

Title: Predictors of psychological well-being among treatment seeking transgender individuals

Bouman, W. P., Davey, A., Meyer, C., Witcomb, G. L. & Arcelus, J. (2016). Predictors of psychological well-being among treatment seeking transgender individuals. *Sexual and Relationship Therapy*, 31 (3), pp.359-375.

Link to repository:

<https://repository.nottinghamshirehealthcare.nhs.uk/handle/123456789/286>

Additional information:

This is an Accepted Manuscript of an article published by Taylor & Francis in *Sexual and Relationship Therapy* on 26 November 2015, available

online: <http://www.tandfonline.com/10.1080/14681994.2016.1184754>.

Publisher: Taylor & Francis

Version note:

The version presented here may differ from the published version or from the version of record. If you wish to cite the following item, it is advised to consult the publisher version. Access to the publisher version can be found via the repository URL listed above.

For more information about this article, or the research repository, please contact repository@nottshc.nhs.uk

Please cite the published version

Nottinghamshire Healthcare NHS Foundation Trust

Institutional Repository

repository.nottinghamshirehealthcare.nhs.uk

Predictors of psychological well-being among treatment seeking transgender individuals.

Walter Pierre Bouman¹, Amanda Davey², Caroline Meyer³, Gemma L. Witcomb² and Jon Arcelus^{1,4}.

¹ Nottingham Centre for Gender Dysphoria, 3 Oxford Street, Nottingham, NG1 5BH, UK.

² School of Sport, Exercise, & Health Sciences, Loughborough University, Loughborough, LE11 3TU, UK.

³ Institute of Digital Healthcare, University of Warwick, CV4 7AL, UK.

⁴ Division Psychiatry and Applied Psychology, Faculty of Medicine & Health Sciences, University of Nottingham, Nottingham, UK

*Requests for reprints should be addressed to Prof. Jon Arcelus, Nottingham Centre for Gender Dysphoria, 3 Oxford Street, Nottingham NG1 5BH, United Kingdom. Tel: +44 115 8760160 (email: jon.arcelus@nottingham.ac.uk)

Abstract

Objectives: Research has yet to identify specific predictors of poor psychological well-being and quality of life in transgender people. This study aimed firstly to explore the predictive value of five factors known to be associated with poor psychological well-being in cis and transgender people; age, self-esteem, victimisation, interpersonal problems, and body dissatisfaction. Secondly, to investigate the mediatory role of self esteem and social support. **Methods:** Two hundred and eight participants (104 transgender and 104 cisgender controls), matched by age and gender, completed measures of these predictor variables, along with general psychopathology and functional quality of life. **Results:** The results indicate that in the transgender group, greater psychopathology and greater depression was predicted by younger age (psychopathology only), lower self-esteem, greater body dissatisfaction, and greater interpersonal problems. In the cisgender group, only lower self-esteem and greater interpersonal problems were significant predictors of these factors. For quality of life, lower self-esteem and greater interpersonal problems were significant predictors of low quality of life in both groups. Self esteem but not social support mediated the above relationships. **Conclusions:** Overall, self-esteem and interpersonal problems appear to be crucial factors that influence well-being. Those providing treatment to transgender people should pay more attention to these areas.

Keywords: Transgender, Gender Dysphoria, Well-being, Quality of life, Psychopathology

Introduction

Transsexualism is the formal diagnosis as per the International Classification of Diseases (10th edition, ICD-10) (WHO, 1992), given to individuals who desire to live and be accepted as a member of the opposite sex to the one assigned at birth, usually accompanied by the wish to make their body as congruent as possible with the preferred sex through cross-sex hormone treatment and in some cases surgery (ICD-10; WHO, 1992). Experienced genders are not necessarily binary (i.e., male or female) and the new edition of the ICD (ICD-11) expected to be published in 2017, is likely to include diagnoses for individuals who do not fit the binary notion of gender (Drescher, Cohen-Kettenis, & Winter, 2012), and do not necessarily wish to transition from one to another (i.e., male to female or female to male). This is in line with the DSM-5 diagnosis of Gender Dysphoria (American Psychiatric Association, 2013). A recent study investigating meta-analytical prevalence rate of transsexualism based on published international studies found the prevalence of 4.6 in 100,000 individuals; 6.8 for trans females (birth assigned males who identify as female) and 2.6 for trans males (birth assigned females who identify as male), with time analysis finding an increase in reported prevalence over the last 50 years (Arcelus et al., 2015).

Over the years different terms have been used to describe people who present with a dysphoria about their gender, but for the clarity of this review the term 'transgender' will be used as an umbrella term to cover a wide variety of atypical gender experiences and expressions which may lead to a change of social gender role, but does not necessarily include cross-sex hormone treatment or surgical

intervention (Coleman et al., 2012; Wylie et al., 2012). However, the big majority of the studies used in the introduction and discussion section will be based on individuals attending clinical services and in the majority of the case wishing to have gender confirming medical interventions. The terms “trans female” will be used to describe individuals assigned male at birth, based on their genital appearance, but later identify as female and “trans male” for people assigned female at birth, based on their genital appearance, but later identifies as male.

Transgender individuals have been found to have lower levels of psychological well-being compared to the general population (e.g., Davey, Bouman, Arcelus & Meyer, 2014; Heylens et al., 2014). Psychological well-being is a multi-dimensional concept comprising of affective aspects of personal experience (Warr, 1978). It includes, but is not limited to, an absence of psychopathology (Jahoda, 1958) and a satisfactory quality of life (WHO, 1997). More specifically, transgender individuals are known to have high prevalence of mental health problems, including affective and anxiety disorders as well as non-suicidal self-injuries (NSSI) and even suicide (e.g., Claes et al., 2015; Clements-Nolle, Marx, & Katz, 2006; Couch et al., 2007; Davey et al., in press; Dhejne et al, 2016; Hepp, Kraemer, Schnyder, Miller, & Delsignore, 2005; Heylens et al., 2014; Nuttbrock et al., 2010, 2013; Skrapec & MacKenzie, 1981). Such psychopathology has been reported to affect up to 40% of transgender individuals (Heylens et al., 2014). In addition, transgender individuals have been found to report low quality of life compared to the general population (Newfield, Hart, Dibble, & Kohler, 2006). This is most prevalent among trans men (Newfield et al., 2006), though less is known about the quality of life among trans women.

While poor psychological well-being in this population is relatively well documented (e.g., Couch et al., 2007; Hepp et al., 2005; Heylens et al., 2014; Nuttbrock et al., 2010, 2013), factors that might predict this are inadequately understood. Previous studies reviewing risk factors of poor psychological well-being among transgender people have lacked statistical power and have mainly focused on depression (Hoffman, 2014; Khobzi Rotondi, 2012). Therefore the aim of this study was to investigate the predictors of psychological well-being in treatment seeking transgender individuals. The study investigates five specific factors that have been found to be associated to psychopathology and quality of life in both the trans and cis gender (non trans) population. These factors are: age (e.g., Arcelus et al., 2016; Heylens et al., 2014), self-esteem (Strain & Shuff, 2010), transphobia victimisation (e.g., Claes et al., 2015; Collier, Van Beusekom, Bos, & Sandfort, 2014; Goldblum et al., 2012), interpersonal problems (e.g., Barrett & Barber, 2007; Davey et al., 2015) and body dissatisfaction (e.g., Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006; Jones et al., 2016).

