University of Nottingham

IMPACT OF TRANSITION TO IDENTIFIED GENDER ON TRANSGENDER ADULTS' QUALITY OF LIFE, AUTISTIC TRAITS AND EXPERIENCES OF INTERPERSONAL INTERACTIONS

Anna Nobili, BSc, MSc

Thesis submitted to the University of Nottingham for the degree of

Doctor of Philosophy

March, 2019

Acknowledgements

I would like to thank my supervisors Professor Cris Glazebrook and Professor Jon Arcelus for supporting me throughout this path and, at times, struggle. Thank you for you guidance, for helping me in times of need and stress and for sharing your expert knowledge. You have helped me to grow as a person as well as a researcher; you have helped me to become who I am now. Thank you for believing in my capabilities, often much more than how much I believed in myself.

Big thanks goes to the participants, patients and staff at the Nottingham Centre for Transgender Health, for making the research possible and for sharing their time with me.

Thank you to the BMedSci and Masters students at the University of Nottingham Sophie Cooper, Megan Cable and Jiratchaya Samutsakorn who worked at my side to make these studies and thesis possible.

I would also like to thank my precious family to have supported me from far away, to have always believed in me and to have made many sacrifices; you have helped me to get where I am today.

Abstract

Transgender people often experience poor mental health and there is a strong clinical impression that this population reports high rates of autistic traits. These issues potentially have a negative impact upon their Quality of Life (QoL) and interpersonal issues. Transgender people generally wish to undergo Gender-Affirming Treatments (GAT), which consist of medical interventions such as Cross-Sex Hormone Treatment (CHT) and gender-affirming surgeries. These procedures help align transgender people's physical characteristics with the gender they identify with and help improve their physical quality of life. However, there is need to understand the impact of undergoing GAT upon mental health-related QoL and social interactions. Thus, **Study 1**, a systematic review and meta-analysis, was conducted to explore the evidence related to different dimensions of quality of life as well as to gain understanding of the effect of CHT upon mental health-related QoL. Results of this study suggest that transgender people have poorer mental health-related quality of life than the general population. Additionally, some evidence suggests that post-treatment their disadvantage becomes less apparent.

There is paucity of studies trying to understand if this population truly displays enhanced rates of autistic traits as well as the impact of medically transitioning and undergoing CHT on these traits in order to provide transgender people with the needed support. Therefore, **Study 2** was carried out to determine if a large sample of transgender people (n= 656) report higher rates of autistic traits compared to a matched sample of cisgender people and **Study 3** longitudinally explored the impact of undergoing CHT upon levels of autistic traits in a sample of 91 transgender participants. Findings from the cross-sectional study suggest that transgender adults assigned female at birth display higher levels of autistic traits compared to cisgender females. Transgender adults assigned male at birth had lower levels of autistic traits compared to matched cisgender males. Results of the longitudinal study of transgender adults show that undergoing CHT widens the gender gap, with autistic traits slightly worsening for birth assigned females whilst remaining stable for birth assigned males. This provides some evidence for the stability of autistic traits and for the impact of testosterone treatment upon autistic traits.

In spite of evidence of poorer mental health-related QoL and high rates of autistic traits in transgender adults assigned female at birth research that tries to understand the actual experiences of interpersonal interactions in this population and the

factors that influence them is lacking. Thus, **Study 4** was carried out to fill this gap in the literature by interviewing a sample of young transgender people. From the interviews it surfaced that transitioning is perceived as having a positive impact upon transgender people's perceptions of interpersonal interactions and social skills. People also suggested individual differences and personal traits to play a significant role in social interactions and that sharing common interests fosters socialisation.

