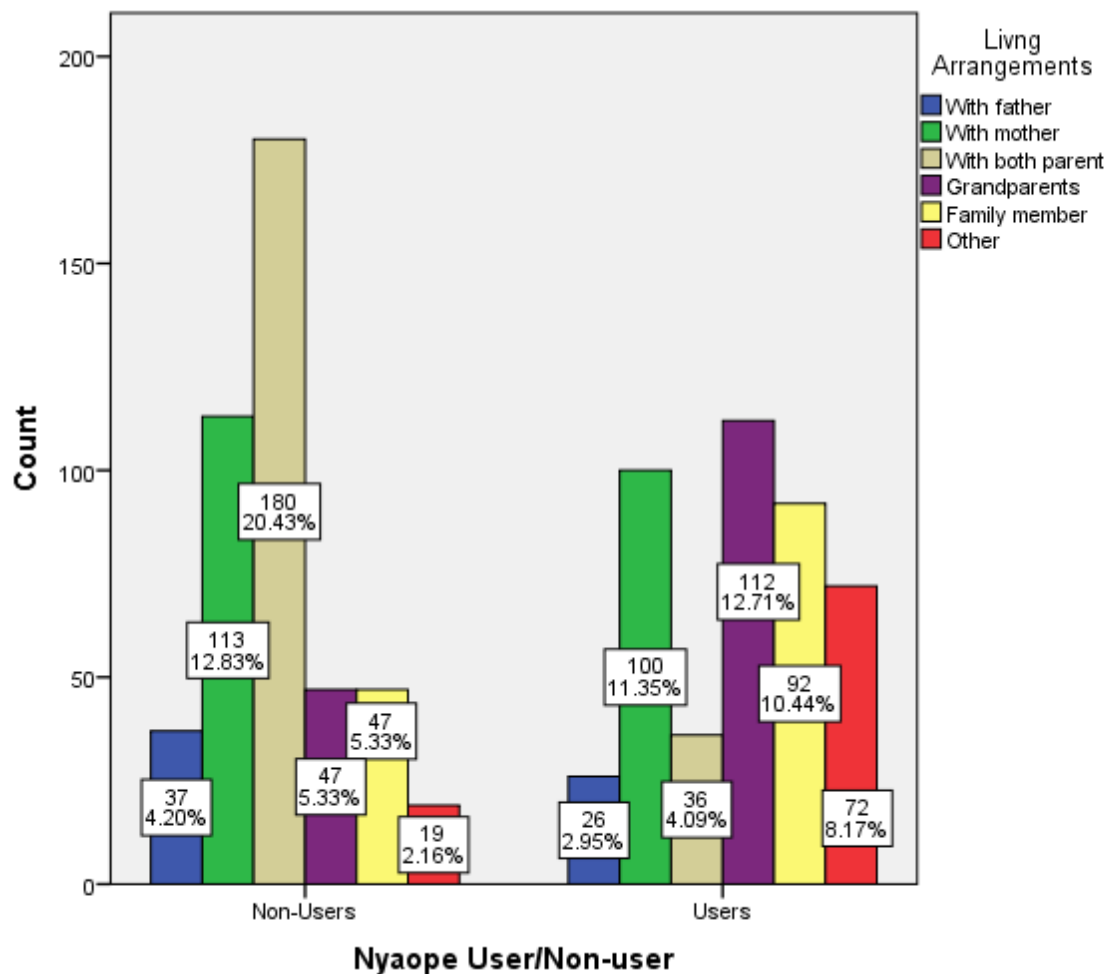


Figure 4.4: Distribution of respondents according to living arrangements

Figure 4.5 shows the distribution of respondents according to geographical location. Data distribution show that there were more users of *Nyaope* (36.8%) in rural areas than non-users (8.1%). Also, there were more non-users from semi-urban areas (27.81%) compared to users (19.64%). Similarly, there were more non-users from urban settings (27.81%) compared to users (11.80%).

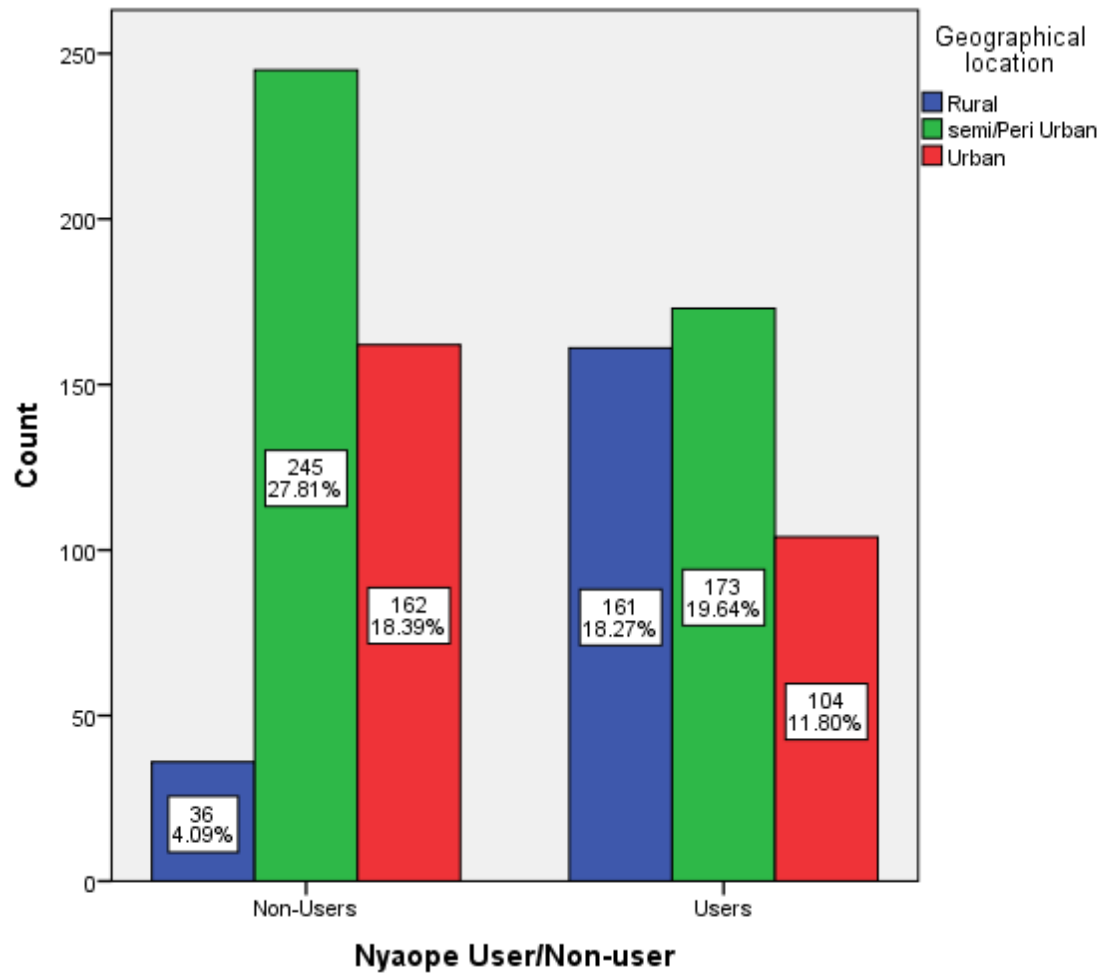


Figure 4.5: Distribution of respondents according to geographical location

4.5 Instrumentation

Structured psychological instruments were used to collect data from participants. The instruments are as follows:

4.5.1 Socio-demographic characteristics of respondents

This section obtained information on age, gender, level of education, marital status of parents, living arrangement and geographical location of respondents.

4.5.2 Eysenck Personality Questionnaire-Revised (EPQ)

The Eysenck Personality Questionnaire (EPQ-R), developed by Eysenck and Eysenck (1975), is a 48-item questionnaire that assesses three domains of personality traits (Psychoticism, Extraversion and Neuroticism) that account for the variance in personality. It also includes lie scale which is validity scale to measure social desirability on the test. The EPQ is measured on a “yes (1)” and “no (0)” response format. Sample items include: “*Do you prefer to go your own way rather than act by the rules?*” (Psychoticism), “*Are you a talkative person?*” (Extraversion) and “*Are your feelings easily hurt?*” (Neuroticism). The reliability and validity of EPQ have been reported extensively in the literature. The authors reported a factorial similarity of the three dimensions of EPQ across 34 countries (Barrett, Petrides, Eysenck & Eysenck, 1998). A recent study also confirmed the cross-cultural relevance of EPQ across 33 countries which included a Southern African sample (Bowden, Saklofske, van de Vijver, Sudarshan, & Eysenck, 2016). In addition, Edwards, Mbele and Edwards (2009) confirmed the Eysenckian theory of personality by using the EPQ in a sample of South African students. The present study obtained alpha reliability coefficients of .76, .68, .81 and .62 for psychoticism, extraversion, neuroticism and lie respectively. High scores on the subscales reflects more composition of the particular personality trait.

4.5.3 Rosenberg self-esteem scale

The Rosenberg self-esteem scale is a 10-item scale used to measure overall self-worth by measuring both positive and negative feelings about the self (Rosenberg, 1965). It is a unidimensional scale measured scored on a 4-point Likert scale format ranging from strongly agree to strongly disagree. Sample items include: “*I think that I have a number of good qualities,*” “*I wish I could have more respect for myself*” and “*I take a positive attitude toward myself.*” The

Rosenberg self-esteem scale is an extensively used self-report instrument for assessing self-esteem that has consistently been found to be a valid and reliable measure of self-esteem within the South African population (e.g. Makhubela & Mashegoane, 2017; Westaway, Jordaan & Tsai, 2015). In this study, a Cronbach's alpha of 0.78 was obtained for the scale. A high score on the scale reflects high self-esteem.

4.5.4 General Health Questionnaire (GHQ) 28

This is a 28-item questionnaire used to assess somatic symptoms, anxiety and insomnia, social dysfunction and severe depression. The General Health Questionnaire (GHQ) is a screening device used in this study to identify non-psychotic psychiatric conditions among users and non-users of substances. The scale was generally measured on a 4-point Likert scale format ranging from "*not at all (0)*" to *much worse than usual (3)*. The GHQ is valid for measuring mental health across age categories spanning from adolescence to adulthood in both psychiatric and non-psychiatric populations. Sample items include: "*Been feeling in need of some medicine to pick you up?*" (Somatic symptoms), "*Lost much sleep over worry?*" (anxiety/insomnia), "*Felt on the whole you were doing things well?*" (Social dysfunction) and "*Been thinking yourself as a worthless person?*" (Severe depression)." The GHQ-28 is extensively shown to be reliable and valid in measuring mental health status using South African sample (e.g. Lawal, Idemudia & Senyatsi, 2018; Idemudia & Matamela, 2012). In the current study, the four dimensions of mental health yielded Cronbach's alpha coefficients ranging from 0.72 to 0.81. High scores on the scale reflect negative mental health and presence of psychological distress.

4.5.5 Ryff's psychological wellbeing scale (PWB)

The PWB theoretically measures six dimensions of psychological wellbeing which are autonomy (AU), environmental mastery (EM), personal growth (PG), positive relations (PR), purpose in life (PL) and self-acceptance (SA). The PWB has different versions six different versions ranging from the 18-item to the 84-item versions. The current study utilized the PWB 18-item form because it the most commonly used among the six versions (Sirigatti, Penzo, Iani,

Mazzeschi, Hatalaskaja, Giannetti, & Stefanile, 2012). Respondents rate items on a 6-point Likert scale ranging from “strongly disagree (1)” to “strongly agree (6)”. Sample items for subscales include: “I tend to be influenced by people with strong opinions” (AU), “The demands of everyday life often get me down” (EM), “I gave up trying to make a big improvements or changes in my life a long time ago” (PG), “Maintaining close relationships has been difficult and frustrating for me” (PR), “Some people wander aimlessly through life, but I am not one of them” (PL) and “In many ways, I feel disappointed about my achievements in life” (SA). Edwards, Ngcobo and Pillay (2004) found the six dimensional postulation of the 18-item PWB to be reliable and valid in measuring psychological wellbeing within the South African context. In this study, the six dimensions of psychological wellbeing yielded Cronbach’s alpha ranging from 0.68 to 0.79. The higher the total scores, the higher the psychological wellbeing and vice-versa.

4.6 Ethical considerations

Ethical considerations involved obtaining the informed consent of all respondents. Since some of the respondents were minors, assent was requested from parents, caregivers or legal guardians. Verbal and written consent were also obtained from all respondents and they willingly signed the consent form attached to each questionnaire. In order to get honest responses from respondents, they were all assured of the confidentiality of information provided. No respondent was coerced into participating in the study and permission was given to respondents who were willing to withdraw mid-way into the data collection process. Also, permission to conduct the study was requested and obtained from the Health Research Ethics Committee of the North-West University, Mafikeng Campus.

4.7 Data collection

Respondents were informed that participation in the study was voluntary and that they were free to withdraw from the study at any point, although participation was encouraged. Respondents were also informed that they were protected from physical and psychological harm through the research process, by ensuring that those who were physically in pain, were excluded from the

study. In the event of adverse reactions from respondents, immediate professional referral to a Clinical Psychologist was done by the researcher. (Procedure for data collection)

4.8 Data analysis

The Statistical Package for the Social Sciences 24 (IBM SPSS 24) and Analysis of Moment Structures (IBM AMOS 24) were used to analyse data. Descriptive statistics which include mean, standard deviation and bar charts were used to describe the socio-demographic characteristic of respondents and data distribution. Bivariate relationships among variables were assessed using Pearson's R. Hypotheses 1, 2, 9 and 10 were tested using the multivariate analysis of variance (MANOVA) while hypotheses 3, 4, 5, 6, 7 and 8 were tested by means of structural equation modelling (SEM).

Before the main analysis, data was checked for missing values. No cases were reported with more than 5% missing values. All missing values were substituted with mean values. Variables were also scanned for normality and the outcome showed no serious cases of deviation from normality given that scores on skewness and kurtosis did not exceed -1 and + 1 (Mertler & Vannatta, 2005). In addition, there were significant outlier in data distribution as z-score values on study variables was in the range between +3.00 to -3.00.

CHAPTER FIVE

PRESENTATION OF RESULTS

5.1 Introduction

The previous chapter presented the detailed, step-by-step processes and design followed in conducting this study. This chapter presents the study results in the form of hypotheses testing using both univariate and multivariate analyses.

5.2 Correlation Analyses

The result of correlation analyses is presented in Table 4.2. The results showed that gender was weakly but significantly associated with all dimensions of mental health; somatic symptoms [$r(436) = -.10, p = .04$], anxiety [$r(436) = -.14, p = .003$], social dysfunction [$r(436) = -.10, p = .04$] and severe depression [$r(436) = -.10, p = .04$]. Specifically, being female was associated with negative mental health. However, age was not related to any dimension of mental health and psychological wellbeing. Out of all the dimensions of psychological wellbeing (PWB) and mental health (MH), neuroticism was weakly but significantly associated with autonomy [$r(436) = -.10, p = .04$], purpose in life [$r(436) = -.13, p = .007$], self-acceptance [$r(436) = -.14, p = .003$] and somatic symptoms [$r(436) = -.10, p = .04$]. Extraversion was not related to any dimension of PWB and MH except autonomy [$r(436) = -.12, p = .01$]. Psychoticism was found to be negatively associated with autonomy [$r(436) = -.21, p < .001$], environmental mastery [$r(436) = -.11, p = .03$] and purpose in life [$r(436) = -.13, p = .005$], but not related to other dimensions of PWB and all dimensions of MH. Self-esteem was negatively associated with all MH dimensions; somatic symptoms [$r(436) = -.32, p < .001$], anxiety [$r(436) = -.33, p < .001$], social dysfunction [$r(436) = -.23, p < .001$] and severe depression [$r(436) = -.18, p < .001$]. Similarly, self-esteem was associated with all dimensions of PWB except personal growth; autonomy [$r(436) = .19, p < .001$], environmental mastery [$r(436) = .21, p < .001$], positive relations [$r(436) = .13, p = .005$], self-acceptance [$r(436) = .21, p < .001$] and personal growth [$r(436) = .05, p = .32$].

Table 5.1:

Summary of correlations among study variables (*Nyaope users' sample*)

N = 438	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Mean		22.48	5.08	5.37	6.04	28.27	11.46	12.01	11.35	10.99	11.25	11.52	7.07	5.25	15.39	7.04
SD		2.76	1.86	1.86	1.75	3.19	2.79	2.87	2.83	2.92	2.71	2.94	4.55	5.15	3.32	4.94
Gender (1)																
Age (2)	-.18**															
Neuroticism (3)	-.09	.12*														
Extraversion (4)	.03	-.05	.27**													
Psychoticism (5)	.02	-.09	.01	.08												
Self-esteem (6)	.06	-.04	-.02	-.02	-.09*											
Autonomy (7)	.002	-.02	-.10*	-.12*	-.21**	.19**										
EM (8)	.07	-.06	-.04	-.07	-.11*	.21**	.53**									
PG (9)	.10*	-.08	-.08	.07	-.07	.04	.23**	.30**								
PR (10)	.002	.02	-.07	-.004	-.04	-.10*	.09	.16**	.20**							
PL (11)	-.02	.04	-.13**	-.05	-.13**	-.13**	.08	.04	.17**	.32**						
SA(12)	.01	.03	-.14**	-.03	-.09	-.21**	.07	.01	.15**	.27**	.32**					
SS (13)	-.10*	.07	-.10**	-.02	-.05*	-.32**	-.10*	-.08	.12*	.19**	.20**	.27**				
A/I (14)	-.14**	.11*	-.01	.01	.03	-.33**	-.24*	-.16**	.01	.04	.11*	.16**	.47**			
SDY (15)	-.10*	.04	.09	.03	-.05	.23**	-.11*	-.17**	.03	.11*	.11*	.15**	.34**	.28**		
SDE (16)	-.10*	-.01	-.08	-.01	-.002	-.18**	-.12**	-.11**	-.01	.05	.12*	.08	.32**	.32**	.45**	

** . Correlation is significant at the 0.01 level (2-tailed); * . Correlation is significant at the 0.05 level (2-tailed); Gender (0 = female; 1 = male)

EM = Environmental mastery; PG = Personal growth; PR = Positive relations; PL = Purpose in life; SA = Self-acceptance; SS =Somatic symptoms; A/I = Anxiety/Insomnia ; SDY = Social dysfunction; SDE = Severe depression

5.3 Hypotheses testing

5.3.1 Hypothesis One: Users of *Nyaope* will differ significantly from non-users on psychological wellbeing

A one-way multivariate analysis of variance (MANOVA) was used to test the hypothesis.