Firstly, in transgender individuals, younger age has been associated with greater mental health problems (Arcelus et al., 2016; Heylens et al., 2014) and lower mental health-related quality of life (Newfield et al., 2006). Secondly, low self-esteem has been linked to higher levels of depression and anxiety in trans women (Strain & Shuff, 2010) and, in the general cisgender population, low self-esteem is a known risk factor for poor psychological well-being (while high self-esteem acts as a protective factor; e.g., Mann, Hosman, Schaalma, & de Vries, 2004). Thirdly, discrimination, harassment and abuse on the basis of being transgender (transphobia) has been linked to increased risk of suicide (e.g., Goldblum et al., 2012; Grossman, D'Augelli, & Frank, 2011), depression (e.g., Lombardi, 2009;

Nemoto, Bödeker, & Iwamoto, 2011) and substance use (e.g., Reisner, Greytak, Parsons, & Ybarra, 2015). The fourth variable is that of interpersonal functioning (ability to social interaction and engagement) where poor interpersonal functioning has been linked to a range of mental health problems in the general cisgender population, such as depression (e.g., Barrett & Barber, 2007; Eberhart & Hammen, 2006; Ravitz, Maunder, & McBride, 2007), anxiety (e.g., McEvoy, Burgess, Page, Nathan & Fursland, 2013), and eating disorders (e.g., Arcelus et al., 2009; Arcelus, Haslam, Farrow, & Meyer, 2013) as well as in the transgender population (Davey et al., 2014). Finally, the detrimental effects of body dissatisfaction in cisgender groups are observed in increasing risk for depression (e.g., Paxton et al., 2006), low self-esteem (e.g., Davison & McCabe, 2006), and eating psychopathology (e.g., Stice & Shaw, 2002). Body dissatisfaction has also been found to be higher in transgender people compared to a control group (e.g., Witcomb et al., 2015) and some evidence suggests it is manifested in restrictive eating behaviours (e.g., Ålgars, Santilla, & Sandnabba, 2010).

This study hypothesised that greater psychopathology and greater levels of depression among transgender individuals would be significantly predicted by lower self-esteem, greater interpersonal problems, higher body dissatisfaction, more frequent experiences of transphobic victimisation, and younger age. It was also hypothesised that lower quality of life among transgender individuals would also be significantly predicted by lower self-esteem, greater interpersonal problems, higher body dissatisfaction, more frequent experiences of transphobic victimisation, and younger age. Lastly the study will test whether either self-esteem or social support mediated any significant effects of predictors on psychopathology, depression or

quality of life. It was hypothesised that self-esteem and social support would mediate the effects of predictors on psychological well-being variables.

Method

Participants

Transgender sample. The sample consisted of 104 patients (64 trans females and 40 trans males) who were on the treatment pathway. Transgender participants were selected from all consecutive, eligible patients assessed at national centre. In order for transgender people to be accepted into the treatment program they will need to have made a full social gender role transition, demonstrated evidence of social and/or occupational function, as well as amended most of their legal documentation, including name changing. If there are no physical contraindications, patients will usually receive cross-sex hormone treatment. Following a minimum of 6 months of living in their newly acquired gender role and being part of the treatment programme patients are generally considered for chest reconstructive surgery (for trans males). Transgender people wishing genital reconstructive surgery are usually part of the treatment programme for a minimum of one year. Once sex reassignment surgery (SRS) has been completed, follow-up care can be organised at the Centre. Although not all transgender people attending the service may desire or deem cross-sex hormone treatment necessary (Bockting, Coleman, & De Cuypere, 2011; Wylie et al., 2014), most present to the service requesting this in order to reduce their gender and body dysphoria.

Control sample. The control sample comprised of 104 cisgender participants, recruited from a university campus, local organisations, and social networking websites, through opportunity and snowballing techniques where participants are

encouraged to invite others to take part. Control participants were those who identified themselves as not being transgender or having gender dysphoria, and were matched by age and with the experienced gender of the transgender sample.

Procedure

Transgender participants were invited to complete a questionnaire pack, which included the following: information sheet, consent form, socio-demographic questionnaire, self-report measures, and return envelope. Those who were interested in participating were asked to complete the questionnaire pack at home and return it to the Centre using the pre-paid envelope provided. Data collection continued for approximately a year and yielded a response rate of 40%. Control participants were sent a web-link to an online survey via email or social networking websites and were asked to pass on the web-link to others who might be interested in taking part. The online survey replicated the clinical questionnaire pack barring trans-specific questions, for example stage of transition and experiences of transphobia. Of 161 controls who participated, 104 were matched with the transgender sample.

Ethical approval was provided by the UK University Institutional Ethics Board and the NHS Local Research Ethics Committee. Informed consent was obtained from all participants.

Measures

Symptom Checklist 90 Revised (SCL-90-R; Derogatis, 1977). The SCL-90-R (SCL) assesses general psychopathology and provides a global score, referred to as the Global Severity Index (GSI, Derogatis, 1977). This is calculated from scores across nine primary symptoms dimensions: *depression, anxiety, obsessive-compulsive, phobic anxiety, somatisation, interpersonal sensitivity, paranoid ideation, hostility, and psychoneuroticism*. This study utilised the GSI score as well as the 13 item depression subscale. Higher scores indicate greater psychopathology. The SCL has good construct validity and reliability (Derogatis & Unger, 2010) and is applied widely in trans research (e.g., De Cuypere et al., 2006; Fischer et al., 2010; Haraldsen & Dahl, 2000; Simon, Zsolt, Fogd, & Czobor, 2011; Smith, Van Goozen, Kuiper, & Cohen-Kettenis, 2005). For this sample, the Cronbach's alphas across SCL subscales were $>.72$ in the transgender group and $>.66$ in the control group.

Short Form Health Survey 36 version 2 (SF36v2; Ware & Sherbourne, 1992). The SF36v2 (SF; Ware & Sherbourne, 1992) measures functional quality of life. Four subscales, which relate to quality of life in psychological well-being (vitality, social functioning, role limitations due to emotional problems, and mental health) produce a mean score, denoted as the Mental Health Component Summary score (MHCS). Higher scores indicate higher quality of life. The MHCS, devised by the original authors, has been used in existing trans research (e.g., Gorin-Lazard et al., 2012). The equivalent physical health component summary score was not relevant to the objectives of this study. The SF has excellent high internal reliability and discriminant validity (McHorney, War, Lu, & Donal Sherbourne, 1994). Within this sample, the Cronbach's alphas for SF subscales were $>.76$ in the transgender group and $>.79$ in the control group.

Rosenberg Self Esteem Scale (RSE; Rosenberg, 1965). The RSE evaluates global self-esteem (e.g., Blascovich & Tomaka, 1991; Gray-Little, Williams, & Hancock, 1997). Ten items produce a global score, which is considered in the normal range when between 15 and 25. A global score lower than 15 indicates low self-esteem. The RSE has been empirically validated (Robins, Hendin, & Trzesniewski, 2001) and administered previously to transgender individuals (Skrapec & MacKenzie, 1981; Vocks, Stahn, Loenser, & Legenbauer, 2009). The Cronbach's alphas were .91 and .92 for the transgender and control group, respectively.