Contents

Acknowledgements **2**

Abstract **3**

List of Tables **10**

List of Figures **11**

List of Appendices **12**

Research Reported in this Thesis **13**

Conference proceedings **14**

Glossary of key terms used in this thesis **15**

Abbreviations **18**

Chapter 1 ..... **19**

General Introduction **19**

1. Terminology in transgender health 19
2. Prevalence of mental health problems 20
3. Predictors of mental health problems and quality of life 20
4. Interpersonal difficulties in the transgender population 22
5. Aetiology of interpersonal difficulties in the transgender population 23
    - 5.1. Lack of social acceptance 24
    - 5.2. Stigma, discrimination and victimisation 24
    - 5.3. Transphobia by others 25
    - 5.4. Internalised transphobia 26
6. Description of gender-affirming treatment 27
    - 6.1. Gender-affirming treatment for transgender women 30
    - 6.2. Gender-affirming treatment for transgender men 31
7. Effect of gender-affirming treatment on mental health and quality of life 33
8. Challenges associated with gender-affirming treatment 35
    - 8.1. Challenges pre-social transition 36
    - 8.2. Challenges after coming out and social transition 36
    - 8.3. Challenges accessing gender-affirming treatment 37
    - 8.4. Challenges during medical transition 38
    - 8.5. Challenges following gender-affirming treatment 40
9. Effect of social support on a positive quality of life 40
10. Need for good interpersonal skills 41
11. Minority Stress Model 42
12. Link between interpersonal difficulties and individual differences 43
13. Transgender people and autism spectrum conditions 44
14. Aims of the thesis 47

Chapter 2 - Study 1 ..... **48**

Quality of Life of Treatment-Seeking Transgender Adults: **48**

A Systematic Review and Meta-Analysis **48**

Abstract 48

1. Introduction 49

2. Method 51
2.1. Eligibility criteria 51
2.2. Search Strategy 52
2.3. Quality Assessment 53
2.4. Data extraction 54
2.5. Meta-analysis 54
2.6. QoL Measures Used in the Review 55
3. Results 59
3.1. Study Characteristics 61
3.2. Risk of bias 62
3.3. Results of the Literature review 69
3.3.1. Voice-related QoL 69
3.3.2. Sex-related QoL 72
3.3.3. Body Image-Related QoL 75
3.3.4. General (non-condition specific) QoL 78
3.4. Results of the meta-analysis 89
3.4.1. Meta-Analysis – Mental health-related QoL of Transgender People Compared to the General Population 89
3.4.2. Meta-Analysis – Subgroup Analysis – Mental health-related QoL Post-Hormonal Treatment of Transgender People Compared to the General Population 90
4. Discussion 90
4.1. Condition specific QoL 91
4.2. General QoL 93
4.3. Factors Associated with QoL 94
5. Conclusion 95

Chapter 3 - Study 2 96

Autistic Traits in Treatment-Seeking Transgender Adults 96
Abstract 96
1. Introduction 97
2. Methods 100
2.1. Participants 100
2.2. Settings 101
2.3. Design 101
2.4. Main Outcome Measures 101
2.4.1. Autism Spectrum Quotient Short Version—AQ-Short 101
2.5. Procedure 102
2.6. Data Analysis 103
3. Results 104
3.1. Sociodemographic Characteristics of the Matched Samples 104
3.2. Differences in Clinical Caseness Between Groups 104
3.3. Differences in AQShort Total and Subscale Scores Between Groups 105
3.4. AQShort Total and Subscale Scores by Assigned Gender at Birth 107
4. Discussion 110

Chapter 4 – Study 3 116

Longitudinal study exploring the stability of autistic traits in treatment-seeking transgender adults following cross-sex hormone treatment. 116

Abstract 116
1. Introduction 118
2. Methods 119
2.1. Participants 119
2.2. Setting 120
2.3. Design and Procedure 120
2.4. Main Outcome Measures 121
2.4.1. Autism Spectrum Quotient Short Version – AQ-Short 121
2.4.2. Anxiety subscale of the Hospital Anxiety and Depression Scale - HADS-A 121
2.5. Data Analysis 122
3. Results 122
3.1. Change in AQ scores controlling for change in anxiety 124
4. Discussion 126
5. Conclusion 128

Chapter 5 - Study 4 130

A qualitative study on the perception of factors influencing interpersonal events in young transgender people 130
Abstract 130
1. Introduction 131
2. Method 134
2.1. Design 134
2.3. Participants 136
2.4. Recruitment 137
2.5. Materials 137
2.5.1. Inventory of Interpersonal Problems - IIP-32 138
2.6. Interview Guide 138
2.7. Procedure 139
2.8. Analyses 140
2.9. Reflexive Statement 142
3. Results 143
3.1. Participants' Characteristics 143
3.2. IIP-32 145
3.3. Qualitative Findings 146
3.3.1. Theme 1 – Transitioning has a positive impact on interpersonal interactions 147
3.3.1.1. Subtheme 1 – Transitioning improves social confidence and reduces social anxiety 148
3.3.1.2. Subtheme 2 – Transitioning improves resilience . 149
3.3.1.3. Subtheme 3 – Transitioning facilitates insights into communication and improves relationships 150
3.3.2. Theme 2 – Underlying individual differences are still important 151
3.3.3. Theme 3 – Perceived stigma is a barrier to social interactions 152
3.3.4. Theme 4 – Fears and worries contribute to negative experiences 153