There were significant and positive correlations (ranging from $r = .15$ to $r = .53$) among the dimensions of psychological wellbeing, except for the relationship between autonomy and positive relations ($r = .09$, $p = .07$), autonomy and purpose in life ($r = .08$, $p = .08$), autonomy and self-acceptance ($r = .07$, $p = .14$), environmental mastery and purpose in life ($r = .04$, $p = .45$) and environmental mastery and self-acceptance ($r = .01$, $p = .80$). Tests of the assumption of homogeneity of variance-covariance reveals that there was no homogeneity of variance-covariance, $F(21, 2841004.50) = 7.22$, $p < .001$). Therefore, Pillai's Trace was used as the test statistic for the multivariate tests.

Table 5.2a shows the mean and standard deviation scores for the six dimensions of psychological wellbeing (PWB) by *Nyaope* use/non-use.

Table 5.2a:

Summary of descriptive statistics of users and non-users of *Nyaope* on psychological wellbeing

	User/Non-user	Mean	Std. Deviation	n
Autonomy	Non-Users	10.64	2.92	443
	Users	9.83	2.36	438
	Total	10.24	2.69	881
Environmental Mastery	Non-Users	11.78	2.40	443
	Users	12.02	2.42	438
	Total	11.90	2.41	881
Personal Growth	Non-Users	12.14	2.90	443
	Users	10.64	2.52	438
	Total	11.40	2.82	881
Postive Relations	Non-Users	10.58	2.87	443
	Users	10.32	2.60	438
	Total	10.45	2.74	881
Purpose in Life	Non-Users	10.56	2.89	443
	Users	10.25	2.62	438
	Total	10.41	2.76	881
Self-acceptance	Non-Users	12.15	2.71	443
	Users	11.21	2.37	438
	Total	11.68	2.59	881

Table 5.2b presents the multivariate test examining whether the six dimensions of PWB differ between users and non-users.

Table 5.2b:

Summary of multivariate tests of difference between users and non-users on psychological wellbeing

	Effect	Value	F	Hypothesis df	Error df	Sig.	η^2
Intercept	Pillai's Trace	.99	9505.01	6	874	.00	.99
	Wilks' Lambda	.02	9505.01	6	874	.00	.99
	Hotelling's Trace	65.25	9505.01	6	874	.00	.99
	Roy's Largest Root	65.25	9505.01	6	874	.00	.99
<i>Nyaope</i> user/non-user	Pillai's Trace	.09	15.18	6	874	.00	.09
	Wilks' Lambda	.91	15.18	6	874	.00	.09
	Hotelling's Trace	.11	15.18	6	874	.00	.09
	Roy's Largest Root	.10	15.18	6	874	.00	.09

Result showed a significant difference in PWB between users and non-users [Pillai's $\eta^2 = .09$, $F(6, 874) = 15.18$, $p < .001$, multivariate $\eta^2 = .09$]. The univariate test of differences between users and non-users on dimension of PWB is presented in Table 5.2c.

Table 5.2c:

Summary tests of differences between users and non-users on mental health

Source	Dependent Variable	Sum of Squares	d	Mean Square	F	Sig.	η^2
Intercept	Autonomy	92264.91	1	92264.91	13076.60	.00	.94
	Environmental Mastery	124747.36	1	124747.36	21546.47	.00	.96
	Personal Growth	114304.91	1	114304.91	15466.98	.00	.95
	Positive Relations	96244.23	1	96244.23	12853.29	.00	.94
	Purpose in Life	95427.73	1	95427.73	12550.85	.00	.94
	Self-acceptance	120197.77	1	120197.77	18479.29	.00	.6
Users/non-users	Autonomy	142.91	1	142.91	20.25	.00	.02
	Environmental Mastery	12.87	1	12.87	2.22	.14	.003
	Personal Growth	500.50	1	500.50	67.73	.00	.07
	Positive Relations	14.43	1	14.43	1.93	.17	.002
	Purpose in Life	21.60	1	21.60	2.84	.09	.003
	Self-acceptance	193.22	1	193.22	29.71	.00	.03
Error	Autonomy	6201.99	879	7.06			
	Environmental Mastery	5089.14	879	5.79			
	Personal Growth	6496.04	879	7.39			
	Positive Relations	6581.87	879	7.49			
	Purpose in Life	6683.29	879	7.60			
	Self-acceptance	5717.42	879	6.50			
Corrected Total	Autonomy	6344.89	880				
	Environmental Mastery	5102.01	880				
	Personal Growth	6996.54	880				
	Positive Relations	6596.30	880				
	Purpose in Life	6704.89	880				
	Self-acceptance	5910.65	880				

The results show significant differences between users and non-users of *Nyaope* on autonomy [$F(1, 879) = 20.54, p < .001, \text{partial } \eta^2 = .02$], personal growth [$F(1, 879) = 67.73, p < .0001, \text{partial } \eta^2 = .07$] and self-acceptance [$F(1, 879) = 29.71, p < .0001, \text{partial } \eta^2 = .03$]. However, there were no significant differences between users and non-users of *Nyaope* on environmental mastery [$F(1, 879) = 2.22, p = .13, \text{partial } \eta^2 = .002$], positive relations [$F(1, 879) = 1.93, p = .15, \text{partial } \eta^2 = .002$] and purpose in life [$F(1, 879) = 2.84, p = .09, \text{partial } \eta^2 = .003$]. Comparisons of the means of dependent variables indicate that users of *Nyaope* ($M = 9.83, SD = 2.69$) had lower scores on autonomy than non-users ($M = 10.64, SD = 2.92$). Also, users of *Nyaope* ($M = 10.64, SD = 2.52$) had lower scores on personal growth than non-users ($M = 12.14, SD = 2.91$). Similarly, users of *Nyaope* ($M = 11.21, SD = 2.37$) had lower scores on self-acceptance relative to non-users ($M = 12.15, SD = 2.71$).

5.3.2 Hypothesis Two: Users of *Nyaope* will significantly differ from non-users on mental health

A one-way multivariate analysis of variance (MANOVA) was used to test the hypothesis.

There were significant and positive correlations (ranging from $r = .28$ to $r = .47$) among the dimensions of mental health. The tests of the assumption of homogeneity of variance-covariance reveal that there was no homogeneity of variance-covariance, $F(10, 3692820.84) = 8.12, p < .001$. Therefore, Pillai's Trace was used as the test statistic for the multivariate tests.

Table 5.3a shows the mean and standard deviation scores on the dimensions of mental health.

Table 5.3a:

Summary of descriptive statistics of users and non-users on mental health

	User/Non-user	Mean	Std. Deviation	N
Somatic Symptoms	Non-Users	7.76	6.04	443
	Users	7.07	4.55	438
	Total	7.42	5.36	881
Anxiety/Insomnia	Non-Users	6.02	6.55	443
	Users	5.25	5.15	438
	Total	5.64	5.91	881
Social Dysfunction	Non-Users	14.50	3.25	443
	Users	19.18	3.42	438
	Total	16.83	4.07	881
Severe Depression	Non-Users	4.89	5.26	443
	Users	7.04	4.94	438
	Total	5.96	5.21	881

Table 5.3b presents the multivariate test examining whether the four dimensions of mental health differ between users and non-users.

Table 5.3b:

Summary of multivariate tests of difference on mental health between users and non-users of *Nyaope*

	Effect	Value	F	Hypothesis df	Error df	Sig.	η^2
Intercept	Pillai's Trace	.97	6272.52	4	876	.00	.97
	Wilks' Lambda	.03	6272.52	4	876	.00	.97
	Hotelling's Trace	28.642	6272.52	4	876	.00	.97
	Roy's Largest Root	28.642	6272.52	4	876	.00	.97
Users/non-users	Pillai's Trace	.35	117.69	4	876	.00	.35
	Wilks' Lambda	.65	117.69	4	876	.00	.35
	Hotelling's Trace	.54	117.69	4	876	.00	.35
	Roy's Largest Root	.54	117.69	4	876	.00	.35

Results indicated a significant difference in the mental health of users and non-users [Pillai's $\eta^2 = .35$, $F(4, 876) = 117.68$, $p < .001$, multivariate $\eta^2 = .35$]. The univariate test of differences between users and non-users on each dimension of mental health is presented in Table 5.3c.

Table 5.3c:

Summary tests of differences between users and non-users on mental health

Source	Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	Somatic Symptoms	48447.40	1	48447.40	1693.79	.00	.66
	Anxiety/Insomnia	27958.39	1	27958.39	804.23	.00	.478
	Social Dysfunction	249785.29	1	249785.29	22472.52	.00	.96
	Severe Depression	31372.34	1	31372.34	1204.98	.00	.58
Users/non-users	Somatic Symptoms	106.23	1	106.23	3.71	.054	.004
	Anxiety/Insomnia	130.31	1	130.31	3.75	.053	.004
	Social Dysfunction	4812.87	1	4812.87	433.001	.00	.33
	Severe Depression	1015.41	1	1015.41	39.001	.00	.04
Error	Somatic Symptoms	25142.06	879	28.60			
	Anxiety/Insomnia	30557.73	879	34.76			
	Social Dysfunction	9770.21	879	11.12			
	Severe Depression	22885.27	879	26.04			
Corrected Total	Somatic Symptoms	25248.28	880				
	Anxiety/Insomnia	30688.04	880				
	Social Dysfunction	14583.08	880				
	Severe Depression	23900.69	880				

The results show significant differences between users and non-users of *Nyaope* on social dysfunction [$F(1, 879) = 433.001, p < .001, \text{partial } \eta^2 = .33$] and severe depression [$F(1, 879) = 39.01, p < .001, \text{partial } \eta^2 = .04$], while somatic symptoms [$F(1, 879) = 3.71, p = .054, \text{partial } \eta^2 = .004$], and anxiety/insomnia [$F(1, 879) = 3.75, p = .053, \text{partial } \eta^2 = .004$] were close to being

significant. Comparisons of means on dependent variables indicate that users of *Nyaope* ($M = 19.18$, $SD = 3.42$) had higher scores on social dysfunction than non-users ($M = 14.50$, $SD = 3.25$). Also, users of *Nyaope* ($M = 7.04$, $SD = 4.94$) had higher scores on severe depression than non-users ($M = 4.89$, $SD = 5.26$). However, the effect size of use/non-use of *Nyaope* is much larger for social dysfunction ($\eta^2 = .33$) than severe depression ($\eta^2 = .04$).

5.3.3 Hypothesis three: Psychoticism, extraversion, neuroticism and self-esteem will significantly predict the mental health of *Nyaope* users.

The hypothesis was tested using structural equation modelling (SEM). Psychosocial factors consisted of personality traits and self-esteem. Personality traits has three dimensions (neuroticism, psychoticism and extraversion), while mental health has four dimensions (somatic symptoms, anxiety/insomnia, social dysfunctions and severe depression). Gender was controlled for in the model given that it formed relationships with mental health dimensions as shown in Table 5.1. The path diagram with standardized estimates is presented in Figure 5.1

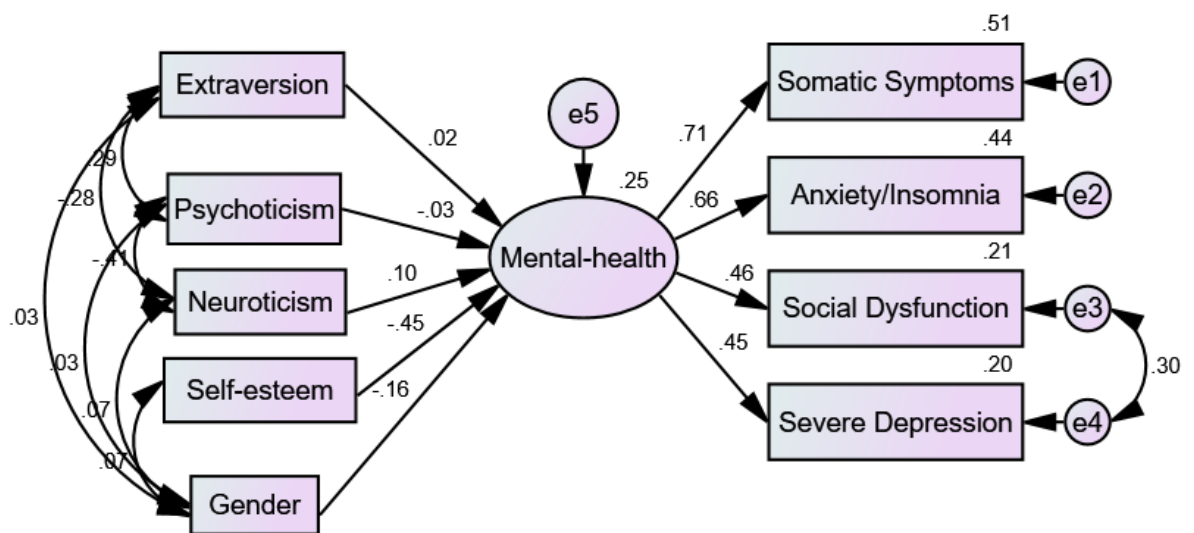


Figure 5.1: Direct effect of psychosocial factors on mental health

The results of path analyses with p-values are displayed in Table 5.4. The model fit was absolute, $\chi^2(19) = 18.96$, $p = .46$; CFI = 1.00; RMSEA = .00 [90% CI = (.00, .04)], SRMR = .02. Outcomes show that self-esteem ($\beta = -.45$, $p < .001$) significantly predicted mental health while

neuroticism ($\beta = .10, p = .08$), extraversion ($\beta = .02, p = .74$) and psychoticism ($\beta = -.03, p = .59$) did not. Specifically, an increase in self-esteem predicted positive mental health. The control variable gender ($\beta = -.16, p = .003$) also significantly predicted mental health. Specifically, being of the female gender predicted negative mental health. The model explained 25% variance in mental health. Factor loadings of the indicators of mental health were all significant.

Table 5.4:
Summary of direct effects of psychosocial factors on mental health

			Estimate	S.E.	C.R.	P
Mental health	<---	Extraversion	.018	.097	.328	.74
Mental health	<---	Psychoticism	-.032	.105	-.542	.59
Mental health	<---	Neuroticism	.102	.112	1.729	.08
Mental health	<---	Self-esteem	-.455	.059	-7.888	.00
Mental health	<---	Gender	-.156	.356	-2.924	.003
Somatic symptoms	<---	Mental health	.712			
Anxiety/insomnia	<---	Mental health	.665	.116	9.148	.00
Social dysfunction	<---	Mental health	.463	.065	7.360	.00
Severe depression	<---	Mental health	.453	.095	7.224	.00

5.3.4 Hypothesis four: Psychoticism, extraversion, neuroticism and self-esteem will significantly predict psychological wellbeing among *Nyaope* users.

The hypothesis was tested using SEM. Psychosocial factors consisted of personality traits and self-esteem. Psychological wellbeing has six dimensions [autonomy (AU), environmental mastery (EM), personal growth (PG), positive relations (PR), purpose in life (PL) and self-acceptance (SA)]. The path diagram with standardized estimates is presented in Figure 5.2.

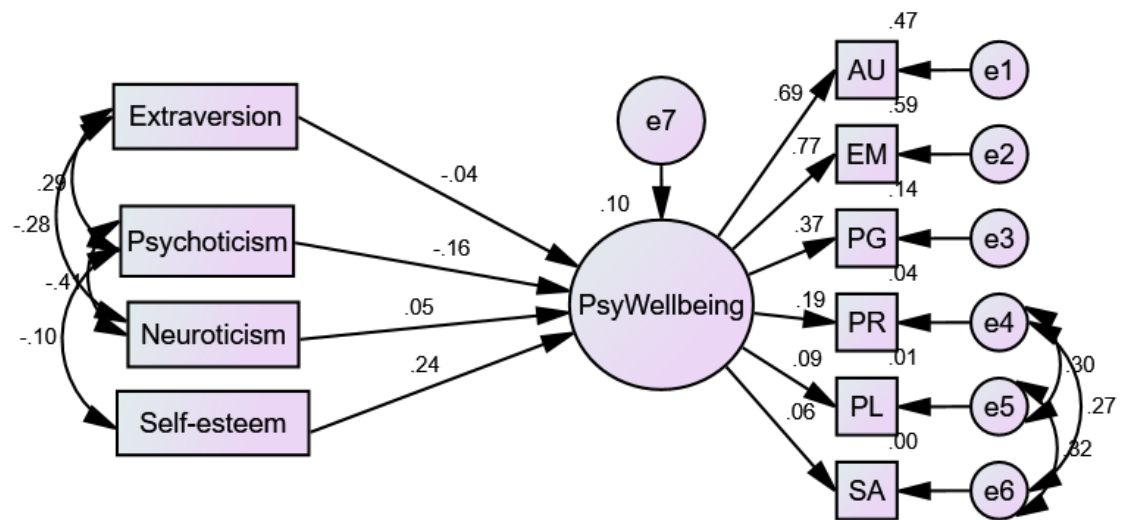


Figure 5.2: Direct effect of psychosocial factors on psychological wellbeing

The results of path analyses with p-values are displayed in Table 5.9. The model achieved a satisfactory fitness, $\chi^2(28) = 86.01$, $p < .001$; CFI = .90; RMSEA = .069 [90% CI = (.05, .086)], SRMR = .06. Outcomes show that self-esteem ($\beta = .24$, $p < .001$) and psychoticism ($\beta = -.16$, $p = .01$) significantly predicted psychological wellbeing while extraversion ($\beta = -.04$, $p = .49$) and neuroticism ($\beta = .05$, $p = .46$) did not. Specifically, an increase in self-esteem predicted positive mental health while an increase in psychoticism predicted negative wellbeing. The model explained 10% variance in psychological wellbeing. Factor loadings of the indicators of psychological wellbeing were significant except for purpose in life and self-acceptance subscales.