Inventory of Interpersonal Problems (IIP-32; Barkham, Hardy, & Startup, 1996). The IIP-32 (IIP) assesses common interpersonal problems, across eight subscales: *hard to be assertive*, *hard to be sociable*, *hard to supportive*, *hard to be involved*, *too dependent*, *too caring*, *too aggressive*, and *too open*. A global score provides an indication of overall interpersonal problems, where higher scores indicate greater interpersonal problems. The IIP has demonstrated high reliability (Barkham et al., 1996) and has been applied in both non-clinical (e.g., Berry, Wearden, Barrowclough, & Liversidge, 2006) and clinical samples (e.g., Arcelus et al., 2009; Paley et al., 2008). The Cronbach's alphas among the transgender and control groups across IIP subscales were >.62 and >.71 respectively.

Hamburg Body Drawing Scale (HBDS; Appelt & Strauss, 1988). The HBDS is a pictorial measure of body dis/satisfaction. Respondents rate how satisfied they are with each specific part of the body as identified on the body drawing, including primary and secondary sexual characteristics. Lower scores signify higher body dissatisfaction. A global mean score is derived from all items, barring 'other'

and 'overall' body satisfaction. The HBDS was purposely developed for use within transgender populations (Appelt & Strauss, 1988). The Cronbach's alpha for the HBDS among the transgender group was .70 whereas in the control group it was .91.

Experiences of transphobic victimisation. Two items were adapted from previous studies measuring transphobic victimisation (Clements-Nolle et al., 2006; Nuttbrock et al., 2010). The items asked "have you ever been verbally abused or harassed due to your gender identity or presentation?" and "have you ever been physically abused or harassed due to your gender identity or presentation?". Participants responded with the frequency of how often they had experienced trans-specific verbal or physical victimisation. Scores were as follows: 0 never, 1 once, 2 a few times, and 3 several times.

Data analysis

All *SCL* data were positively skewed in both groups and non-normally distributed, as demonstrated by significant ($p < .002$) Kolmogorov-Smirnov tests and Shapiro-Wilk tests across all subscales. Similarly, *SF* data were mostly non-normally distributed but negatively skewed in both groups. Therefore, non-parametric tests were selected where appropriate and it is advised that regression analyses are interpreted with caution, as there are no non-parametric equivalents available. Initially to test significant differences between the transgender and control groups across each measure), a series of one-tailed Mann Whitney U tests were run. To test

hypotheses two and three, a series of one-tailed Spearman's Rho correlations were performed prior to regression analyses to test whether factors were significantly associated with psychological well-being factors. Both global and subscale scores were entered in correlational analyses. Subsequently, factors from significant correlations were put forward into multiple linear (enter method) regressions. Predictor (independent) factors were age, *global RSE*, *global HBDS*, *IIP subscales*, and transphobic (*TV*) victimisation scores. Regarding outcome (dependent) factors, general scores of psychopathology and quality of life were applied: *SCL GSI* and *SF MHCS scores*. According to Cohen (1992), in order to run a multiple regression analysis with five independent variables, between 91 and 126 participants are required to meet a power of 0.80 (for a medium effect size, with an alpha of .05 or .01). Owing to the large number of tests conducted, an alpha level of .01 was applied throughout to determine significance. In order to test *global RSE* and *global MSPSS* as mediators, there were four necessary conditions: the predictor variable significantly predicts the outcome variable; the predictor variable significantly predicts the mediator variable; the mediator variable significantly predicts the outcome variable; and the relationship between predictor variable and outcome variable is smaller when the mediator is included in the model than when it is absent. Only when all conditions were met was mediation analysis performed. The size of indirect effect of the predictor variable on the outcome variable and its confidence interval indicate whether mediation has occurred. If the confidence intervals for the indirect effect do not contain zero, it can be concluded that mediation has occurred. The size of the effect is calculated in the form of kappa-squared: .01 is considered a small effect, .09 a medium effect, and .25 a large effect (Preacher & Kelley, 2011).

Results

Characteristics of the sample

The mean ages of the transgender and control groups were 36.52 years (SD 15.25) and 37.63 years (SD 15.30), respectively. Age was not significantly different between the two groups ($U=5146$, $p=.626$). The gender ratio of 64:40 trans women to trans men was similar to previous research investigating transgender samples (e.g., Heylens et al., 2014). Further socio-demographic information is presented in Table 1 while the means and standard deviations of psychological well-being variables and predictive variables are presented in Table 2.

[Insert Table 1 about here]

Differences between the transgender and control groups

The transgender group had significantly higher scores on psychopathology, across *SCL GSI* and all *SCL* subscales, and specific interpersonal problems, *IIP hard to be sociable*, *IIP hard to be supportive*, and *IIP hard to be involved*, compared to the control group (see Table 2). They also scored significantly lower on quality of life, both on the mental health composite score *SF MHCS* and the majority of *SF* subscales (except *SF vitality*, though this neared significance), global RSE self-esteem, global *HBDS* body satisfaction, and interpersonal problems subscale *IIP too open*, than controls.

[Insert Table 2 about here]

Links between psychopathology and quality of life

Among the transgender group, every *SCL* psychopathology subscale was significantly, negatively correlated to every *SF* quality of life subscale ($r > -.26$, $p < .006$ in all cases). Among the control group, *SCL* subscales were all significantly, negatively correlated with *SF MHCS*, *SF vitality* and *SF mental health* ($r > -.25$, $p < .006$). Most *SCL* subscales, including *SCL obsessive compulsive*, *SCL interpersonal sensitivity*, *SCL depression*, *SCL anxiety*, *SCL phobic anxiety*, and *SCL psychoneuroticism* were significantly, negatively correlated with *SF role limitations due to emotional problems* ($r > -.28$, $p < .003$). However, *SCL somatisation*, *SCL hostility*, and *SCL paranoid ideation* were not significantly correlated with *SF role limitations due to emotional problems*. Only *SCL depression* and *SCL phobic anxiety* were correlated with *SF social functioning* (respectively $r = -.26$, $p = .004$, $r = -.25$, $p = .005$).

Predictors of psychopathology

Among the transgender group, *SCL GSI* and *SCL Depression* independently were not significantly correlated with either of the transphobic victimisation scores: *TV verbal* or *TV physical*. However, they were significantly, positively correlated with scores on *IIP* interpersonal problems (global score and all subscales, except *IIP too open*) and significantly, negatively correlated with age, *global RSE* self-esteem, and *global HBDS* body satisfaction. The full regression model for *SCL GSI*, and for *SCL Depression* containing the predictors age, *global RSE*, *global HBDS*, and all *IIP*

subscales (except *IIP too open*) were statistically significant (for SCL GSI: $R^2=.536$, $F=10.262$, $p<.001$, betas ranged from $-.3.15$ to $.34$ and for SCL Depression: $R^2=.527$, $F=9.926$, $p<.001$). The model explained 54% and 53 % of the variance in global psychopathology, respectively. In both models, *global RSE* and *IIP too dependent* were significant individual predictors.