3.3.4.1. Subtheme 1 – Concerns around misgendering and negative reactions to transgender status 153
3.3.4.2. Subtheme 2 – Worries around romantic relationships 155
3.3.4.3. Subtheme 3 – Physical and emotional safety 155
3.3.5. Theme 5 – Managing interpersonal interactions 157
3.3.5.1. Subtheme 1 – Avoiding social situations and potential conflict 157
3.3.5.2. Subtheme 2 – Developing problem focussed coping strategies to deal with trans-specific interpersonal challenges 158
3.3.6. Theme 6 – The importance of shared interests 160
4. Discussion 161
4.1. Implications 168
4.2. Strengths and limitations 169
5. Conclusion 170

Chapter 6 172

General Discussion 172
1. Objective of thesis 172
2. Summary of findings 172
2.1. Chapter 2 – Study 1 172
2.2. Chapter 3 – Study 2 174
2.3. Chapter 4 – Study 3 175
2.4. Chapter 5 – Study 4 177
3. Theoretical underpinning 179
3.1. Epistemological position 179
3.2. Biopsychosocial approach 180
4. Implications 181
4.1. Clinical implication 181
4.1.1 Clinical implications from the systematic review and meta-analysis (Study 1) 181
4.1.2 Clinical implications from the cross-sectional study in ASC (Study 2) 183
4.1.3. Clinical implications from longitudinal study (study 3) 183
4.1.4. Clinical implication from qualitative study (study 4) 184
4.2. Implications for social support 185
4.3. Implications for transgender healthcare services and for the development of interventions 187
5. Strengths and limitations 191
5.1. Strengths 191
5.2. Limitations 192
6. Future research 195
7. Conclusion 196

References 199

Appendix 233
Appendix A – Ethical approval letter 233
Appendix B – Protocol qualitative study 234

Appendix C – Letter sent out to patients who previously spoke to a clinician about possible participation in the study 239
Appendix D - Letter sent out to patients who did not previously speak to a clinician about possible participation in the study 240
Appendix E – Invitation letter written by the researcher AN 241
Appendix F - Participant information sheet 242
Appendix G – Cover letter 245
Appendix H – Expression of interest slip 246
Appendix I – Interview guide 247
Appendix J – Sociodemographic questionnaire 251
Appendix K – Inventory of Interpersonal Problems (IIP-32) 254
Appendix L – Participant consent form 256
Appendix M – Debriefing form 257
Appendix N – Codebook 258
Appendix O – COREQ checklist 268

List of Tables

Table 1.1 - Criteria for inclusion of studies within the review …… p. 53

Table 1.2 - Quality of life measures used in the review…….…… p. 57

Table 1.3 - Risk of bias of studies included in the review …….. p. 65

Table 1.4 - Studies investigating voice-related quality of life in transgender people…… p. 72

Table 1.5 - Studies investigating sex-related quality of life in transgender people ……. p. 75

Table 1.6 - Studies investigating body image-related quality of life in transgender people …….. p. 78

Table 1.7 - Studies investigating quality of life in transgender people …….... p. 81

Table 2.1 - Descriptive statistics for the transgender and cisgender groups ….. p. 104

Table 2.2 - ASC cases reaching clinical significance by group and sex assigned at birth ……..…….. p. 105

Table 2.3 - T-test results comparing transgender and cisgender people on AQ-Short subscales and total scores ……. p. 107

Table 2.4 - AQ-Short total and subscale scores by group and birth assigned gender ……..…….. p. 110

Table 3.1 - Descriptive statistics for overall sample as well as divided by sex assigned at birth …….. p. 123

Table 3.2 - ASC clinical caseness for baseline and follow-up measurements, overall and by sex assigned at birth. ……. p. 124

Table 3.3 - Paired samples t-test examining change for total sample in total AQ-short total and anxiety scores from T0 to T1, for the overall sample as well as split by assigned gender at birth …….. p. 126

Table 4.1 - Sociodemographic composition and characteristics of the sample of young transgender people (n=18) …… p. 143

Table 4.2 - Transgender people's pre-interview scores and general population's on the Inventory of Interpersonal Problems (IIP-32) ……..…….. p. 145

Table 4.3 - Overarching themes and subthemes identified from the interviews ……..…….. p. 146

List of Figures

Figure 1.1 - Process of identification of eligible studies for inclusion within the review …….. p. 62