Table 5.5:

Summary of the direct effects of psychosocial factors on psychological wellbeing

			Estimate	S.E.	C.R.	P
PsyWellbeing	<---	Extravert	-.042	.060	-.698	.485
PsyWellbeing	<---	Psychoticism	-.165	.066	-2.491	.013
PsyWellbeing	<---	Neuroticism	.051	.069	.746	.456
PsyWellbeing	<---	Self-esteem	.142	.035	4.080	***
Autonomy	<---	PsyWellbeing	1.000			
Environmental mastery	<---	PsyWellbeing	1.150	.152	7.571	***
Personal growth	<---	PsyWellbeing	.549	.089	6.158	***
Positive relations	<---	PsyWellbeing	.287	.087	3.277	.001
Purpose in life	<---	PsyWellbeing	.133	.080	1.659	.10
Self-acceptance	<---	PsyWellbeing	.085	.086	.983	.33

wellbeing. In addition, the direct effect of psychological wellbeing ($\beta = -.16, p = .02$) on mental health was significant.

According to Preacher and Hayes (2004), evidence for mediation in a SEM framework requires that both indirect and total effects must be significant. Results indicate that the standardized total effects of self-esteem ($\beta = -.46, p = .004$) on mental health was significant. However, the standardized total effects of neuroticism ($\beta = .10, p = .19$), extraversion ($\beta = -.02, p = .81$), psychoticism ($\beta = -.03, p = .72$) were not significant. The standardized indirect effects of self-esteem, extraversion, neuroticism and psychoticism were tested using bootstrapping. Table 5.6 displays the 90% and 95% bias-corrected confidence intervals for indirect effects. The indirect effect of self-esteem and psychoticism on mental health did not pass through zero. Given that the total and the indirect effects of self-esteem were significant, it can be concluded that psychological wellbeing significantly and partially mediates the direct effect of self-esteem on mental health. However, since the total effect of psychoticism was not significant (but only the indirect effect), it can be concluded that psychological wellbeing did not significantly mediate the relationship between psychoticism and mental health. Further, the indirect effects of extraversion and neuroticism on mental health passed through zero. This shows that psychological wellbeing does not significantly mediate the association of extraversion and neuroticism with mental health.

Table 5.6:

Bias-corrected unstandardized 90% and 95% confidence intervals for indirect effects

Mediated paths	90% CI		Estimate	95% CI	
	Lower bounds	Upper bounds		Lower bounds	Upper bounds
Self-esteem > Psychological Wellbeing > Mental health	-.10	-.01	-.04	-.12	-.01
Extraversion > Psychological Wellbeing > Mental health	-.003	.04	.01	-.01	.05
Neuroticism > Psychological Wellbeing > Mental health	-.03	.01	-.01	-.04	.02
Psychoticism > Psychological Wellbeing > Mental health	.004	.08	.03	.001	.095

5.3.6 Hypothesis six: The direct effect of psychoticism, extraversion and neuroticism on mental health will be successively mediated by self-esteem and psychological wellbeing among Nyaope users.

The hypothesis was tested using SEM. Psychoticism, extraversion and neuroticism were specified as the independent variables, self-esteem and psychological wellbeing as mediator variables and mental health as dependent variable. The path diagram with standardized estimates are presented in Figures 5.4.

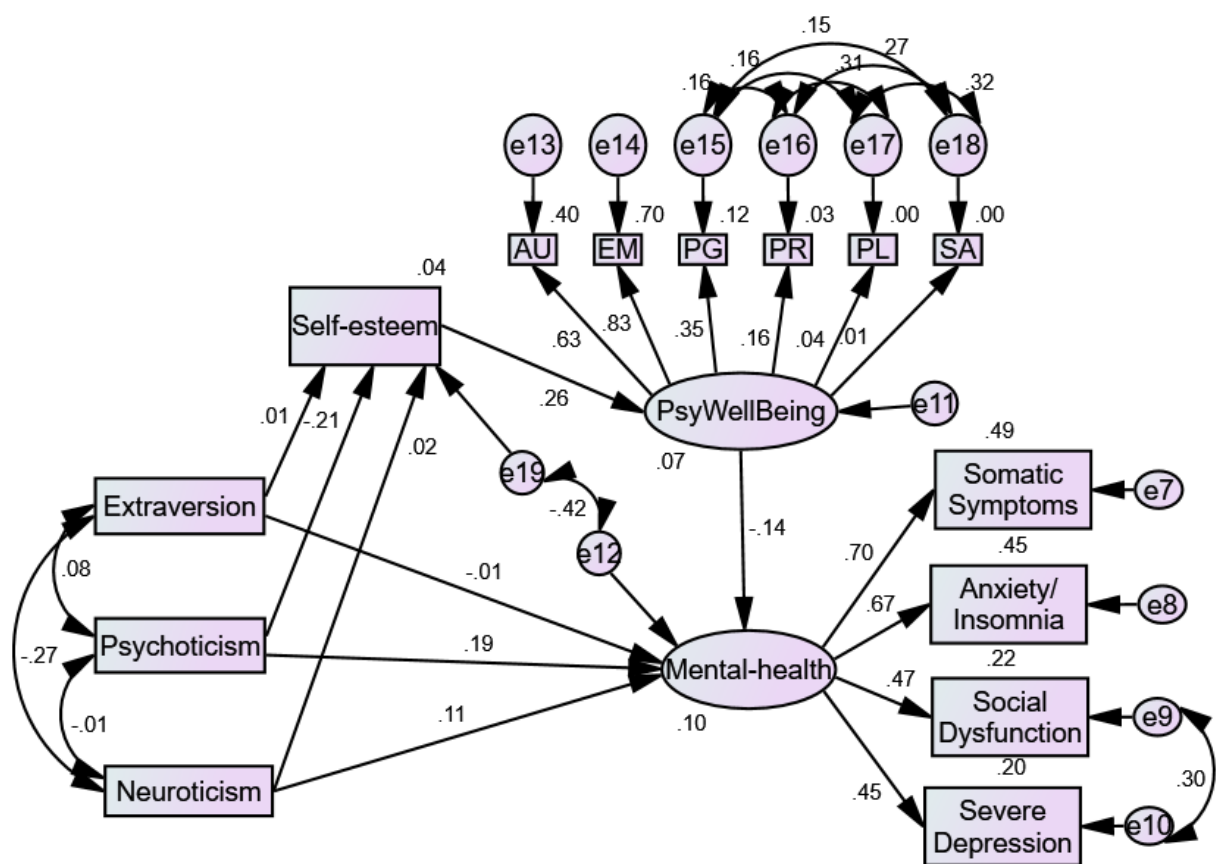


Figure 5.4: self-esteem and psychological wellbeing successively mediating the relationship between personality factors and mental health among Nyaope users

Outcome of fit indices showed that the model achieved a satisfactory fit, $\chi^2(62) = 148.36$, $p < .001$; CFI = .90; RMSEA = .056 [90% CI = (.045, .068)], SRMR = .07. The direct effect of psychoticism ($\beta = .19$, $p < .001$) on mental health was significant while that of neuroticism ($\beta = .11$, $p = .06$) and extraversion ($\beta = -.01$, $p = .83$) were not. Only the direct effect of psychoticism ($\beta = -.21$, $p < .001$) on self-esteem was significant, while that of extraversion ($\beta = .01$, $p = .89$) and neuroticism ($\beta =$

.02, $p = .64$) were not. The direct effect of self-esteem ($\beta = .26, p < .001$) on psychological wellbeing was significant while the direct effect of psychological wellbeing ($\beta = -.14, p = .03$) on mental health was also significant.

Results further indicate that the standardized total effects of psychoticism ($\beta = .20, p = .009$) on mental health was significant, whereas, that of neuroticism ($\beta = .11, p = .08$) and extraversion ($\beta = -.01, p = .79$) were not. The standardized indirect effects of extraversion, neuroticism and psychoticism were tested using bootstrapping. Table 5.7 displays the 90% and 95% bias-corrected confidence intervals for indirect effects. The standardized indirect effect of psychoticism on mental health was significant since it did not pass through zero based on the 90% bias-corrected confidence intervals. Given that the total and the indirect effects of psychoticism was significant, it can be concluded that only the association between psychoticism and mental health was partially and successively mediated by self-esteem and psychological wellbeing.

Table 5.7:
Bias-corrected unstandardized 90% and 95% confidence intervals for indirect effects among the *Nyaope* users (moderated-mediated model)

Mediated paths				90% CI		Estimate	95% CI	
				Lower bounds	Upper bounds		Lower bounds	Upper bounds
Extraversion	>	Self-esteem	>	Psychological Wellbeing	>	Mental health		
Neuroticism	>	Self-esteem	>	Psychological Wellbeing	>	Mental health		
Psychoticism	>	Self-esteem	>	Psychological Wellbeing	>	Mental health		

5.3.7 Hypothesis seven: Nyaope use/nonuse will moderate the successive mediated path between personality factors and mental health.

A moderated-mediated hypothesis was tested using SEM. Psychoticism, extraversion and neuroticism were specified as the independent variables, self-esteem and psychological wellbeing as mediator variables and mental health as dependent variable. Nyaope use (yes/no) was specified as moderator. The path diagrams with standardized estimates for the *Nyaope* use and nonuse groups are presented in Figures 5.4 and 5.5 respectively.

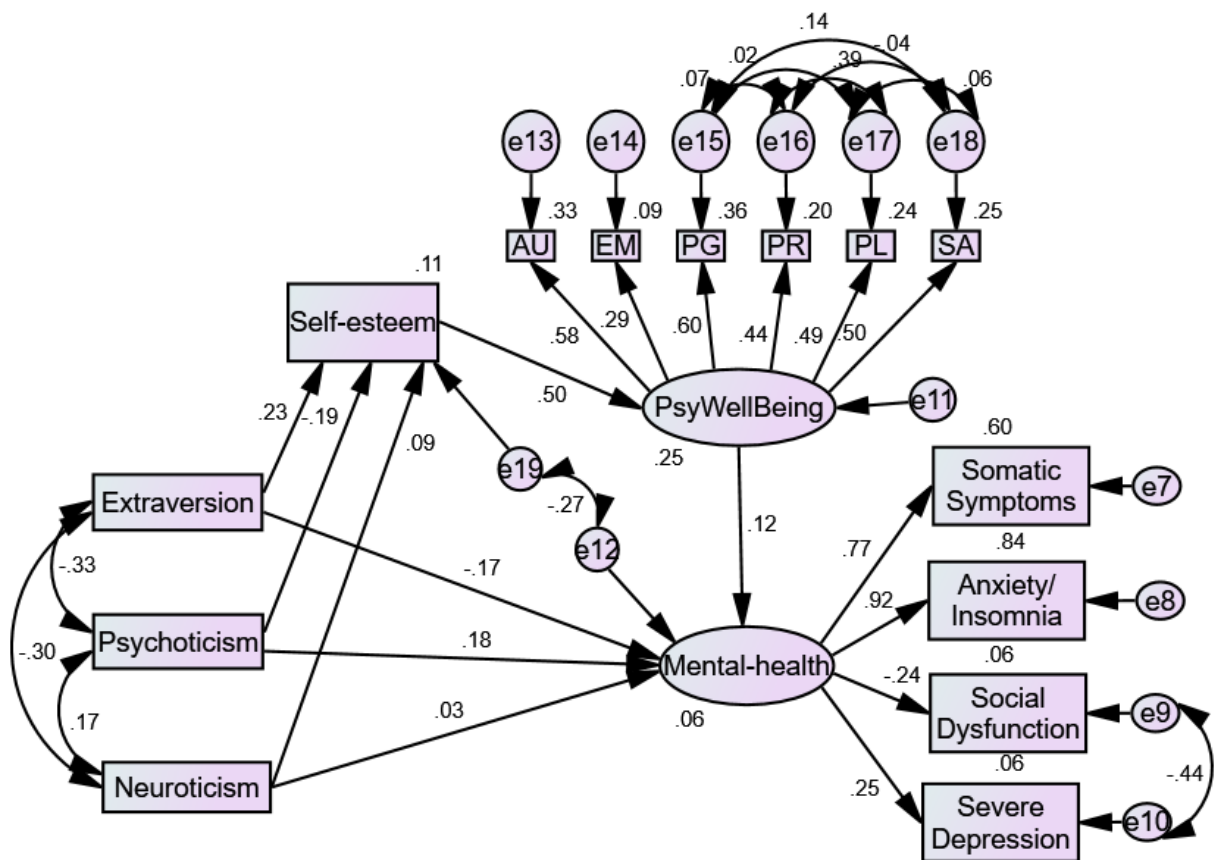


Figure 5.5: self-esteem and psychological wellbeing succesively mediating the relationship between personality factors and mental health among non Nyaope users

The moderated-mediation model (Nyaope use/nonuse) indicate a fair model fit compared to the mediated model (figure 5.4) given the lower CFI and higher SRMR values, $\chi^2(124) = 396.27$, $p < .001$; CFI = .87; RMSEA = .05 [90% CI = (.045, .056)], SRMR = .09. In the *Nyaope* non-use group, both the standardized total effects of extraversion ($\beta = -.16$, $p = .018$) and psychoticism (β

= .17, $p = .005$) were significant while that of neuroticism was not ($\beta = .04$, $p = .60$). Among the *Nyaope* use group, the standardized total effects of psychoticism ($\beta = .20$, $p = .006$) on mental health was significant, whereas, that of neuroticism ($\beta = .11$, $p = .052$) and extraversion ($\beta = -.01$, $p = .88$) were not. Tables 5.7 and 5.8 display the 90% and 95% bias-corrected confidence intervals for indirect effects in the *Nyaope* use and nonuse groups respectively. While only the indirect effect of psychoticism among the *Nyaope* use group did not pass through zero, all the indirect effects among the *Nyaope* non-use group passed through zero. This implies that self-esteem and psychological wellbeing successively mediated only the relationship between psychoticism and mental health in the *Nyaope* use group. In contrast, self-esteem and psychological wellbeing did not successively mediated the relationship between all personality factors and mental health in the *Nyaope* non-use group.

Table 5.8:
Bias-corrected unstandardized 90% and 95% confidence intervals for indirect effects among the *Nyaope* nonusers (moderated-mediation model)

Mediated paths				90% CI		Estimate	95% CI	
				Lower bounds	Upper bounds		Lower bounds	Upper bounds
Extraversion	>	Self-esteem	>	Psychological	Wellbeing > Mental health			
Neuroticism	>	Self-esteem	>	Psychological	Wellbeing > Mental health			
Psychoticism	>	Self-esteem	>	Psychological	Wellbeing > Mental health			

5.3.8 Hypothesis eight: Gender will moderate the successive mediated path between personality factors and mental health among Nyaope users.

A moderated-mediation hypothesis was tested using SEM. Psychoticism, extraversion and neuroticism were specified as the independent variables, self-esteem and psychological wellbeing as mediator variables and mental health as dependent variable. Gender was specified as a moderator. The path diagrams with standardized estimates are presented in Figures 5.6 and 5.7 respectively for *males* and *female* Uyaope users.

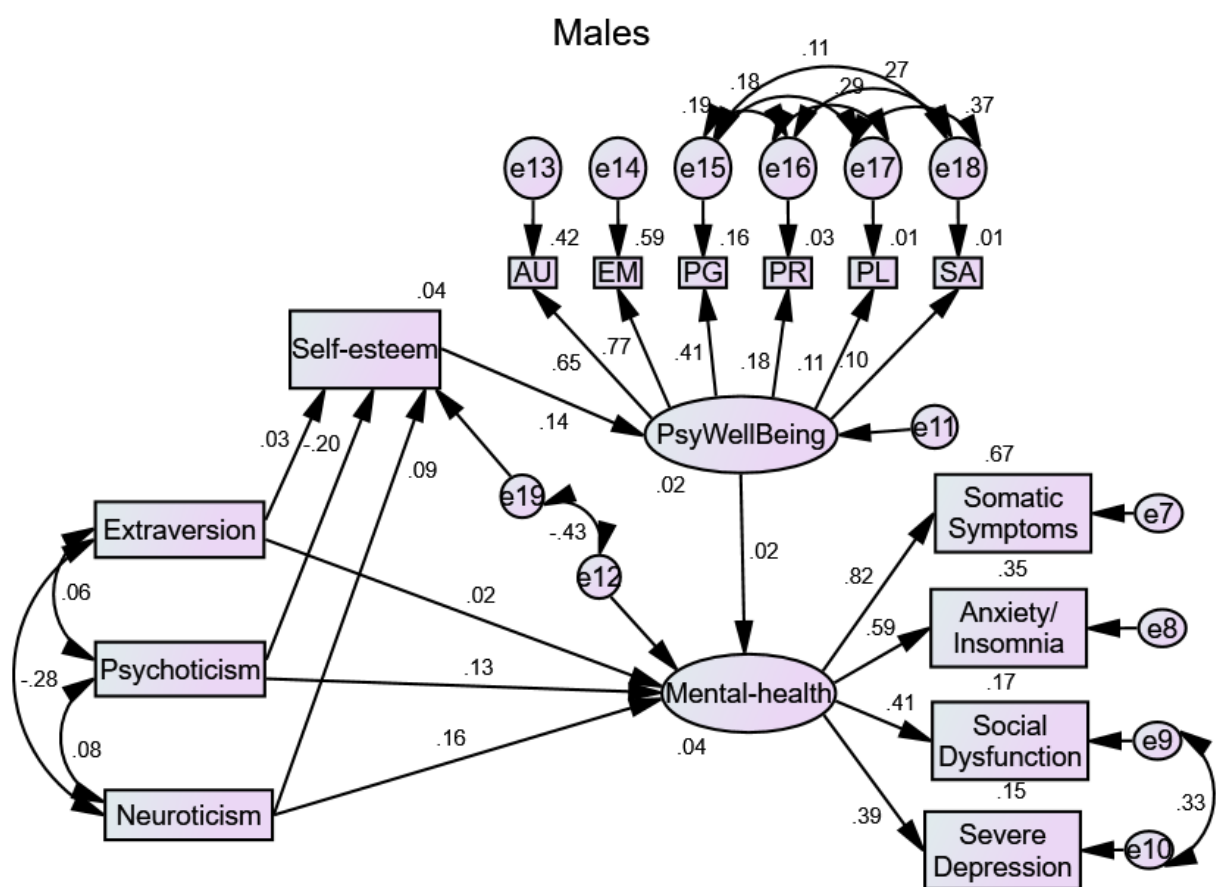


Figure 5.6: self-esteem and psychological wellbeing successively mediating the relationship between personality factors and mental health among male Uyaope users