Among the control group, psychopathology scores *SCL GSI* and *SCL depression* were both significantly, positively correlated with *global IIP* interpersonal problems (but not individual *IIP* subscales) and significantly, negatively correlated with *global RSE* self-esteem. *SCL GSI*, but not *SCL depression* was also significantly, positively correlated with age. The full regression model for *SCL GSI*, containing age, *global RSE* and *global IIP* was statistically significant ($R^2=.298$, $F=13.848$, $p<.001$, betas ranged from $-.286$ to $.339$). The full regression model for *SCL depression*, containing *global RSE* and *global IIP* was also significant ($R^2=.287$, $F=19.964$, $p<.001$, betas were $-.328$ and $.287$). In both models, *global RSE* and *global IIP* were significant individual predictors and the overall variance explained was 30% and 29%, respectively.

Predictors of quality of life

Among the transgender group, mental health related quality of life (*SF MHCS*) was not significantly correlated to *global HBDS* body satisfaction, interpersonal problems subscale *IIP too open*, or transphobic victimisation (neither *TV verbal* or *TV physical*). However, it was significantly, positively correlated with age and *global RSE* self-esteem, and negatively correlated with interpersonal problems (*global IIP* and all remaining subscales). The full regression model,

containing age, *global RSE* and all *IIP* subscales, barring *IIP too open*, was statistically significant ($R^2=.491$, $F=9.221$, $p<.001$, betas ranged from $-.176$ to $.432$), explaining 49% of the variance in quality of life. Significant individual predictors were *global RSE* and *IIP too dependent*. Among the control group, *SF MHCS* was also not significantly correlated to *global HBDS*, but was significantly, positively correlated with age and *global RSE*, and significantly, negatively correlated with *global IIP*. The full regression model, containing age, *global RSE*, and *global IIP* was significant ($R^2=.383$, $F=19.219$, $p<.001$, betas ranged between $-.339$ and $.377$), explaining 38% of the variance in quality of life. Significant individual predictors were *global RSE* and *IIP global*.

[Insert Table 3 about here]

Self-esteem as a mediator

Where predictor variables significantly predicted the outcome variables (*SCL GSI*, *SCL depression*, and *SF MHCS*) mediation analyses were performed entering *global RSE* self-esteem as the mediator. In the transgender group, mediation analysis could not be performed with *IIP hard to be supportive* as the predictor variable with any of the outcome variables, as this variable did not significantly predict *global RSE*. *IIP hard to be involved* also did not significantly predict *global RSE* in the model where *SF MHCS* was the outcome. Thus, in these cases, not all the necessary criteria for mediation were met. However, *global RSE* self-esteem was found to be a consistent mediator between the following predictor variables and both *SCL GSI* and *SCL depression*: age, *global HBDS*, and *IIP subscales hard to be assertive*, *hard to be sociable*, *hard to be involved*, *too dependent*, *too caring*, and *too aggressive*. In addition, the relationships between *SF MHCS* and predictor

variables age, *IIP hard to be assertive*, *IIP hard to be sociable*, *IIP too dependent*, *IIP too caring*, and *IIP too aggressive* were mediated by *global RSE*.

[Insert Table 4 about here]

In the control group, as *global RSE* did not significantly predict *SCL GSI* or *SF MHCS*, mediation analysis could not be performed with these as outcome variables and age as the predictor variable. However, the relationship between *global IIP* and *SCL GSI* was mediated by *global RSE* ($b = .107$, BCa CI [.027, .268]) with a medium effect ($k^2 = .145$, BCa CI [.045, .291]). Similarly, the relationship between *global IIP* and *SCL depression* was mediated by *global RSE* ($b = .178$, BCa CI [.045, .430]) with a medium to large effect ($k^2 = .163$, BCa CI [.054, .332]).

Social support as a mediator

Among the transgender group, MSPSS subscales did significantly predict *SF MHCS*. And all IIP subscales (except *IIP too open*) significantly predicted *SF MHCS*. However, IIP subscales did not predict MSPSS global, therefore, in all cases, the criteria for testing MSPSS as a mediator were not met.

Discussion

The principal aim of this study was investigate predictors of psychological well-being among a sample of treatment-seeking transgender individuals compared to a matched cisgender control group. The two components of psychological well-being that were explored were psychopathology (including depression) and quality

of life (WHO, 1997). In line with existing research (Davey et al., 2014; Hepp et al., 2005; Newfield et al., 2006; Skrapec & MacKenzie, 1981; Witcomb et al., 2015) transgender individuals were found to have greater levels of psychopathology, body dissatisfaction, and interpersonal problems, and lower levels of self-esteem, compared to cisgender individuals. As hypothesised, among the transgender group, greater psychopathology was predicted by younger age, lower levels of self-esteem, greater body dissatisfaction, and greater interpersonal problems. Similar results were found for predicting high levels of depression, though age was not significant. In comparison, among the cisgender group, only lower self-esteem and greater overall interpersonal problems were significant predictors of greater psychopathology and depression. In terms of lower quality of life, lower self-esteem and greater interpersonal problems were significant predictors among transgender individuals. Against expectations, higher body dissatisfaction was not associated with lower quality of life. Among the cisgender group, younger age, lower self-esteem, and greater overall interpersonal difficulties were significant predictors of low quality of life. Interestingly, frequency of transphobic victimisation was not correlated with psychopathology, depression, or quality of life in the transgender group, though verbal transphobic victimisation was correlated with four SCL subscales (somatisation, anxiety, phobic anxiety, and paranoid ideation).

With age tends to come more developed coping strategies (Diehl, Coyle, & Labouvie-Vief, 1996), which may explain the role of age in psychological well-being. Younger transgender adults may be more vulnerable to mental health difficulties as they have less experience in managing stress, whereas those who are older may have had time to develop and establish more effective coping mechanisms. Age was a predictor for psychopathology only for the transgender group, which is likely

to be the result of the high levels of stress in this particular group. Although transphobia experiences were not predictors of psychopathology, in general, the experience of verbal transphobia was a predictor of anxiety.

The finding that self-esteem has a prominent contribution to psychological well-being among transgender individuals reflects evidence in the literature on cisgender groups (e.g., Mann et al., 2004). Although transgender individuals' self-esteem may improve as the body undergoes treatment and distress is alleviated, it may be beneficial for clinicians to focus on bolstering self-esteem in its own right. However, in other areas this has been found to be complicated and of mixed success (e.g., Forsyth, Lawrence, Burnette, & Baumeister, 2007).

Interpersonal functioning appears to be of great importance to psychological well-being among transgender individuals and this is an area which could be targeted within clinical services. This is not specific for transgender people as the same results were found in the control group. For example, interpersonal psychotherapy may help to improve psychological well-being by assisting individuals to develop their interpersonal skills, manage potentially difficult relationship transitions, and build their confidence in interacting with others (Klerman, Weissman, Rounsaville, & Chevron, 1984).