Figure 1.2 - Meta-analysis on mental health-related QoL of transgender people compared to the general population …….. p. 89

Figure 1.3 - Meta-analysis on mental health-related QoL transgender people post-hormonal treatment compared to the general population …….. p. 90

Figure 2.1 - Flow chart of exclusion and matching procedures …….. p. 103

Figure 2.2. - Estimated marginal means of AQ-Short total scores for transgender and cisgender groups, by sex assigned at birth …… p. 108

Figure 3.1 - Flow chart of exclusion of participants …… p. 120

Figure 3.2 - A graph showing the interaction between total AQ-Short scores and birth assigned gender when controlling for age and change in anxiety scores …….. p. 125

List of Appendices

Appendix A - Ethical approval letter ……. p. 221

Appendix B - Protocol qualitative study …….. p. 222

Appendix C - Letter sent out to patients who previously spoke to a clinician about possible participation in the study …….. p. 227

Appendix D - Letter sent out to patients who did not previously speak to a clinician about possible participation in the study …….. p. 228

Appendix E - Invitation letter written by the researcher AN …….. p. 229

Appendix F - Participant information sheet …… p. 230

Appendix G - Cover letter …… p. 233

Appendix H – Expression of interest slip …….. p. 234

Appendix I – Interview guide …….. p. 235

Appendix J – Sociodemographic questionnaire …… p. 239

Appendix K – Inventory of Interpersonal Problems (IIP-32) …… p. 241

Appendix L – Participant consent form …….. p. 243

Appendix M – Debriefing form …… p.244

Appendix N – Codebook …….. p. 245

Research Reported in this Thesis

Peer reviwed publications derived from the research reported on in this thesis

Nobili, A., Glazebrook, C., Bouman, W. P., Glidden, D., Baron-Cohen, S., Allison, C., Smith, P., & Arcelus, J. (2018). Autistic traits in treatment-seeking transgender adults. *Journal of Autism and Developmental Disorders, 48*(12), 3984-3994.

Nobili, A., Glazebrook, C., & Arcelus, J. (2018). Quality of life of treatment-seeking transgender adults: a systematic review and meta-analysis. *Reviews in Endocrine and Metabolic Disorders, 19*(3), 199-220.

Conference proceedings

Nobili, A., Glazebrook, C., Bouman, W. P., Glidden, D., Baron-Cohen, S., Allison, C., Smith, P., & Arcelus, J. (2017). Autistic traits in treatment-seeking transgender adults. European Professional Association for Transgender Health (EPATH) Biennial Conference. Belgrade, Serbia: 6th-8th April. *Oral presentation.*

Nobili, A., Glazebrook, C., Bouman, W. P., Glidden, D., Baron-Cohen, S., Allison, C., Smith, P., & Arcelus, J. (2018). Autistic traits in treatment-seeking transgender adults. The Royal College of Psychiatrists International Congress. Birmingham, UK: 25th June. *Poster presentation.*

Nobili, A., Glazebrook, C., Cooper, S., & Arcelus, J. (2018). A Qualitative Study on the Perception of Factors Influencing Interpersonal Events in Young Transgender People Attending a Transgender Health Clinic. British Association of Gender Identity Specialists (BAGIS). Belfast, UK: 4th- 5th October. *Oral presentation.*

Nobili, A., Glazebrook, C., Bouman, W. P., Glidden, D., Baron-Cohen, S., Allison, C., Smith, P., & Arcelus, J. (2018). Autistic traits in treatment-seeking transgender adults. World Professional Association for Transgender Health (WPATH) Biennial Conference. Buenos Aires, Argentina: 2nd-6th November. *Oral presentation.*

Nobili, A., Glazebrook, C., Bouman, W. P., & Arcelus, J. (2019). Longitudinal study exploring the stability of autistic traits in treatment-seeking transgender adults following cross-sex hormone treatment. European Professional Association for Transgender Health (EPATH) Biennial Conference. Rome, Italy: 11th-13th April. *Poster presentation.*

Glossary of key terms used in this thesis

Agender – an individual whose gender identity includes no gender

Autistic spectrum conditions (ASC) – spectrum of neurodevelopmental conditions characterised by impairment in interpersonal communication as well as by repetitive patterns of behaviours

Autistic traits – behavioural characteristics and difficulties common in people on the autistic spectrum

Bigender – an individual whose gender identity includes both binary genders; thus female and male

Chest reconstructive surgery (CRS) – the process of surgical breast removal, also known as top surgery or mastectomy