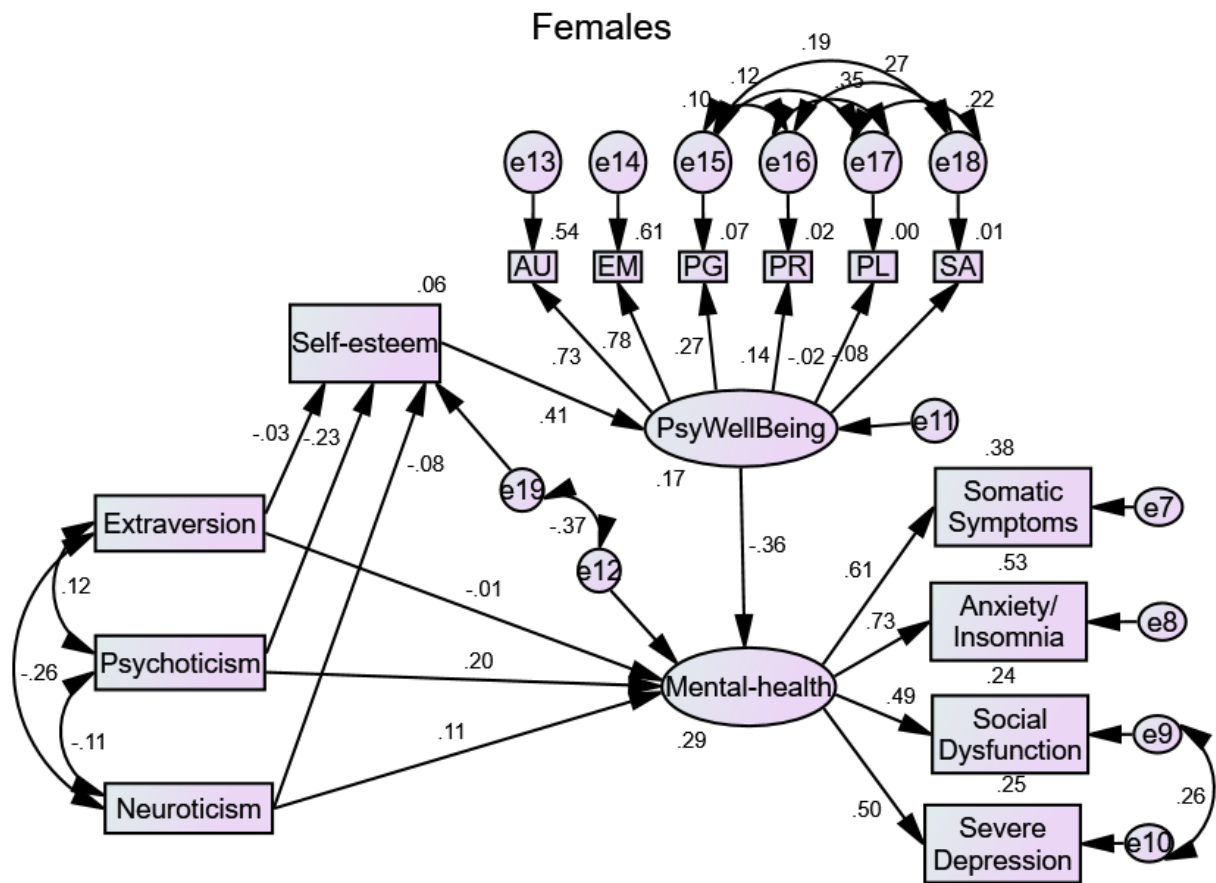


Figure 5.7: self-esteem and psychological wellbeing succesively mediating the relationship between personality factors and mental health among female Uyaope users

The moderated-mediation model (gender) indicate a good fit although with higher SRMR values, $\chi^2(124) = 217.91, p < .001$; CFI = .89; RMSEA = .04 [90% CI = (.03, .05)], SRMR = .09. Among males, only the standardized total effect of neuroticism ($\beta = .16, p = .01$) was significant while the effects psychoticism ($\beta = .13, p = .07$) and extraversion ($\beta = .02, p = .87$) were not. In females, only the standardized total effect of psychoticism ($\beta = .24, p = .007$) was significant while the effects of neuroticism ($\beta = .13, p = .30$) and extraversion ($\beta = -.002, p = .81$) were not. Tables 5.9 display the 90% and 95% bias-corrected confidence intervals for indirect effects for male and female *Nyaope* users. All the indirect effects for both gender passed through zero except the indirect effect of psychoticism in females. Therefore, it is concluded that self-esteem and psychological wellbeing succesively mediated the relationship between psychoticism and mental health only in female *Nyaope* users.

Table 5.9:
Bias-corrected unstandardized 90% and 95% confidence intervals for indirect effects as moderated by gender

Mediated paths				90% CI		Estimate	95% CI		
				Lower bounds	Upper bounds		Lower bounds	Upper bounds	
Male									
Extraversion	>	Self-esteem	>	Psychological	-.001	.003	.00	-.001	.006
Wellbeing > Mental health									
Neuroticism	>	Self-esteem	>	Psychological	-.002	.006	.00	-.003	.007
Wellbeing > Mental health									
Psychoticism	>	Self-esteem	>	Psychological	-.007	.005	-.001	-.009	.009
Wellbeing > Mental health									
Female									
Extraversion	>	Self-esteem	>	Psychological	-.01	.03	.004	-.01	.04
Wellbeing > Mental health									
Neuroticism	>	Self-esteem	>	Psychological	.00	.05	.012	-.002	.06
Wellbeing > Mental health									
Psychoticism	>	Self-esteem	>	Psychological	.01	.08	.04	.01	.08
Wellbeing > Mental health									

5.3.9 Hypothesis nine: Living arrangement will moderate the successive mediated path between personality factors and mental health among Nyaope users.

A moderated-mediation hypothesis was tested using SEM. Psychoticism, extraversion and neuroticism were specified as the independent variables, self-esteem and psychological wellbeing as mediator variables and mental health as dependent variable. Living arrangement (living with parents vs. living with others) was specified as a moderator. The path diagrams with standardized estimates are presented in Figures 5.8 and 5.9 respectively for *Uyaope* users living with parents and living with others.

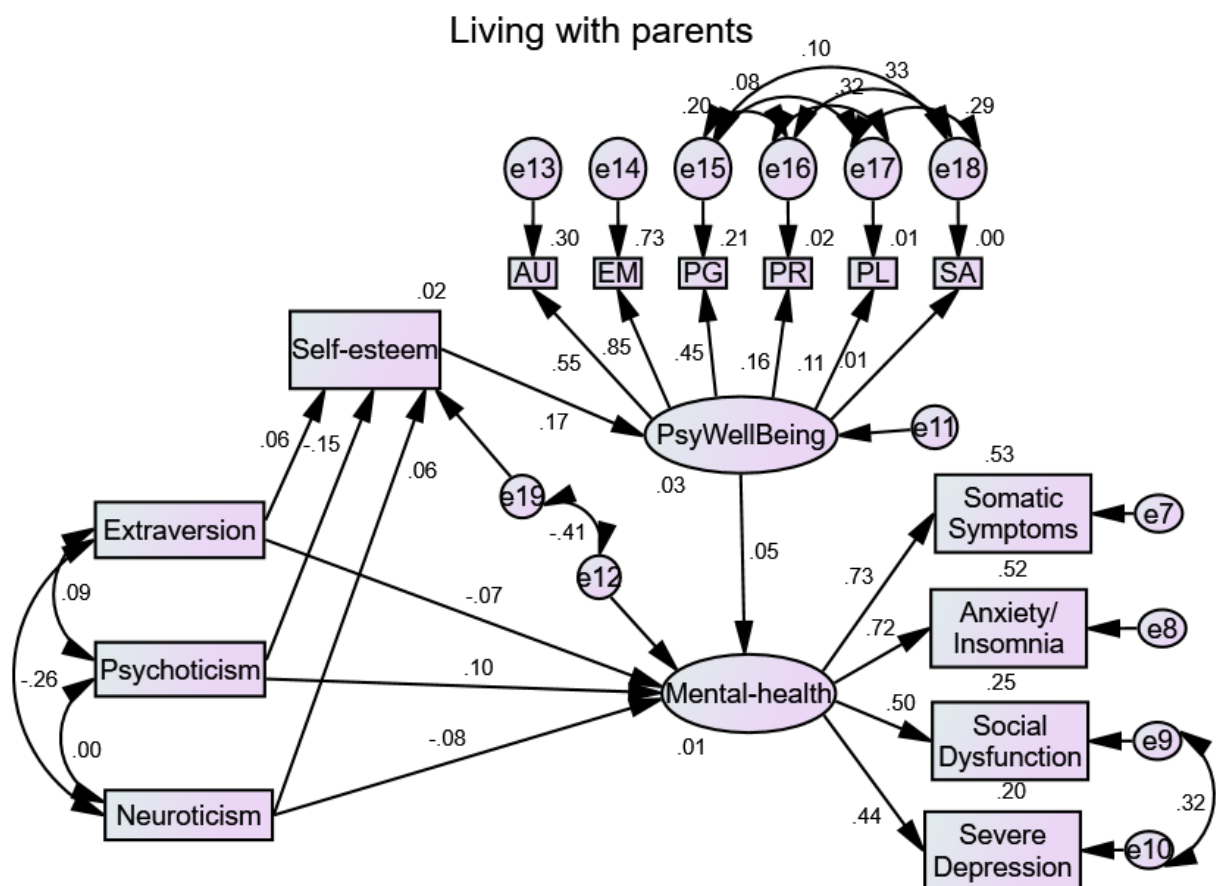


Figure 5.8: self-esteem and psychological wellbeing succesively mediating the relationship between personality factors and mental health among *Uyaope* users living with parents

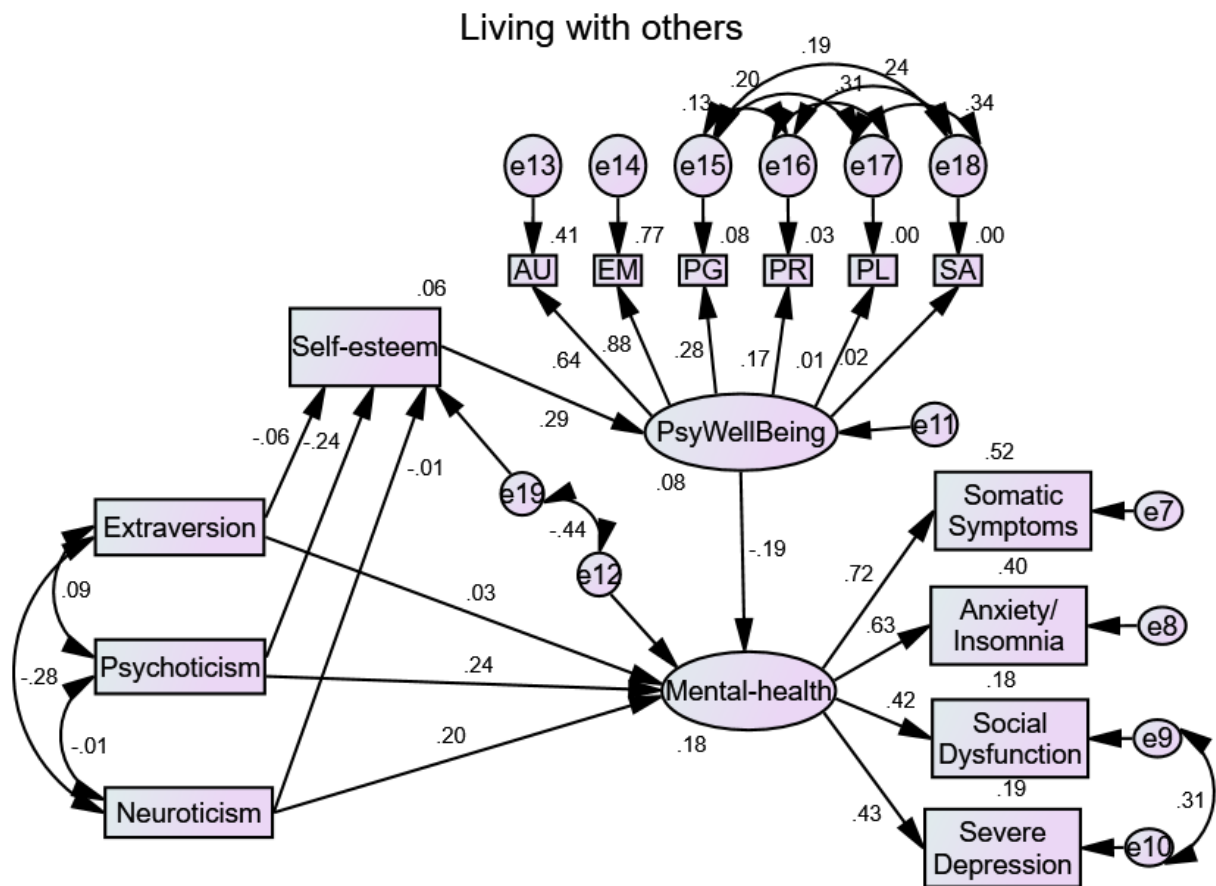


Figure 5.9: self-esteem and psychological wellbeing succesively mediating the relationship between personality factors and mental health among Uyaope users living with others

The moderated-mediation model (living arrangement) shows an adequate model fit although with higher SRMR values, $\chi^2(124) = 199.49$, $p < .001$; CFI = .91; RMSEA = .037 [90% CI = (.027, .047)], SRMR = .08. Among those living with parents, standardized total effects of neuroticism ($\beta = -.08$, $p = .32$), psychoticism ($\beta = .10$, $p = .36$) and extraversion ($\beta = -.07$, $p = .55$) were not all significant. In Nyaope users living with others, the standardized total effects of psychoticism ($\beta = .25$, $p = .006$) and neuroticism ($\beta = .20$, $p = .01$) were significant while the effects of extraversion ($\beta = .03$, $p = .67$) was not. Tables 5.10 display the 90% and 95% bias-corrected confidence intervals for indirect effects for Nyaope users living with parents and living with others. All the indirect effects passed through zero except the indirect effect of psychoticism among Nyaope users living with others. Given that both the total and indirect effects of psychoticism were significant among those living with others, it is concluded that self-esteem and psychological wellbeing succesively

mediated the relationship between psychoticism and mental health among *Nyaope* users living with others.

Table 5.10:
Bias-corrected unstandardized 90% and 95% confidence intervals for indirect effects as moderated by living arrangement

Mediated paths				90% CI		Estimate	95% CI	
				Lower bounds	Upper bounds		Lower bounds	Upper bounds
Living with parents								
Extraversion > Self-esteem > Psychological Wellbeing > Mental health				-.001	.01	.00	-.002	-
Neuroticism > Self-esteem > Psychological Wellbeing > Mental health				-.001	.007	.00	-.002	-
Psychoticism > Self-esteem > Psychological Wellbeing > Mental health				-.006	.005	-.001	-.02	.01
Living with others								
Extraversion > Self-esteem > Psychological Wellbeing > Mental health				.00	.02	.003	-.001	-
Neuroticism > Self-esteem > Psychological Wellbeing > Mental health				-.005	.008	.00	-.007	.009
Psychoticism > Self-esteem > Psychological Wellbeing > Mental health				.001	.03	.013	.00	.04

5.3.10 Hypothesis ten: Geographical location will moderate the successive mediated path between personality factors and mental health among Nyaope users.