Body dissatisfaction has been linked to a number of indicators of poor psychological well-being (Davison & McCabe, 2006; Jones et al., 2016; Paxton et al., 2006; Stice & Shaw, 2002) and, as expected, predicted greater psychopathology in the transgender group. Cross-sex hormone treatment and sex reassignment surgery are intended to better align the physical body with the person's experienced

gender, though this is achieved to varying degrees between individuals. Consequently, psychopathology should be reduced accordingly with the progression of treatment (Gómez-Gil et al., 2012). Previous research regarding transgender individuals following sex reassignment surgery shows that the adequacy of surgical results influences psychopathology (Ross & Need, 1989). It is surprising, in this population, that body dissatisfaction did not predict quality of life, which may be due to selecting a sample within a treatment program, where cross-sex hormone interventions are underway and so bodily changes are already occurring and while dissatisfaction may still be high, the relief from knowing that the body is changing and will continue to change may negate any negative impact positively on quality of life.

Though this study contributes valuable evidence to the literature on well-being among transgender individuals, there are some limitations which must be considered. Whilst reasonably strong relationships were found, the data is cross-sectional and therefore requires a robust replication, applying a prospective design, to determine true predictive effects. This study examined levels of psychopathology which is not necessarily synonymous with clinically diagnosed mental health problems. With regards to sample characteristics, the transgender group had a higher proportion of individuals who were not in paid employment, had never been married or were divorced, and were either living alone, with their families of origin or non-partners, compared to the cisgender group. It is possible that these socio-demographic differences may have influenced the differences, particularly in psychological well-being and interpersonal functioning. However, these differences in socio-demographic characteristics, such as divorce or living alone, may be

inextricably associated with being transgender, since many transgender people lose relationships, housing, and employment as a result of their transition (Factor & Rothblum, 2007; Whittle, Turner, & Al-Alami, 2007). The sample were also predominately white, which poses limitations in terms of generalizability.

Due to the specific nature of the clinical sample, these findings can only be generalised to individuals diagnosed with Transsexualism, who are on the treatment pathway. Different factors may be salient to the psychological well-being of those who are not receiving treatment or in contact with clinical gender identity services, or of those who have fully completed their transition. The lack of association between transphobic victimisation and psychological well-being factors might be explained by a floor effect of having the majority of transgender participants reporting few to no incidents, unlike in previous research (e.g., Nemoto et al., 2011). In light of the present findings, further research into the potential benefit and efficacy of improving self-esteem as it mediates the relationship between all the main factors and well-being would be valuable.

Overall, this study has found that the most salient predictors of low psychological well-being among transgender individuals are self-esteem and interpersonal problems. Younger age and greater body dissatisfaction predict greater psychopathology, but not lower quality of life, whereas lower self-esteem and greater interpersonal problems predict both. The study also showed that self esteem mediates the above relationships. This evidence suggests that increased attention should be paid to ways to bolster self-esteem, decrease interpersonal problems, and address body dissatisfaction, particularly in younger transgender people, with the aim of improving overall psychological well-being.

References

- Ålgars, M., Santilla, P., & Sandnabba, N. K. (2010). Conflicted gender identity, body dissatisfaction, and disordered eating in adult men and women. *Sex Roles*, 63(1-2), 118–125.
- American Psychiatric Association (APA). (2013). *Diagnostic and Statistical Manual of Mental Disorders. Fifth edition. DSM-V*. Washington, DC: American Psychiatric Association.
- Appelt, H., & Strauss, B. (1988). *Psychoendokrinologische gynäkologie*. Stuttgart: Enke.
- Arcelus, J., Bouman, W.P., Van Den Noortgate W., Claes, L., Witcomb, G.L., & Fernandez-Aranda, F. (2015). Prevalence of Transsexualism: A systematic review and meta-analysis. *European Psychiatry*, 30(6), 807-815.
- Arcelus, J., Claes, L., Witcomb, G.L., Marshall, E., Bouman, W.P. (2016). Risk Factors for Non Suicidal Self Injury among Trans Youth. *Journal of Sexual Medicine*, 13(3), (in press)
- Arcelus, J., Haslam, M., Farrow, C., & Meyer, C. (2013). The role of interpersonal functioning in the maintenance of eating psychopathology: A systematic review and testable model. *Clinical Psychology Review*, 33, 156–167.
- Arcelus, J., Whight, D., Langham, C., Baggott, J., McGrain, L., Meadows, L., & Meyer, C. (2009). A case series evaluation of a modified version of interpersonal

- psychotherapy (IPT) for the treatment of bulimic eating disorders: a pilot study. *European Eating Disorders Review*, 17(4), 260–268.
- Barkham, M., Hardy, G. E., & Startup, M. (1996). The IIP-32: a short version of the Inventory of Interpersonal Problems. *British Journal of Clinical Psychology*, 35(1), 21–35.
- Barrett, M. S., & Barber, J. P. (2007). Interpersonal profiles in major depressive disorder. *Journal of Clinical Psychology*, 63(3), 247–266. doi:10.1002/jclp
- Berry, K., Wearden, A., Barrowclough, C., & Liversidge, T. (2006). Attachment styles, interpersonal relationships and psychotic phenomena in a non-clinical student sample. *Personality and Individual Differences*, 41, 707–718.
- Blascovich, J., & Tomaka, J. (1991). The Self-Esteem Scale. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (pp. 115–160). New York: Academic Press.
- Bockting, W., Coleman, E., & De Cuypere, G. (2011). Care of transsexual persons. *The New England Journal of Medicine*, 364, 2259-560.
doi:10.1056/NEJMcp1008161
- Claes, L., Bouman, W. P., Witcomb, G., Thurston, M., Fernandez-Aranda, F., & Arcelus, J. (2015). Non-suicidal self-injury in trans people: Associations with psychological symptoms, victimization, interpersonal functioning and perceived social support. *Journal of Sexual Medicine*, 12(1), 168-179.

- Clements-Nolle, K., Marx, R., & Katz, M. (2006). Attempted suicide among transgender persons. *Journal of Homosexuality*, 51(3), 53–69.
doi:10.1300/J082v51n03
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.
- Coleman, E., Bockting, W., Botzer, M., Cohen-Kettenis, P., DeCuypere, G., Feldman, J.,...Zucker, K. (2012). Standards of Care for the Health of Transsexual, Transgender, and Gender-Nonconforming People, Version 7. *International Journal of Transgenderism*, 13(4), 165-232.
- Collier, K.L., Van Beusekom, G., Bos, H.M.W., & Sandfort, T.G.M. (2013). Sexual Orientation and Gender Identity/Expression Related Peer Victimization in Adolescence: A Systematic Review of Associated Psychosocial and Health Outcomes, *Journal of Sex Research*, 50(3-4), 299-317. doi: 10.1080/00224499.2012.750639
- Couch, M., Pitts, M., Mulcare, H., Croy, S., Mitchell, A., & Patel, S. (2007). *TranzNation: A report on the health and wellbeing of transgendered people in Australia and New Zealand* (pp. 1–76). Melbourne: La Trobe University: Australian Research Centre in Sex, Health & Society.
- Davey, A., Arcelus, J., Meyer, C., & Bouman, W.P. (2016). Self injury among trans individuals in transition and matched controls: Prevalence and Associated factors. *Health and Social Care in the Community* (in press).
- Davey, A., Bouman, W.P., Arcelus, J., & Meyer, C. (2014). Social Support and Psychological Well-Being in Gender Dysphoria: A Comparison of Patients With Matched Controls. *Journal of Sexual Medicine*, 11(12), 2976-2985.