Cisgender – an individual whose gender identity matches the gender assigned at birth based on sexual characteristics

Coming out – process of disclosure of an individual's true gender identity and first step of the transitioning process

Cross-sex hormone treatment (CHT) – therapy based on administering sex hormones (oestrogen and testosterone) in order to initiate the development of secondary sex characteristics of the gender an individual identifies with

Extreme male brain (EMB) theory of autism (Baron-Cohen 2002) **–** suggests that autism is a form of extreme male brain, where males show, on average, lower empathising capabilities and interpersonal sensitivity and higher levels of systematising traits

Facial feminisation surgery – surgical treatment used to feminise an individual's facial characteristics

Gender – constitutes an individual's sex, gender identity and gender expression

Gender assigned at birth – the gender people are assigned with at birth based on their sexual characteristics

Gender dysphoria (GD) – distress experienced by some transgender people as a consequence of the mismatch between gender identity and bodily characteristics. The term GD is also used as a diagnosis given when the distress impairs functioning for a prolonged period of time

Gender expression – an individual's expression of gender identity through behaviours, choice of clothing, mannerisms and bodily characteristics

Gender fluid – an individual whose gender identity fluctuates over time

Gender identity – the psychological identification of oneself in relation to gender

Gender-affirming genital surgery (GAGS) – term encompassing the surgical procedures required for a transgender person to alter their genitalia in order to align it with the gender identity of the individual

Gender-affirming medical interventions (GAMI) – term used to encompass the medical procedures used to align bodily characteristics with gender identity

Gender-affirming treatment (GAT) - term used to encompass the procedures used to align bodily characteristics with gender identity

Gender role – term used to express the social and cultural role of an individual within the society in function of and as considered appropriate for the gender identity

Interpersonal issues - negative outcomes of behaviours and cognitions that result in a range of difficulties related to socialisation and social interactions

Interpersonal theory (Sullivan, 1953) – suggests that interpersonal interactions determine an individual's sense of security, sense of self and the dynamics that drive a person's behaviour

Medical transition – see Gender-Affirming Medical Interventions

Minority stress model (MSM) (Meyer, 2003) – states that chronically high levels of stress (such as discrimination and prejudice) faced by minority groups over time can lead to poor mental and physical health

Non-binary – an umbrella term used to encompass all individuals who identify outside of the dichotomous system of gender identification (male – female)

Pangender – term used to describe individuals who identify as having an infinite number of gender identities

Polygender - term used to describe individuals who identify as having several gender identities

Quality of life (QoL) – term referring to the perception of the quality, satisfaction and happiness with life that has an impact on wellbeing

Secondary sex characteristics – physical characteristics developed through puberty that differentiate between males and females but that are not necessary for reproduction (e.g. breasts, distribution of fat and muscles, development of body hair)

Sex – refers to the biological characteristics that differentiate between males and females, such as chromosomes, reproductive organs and secondary sex characteristics

Transgender (trans) – any individual whose gender identity does not match with the gender assigned at birth based on their sexual characteristics

Trans* - umbrella term referring to all individuals who are not cisgender

Transgender man (transman) – individual who was assigned female at birth based on sexual characteristics but who identifies as male

Transgender woman (transwoman) - individual who was assigned male at birth based on sexual characteristics but who identifies as female

Treatment-seeking transgender people –transgender individuals who either desire to undergo or are undergoing gender-affirming medical interventions

Voice feminisation surgery (VFS) – medical procedure designed to increase the pitch of the voice and allow the voice to sound more feminine

Abbreviations

ASC	Autism Spectrum Conditions
CBT	Cognitive Behaviour Therapy
CHT	Cross-Sex Hormone Treatment
CIS	Cisgender
CRS	Chest Reconstructive Surgery
EMB	Extreme Male Brain theory
FFS	Facial Feminisation Surgery
GAGS	Gender Affirming Genital Surgery
GAMI	Gender-Affirming Medical Intervention
GAT	Gender-Affirming Treatment
GD	Gender Dysphoria
GP	General Practitioner
GRT	Gender Role Transition
IPT	Interpersonal Psychotherapy
LGBT	Lesbian Gay Bisexual Transgender
MSM	Minority Stress Model
QoL	Quality of Life
TM	Transgender Man
ToM	Theory of the Mind
TW	Transgender Woman
VFS	Voice Feminisation Surgery
VFT	Voice Feminisation Treatment
vQoL	Voice-related Quality of Life

Chapter 1

General Introduction

1. Terminology in transgender health

Sex and *gender* are two different concepts that are mistakenly used interchangeably. They both refer to being male and/or female, but they entail substantial differences. The former term refers to the existing biological differences between males and females, for instance related to sexual characteristics or genetic profile, whilst the latter refers to cultural, psychological and/or social differences (Bouman & Arcelus, 2017). Instead, the term *gender identity* involves the personal and internal identification in relation to gender (Bouman & Arcelus, 2017).