A moderated-mediation hypothesis was tested using SEM. Psychoticism, extraversion and neuroticism were specified as the independent variables, self-esteem and psychological wellbeing as mediator variables and mental health as dependent variable. Geographical location (rural/semi-urban/urban) was specified as a moderator. The path diagrams with unstandardized estimates are presented in Figures 5.10, 5.11 and 5.12 respectively for *Uyaope* users in rural, semi-urban and urban settings

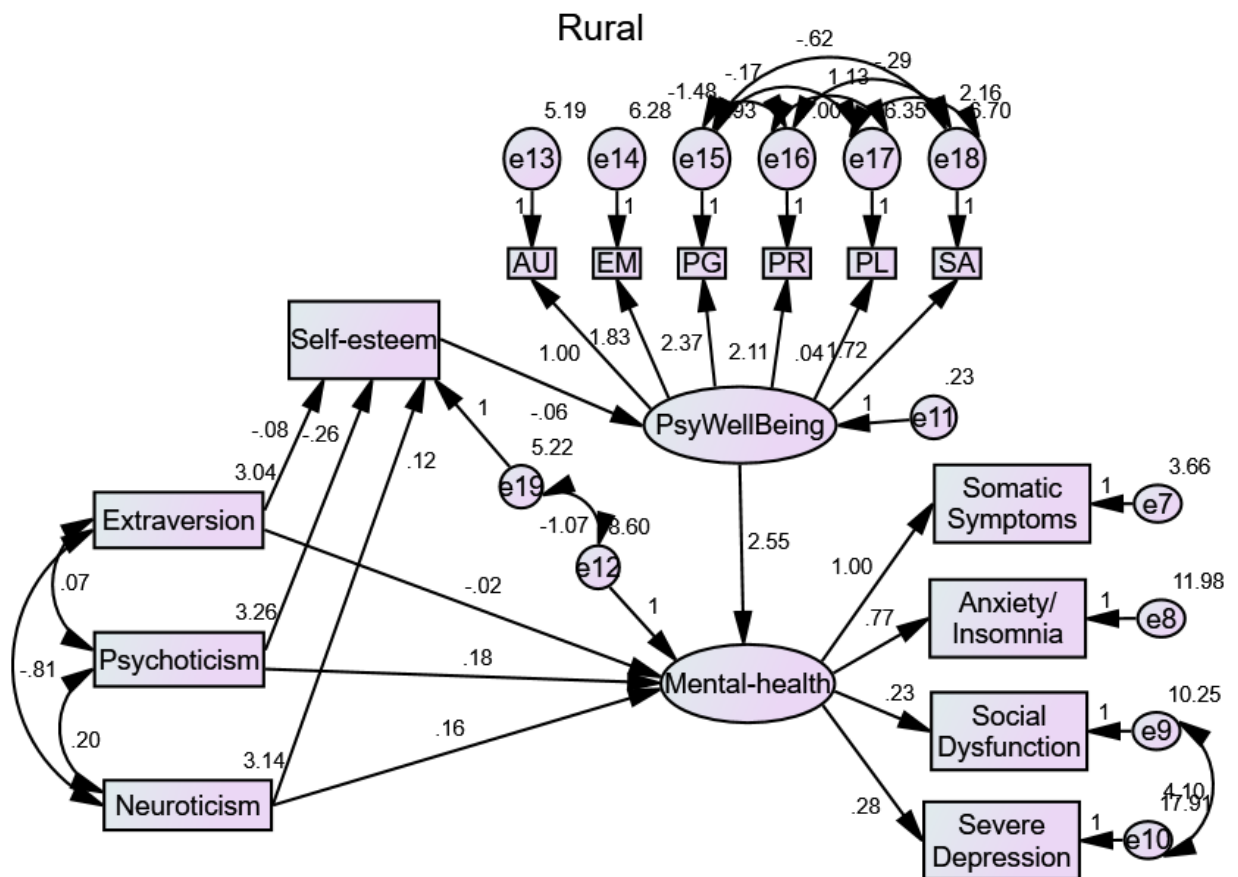


Figure 5.10: self-esteem and psychological wellbeing succesively mediating the relationship between personality factors and mental health among Uyaope users in rural setting

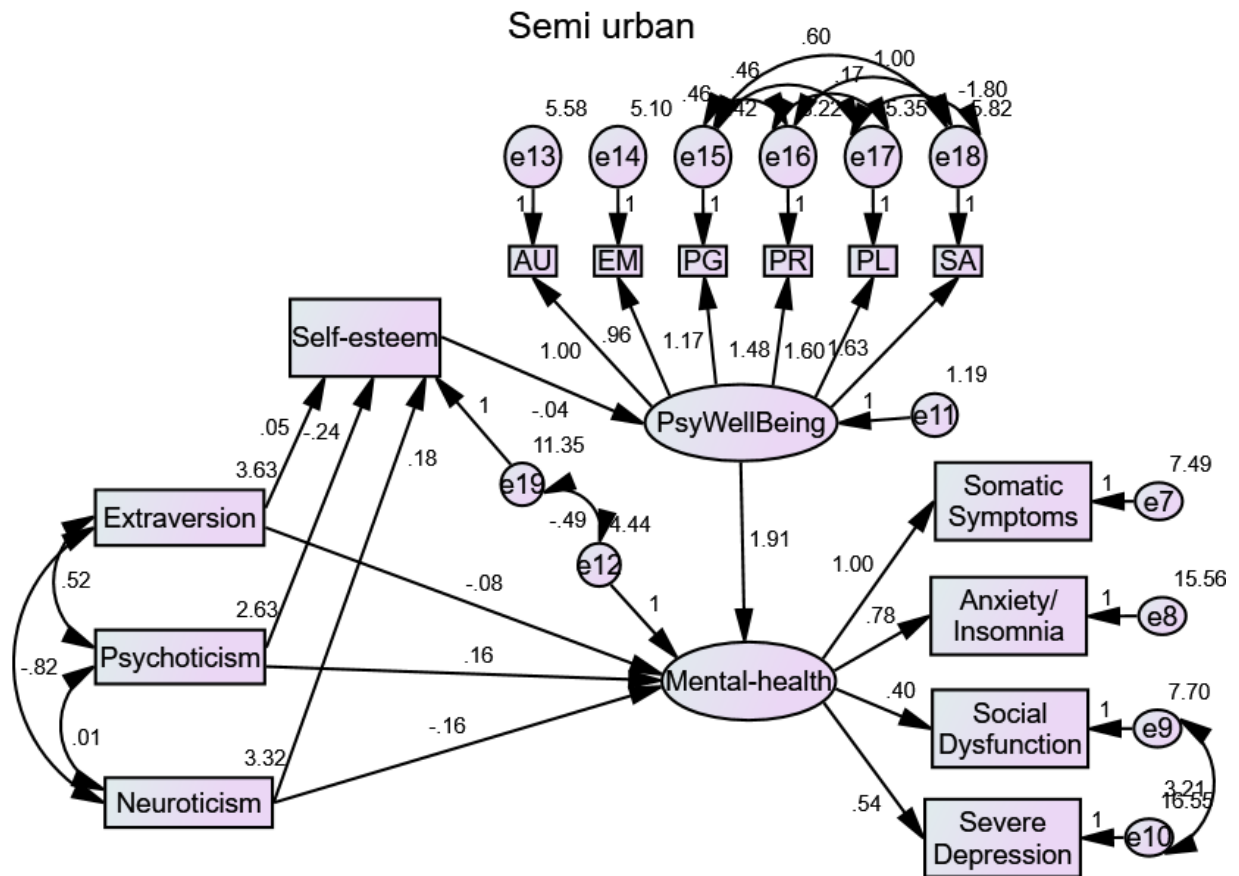


Figure 5.11: self-esteem and psychological wellbeing succesively mediating the relationship between personality factors and mental health among Uyaope users in semi-urban settings

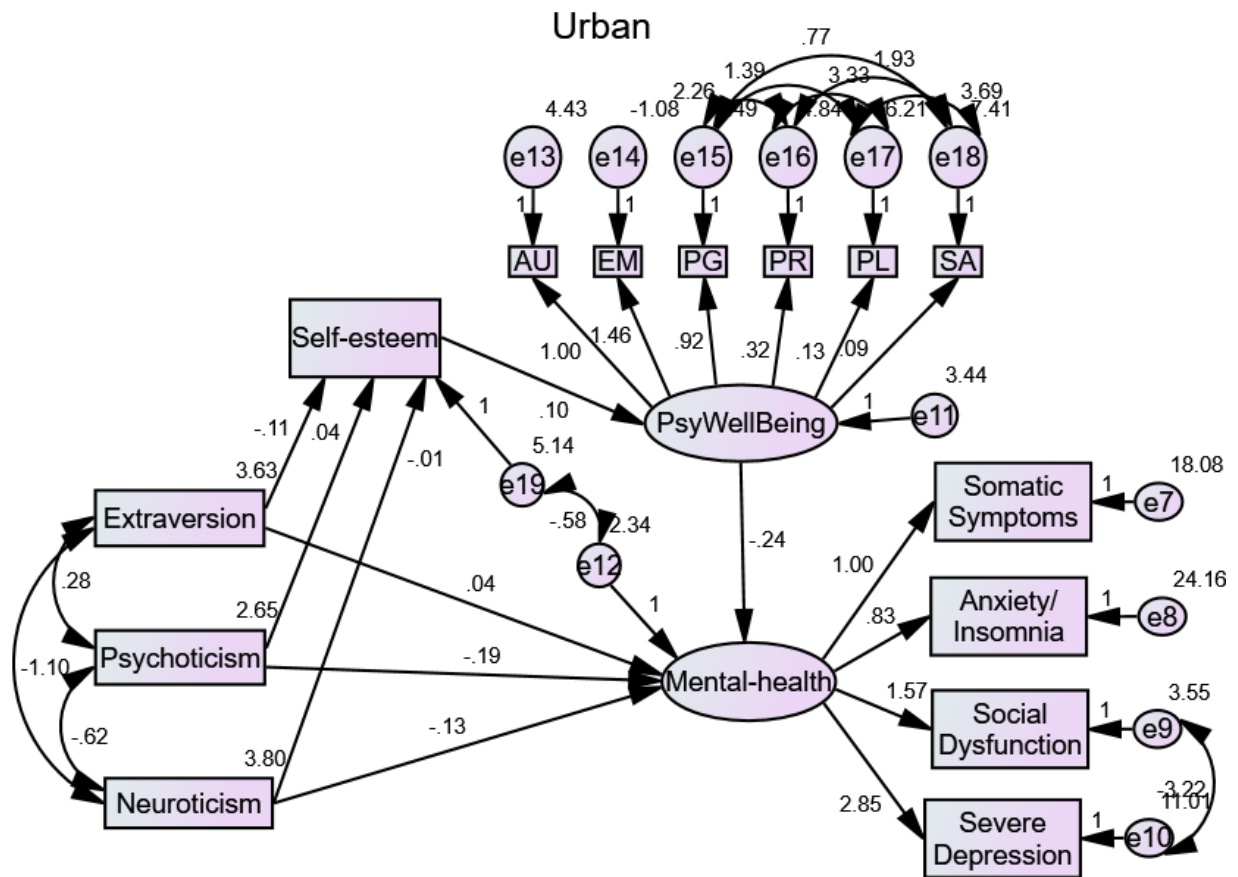


Figure 5.12: self-esteem and psychological wellbeing succesively mediating the relationship between personality factors and mental health among Uyaope users in urban settings

The moderated-mediation model (living arrangement) shows an adequate model fit although with higher SRMR values, $\chi^2(124) = 199.49$, $p < .001$; CFI = .91; RMSEA = .037 [90% CI = (.027, .047)], SRMR = .08. Among *Uyaope* users in rural settings, the unstandardized total effects of neuroticism ($\beta = -.01$, $p = .24$), psychoticism ($\beta = -.02$, $p = .40$) and extraversion ($\beta = -.01$, $p = .50$) were not all significant. Also, the unstandardized total effects of extraversion ($\beta = -.08$, $p = .46$), psychoticism ($\beta = .17$, $p = .21$) and neuroticism ($\beta = .18$, $p = .22$) were not significant among *Uyaope* users in semi-urban settings. Similarly, the unstandardized total effects of extraversion ($\beta = .04$, $p = .88$), psychoticism ($\beta = -.13$, $p = .09$) and neuroticism ($\beta = -.19$, $p = .16$) were not significant among *Uyaope* users in urban settings.

Tables 5.11 shows the 90% and 95% bias-corrected confidence intervals for indirect effects for *Nyaope* users in rural, semi-urban and urban settings. All the indirect effects passed through zero except the indirect effects of psychoticism among *Nyaope* users in semi-urban settings. However, given that all total effects including that of psychoticism were insignificant it can be concluded that self-esteem and psychological wellbeing did not successively mediate the relationship between personality factors and mental health according to geographical locations of *Nyaope* users.

Table 5.11:
Bias-corrected unstandardized 90% and 95% confidence intervals for indirect effects as moderated by living arrangement

Mediated paths				90% CI		Estimate	95% CI		
				Lower bounds	Upper bounds		Lower bounds	Upper bounds	
Urban									
Extraversion	>	Self-esteem	>	Psychological Wellbeing > Mental health	-.001	.02	.003	-.002	-
Neuroticism	>	Self-esteem	>	Psychological Wellbeing > Mental health	-.01	.01	.00	-.01	.01
Psychoticism	>	Self-esteem	>	Psychological Wellbeing > Mental health	-.02	.003	-.001	-.10	.005
Semi-urban									
Extraversion	>	Self-esteem	>	Psychological Wellbeing > Mental health	-.09	.003	-.004	-	.006
Neuroticism	>	Self-esteem	>	Psychological Wellbeing > Mental health	-.05	-.001	-.014	-	.001
Psychoticism	>	Self-esteem	>	Psychological Wellbeing > Mental health	.001	.10	.02	.00	-
Rural									
Extraversion	>	Self-esteem	>	Psychological Wellbeing > Mental health	.001	-	.012	.00	-
Neuroticism	>	Self-esteem	>	Psychological Wellbeing > Mental health	-	-.001	-.02	-	.00
Psychoticism	>	Self-esteem	>	Psychological Wellbeing > Mental health	.01	-	.04	.003	-

5.3.11 Hypothesis six: Gender, living arrangement and geographical location will significantly influence the psychological wellbeing of users of *Nyaope*

A three-way multivariate analysis of variance (MANOVA) was used to test the hypothesis.

Test of the assumption of homogeneity of variance-covariance reveals that there was no homogeneity of variance-covariance, $F(504, 14951.58) = 1.30, p < .001$. Therefore, Pillai's Trace was used as the test statistic for the multivariate tests.

Table 5.12a shows the descriptive statistics (mean, standard deviation) for the six dimensions of PWB by gender, living arrangement and geographical location.

Table 5.12a:

Summary of descriptive statistics on PWB by gender, living arrangement and geographical location of *Nyaope* users

		Autonomy		EM		PG		PR		PL		SA	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Gender	n												
Female	165	9.69	2.28	11.95	2.39	10.48	2.64	10.42	2.64	10.35	2.63	11.25	2.41
Male	273	9.92	2.42	12.07	2.44	10.73	2.44	10.26	2.58	10.19	2.61	11.19	2.36
Living arr.													
Father alone	26	10.50	2.50	12.19	2.04	10.92	2.33	9.69	2.28	9.92	2.83	11.88	1.93
Mother alone	100	9.81	2.45	12.23	2.36	11.02	2.51	10.21	2.82	10.17	2.59	10.91	2.20
Both parents	36	9.86	2.26	12.36	2.14	10.11	2.51	10.22	2.60	9.39	3.03	11.42	2.37
Grandparents	112	9.97	2.41	11.91	2.52	10.82	2.44	10.53	2.44	10.40	2.59	11.18	2.48
Family member	92	9.55	2.44	12.07	2.39	10.41	2.64	10.09	2.64	10.57	2.77	11.41	2.62
Other	72	9.74	2.07	11.61	2.61	10.26	2.52	10.75	2.56	10.28	2.14	11.08	2.24
Geo. location													
Rural	161	9.40	2.56	12.48	2.36	10.46	2.74	10.29	2.93	10.17	2.55	11.17	2.48
Semi urban	173	10.27	2.44	12.28	2.46	10.81	2.73	10.53	2.56	10.64	2.92	11.10	2.57
Urban	104	9.77	1.73	10.87	2.06	10.63	1.64	10.04	2.06	9.73	2.06	11.46	1.81

Table 5.12b presents the multivariate test examining whether the six dimensions of PWB differ according to gender, living arrangement and geographical location. The main effect of

geographical location [Pillai's $\eta^2 = .08$, $F(12, 796) = 2.87$, $p < .001$, multivariate $\eta^2 = .04$] was significant on the combined PWB dimensions. However, the main effects of gender [Pillai's $\eta^2 = .01$, $F(6, 397) = .44$, $p = .85$, multivariate $\eta^2 = .01$] and living arrangement [Pillai's $\eta^2 = .06$, $F(30, 2005) = .86$, $p = .68$, multivariate $\eta^2 = .01$] were not significant. The interaction effect of the three independent variables (Pillai's $\eta^2 = .13$, $F(60, 2412) = .92$, $p = .66$, multivariate $\eta^2 = .02$) was not significant.

Table 5.12b:

Summary of multivariate tests of difference on psychological wellbeing by gender, living arrangement and geographical location of *Nyaope* users

	Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.98	3949.45	6	397	.00	.98
	Wilks' Lambda	.02	3949.45	6	397	.00	.98
	Hotelling's Trace	59.69	3949.45	6	397	.00	.98
	Roy's Largest Root	59.69	3949.45	6	397	.00	.98
Gender (A)	Pillai's Trace	.007	.44	6	397	.85	.01
	Wilks' Lambda	.993	.44	6	397	.85	.01
	Hotelling's Trace	.007	.44	6	397	.85	.01
	Roy's Largest Root	.007	.44	6	397	.85	.01
Living arrangement (B)	Pillai's Trace	.064	.86	30	2005	.684	.01
	Wilks' Lambda	.938	.86	30	1590	.689	.01
	Hotelling's Trace	.065	.85	30	1977	.693	.01
	Roy's Largest Root	.026	1.74	6	401	.111	.03
Geographical location (C)	Pillai's Trace	.083	2.87	12	796	.001	.04
	Wilks' Lambda	.918	2.88	12	794	.001	.04
	Hotelling's Trace	.088	2.90	12	792	.001	.04
	Roy's Largest Root	.069	4.58	6	398	.000	.07
A * C	Pillai's Trace	.074	1.01	30	2005	.45	.02
	Wilks' Lambda	.927	1.01	30	1590	.44	.02
	Hotelling's Trace	.078	1.03	30	1977	.43	.02
	Roy's Largest Root	.059	3.95	6	401	.001	.06
B * C	Pillai's Trace	.009	.29	12	796	.99	.004
	Wilks' Lambda	.991	.29	12	794	.99	.004
	Hotelling's Trace	.009	.29	12	792	.99	.004
	Roy's Largest Root	.007	.44	6	398	.85	.01
A * B * C	Pillai's Trace	.149	1.02	60	2412	.43	.03
	Wilks' Lambda	.859	1.03	60	2085.06	.42	.03
	Hotelling's Trace	.156	1.03	60	2372	.42	.03
	Roy's Largest Root	.065	2.63	10	402	.004	.06
A * B * C	Pillai's Trace	.134	.92	60	2412	.66	.02
	Wilks' Lambda	.872	.92	60	2085.06	.65	.02
	Hotelling's Trace	.140	.92	60	2372	.64	.02
	Roy's Largest Root	.068	2.75	10	402	.003	.06

The univariate test of differences on dimensions of psychological wellbeing according to geographical location is presented in Table 5.12c.