- Davey A, Bouman WP, Arcelus J, Meyer C (2015). Interpersonal functioning among individuals with gender dysphoria. *Journal of Clinical Psychology*, 71(12), 1173-1185.
- Davison, T. E., & McCabe, M. P. (2006). Adolescent body image and psychosocial functioning. *Journal of Social Psychology*, 146(1), 15–30.
- De Cuypere, G., Elaut, E., Heylens, G., Van Maele, G., Selvaggi, G., T'Sjoen, G., ... Monstrey, S. (2006). Long-term follow-up: psychosocial outcome of Belgian transsexuals after sex reassignment surgery. *Sexologies*, 15, 126–133.
- Derogatis, L. R. (1977). *SCL-90-R: Administration, Scoring, and Procedures Manual for the R(evised) Version*. Baltimore, MD: Johns Hopkins University, School of Medicine.
- Derogatis, L. R., & Unger, R. (2010). Symptom Checklist-90-Revised. In I. B. Weiner & W. E. Craighead (Eds.), *The Corsini Encyclopaedia of Psychology* (4th ed., pp. 1743–1744). Hoboken, NJ: John Wiley & Sons.
- Dhejne, C., Van Vlerken. R., Heylens, G., and Arcelus, J. (2016) Mental health and gender dysphoria: A review of the literature. *International Review of Psychiatry*, 28 (1), 44-57.
- Diehl, M., Coyle, N., & Labouvie-Vief, G. (1996). Age and sex differences in strategies of coping and defense across the life span. *Psychology and Aging*, 11(1), 127–139.

- Drescher, J., Cohen-Kettenis, P., & Winter, S. (2012). Minding the body: situating gender identity diagnoses in the ICD-11. *International Review of Psychiatry, 24*, 568–77. doi:10.3109/09540261.2012.741575
- Eberhart, N. K., & Hammen, C. L. (2006). Interpersonal predictors of onset of depression during the transition to adulthood. *Personal Relationships, 13*(2), 195–206. doi:10.1111/j.1475-6811.2006.00113.x
- Factor, R.J., & Rothblum, E.D. (2007). A study of transgender adults and their non-transgender siblings on demographic characteristics, social support, and experiences of violence. *Journal of LGBT Health Research, 3*, 11-30.
- Fischer, A. D., Bandini, E., Ricca, V., Ferruccio, N., Corona, G., Meriggiola, M. C., ... Maggi, M. (2010). Dimensional profiles of male to female gender identity disorder: an exploratory research. *Journal of Sexual Medicine, 7*(7), 2487–2498.
- Forsyth, D.R., Lawrence, N.K., Burnette, J.L., & Baumeister, R.F. (2007). Attempting to Improve the Academic Performance of Struggling College Students by Bolstering Their Self-esteem: An Intervention that Backfired. *Journal of Social and Clinical Psychology, 26*(4), 447-459.
- Goldblum, P., Testa, R. J., Pflum, S., Hendricks, M. . L., Bradford, J., & Bongar, B. (2012). The relationship between gender-based victimization and suicide attempts in transgender people. *Professional Psychology: Research and Practice, 43*(5), 468–475.

Gómez-Gil, E., Zubiaurre-Elorza, L., Esteva, I., Guillamon, A., Godás, T., Cruz

Almaraz, M., ... Salamero, M. (2012). Hormone-treated transsexuals report less social distress, anxiety and depression. *Psychoneuroendocrinology*, *37*(5), 662–70. doi:10.1016/j.psyneuen.2011.08.010

Gorin-Lazard, A., Baumstarck, K., Boyer, L., Maquigneau, A., Gebleux, S.,

Penochet, J.-C., ... Bonierbale, M. (2012). Is hormonal therapy associated with better quality of life in transsexuals? A cross-sectional study. *Journal of Sexual Medicine*, *9*, 531–541.

Gray-Little, B., Williams, V. S. L., & Hancock, T. D. (1997). An item response theory analysis of the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin*, *23*, 443–451.

Grossman, A. H., D'augelli, A. R., & Frank, J. A. (2011). Aspects of Psychological Resilience among Transgender Youth. *Journal of LGBT Youth*, *8*(2), 103–115. doi:10.1080/19361653.2011.541347

Haraldsen, I. R., & Dahl, A. A. (2000). Symptom profiles of gender dysphoric patients of transsexual type compared to patients with personality disorders and healthy adults. *Acta Psychiatrica Scandinavica*, *102*(4), 276–81. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/11089727>

- Hepp, U., Kraemer, B., Schnyder, U., Miller, N., & Delsignore, A. (2005). Psychiatric comorbidity in gender identity disorder. *Journal of Psychosomatic Research*, 58(3), 259–261. doi:10.1016/j.jpsychores.2004.08.010
- Heylens, G., Elaut, E., Kreukels, B. P. C., Paap, M. C. S., Cerwenka, S., Richter-Appelt, H., ... De Cuypere, G. (2014). Psychiatric characteristics in transsexual individuals: Multicentre study in four European countries. *British Journal of Psychiatry*, 204, 151–156.
- Hoffman, B. (2014). An Overview of Depression among Transgender Women. *Depression Research and Treatment*, Article ID 394283, 1-9.
doi:10.1155/2014/394283
- Jahoda, M. (1958). *Current concepts of positive mental health*. New York: Basic Books.
- Jones, B., Haycraft, E., Murjan, S., and Arcelus, J. (2016). Body dissatisfaction and disordered eating in trans people: A systematic review of the literature. *International Review of Psychiatry*, 28(1), 81-94.
- Khobzi Rotondi, N. (2012). Depression in Trans People: A Review of the Risk Factors. *International Journal of Transgenderism*, 13(3), 104–116.
doi:10.1080/15532739.2011.663243
- Klerman, G. L., Weissman, M. M., Rounsaville, B., & Chevron, E. (1984). *Interpersonal psychotherapy for depression*. New York: Basic Books.

Lombardi, E. (2009). Varieties of transgender/transsexual lives and their relationship with transphobia. *Journal of Homosexuality*, *56*(8), 977–992.

doi:10.1080/00918360903275393

Lombardi, E. L., Wilchins, R. A, Priesing, D., & Malouf, D. (2001). Gender violence: transgender experiences with violence and discrimination. *Journal of Homosexuality*, *42*(1), 89–101. Retrieved from

<http://www.ncbi.nlm.nih.gov/pubmed/11991568>

Mann, M., Hosman, C. M. H., Schaalma, H. P., & de Vries, N. K. (2004). Self-esteem in a broad-spectrum approach for mental health promotion. *Health Education Research*, *19*(4), 357–372.

McEvoy, P. M., Burgess, M. M., Page, A. C., Nathan, P., & Fursland, A. (2013). Interpersonal problems across anxiety, depression, and eating disorders: A transdiagnostic examination. *British Journal of Clinical Psychology*, *52*(2), 129–147. doi:10.1111/bjc.12005

McHorney, C. A., War, J. E., Lu, J. F. R., & Donal Sherbourne, C. (1994). The MOS 36-Item Short-Form Health Survey (SF-36): III. tests of data quality, scaling assumptions, and reliability across diverse patient groups. *Medical Care*, *32*(1), 40–66.

Nemoto, T., Bödeker, B., & Iwamoto, M. (2011). Social support, exposure to violence and transphobia, and correlates of depression among male-to-female

transgender women with a history of sex work. *American Journal of Public Health*, 101(10), 1980–1988. doi:10.2105/AJPH.2010.197285

Newfield, E., Hart, S., Dibble, S., & Kohler, L. (2006). Female-to-male transgender quality of life. *Quality of Life Research*, 15(9), 1447–57. doi:10.1007/s11136-006-0002-3

Nuttbrock, L., Bockting, W., Rosenblum, A., Hwahng, S., Mason, M., Macri, M., & Becker, J. (2013). Gender abuse, depressive symptoms, and HIV and other sexually transmitted infections among male-to-female transgender persons: A three-year prospective study. *American Journal of Public Health*, 103(2), 300–307. doi:10.2105/AJPH.2011.300568

Nuttbrock, L., Hwahng, S., Bockting, W., Rosenblum, A., Mason, M., Macri, M., & Becker, J. (2010). Psychiatric impact of gender-related abuse across the life course of male-to-female transgender persons. *Journal of Sex Research*, 47(1), 12–23. doi:10.1080/00224490903062258

Paley, G., Cahill, J., Barkham, M., Shapiro, D., Jones, J., Patrick, S., & Reid, E. (2008). The effectiveness of psychodynamic-interpersonal therapy (PIT) in routine clinical practice: A benchmarking comparison. *Psychology & Psychotherapy: Theory, Research & Practice*, 81, 157–175.

Paxton, S. J., Neumark-Sztainer, D., Hannan, P. J., & Eisenberg, M. E. (2006). Body dissatisfaction prospectively predicts depressive mood and Low self-esteem in adolescent girls and boys. *Journal of Clinical Child & Adolescent Psychology*, 35(4), 539–549.

- Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods*, 16(2), 93–115.
- Ravitz, P., Maunder, R., & McBride, C. (2007). Attachment, contemporary interpersonal theory and IPT: An integration of theoretical, clinical, and empirical perspectives. *Journal of Contemporary Psychotherapy*, 38(1), 11–21.
doi:10.1007/s10879-007-9064-y
- Reisner, S.L., Greytak, E.A., Parsons, J.T., & Ybarra, M.L. (2015). Gender Minority Social Stress in Adolescence: Disparities in Adolescent Bullying and Substance Use by Gender Identity. *Journal of Sex Research*, 52(3), 243-256. doi: 10.1080/00224499.2014.886321
- Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin*, 27(2), 151–161.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Ross, M. W., & Need, J. A. (1989). Effects of adequacy of gender reassignment surgery on psychological adjustment: a follow-up of fourteen male-to-female patients. *Archives of Sexual Behavior*, 18(2), 145–53.
- Simon, L., Zsolt, U., Fogd, D., & Czobor, P. (2011). Dysfunctional core beliefs, perceived parenting behavior and psychopathology in gender identity disorder: A comparison of male-to-female, female-to-male transsexual and

- nontranssexual control subjects. *Journal of Behavior Therapy and Experimental Psychiatry*, 42(1), 38–45. doi:10.1016/j.jbtep.2010.08.004
- Skrapec, C., & MacKenzie, K. R. (1981). Psychological self-perception in male transsexuals, homosexuals, and heterosexuals. *Archives of Sexual Behavior*, 10(4), 357–370.
- Smith, Y. L. S., Van Goozen, S. H. M., Kuiper, A. J., & Cohen-Kettenis, P. T. (2005). Sex reassignment: outcomes and predictors of treatment for adolescent and adult transsexuals. *Psychological Medicine*, 35(1), 89–99.
- Stice, E., & Shaw, H. E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of Psychosomatic Research*, 53(5), 985–993.
- Strain, J. D., & Shuff, I. M. (2010). Psychological Well-Being and Level of Outness in a Population of Male-to-Female Transsexual Women Attending a National Transgender Conference. *International Journal of Transgenderism*, 12(4), 230–240. doi:10.1080/15532739.2010.544231
- Vocks, S., Stahn, C., Loenser, K., & Legenbauer, T. (2009). Eating and body image disturbances in male-to-female and female-to-male transsexuals. *Archives of Sexual Behavior*, 38(3), 364–377.
- Ware, J. E., & Sherbourne, C. D. (1992). The MOS 36-item short-form health survey (SF-36). I Conceptual framework and item selection. *Medical Care*, 30, 473–483.

Warr, P. (1978). A study of psychological well-being. *British Journal of Psychology*, 69(1), 111–121.

Whittle, S., Turner, L., & Al-Alami, M. (2007). *Engendered penalties: Transgender and transsexual people's experiences of inequality and discrimination*.

Wetherby: Communities and Local Government publications.

Witcomb, G.L., Bouman, W.P., Brewin, N., Richards, C., Fernandez-Aranda, F., & Arcelus, J. (2015). Body image dissatisfaction and eating-related psychopathology in trans individuals: A matched control study. *European Eating Disorders Review*, 23(4), 287-293.

World Health Organisation. (1997). *Measuring Quality of Life*. Geneva: World Health Organisation. Retrieved online on 23rd March 2015 from http://www.who.int/mental_health/media/68.pdf

World Health Organisation. (1992). *International classification of diseases 10 (ICD-10)*. Geneva: World Health Organisation.

Wylie, K. R., Barrett, J., Besser, M., Bouman, W. P., Bridgeman, M., Clayton, A., ...

Ward, D. (2014). Good practice guidelines for the assessment and treatment of adults with gender dysphoria. *Sexual and Relationship Therapy*, 29(2), 154–214.

Table 1. Demographic characteristics of the transgender and control sample (n=208)

	Transgender sample (n=104) n (%)	Control sample (n=104) n (%)
<i>Gender identity</i>		
Female	64 (61.5%)	64 (61.5%)
Male	40 (38.5%)	40 (38.5%)
<i>Ethnic origin</i>		
White	93 (89.4%)	99 (95.2%)
Indian	0 (0%)	1 (1%)
Black other	1 (1%)	0 (0%)
Pakistani	1 (1%)	0 (0%)
Chinese	1 (1%)	0 (0%)
Other	8 (7.7%)	4 (3.8%)
<i>Employment status</i>		
Employed full-time	42 (40.4%)	38 (36.5%)
Employed part-time	4 (3.8%)	19 (18.3%)
Student	15 (14.4%)	35 (33.7%)
Volunteer work	10 (9.6%)	4 (3.8%)
Housewife/husband	1 (1%)	2 (1.9%)
Disabled	3 (2.9%)	0 (0%)
Unemployed	13 (12.5%)	1 (1%)
Other	16 (15.4%)	5 (4.8%)
<i>Civil status</i>		
Single, never married	71 (68.3%)	52 (50%)
Married	8 (7.7%)	36 (34.6%)
Civil partnership	1 (1%)	3 (2.9%)
Separated	3 (2.9%)	3 (2.9%)
Divorced	16 (15.4%)	4 (3.8%)
Widowed	2 (1.9%)	3 (2.9%)
Other	2 (1.9%)	1 (1%)