Table 5.12c: Summary of univariate test of differences on psychological wellbeing by geographical location of *Nyaope* users

Source	Dependent Variable	Sum of Squares	d	Mean Square	F	Sig.	Partial Eta Squared
Intercept	Autonomy	19859.26	1	19859.26	3522.13	.00	.898
	Environmental Mastery	30116.15	1	30116.15	5326.17	.00	.930
	Personal Growth	22655.89	1	22655.89	3591.47	.00	.899
	Positive Relations	20923.93	1	20923.93	3179.84	.00	.888
	Purpose in Life	20952.81	1	20952.81	3239.41	.00	.890
Geographical location	Self-acceptance	26490.37	1	26490.37	4572.26	.00	.919
	Autonomy	35.69	2	17.83	3.16	.04	.02
	Environmental Mastery	58.76	2	29.38	5.20	.006	.03
	Personal Growth	9.37	2	4.69	.74	.48	.004
	Positive Relations	30.60	2	15.30	2.33	.10	.01
	Purpose in Life	74.08	2	37.04	5.73	.004	.03
	Self-acceptance	3.21	2	1.60	.28	.76	.001
	Autonomy	2266.65	402	5.64			
	Environmental Mastery	2273.06	402	5.65			
	Personal Growth	2535.91	402	6.31			
Error	Positive Relations	2645.23	402	6.58			
	Purpose in Life	2600.17	402	6.47			
	Self-acceptance	2329.07	402	5.79			

The ANOVA summary (Table 5.12c) indicates that autonomy [$F(2, 402) = 3.16, p = .04$, partial $\eta^2 = .02$], environmental mastery [$F(2, 402) = 5.20, p = .006$, partial $\eta^2 = .03$], and purpose in life [$F(2, 402) = 5.73, p = .004$, partial $\eta^2 = .03$] were significantly influenced by geographical location, while personal growth [$F(2, 402) = .74, p = .48$, partial $\eta^2 = .004$], positive relations [$F(2, 402) = 2.33, p = .10$, partial $\eta^2 = .01$] and self-acceptance [$F(2, 402) = .28, p = .76$, partial $\eta^2 = .001$] were not.

Post hoc analyses were calculated using the Bonferonni correction. Outcomes showed that *Nyaope* users in urban ($M = 9.77, SD = 1.73$) and semi-urban settings ($M = 10.27, SD = 2.44$) had higher scores on autonomy than *Nyaope* users in rural settings ($M = 9.40, SD = 2.56$). However, users in rural setting ($M = 12.48, SD = 2.36$) and semi-urban settings ($M = 12.28, SD = 2.46$) had higher scores on environmental mastery than users in urban settings ($M = 10.87, SD = 2.06$). Similarly, users in a rural setting ($M = 10.17, SD = 2.55$) and semi-urban settings ($M = 10.64, SD = 2.92$) had higher scores on purpose in life compared to users in urban settings ($M = 9.73, SD = 2.06$).

5.3.12 Hypothesis seven: Gender, living arrangement and geographical location will significantly influence the mental health of users of *Nyaope*.

A three-way multivariate analysis of variance (MANOVA) was used to test the hypothesis.

The test of the assumption of homogeneity of variance-covariance reveals that there was homogeneity of variance-covariance, $F(300, 10777.85) = 1.13, p = .06$). Therefore, Wilks' Lambda was used as the test statistic for the multivariate tests.

Table 5.13a shows the descriptive statistics (mean, standard deviation) for dimensions of mental health by gender, living arrangement and geographical location.

Table 5.13a:

Summary of descriptive statistics on MH by gender, living arrangement and geographical location of *Nyaope* users

		Somatic symptoms		Anxiety/Insomnia		Social dysfunction		Severe depression	
		M	SD	M	SD	M	SD	M	SD
Gender	N								
Female	165	7.64	4.88	6.18	5.57	19.19	3.44	7.68	5.26
Male	273	6.73	4.31	4.69	4.84	19.85	3.22	6.66	4.70
Living arrangement									
Father alone	26	7.54	4.38	5.85	4.79	19.27	3.57	7.46	5.10
Mother alone	100	6.88	4.70	4.86	4.98	19.99	3.26	6.90	4.64
Both parents	36	6.56	3.95	3.17	4.02	20.31	3.48	6.36	4.64
Grandparents	112	6.71	4.57	4.99	5.31	19.61	3.15	7.29	5.36
Family member	92	6.83	4.07	5.46	4.92	19.58	3.50	6.73	4.63
Other	72	8.29	5.12	6.75	5.70	18.85	3.19	7.43	5.20
Geographical location									
Rural	161	5.86	3.83	3.81	4.31	20.06	3.30	6.88	4.35
Semi urban	173	6.08	4.06	4.13	4.59	20.24	3.01	5.77	4.39
Urban	104	10.59	5.58	9.34	5.13	17.83	3.22	9.41	5.79

Table 5.13b presents the multivariate test examining whether the four dimensions of MH differ according to gender, living arrangement and geographical location. The main effect of geographical location (Wilks' $\lambda = .87$, $F(8, 798) = 7.18$, $p < .001$, multivariate $\eta^2 = .07$) was significant on the combined MH dimensions. However, the main effects of gender (Wilks' $\lambda = .99$,

$F(4, 399) = .55, p = .70$, multivariate $\eta^2 = .01$) and living arrangement (Wilks' $\lambda = .96, F(20, 1324) = .85, p = .65$, multivariate $\eta^2 = .01$) were not significant. The interaction effect of the three independent variables (Wilks' $\lambda = .89, F(40, 1514.82) = 1.23, p = .16$, multivariate $\eta^2 = .03$) was not significant.

Table 5.13b:

Summary of multivariate tests of difference on MH by gender, living arrangement and geographical location of *Nyaope* users

	Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.97	3227.32	4	399	.00	.97
	Wilks' Lambda	.03	3227.32	4	399	.00	.97
	Hotelling's Trace	32.35	3227.32	4	399	.00	.97
	Roy's Largest Root	32.35	3227.32	4	399	.00	.97
Gender (A)	Pillai's Trace	.01	.55	4	399	.70	.01
	Wilks' Lambda	.99	.55	4	399	.70	.01
	Hotelling's Trace	.01	.55	4	399	.70	.01
	Roy's Largest Root	.01	.55	4	399	.70	.01
Living arrangement (B)	Pillai's Trace	.04	.85	20	1608	.65	.01
	Wilks' Lambda	.96	.85	20	1324.28	.65	.01
	Hotelling's Trace	.043	.85	20	1590	.66	.01
	Roy's Largest Root	.03	1.99	5	402	.08	.02
Geographical location (C)	Pillai's Trace	.13	7.08	8	800	.00	.07
	Wilks' Lambda	.87	7.18	8	798	.00	.07
	Hotelling's Trace	.15	7.28	8	796	.00	.07
	Roy's Largest Root	.12	12.42	4	400	.00	.11
A * B	Pillai's Trace	.04	.82	20	1608	.69	.01
	Wilks' Lambda	.96	.82	20	1324.28	.69	.01
	Hotelling's Trace	.04	.82	20	1590	.69	.01
	Roy's Largest Root	.02	1.49	5	402	.19	.02
A * C	Pillai's Trace	.01	.62	8	800	.76	.01
	Wilks' Lambda	.99	.62	8	798	.76	.01
	Hotelling's Trace	.01	.62	8	796	.76	.01
	Roy's Largest Root	.01	1.09	4	400	.36	.01
B * C	Pillai's Trace	.10	1.04	40	1608	.40	.03
	Wilks' Lambda	.90	1.04	40	1514.82	.40	.03
	Hotelling's Trace	.11	1.04	40	1590	.40	.03
	Roy's Largest Root	.05	2.10	40	402	.02	.05
A * B * C	Pillai's Trace	.12	1.23	40	1608	.16	.03
	Wilks' Lambda	.89	1.23	40	1514.82	.16	.03
	Hotelling's Trace	.12	1.23	40	1590	.16	.03
	Roy's Largest Root	.06	2.28	10	402	.01	.05

The univariate test of differences on dimensions of MH by geographical location is presented in Table 5.13c.

Table 5.13c:

Summary of univariate test of differences on MH by geographical location of *Nyaope* users

Source	Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	Somatic Symptoms	11277.32	1	11277.32	670.76	.00	.63
	Anxiety/Insomnia	6924.22	1	6924.22	320.33	.00	.44
	Social Dysfunction	77332.78	1	77332.78	7817.68	.00	.95
	Severe Depression	11130.64	1	11130.64	493.95	.00	.55
Geographical location	Somatic Symptoms	381.14	2	190.57	11.34	.00	.05
	Anxiety/Insomnia	797.39	2	398.69	18.45	.00	.08
	Social Dysfunction	125.57	2	62.79	6.35	.002	.03
	Severe Depression	368.45	2	184.23	8.18	.000	.04
Error	Somatic Symptoms	6758.77	402	16.81			
	Anxiety/Insomnia	8689.50	402	21.62			
	Social Dysfunction	3976.60	402	9.89			
	Severe Depression	9058.72	402	22.53			

ANOVA summary (Table 5.13c) indicates that all dimensions of mental health were significantly influenced by geographical location: somatic symptoms [$F(2, 402) = 11.34, p < .001$, partial $\eta^2 = .05$], anxiety/insomnia [$F(2, 402) = 11.45, p < .001$, partial $\eta^2 = .08$], social

dysfunction [$F(2, 402) = 6.35, p = .002, \text{partial } \eta^2 = .03$] and severe depression [$F(2, 402) = 8.18, p < .001, \text{partial } \eta^2 = .04$].

Post hoc analyses were calculated using the Bonferroni correction. Outcomes showed that *Nyaope* users in rural setting ($M = 5.86, SD = 3.83$) and semi-urban settings ($M = 6.08, SD = 4.06$) had lower somatic symptoms scores than users in urban settings ($M = 10.59, SD = 5.18$). Likewise, users in rural setting ($M = 3.81, SD = 4.31$) and semi-urban settings ($M = 4.13, SD = 4.59$) had lower anxiety/insomnia scores compared to users in urban settings ($M = 9.34, SD = 5.13$). Similarly, users in rural setting ($M = 6.88, SD = 4.35$) and semi-urban settings ($M = 5.77, SD = 4.39$) had lower severe depression scores compared to users in urban settings ($M = 9.41, SD = 5.79$). In contrast, users in urban settings ($M = 17.83, SD = 3.22$) had lower social dysfunction scores compared to users in rural ($M = 20.06, SD = 3.30$) and semi-urban settings ($M = 20.24, SD = 3.01$).

CHAPTER SIX

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

6.1 Discussion

The aim of this study was to examine the influence of psychosocial factors (personality, self-esteem, gender, living arrangement and geographical location) on the mental health and psychological wellbeing of *Nyaope* users. The mediating roles of psychological wellbeing in the association with personality factors and self-esteem with mental health were also examined. In addition, the study evaluated the differences of use/non-use of *Nyaope* on psychological wellbeing and mental health. Data analyses and the results were presented in the previous chapter. This chapter focuses on the discussion of the results, conclusion and recommendations.

Hypothesis one: Users of *Nyaope* will differ significantly from non-users with respect to psychological wellbeing.

Results showed a significant difference in the psychological wellbeing of users and non-users. Users and non-users of *Nyaope* significantly differ with regard to autonomy, personal growth and self-acceptance. Differences were also close to being significant on purpose in life. Specifically, compared to non-users, users reported lower autonomy, personal growth, self-acceptance and purpose in life. These results confirm that *Nyaope*, like any other drugs of abuse, have negative consequences for psychological health and wellness. These outcomes imply that when adolescents and young adults are under the influence of *Nyaope*, they may not have control over their lives and may be less motivated and less ambitious in pursuit of positive life goals. They may also experience lower life satisfaction and lack clear focus on the way to go in life. However, they can still maintain positive relationship with others and have a mastery of their environment. Although there is scarcity of research linking drug use and the dimensions of the Ryff PWB, outcomes support the findings of Visser and Routledge (2007) that demonstrated that adolescent drug users in the Tshwane area suffer from lower psychological wellbeing compared to non-users.

Similarly, Tuicomepee and Romano (2005) found that psychological wellbeing among Thai drug users was generally low. More recently, Long, Evans, Fletcher, Hewitt, Murphy, Young, and Moore (2017) reported that mephedrone use and multiple substance misuse among adolescents in foster care were associated with poorer psychological wellbeing. While present findings show that *Nyaope* use predisposes individuals to reduced psychological wellbeing, other drug studies have indicated that *Nyaope* can bring a sense of inner warmth and wellbeing (Marcus, 2018; Nevhutalu, 2017).

Hypothesis two: Users of *Nyaope* will significantly differ from non-users on mental health

As hypothesized, results showed a significant difference between users and non-users of *Nyaope* with respect to mental health levels. Specifically, users reported higher levels of social dysfunction and severe depression compared to non-users. An increased level of social dysfunction and severe depression among users was expected given that the effect of *Nyaope* use may predispose the individual to poor concentration in social situations, lack of capacity to complete daily tasks, feelings of worthlessness, hopelessness and helplessness. It has been reported that *Nyaope* users may become negligent in carrying out job and school tasks, cause disruptions in families, and commit violent crimes against family and friends in a bid to get money to procure the drugs (Grelotti et al., 2014; Ridge Times, 2015; Nevhutalu, 2017). Like other addictive drugs, the use of *Nyaope* may make the individual vulnerable to severe depression and psychological distress (Savolainen, Kaakinen, Sirola & Oksanen, 2018; Nevhutalu, 2017) as a result of craving the drug when it is not readily available. Outcomes are also in line with more recent studies (e.g. Roviš, Vasiljev, Jenko-Pražnikar, Petelin, Drevenšek, Peruč & Černelič-Bizjak, 2019; Haesen, Merkt, Imber, Elger, & Wangmo, 2019) that reported a significant association between usage of drugs and negative mental health.

However, this study also shows that users may report lower level of anxiety and somatic symptoms than non-users, although this difference was a weak one. This may be owing to the possible tranquilizing effect of the *Nyaope* drug (Marcus, 2018).

Hypothesis three: Psychoticism, extraversion, neuroticism and self-esteem will significantly predict the mental health of *Nyaope* users.

Outcomes of hypothesis testing showed that only self-esteem significantly predicted mental health, while personality factors did not. However, neuroticism was close to being significantly and negatively related to mental health problems. An increase in self-esteem predicted lower mental health problems. Findings emphasize that it is individuals' level of self-esteem or sense of self-worth that may be important in mental health and not their personality dispositions. This shows that when one perceives or evaluates his/her self-image as positive, there may be a corresponding positive mental health state (and vice versa). Invariably, we may suffer from negative mental health because of our personality traits, or due to how we appraise our personal self-worth in relation to others in both social and non-social situations. Hence, self-esteem may be critical to mental health (Mann, Hosman, Schaalma & Vries, 2004).

Although existing studies linking scores on the Rosenberg Self-esteem Scale and the GHQ-28 among drug users are relatively scarce, the current finding correspond with outcomes of similar studies that demonstrate a negative relationship between self-esteem and mental health or psychological distress. For instance, Mahdavi, Ahmadi, Nadermohamad, Adham (2013) demonstrated that scores on the Rosenberg Self-esteem Scale form moderate and negative associations with somatic symptoms, insomnia/anxiety, social dysfunction and severe depression in a sample of medical sciences students. In the same way, Duraku, Kelmendi and Jemini-Gashi (2018) suggest that higher self-esteem was associated with lower psychological distress in Kosovar adolescents. Similarly, Henriques and Shivakumara (2013) found a negative correlation between self-esteem and psychological distress among sexually abused adolescents, but not among sexually non-abused adolescents. Other studies (e.g. Radeef & Faisa, 2019; Puuskari, Aalto-Setälä, Komulainen, & Marttunen, 2017) have also shown similar findings. However, present results did not confirm the recent findings demonstrating the significant association between the EPN traits

and psychological distress among Chinese and Australian adolescents (Liu, Gillespie, Ye, Zhu, Duffy, & Martin, 2018).

Hypothesis four: Psychoticism, extraversion, neuroticism and self-esteem will significantly predict the psychological wellbeing (PWB) of *Nyaope* users.

The results of hypothesis four suggest that self-esteem and psychoticism significantly predicted PWB of *Nyaope* users while extraversion and neuroticism did not. In particular, while increased self-esteem predicted higher levels of wellbeing, increased psychoticism predicted lower wellbeing. This implies that the psychoticism trait may be more important in lowering PWB among *Nyaope* users compared to extraversion and neuroticism. Since psychoticism is characterized by aggressiveness, impulsivity, egocentricity, cold behaviour and tough-mindedness (Eysenck, 1987), it is logical that *Nyaope* users with more of the trait would manifest lower PWB. The positive association of self-esteem with PWB is also anticipated given that the feeling of psychological wellness is a product of positive evaluation of oneself.

To the best of the researcher's knowledge, no study has been carried out to assess the relationship between self-esteem and PWB among drug users. However, there are studies demonstrating the positive role of self-esteem on PWB among other subpopulations. For example, Paradise and Kernis (2002) reported that subscales of PWB, including environmental mastery, autonomy and purpose in life, increased at higher levels of self-esteem. Among college students in China, related facets of PWB such as satisfaction in life and meaning in life have been shown to increase as levels of self-esteem increased (Du, King & Chi, 2017). More specifically, Urzua et al., (2018) showed self-esteem (as measured by the Rosenberg Self-esteem scale) to be a positive predictor of all dimensions of the Ryff's PWB among samples of immigrants to South America.

Study results demonstrating the predictive ability of psychoticism on PWB also confirm previous findings. For instance, Tommis, Seddon, Woods, Robinson, Reeves, & Russell (2018) found psychoticism to predict lower PWB in a sample of Italian adolescents. However, significant prediction was found only for the positive relations and purpose in life dimensions. Contrasting

with presenting findings, Tommasi et al., (2018) also found neuroticism to negatively predict all dimensions of PWB, except the personal growth dimension. Also, in variance with current study findings, they reported extraversion as positive predictors of positive relations, environmental mastery and personal growth (Tommasi et al., 2018). Results are also inconsistent with a previous study that found extraversion and neuroticism as respective positive and negative predictors of PWB among older adults (Francis & Bolger, 2012).

Hypothesis five: Psychological wellbeing will significantly mediate the effects of psychoticism, extraversion, neuroticism and self-esteem on mental health of *Nyaope* users.

The results of hypothesis testing showed that PWB partially mediated the association between self-esteem and mental health of *Nyaope* users. The mediator (PWB) was found to be significant on mental health. Specifically, an increase in PWB predicted a decrease in mental health problems. However, no mediation outcome was found for the relationship between personality factors and PWB. This is because none of the personality factors was significant on mental health outcomes in the first place. The line of result implies that an increase in self-esteem of *Nyaope* users influences an increase in PWB which further leads to a decrease in mental health problems. In other words, positive self-esteem predisposes high PWB to reduce negative mental health among *Nyaope* users. This direction of outcome underscores the importance of PWB in the relationship between self-esteem and mental health difficulties. It also shows the strength of self-esteem over personality factors in predisposing the mental health level of *Nyaope* users.

To the best of researcher's knowledge, this is the first study that would report the mediating role of PWB in the association between self-esteem and mental health. Given that previous studies have shown that self-esteem is related to mental health (e.g. Radeef & Faisa, 2019; Puuskari, Aalto-Setälä, Komulainen, & Marttunen, 2017) and psychological wellbeing (e.g. Urzua et al., 2018; Du, King & Chi, 2017; Paradise & Kernis, 2002); and that psychological wellbeing is associated with mental health (e.g. Parto & Besharat, 2011; Johal & Pooja, 2016), it is plausible

that psychological wellbeing would mediate the relationship between self-esteem and mental health. PWB provides a link between self-esteem and mental health

Hypothesis six: The direct effects of psychoticism, extraversion and neuroticism on mental health will be successively mediated by self-esteem and psychological wellbeing among Nyaope users. This hypothesis was partially confirmed. Results suggest that self-esteem and psychological wellbeing successively mediated the relationship between personality and mental health, but this occurred only for psychoticism. In others words, the successive mediating effect of self-esteem and psychological wellbeing was only established in the relationship between psychoticism and mental health, and not in the association of extraversion and neuroticism with mental health. This shows that, among other personality factors, psychoticism is major maladaptive trait predisposing Nyaope users to poor mental health. In addition, the mechanism by which psychoticism influences mental health among Nyaope users is by partially and successively lowering their self-esteem and psychological wellbeing. In other words, psychoticism lowers self-esteem, then low self-esteem reduces psychological wellbeing, then reduced psychological wellbeing in turn increase mental health problems.

Although this line of result has not been demonstrated in the research literature, it is expected that self-esteem and psychological wellbeing will successively mediate the association between psychoticism and mental health since it is already suggested in past studies that psychoticism could predict self-efficacy, a related construct of self-esteem (Garaigordobil & Bernarás, 2009) and mental health (Liu, Gillespie, Ye, Zhu, Duffy & Martin, 2018), self-esteem could influence psychological wellbeing (Urzua et al., 2018) and psychological wellbeing could associate with mental health (Johal & Pooja, 2016).

Hypothesis seven: *Nyaope* use/non-use will moderate the successive mediated paths between personality factors and mental health among users and non-users of *Nyaope*.

Outcomes demonstrate that *Nyaope* use/non-use moderated the successive mediated paths between self-esteem and mental health in the overall study sample. The moderation occurred only between the successive mediated path between psychoticism and mental health and not for the association of extraversion and neuroticism with mental health. Specifically, the partial successive mediation by self-esteem and psychological wellbeing in the association between psychoticism and mental health was confirmed in users of *Nyaope* and not non-users. First, this result further implies that, among the three personality factors, psychoticism trait assumes a special role in the vulnerability to poor mental health among *Nyaope* users. Second, being a *Nyaope* user may make the effect of psychoticism detrimental to one's self-esteem, psychological wellbeing and mental health. Third, psychoticism may influence the mental health of *Nyaope* users by partly and sequentially lowering their self-esteem and psychological wellbeing. Findings somehow support previous work which suggest that psychoticism may influence the mental health specifically among substance abusers (Kumar & Kumar, 2009).

Hypothesis eight: Gender will moderate the successive mediated paths between personality factors and mental health among *Nyaope* users.

Similar to findings in hypotheses six and seven, self-esteem and psychological wellbeing were found to successively mediate the relationship between psychoticism and mental health, and not the association of extraversion and neuroticism with mental health. Results of further show that gender significantly moderated the successive mediated paths between personality and mental health among *Nyaope* users. Specifically, this sequential mediation effect was found only in female *Nyaope* users and not among their male counterparts. This implies that the successive mediation effect of self-esteem and psychological wellbeing on the association between psychoticism and mental health applies particularly to female *Nyaope* users. Invariably, being a

female Nyaope user may predispose susceptibility to the negative impact of psychoticism on mental health through reduced self-esteem and psychological wellbeing. This result does not agree with past work (Sahi & Raghavi, 2016) that suggest that gender difference does not exist in the relationship between psychoticism and stress symptoms a sample of college students. A more recent study also showed that gender may not moderate the association of personality factors and psychological problems among individuals in the general population (Alizadeh, Feizi, Rejali, Afshar, Keshteli & Adibi, 2018).

Hypothesis nine: Living arrangement will moderate the successive mediated paths between personality factors and mental health among Nyaope users.

The outcomes of hypothesis testing showed that living arrangement moderated the successive mediating effect of self-esteem and psychological wellbeing on the relationship between personality and mental health. Analogous to results of hypotheses six, seven and eight, psychoticism was the only personality factor that had significant successive mediating path to mental health. In particular, the successive mediating effect of self-esteem and psychological wellbeing on the relationship between psychoticism and mental health was significant among Nyaope users living with others and not those living with their parents. This demonstrates that Nyaope users under the foster care may be vulnerable to having mental health symptoms as a result of psychoticism. The vulnerability to mental health problems may occur through successive weakening of self-esteem and psychological wellbeing by psychoticism.

This direction of result may not be surprising given that individuals in foster care may suffer from personality aberrations including psychoticism as a result of possible child abuse, negative environmental circumstances and poor stimulation during childhood (Committee on Early Childhood, Adoption and Dependent Care, 2000). These aberrations may suggest why adolescents and children under foster care exhibit more depression symptoms, externalizing problems,

hyperactivity, conduct problems, substance use dependence, general physical and mental health problems compared with controls (Hunter, 2011; Turney & Wildeman).

Hypothesis ten: Geographical location will moderate the successive mediated paths between personality factors and mental health among Nyaope users.

This hypothesis was not confirmed. The geographical settings Nyaope users reside did not moderate the successive mediation effect of self-esteem and psychological wellbeing on the relationship between personality and mental health. In other words, variation in settings Nyaope users reside, be it rural, semi-urban and urban, does not influence the successive mediation pathway between psychoticsm and mental health. This outcome is somewhat not consistent with past findings that showed that personality structures such as narcissistic, borderline and schizotypal (Masiak, Kuśpit, Surtel & Jarosz, 2014) and mental health risks (Solmi, Dykxhoorn & Kirkbride, 2011) may be present at different levels in urban and rural environments

Hypothesis six: Gender, living arrangement and geographical location will significantly influence the psychological wellbeing of *Nyaope* users

Results showed that geographical location significantly influenced PWB, while gender and living arrangement did not. The pattern of results for geographical location was mixed. *Nyaope* users in urban and semi-urban settings reported better autonomy than *Nyaope* users in rural settings. However, users in rural and semi-urban settings had higher levels of environmental mastery and purpose in life than users in urban settings. Results further indicated that geographical location did not influence personal growth, positive relations and self-acceptance. Higher scores on autonomy for *Nyaope* users in urban and semi-urban areas indicate the extent to which freedom of opinion and independent ways of doings are permitted in such environments. As a result of the level of industrialization, individualistic and less communal nature of urban and semi-urban environments, *Nyaope* users in these settings are less likely to be influenced by opinions of other people and more likely to judge themselves based on their own values rather than the values of

others. In contrast, *Nyaope* users in rural settings may have lower autonomy because of the collectivist and communal values shared among kinsmen, community leaders and the generality of the indigenous people. While nobody cares to know what the other person does in urban settings, everybody seems to be his brother's keeper in rural settings. As a result of the higher affinity and cohesiveness in relationships among people in rural settings, *Nyaope* users are likely to experience reduced level of autonomy and be influenced by the opinions and counsels of others around.

The lines of results showing *Nyaope* users in rural settings as having higher levels of environmental mastery and purpose in life than users in rural settings also make logical sense. Given the fair complex nature of rural settings, *Nyaope* users living in such environments may likely have the feeling of being in charge of the situation around them, experience lower burdens in accomplishing tasks in everyday life and able to manage personal affairs in a simpler manner compared to users in the city or urban areas where there are heavier environmental demands. In the same manner, the higher purpose in life scores for *Nyaope* users in rural areas may be premised on the less distractive nature of the rural environments, which enables them to be more focused, motivated and goal-directed compared to users in urban settings. Urban environments are marred with various social, leisure and pleasurable activities that may make young adults lose focus on goal-directed activities for greater life achievements.

This pattern of result is somehow similar to the findings of Amato and Zuo (1992) that the psychological wellbeing of poor African Americans in rural areas were better compared to their counterparts in urban settings. In addition, it was recently shown that health and wellbeing is generally better in rural settings than urban centres (Local Government Association and Public Health England, 2017).

Hypothesis seven: Gender, living arrangement and geographical location will significantly influence the mental health of users of *Nyaope*

Similar to hypothesis six outcomes, results showed that geographical location significantly influences the mental health of *Nyaope* users while gender and living arrangement did not. This

implies that place of residence is critical to mental health of *Nyaope* users while living arrangement is insignificant in this study. Regarding differences of geographical location, results demonstrated that *Nyaope* users in rural and semi-urban settings had lower somatic symptoms, anxiety, insomnia, and more severe depression scores compared to users in urban settings. Nevertheless, users in urban settings reported lower social dysfunction scores than users in rural and semi-urban settings. The lower social dysfunction scores among users in urban centres reiterate the autonomy or freedom city centres provide for maximal social interactions. It is plausible that users in urban centres may have a useful role in things around them and are able to enjoy their day-to-day activities given the presence of amusing and pleasurable events in the city. In contrast, users in rural/urban settings are more restrictive in their daily activities and less socially inclined compared to those in the city.

Although urban centres provide avenues for amusements and pleasures, it may not be advantageous to *Nyaope* users because of the lack of social support characterizing such an environment. As a result of individualistic lives in the city, user of *Nyaope* may not receive tangible support from people around to help out with the drug problem, thus predisposing them to higher levels of somatic symptoms, anxiety/insomnia and severe depression. On the other hand, users in rural/semi urban areas may obtain more concrete support from the neighbourhood given that the people around “know each other,” are more communal and collectivist in their orientation. These differences may account for why there are differences in the somatic symptoms, anxiety/insomnia and severe depression scores of users in rural/semi-urban and urban settings.

No study investigating differences of geographical location on mental health among drug users could be found in the research literature. However, Geronimus (2000) indicated a greater prevalence of psychological stressors among urban dwellers due to diversity and increased density of cities. Conversely, results do not support the finding of a related study, suggesting that male caregivers in rural settings have poorer mental health compared to their counterparts in urban areas

(Tommiss et al., 2007). Duboz, Boëtsch, Gueye and Macia (2017) showed that urban dwellers in Senegal reported better self-rated health than rural dwellers.

6.2 Conclusion

Based on study results, *Nyaope* users have lower psychological wellbeing and poorer mental health outcomes compared to non-users. Higher levels of self-esteem predicted increased PWB and lower mental health problems. Further, PWB partially mediated the relationship between self-esteem and mental health. Also, self-esteem and psychological wellbeing successively mediated the relationship between psychoticism and mental health. This successive mediation was moderated by use/non-use of *Nyaope*, gender and living arrangement. In addition, *Nyaope* users in rural/semi urban settings appear to have better PWB and lowered mental health challenges compared to users in urban areas.

6.3 Recommendations

Based on the results of this study, the following recommendations are proposed:

The government of the Republic of South Africa (RSA), individuals, family and the community in general should see *Nyaope* use as a major drug problem facing the youth. They should urgently address the menace of *Nyaope* use given that the users of the drug have significantly lower PWB and greater mental health problems compared to nonusers. This can be done by putting effective policies in place to prevent the manufacture, sales and distribution of the drug. Families should provide more time for care and monitoring of the children, adolescents and youths to prevent them from becoming drug peddlers and users. Individuals and communities should join hands with the government in stemming the menace of drug use and abuse by reporting cases of drug use to appropriate agencies of government and providing directions to drug users on available medical and psychological remedies geared towards ceasing drug use.

Mental health experts and professionals should assess for *Nyaope* use among youths with presenting mental health problems so as to understand the aetiology of the problem and the formulation of appropriate treatment plan. Given that this study showed that self-esteem was a

significant factor in the mental health problems and PWB of *Nyaope* users, psychologists and other mental health experts should assess for self-esteem within this population, and incorporate psychotherapies aiming to improve self-esteem into treatment plans.

Asides from working on the self-esteem of *Nyaope* users for reduction in mental health difficulties, mental health professionals should further assess for psychoticism, as this trait was found to predict mental health among *Nyaope* users via successive mediation of self-esteem and psychological wellbeing. This implies that a higher composition of psychoticism may be a significant part of the personality make-up of *Nyaope* users, which perhaps limits their level of self-esteem, psychological wellbeing mental health, and greater susceptibility to committing antisocial behaviours and using of *Nyaope* (although the use of *Nyaope* may result into psychotic behaviours). In addition, female *Nyaope* users and *Nyaope* users under foster care should be of special target during psychotherapy as the present study shows that psychoticism may specifically lower their mental health level through self-esteem and psychological wellbeing.

In essence, treatment techniques aiming to lower the manifestation of psychoticism among *Nyaope* users should be of focus during therapeutic sessions. In addition, since this study demonstrates that PWB mediates the relationship of self-esteem and mental health outcomes, psychotherapy aiming improved self-esteem should be directed towards increasing PWB.

There is need for the government of RSA to employ the services of psychologists at different health institutions and rehabilitation homes to assist in designing psychological intervention programmes improving the mental health of users of *Nyaope*. As study established that *Nyaope* users in urban settings have lower PWB and poor mental health compared to those in rural and semi-urban settings, it is recommended that more health and wellness programmes be organized on a regular basis in key locations where youths agglomerate in urban centres. In addition, more mental health facilities should be established in urban centres to accommodate upsurge in mental health problems associated with living in the city centres.

6.4 Implications of the study

The study findings of the study have practical, theoretical and methodological implications.

6.4.1 Practical implications

Practically, this study revealed that psychoticism and self-esteem plays a significant role in PWB and mental health of *Nyaope* users. This implies that psychotherapies aimed at lower manifestation of psychoticism trait and improving the self-esteem will foster PWB and reduced mental health problems among *Nyaope* users. The outcome demonstrating the mediating effect of PWB on the relationship between self-esteem and PWB indicate that psychotherapies directed towards increasing self-esteem should target PWB. Also, the finding that psychoticism may increase mental health problems sequentially through self –esteem and PWB suggest the importance of assessing and managing the manifestation of psychoticism among *Nyaope* users and providing interventions at increasing both self-esteem and psychological wellbeing. Lastly, living in urban centres place *Nyaope* users at greater risks of lower PWB and poorer mental health.

6.4.2 Theoretical implications

Theoretically, the findings of this study extend existing mental health theories in the research literature. The study outcomes show that the mechanism by which self-esteem lowers mental health problems is via PWB. This is an extension of existing stress theories that view the occurrence of psychological distress from experience of environmental stressors and depletion of coping resources. Thus, lower mental health problems can occur not only by stress reduction and an increase in coping resources, but also through increasing PWB from self-esteem.

6.4.3 Methodological implications

This study is the first of its kind to examine the mediating effect of PWB on the relationship between self-esteem, personality factors and mental health among drug users. In testing the mediation hypothesis, the study adopted the Preacher and Hayes (2004) approach, which examines mediation by assuming significance of both total and indirect effects. This is unlike the popular approach of Baron and Kenny (1986), which only assesses mediation through only significant

indirect effect. In addition, the current study used the bootstrapping technique to assess the confidence intervals for indirect effect, thereby increasing the validity of the study results. Also, the current study did a comparative analysis of both users and nonusers of *Nyaope* in order to understand whether mental health challenges is a problem among *Nyaope* users.

6.5 Strengths of the study

The strength of this study could be deduced from its results. The study revealed factors that are influential to the psychological wellbeing and mental health of *Nyaope* users. The study also revealed the psychological dynamics embedded among users of *Nyaope* that could further play a significant role in future research. Furthermore, the results are of utmost importance for the development of intervention strategies and programmes aimed at increasing PWB and reducing mental health distress among *Nyaope* users. Furthermore, the study was conducted using the quantitative method, thereby complimenting the results of existing studies on *Nyaope* which are mostly qualitative in approach. Lastly, this study has added to the current body of knowledge and literature on psychological aspects of *Nyaope* use in the SA.

6.6 Limitations of the study and areas for future research

Despite the strengths of this study, like every research endeavour, there are limitations that are worth mentioning. Respondents were selected from rehabilitation facilities across Gauteng Province. This might have affected the external validity of the study as respondents in the study may not represent the entire population of SA, considering the fact that some of the provinces were not included in the study. Thus, generalizing the findings of the study to users of *Nyaope* in other provinces may be inaccurate. Future studies should focus on the use of *Nyaope* from a psychological perspective and extended to the other eight provinces of the country. This will assist in getting a comprehensive understanding of the possible psychosocial factors that could affect the psychological wellbeing and mental health of users of *Nyaope* in SA.

In addition, the mean ages of users (22.48 ± 2.76) and non-users (19.04 ± 1.86) of *Nyaope* seem to be different. Users were mostly emerging adults while non-users were more in their late

adolescence. This variation may confound the findings on comparison of mental health and psychological wellbeing of users and non-users of Nyaope. As a result, a preliminary one-way MANCOVA was conducted with age as a covariate in the effect of Nyaope use (yes/no) on mental health and psychological wellbeing. Outcomes showed that age was not a significant factor in the model.