<i>Living situation</i>		
With family of origin	29 (27.9%)	14 (13.5%)
Alone	34 (32.7%)	21 (20.2%)
Shares with non-partner(s)	15 (14.4%)	10 (9.6%)
With partner only	16 (15.4%)	25 (24%)
With partner and child/ren	3 (2.9%)	24 (23.1%)
With child/ren only	2 (1.9%)	4 (3.8%)
Other	5 (4.8%)	5 (4.8%)
 <i>Treatment stage</i>		
Assessment	7 (6.7%)	-
Real Life Experience	78 (75%)	-
Post-surgery	18 (17.3%)	-
 <i>Hormone status</i>		
No use	19 (18.3%)	-
Current use	82 (78.8%)	-
Previous use	1 (1%)	-

Table 2. Means and standard deviations (SD) of each measure among the transgender and control group, including results of the tests of comparison

Measure	Subscale	Trans	Control	Mann Whitney U test	
		mean(SD)	mean(SD)	<i>U</i>	<i>p</i>
SCL	<i>GSI</i>	0.67(0.55)	0.29(0.33)	2828	<.001**
	<i>somatisation</i>	0.52(0.53)	0.31(0.41)	3921.5	.001*
	<i>obsessive compulsive</i>	0.95(0.82)	0.50(0.58)	3527	<.001**
	<i>interpersonal sensitivity</i>	0.82(0.76)	0.35(0.46)	3271	<.001**
	<i>depression</i>	0.92(0.75)	0.37(0.49)	2625	<.001**
	<i>anxiety</i>	0.45(0.52)	0.19(0.36)	3475	<.001**
	<i>hostility</i>	0.46(0.50)	0.24(0.30)	4011	.001*
	<i>phobic anxiety</i>	0.46(0.66)	0.09(0.28)	2890	<.001**
	<i>paranoid ideation</i>	0.64(0.66)	0.25(0.37)	3376	<.001**
	<i>psychoneuroticism</i>	0.44(0.54)	0.13(0.28)	2951	<.001**
SF	<i>MHCS</i>	70.9(17.9)	79.3(12.8)	3560	.001*
	<i>Vitality</i>	54.6(21.2)	59.5(17.7)	4539	.036
	<i>social functioning</i>	77.9(26.0)	90.1(17.3)	3748	<.001**
	<i>role limitations due to emotional problems</i>	81.3(23.0)	90.7(16.6)	4055.5	.001*
	<i>mental health</i>	70.5(17.3)	77.2(14.9)	3937	.001*
RSE	<i>global</i>	19.9(5.86)	22.6(5.9)	3701	<.001**
HBDS	<i>global</i>	2.97(0.51)	3.57(0.66)	2618.5	<.001**
IIP	<i>global</i>	1.11(0.60)	0.79(0.48)	3651	<.001**

	<i>hard to be assertive</i>	1.38(0.99)	1.15(0.86)	4701	.051
	<i>hard to be sociable</i>	1.37(1.01)	0.63(0.69)	2991.5	<.001**
	<i>hard to be supportive</i>	0.80(0.98)	0.37(0.50)	4008.5	.001*
	<i>hard to be involved</i>	1.24(1.10)	0.62(0.77)	3516.5	<.001**
	<i>too dependent</i>	0.93(0.83)	0.96(0.78)	5185.5	.303
	<i>too caring</i>	1.26(0.81)	1.06(0.75)	4653	.04
	<i>too aggressive</i>	0.69(0.70)	0.66(0.74)	5202.5	.316
	<i>too open</i>	1.46(0.78)	1.82(0.72)	4029.5	.001*
TV	<i>verbal</i>	1.60(1.13)	-	-	-
	<i>physical</i>	0.33(0.68)	-	-	-

Symptom Checklist 90 Revised (SCL), Short Form 36 Health Survey version 2 (SF), Rosenberg Self-Esteem Scale (RSE), Hamburg Body Drawing Scale (HBDS), Inventory of Interpersonal Problems (IIP), Experiences of transphobic victimisation (TV), $p < .01^*$, $p < .001^{**}$.

Table 3. Regression models and significant individual predictors.

Measure	Clinical		% Variance explained	Sig. individual predictors	Control		% Variance explained	Sig. individual predictors
	F	P			F	P		
SCL								
GSI	10.3	<.001*	53.6%	RSE global* IIP too dependent*	13.9	<.001*	29.8%	RSE global* IIP global*
Depression	9.93	<.001*	52.7%	RSE global** IIP too dependent*	20.0	<.001*	28.7%	RSE global* IIP global*
SF								
MHCS	9.22	<.001*	49.1%	RSE global*	19.2	<.001*	38.3%	RSE global* IIP global*

n=104, *p<.01, **p<.001

Table 4. Self-esteem as a mediator.

Measure	SCL GSI				SCL depression				SF MHSC			
	indirect effect of X on Y		effect size		indirect effect of X on Y		Effect size		Indirect effect of X on Y		Effect size	
	<i>b</i>	CI (LL, UL)	k^2	CI (LL, UL)	<i>b</i>	CI (LL, UL)	k^2	CI (LL, UL)	<i>b</i>	CI (LL, UL)	k^2	CI (LL, UL)
Age	-.012	-.018, -.007	.320	.208, .425	-.018	-.027, -.012	.359	.250, .468	.401	.248, .610	.332	.217, .450
<i>HBDS</i>												
global	-.238	-.430, -.116	.224	.117, .364	-.362	-.628, -.182	.249	.128, .409	-	-	-	-
<i>IIP</i>												
hard to be assertive	.082	.029, .163	.158	.062, .290	.117	.034, .221	.166	.048, .294	-2.95	-5.52, -.857	.175	.046, .294
hard to be sociable	.113	.056, .182	.215	.108, .320	.169	.084, .272	.235	.119, .356	-3.68	-6.15, -1.76	.217	.112, .332
hard to be supportive	-	-	-	-	-	-	-	-	-	-	-	-
hard to be involved	.070	.008, .142	.149	.026, .290	.101	.008, .203	.159	.017, .290	-	-	-	-
too dependent	.148	.086, .233	.229	.131, .333	.234	.140, .345	.259	.154, .359	-5.75	-9.18, -2.78	.252	.129, .370
too caring	.114	.050, .203	.180	.079, .288	.173	.078, .319	.201	.095, .330	-3.63	-6.75, -1.58	.177	.078, .287
too aggressive	.129	.047, .246	.174	.074, .295	.191	.078, .357	.193	.086, .314	-4.37	-8.42, -1.77	.189	.095, .310

95% confidence intervals (CI) were bootstrapped, lower limit (LL), upper limit (UL).

Large effect size = 0.25, medium effect size = .09, small effect size = .01 (Preacher & Kelley, 2011).