Self-report measures were used in the study, which could have influenced the relationships among variables. This may lead to an increased level of common methods variance. Future studies could use other measures such as focused-group discussions and interviews, in addition to the self-report measures, to elicit more information from users of the drug. Lastly, the variables investigated in this study were limited to self, personality factors and some demographic variables. Future studies may investigate the roles of critical life events, childhood adversity, spirituality, emotional intelligence and other biographic variables that could potentially predict mental health and psychological wellbeing of users of *Nyaope*. In addition, prospective studies may adopt the mixed method design for more encompassing and robust findings which may further the understanding of the mental health aspects *Nyaope* use and attenuation of the *Nyaope* problem.

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APPENDICES

QUESTIONNAIRE



ETHICS COMMITTEE
North-West University: Mafikeng Campus
Department of Psychology
Faculty of Human and Social Sciences

Private Bag 2046
Mmabatho, 2735
South Africa

Principal Researcher : Evah Malebo Mashaba
Research Title : Psychosocial pathways to psychological wellbeing and mental health
of “Nyaope” users in rehabilitation: A mediation study.
Student : PhD in Psychology (30085888)
Contact Details : 072 544 1028/ malebom85@gmail.com
Department of Psychology, Faculty of Human & Social Sciences,
North-West University, Private Bag 2046, Mmabatho, 2735, South
Africa.
Promoter : Prof. E.S. Idemudia

Dear Respondent

I am a PhD student at the North-West University (Mafikeng Campus), conducting research on different pathways to mental health of Nyaope users in the Gauteng Province. You are required to respond to the attached questionnaire. This will take about 30 minutes to complete. You may choose to take part in the study or not. If you decide not to participate in the study, you will not be affected in any way. Even when you have chosen to participate, you are free to withdraw from the study at any stage you wish.

The questionnaire is completely anonymous, and you cannot be identified in any way. Your name will not be mentioned on the questionnaire. The information you will provide is confidential, and will only be available to my supervisor and myself. Your response to these questions will contribute towards helping the problem under study and will further contribute to the body of knowledge in South Africa and internationally. Please respond truthfully to the questionnaire. This is not a test; therefore, there is no right or wrong answer. Please DO NOT write your names.

If you require any other information about this study, you are welcome to contact me on the numbers and e-mail address above. If you are willing to take part in this study, you are required to sign the consent and assent (for minors) form attached.

Thank you for your assistance. Yours sincerely, Mashaba Malebo

Consent form

I, _____, hereby **consent/ do not consent** to participating in the research on “Nyaope” users in the Gauteng Province undertaken by Mashaba Malebo.

Signature: _____

Date: _____

Signature of the researcher: _____

Assent form

I, _____,

Parent /next of kin hereby **consent/ do not consent** to participating in the research on “Nyaope” users in the Gauteng Province undertaken by Mashaba Malebo.

Signature: _____

Date: _____

Signature of the researcher: _____

THANK YOU FOR CONSENTING TO PARTICIPATE IN THE RESEARCH PROJECT
INSTRUCTIONS: Please use a pen to complete the questionnaire.

SECTION A

DEMOGRAPHIC INFORMATION

1. Highest level of Education (Please indicate) _____

2. Age (in years): _____

3. Gender:

Male	Female
------	--------

4. Marital status of your parents:

Married	Not married	Staying together	widowed	Separated/Divorced	Other

5. Living arrangements:

With father	With mother	With both parents	Grandparents	Family member	Other. Specify

6. Father's occupation: _____

7. Mother's occupation: _____

8. Home language: _____

9. Geographical Location:

Rural	Semi/Per Urban	Urban
-------	----------------	-------

SECTION B

Eysenck Personality Questionnaire (EPQ-R)

Instructions: Please answer each question by putting making a tick on either ‘YES or ‘NO’ following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the questions.

PLEASE REMEMBER TO ANSWER EACH QUESTION

	YES	NO
1. Does your mood often go up and down?		
2. Do you take much notice of what people think?		
3. Are you a talkative person?		
4. If you say you will do something, do you always keep your promise no matter how inconvenient it might be?		
5. Do you ever feel ‘just miserable ‘for no reason?		
6. Would being in debt worry you?		
7. Are you rather lively?		
8. Were you ever greedy by helping yourself to more than your share of anything?		
9. Are you an irritable person?		
10. Would you take drugs which may have strange or dangerous effects?		
11. Do you enjoy meeting new people?		
12. Have you ever blamed someone for doing something you knew was really your fault?		
13. Are your feelings easily hurt?		
14. Do you prefer to go your own way rather than act by the rules?		
15. Can you usually let yourself go and enjoy yourself at a lively party?		
16. Are all your habits good and desirable ones?		
17. Do you often feel ‘fed-up.?		
18. Do good manners and cleanliness matter much to you?		
19. Do you usually take the initiative in making new friends?		
20. Have you ever taken anything (even a pin or button) that belonged to someone else?		
21. Would you call yourself a nervous person?		
22. Do you think marriage is old-fashioned and should be done away with?		

23. Can you easily get some life into a rather dull party?		
24. Have you ever broken or lost something belonging to someone else?		
25. Are you a worrier?		
26. Do you enjoy co-operating with others?		
27. Do you tend to keep in the background on social occasions?		
28. Does it worry you if you know there are mistakes in your work?		
29. Have you ever said anything bad or nasty about anyone?		
30. Would you call yourself tense or 'highly-strung'?		
31. Do you think people spend too much time safeguarding their future with savings and insurances?		
32. Do you like mixing with people?		
33. As a child were you ever cheeky to your parents?		
34. Do you worry too long after an embarrassing experience?		
35. Do you try not to be rude to people?		
36. Do you like plenty of bustle and excitement around you?		
37. Have you ever cheated at a game?		
38. Do you suffer from 'nerves'?		
39. Would you like other people to be afraid of you?		
40. Have you ever taken advantage of someone?		
41. Are you mostly quiet when you are with other people?		
42. Do you often feel lonely?		
43. Is it better to follow society's rules than go your own way?		
44. Do other people think of you as being very lively?		
45. Do you always practice what you preach?		
46. Are you often troubled about feelings of guilt?		
47. Do you sometimes put off until tomorrow what you ought to do today?		
48. Can you get a party going?		

SECTION C

Rosenberg Self-Esteem Scale (RSES)

Instructions: below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

1. On the whole, I am satisfied with myself.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

2. At times I think I am no good at all.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

3. I feel that I have a number of good qualities.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

4. I am able to do things as well as most other people.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

5. I feel I do not have much to be proud of.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

6. I certainly feel useless at times.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

7. I feel that I'm a person of worth, at least on an equal plane with others.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

8. I wish I could have more respect for myself.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

9. All in all, I am inclined to feel that I am a failure.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

10. I take a positive attitude toward myself.

Strongly Agree	Agree	Disagree	Strongly Disagree
----------------	-------	----------	-------------------

SECTION D

Ryff's Psychological Wellbeing Scale (PWS)

Instructions: please indicate your agreement (using a score ranging from 1-6) to the following sentences.

1=strongly disagree, 2= moderately disagree, 3= slightly disagree, 4= slightly agree, 5= moderately agree, 6= strongly

	1	2	3	4	5	6
1. I tend to be influenced by people with strong opinions						
2. In general, I feel I am in charge of the situation in which I live.						
3. I think it is important to have new experiences that challenge how you think about yourself and the world						
4. Maintaining close relationships has been difficult and frustrating for me.						
5. I live life one day at a time and don't really think about the future						
6. When I look at the story of my life, I am pleased with how things have turned out.						
7. I have confidence in my opinions, even if they are contrary to the general consensus						
8. The demands of everyday life often get me down.						
9. For me, life has been a continuous process of learning, changing and growth.						
10. People would describe me as a giving person, willing to share my time with others						
11. Some people wander aimlessly through life, but I am not one of them.						

12. I like most aspects of my personality						
13.I judge myself by what I think is important, not by the values of what others think is important						
14.I am quite good at managing the many responsibilities of my daily life						
15. I gave up trying to make a big improvements or changes in my life a long time ago.						
16. [†] I have not experienced many warm and trusting relationships with others						
17. I sometimes feel as if I've done all there is to do in life						
18.In many ways, I feel disappointed about my achievements in life.						

SECTION E

General Health Questionnaire (GHQ)

Instructions: We should like to know if you have had any medical complaints, and how your health has been in general, over the past few weeks. Please answer ALL the questions by indicating with an "x" the answer, which you think most nearly, applies to you. Please remember that we want to know about present and recent complaints, not those that you had in the past. It is important that you try to answer ALL the questions. Thank you very much for your cooperation.

A1	Been feeling perfectly well and in good health	Better than usual	Same as usual	Worse than usual	Much more than usual
A2	Been feeling in need of some medicine to pick you up?	Not at all	No more than usual	Worse than usual	Much worse than usual
A3	Been feeling run down and out of sorts?	Not at all	No more than usual	Worse than usual	Much worse than usual
A4	Felt that you are ill?	Not at all	No more than usual	Worse than usual	Much worse than usual
A5	Been getting any pains in your head?	Not at all	No more than usual	Worse than usual	Much worse than usual
A6	Been getting a feeling of tightness or pressure in your head?	Not at all	No more than usual	Worse than usual	Much worse than usual
A7	Been having hot or cold spells?	Not at all	No more than usual	Worse than usual	Much worse than usual
B1	Lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much worse than usual
B2	Had difficulty staying asleep?	Not at all	No more than usual	Rather more than usual	Much worse than usual
B3	Felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much worse than usual
B4	Been getting edgy and bad-tempered?	Not at all	No more than usual	Rather more than usual	Much worse than usual

B5	Been getting scared or panicky for no good reason	Not at all	No more than usual	Rather more than usual	Much worse than usual
B6	Found everything getting on top of you	Not at all	No more than usual	Rather more than usual	Much worse than usual
B7	Been feeling nervous and uptight all the time	Not at all	No more than usual	Rather more than usual	Much worse than usual
C1	Been managing to keep yourself busy and occupied	More so than usual	Same as usual	Rather less than usual	Much less than usual
C2	Been taking longer over the things you do?	Quicker than usual	Same as usual	Longer than usual	Much longer than usual
C3	Felt on the whole you were doing things well	Better than usual	About the same	Less well than usual	Much less well
C4	Been satisfied with the way you've carried out your task?	More satisfied	About the same as usual	Less satisfied than usual	Much less satisfied
C5	Felt that you are playing a useful part in things	More so than usual	Same as usual	Less useful than usual	Much less useful
C6	Felt capable of making decisions about things	More so than usual	Same as usual	Less so than usual	Much less capable
C7	Been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Rather less than usual	Much less than usual
D1	Been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
D2	Felt that life is entirely hopeless?	Not at all	No more than usual	Rather more than usual	Much more than usual
D3	Felt that life isn't worth living?	Not at all	No more than usual	Rather more than usual	Much more than usual
D4	Thought of the possibility that you might do away with yourself?	Definitely not	I don't think so	Has crossed my mind	Definitely has

D5	Found at times you couldn't do anything because your nerves were too bad?	Not at all	No more than usual	Rather more than usual	Much more than usual
D6	Found yourself wishing you were dead and away from it all?	Not at all	No more than usual	Rather more than usual	Much more than usual
D7	Found that the idea of taking your own life kept coming into your mind?	Definitely not	I don't think so	Has crossed my mind	Definitely has

Thank you for participating in this study

Malebo Mashaba



NORTH-WEST UNIVERSITY
YUNIBESITHI YA BOKONE-BOPHIRIMA
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Tel: 018 389 2505
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30 August 2017

APPROVAL OF RESEARCH PROPOSAL (2017)

Student Name	M Mashaba
Student Number	30085888
Degree	PhD (Psychology)
Supervisor	Professor ES Idemudia
Co-Supervisor	
Registered Research Title	Psychosocial pathways to psychological wellbeing and mental health of "nyaope" users in rehabilitation. A mediation study

The Higher Degrees Committee of the Faculty of Human and Social Sciences has carefully studied your revised proposal and the correction report submitted on 30 June 2017.

I am glad to inform you that the Committee is generally satisfied with the revised version of your proposal and hereby grants you permission to officially proceed with your research. Please note that your registered title cannot be changed without the written approval of the FHDC.

The committee further approved Professor ES Idemudia as your study supervisor.

May I take this opportunity to wish you all the best with your research.

Kind regards

Prof B M P Setlento
Executive Dean

Original details: (20560540) C:\Users\20560540\Desktop\Approval of proposal M Mashaba.docm
30 August 2017

22337660@nwu.ac.za
Per e-mail



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Web: <http://www.nwu.ac.za>

Human Resource Research Ethics Committee

Tel: 018 289 2044

Email: Betchani.Tchereni@nwu.ac.za

Dear **PROF ERHABOR SUNDAY IDEMUDIA**

02-Nov-2017

APPROVAL OF ETHICS APPLICATION: NWU-HS-2017-0171

The following application has been reviewed by the Human Resource Research Ethics Committee (HRREC) on 14-Sep-2017.

Name of student: E M Mashaba - 30085888.

Name of supervisor/promoter: PROF ERHABOR SUNDAY IDEMUDIA.

Title of study: Psychosocial pathways to psychological well being and mental health of "Nyaope" users: a mediation study.

Application Risk Level: Minimal, low or negligible risk.

This letter serves to inform you that your application has been approved from **14-Sep-2017** to **13-Sep-2020**.

Special conditions of the approval (if applicable):

Yours Sincerely

A handwritten signature in black ink, appearing to be 'B. Tchereni', is written over a faint, circular official stamp.

*
Prof B. Tchereni

Chairperson: Human Resource Research Ethics Committee (HRREC)



NORTH-WEST UNIVERSITY
YUNIBESITHI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT

Ms. Malebo Mashaba

689 Unit D

Temba

0407

27 FEBRUARY 2018

PERMISSION REQUEST TO CONDUCT RESEARCH

Dear Sir/Madam

I Malebo Mashaba, currently a PhD in Psychology student at the North-West University would like to request for permission to conduct the outlined research in your school. The research process involves administration of a 12 paged questionnaire to learners aged 15 years and above, both male and female who are not using Nyaope. The purpose of this process is to compare their Psychological wellbeing to those young people who are in rehabilitation for Nyaope use in the Gauteng Province.

Attached kindly receive the following:

- Approved Research Proposal by the University
- Higher Degrees Research Ethics Committee Approval letter
- Research Questionnaire
- Research Proposal

Your assistance in this regard will be highly appreciated.

Kind Regards

Ms. Malebo Mashaba

Clinical Psychologist

072 544 1028



NORTH-WEST UNIVERSITY
YUNIBESITHI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT

Ms. Malebo Mashaba

689 Unit D

Temba

0407

27 FEBRUARY 2018

PERMISSION REQUEST TO CONDUCT RESEARCH

Dear Sir/Madam

I Malebo Mashaba, currently a PhD in Psychology student at the North-West University would like to request for permission to conduct the outlined research in your Institution. The research process involves administration of a 12 paged questionnaire to Nyaope users in rehabilitation aged 15 years and above, both male and female who have been diagnosed for Nyaope use. The purpose of this process is to compare their Psychological wellbeing to those young people who are not using Nyaope in the Gauteng Province.

Attached kindly receive the following:

- Approved Research Proposal by the University
- Higher Degrees Research Ethics Committee Approval letter
- Research Questionnaire
- Research Proposal

Your assistance in this regard will be highly appreciated.

Kind Regards

Ms. Malebo Mashaba

Clinical Psychologist

072 544 1028

19 Akasia Street
Golf View
Mafikeng, 2745
North West Province

20 September 2019

TO WHOM IT MAY CONCERN

CERTIFICATE OF LANGUAGE EDITING

I, Paul Nepapleh Nkamta, confirm and certify that I have read through and edited the thesis entitled, “**Psychosocial pathways to psychological wellbeing and mental health of *Nyaope* users in rehabilitation: A mediation study**” by **E. M. MASHABA**, student number: **30085888**.

E. M. MASHABA was supervised by **Professor E. S. IDEMUDIA** of the North-West University.

I hold a PhD in English Language and I am qualified to edit academic work of such nature for cohesion and coherence.

The views and research procedures detailed and expressed in the thesis remain those of the researcher/s.

Yours sincerely



Paul Nepapleh Nkamta (PhD; MA; PGCE; BA Hons)
Tel: 018 389 2895
Cell: 073 970 7514



basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

he Headmaster : Sikhululekile Secondary School
Darling street
Kudube

To whom it may concern:

This letter serves as a confirmation that **Ms. E.M Mashaba** has been granted permission to collect data for her research on **PSYCHOSOCIAL PATHWAYS TO PSYCHOLOGICAL WELLBEING AND MENTAL HEALTH OF NYAOPE USERS IN REHABILITATION: A MEDIATION STUDY**. Ms. Mashaba will be allowed to interact with the learners for 3 months, with the Grades 8 to 11.

Yours sincerely

Mrs. Makatu (Principal)

012 717 6153



basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

Declaration of Language Editing



Director: CME Terblanche - BA (Pol Sc), BA Hons (Eng), MA (Eng), TEFL
22 Strydom Street Tel 082 821 3083
Baillie Park, 2531 cumlaudelanguage@gmail.com

DECLARATION OF LANGUAGE EDITING

I, Christina Maria Etrechia Terblanche, hereby declare that I edited the
research study titled:

**Psychosocial pathways to psychological wellbeing and mental health
of Nyaope users in rehabilitation: a mediation study**

for **EM Mashaba** for the purpose of submission as a postgraduate research
study. Changes were indicated in track changes and implementation was
left to the author.

Regards,

A handwritten signature in black ink, appearing to read 'CME Terblanche', with a stylized circular flourish at the end.

CME Terblanche

Cum Laude Language Practitioners (CC)

South African Translators Institute accr nr: 1001066

Full member of the Professional Editors Guild

Turnitin Report

PSYCHOSOCIAL PATHWAYS TO PSYCHOLOGICAL WELLBEING AND MENTAL HEALTH OF NYAOPE USERS IN REHABILITATION: A MEDIATION STUDY

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