Transgender people (also referred to as *trans*) are individuals whose gender identity does not correspond to the gender assigned at birth based on sexual characteristics (APA, 2013). *Transgender women* (or *transwomen*) are individuals assigned male at birth based on their sexual characteristics but who identify as female, whilst *transgender men* (or *transmen*) are those assigned female at birth based on their sexual characteristics who identify as male (Bouman, de Vries, & T'Sjoen, 2016).

Gender diverse people are those who do not identify with the binary system of gender identification (male or female) and within this term different gender identities are included such as *non-binary, bigender* (when gender identity encompasses both male and female genders)*, agender* (when gender identity encompasses no gender)*, gender fluid* (when gender identity fluctuates over time)*, gender queer* (term used for people who identify as neither male nor female), *pangender* (when gender identity encompasses an infinite number of genders)*, polygender* (when gender identity encompasses several genders either concurrently or not) (Beek, Kreukels, Cohen-Kettenis, & Steensma, 2015; Bouman & Arcelus, 2017; Richards *et al., 2016)*. The term *Trans** is used as an overall umbrella term for all the identities that are not cisgender. *Cisgender* people are those individuals whose gender identity matches the sex assigned at birth based on their sexual characteristics (McGeeney & Harvey, 2015). (See Glossary for full explanation of terms).

2. Prevalence of mental health problems

Although being transgender is not necessarily linked to the presence of both health and psychological issues (Byne *et al.,* 2012), transgender people have been found to experience high levels of mental health disorders, such as depression and anxiety (Bockting, Miner, Swinburne Romine, Hamilton, & Coleman, 2013; Bouman *et al.*, 2017a; Budge, Adelson, & Howard, 2013; Davey, Bouman, Meyer, & Arcelus, 2015; Dhejne, Van Vlerken, Heylens, & Arcelus, 2016; Heylens, Verroken, De Cock, T'sjoen, & De Cuypere, 2014; Lenning & Buist, 2013; Millet, Longworth, & Arcelus, 2017). For instance, in a matched-control study from the UK, a clinical sample of transgender people was found to report a three-fold increased risk in probable anxiety disorder (68.8%) compared to a matched community sample (34.5%) (Bouman *et al.,* 2017a). Whilst a systematic review suggested a prevalence of anxiety disorders between 17% and 68% in this population (Millet *et al.,* 2017). These rates are much higher than the prevalence of generalised anxiety disorders in the general population, which was suggested to range between 0.2% and 6.2% (Bandelow & Michaelis, 2015). With regard to depressive symptomatology, another study from the UK where participants were matched by age and experienced gender found treatment-seeking transgender people to present with rates of 23.9% compared to 4.5% of a matched community sample for possible and probable depression (Witcomb *et al.,* 2018). Additionally, this population has been found to display higher levels of non-suicidal self-harm as well as suicidal ideation and attempts compared to the general population (Clements-Nolle, Marx, & Katz, 2006; Marshall, Claes, Bouman, Witcomb, & Arcelus, 2016; Testa, Michaels, Bliss, Rogers, Balsam & Joiner, 2017).

Overall, the mental health issues and psychological disorders found in the transgender population are mainly emotional in nature, whilst major psychiatric disorders such as schizophrenia and bipolar disorder are rare and are not more prevalent than in the general population (Dhejne *et al.,* 2016).

3. Predictors of mental health problems and quality of life

As transgender people were found to report poor mental health, literature tried to investigate what factors predict and are linked to these problems and consequently to Quality of Life (QoL).

QoL is a complex construct and it can be described as the quality of an individual's perception of their own life, satisfaction with life, happiness and the impact that these feelings have upon objective and subjective wellbeing (Borthwick-Duffy, 1992; de Vries *et al.,* 2014). QoL is subdivided into different dimensions, which are related to different constructs that make up the wellbeing and satisfaction with life of an individual; health-related QoL and mental health-related QoL. Health-related QoL is the perception of an individual's own physical wellbeing, whilst mental health-related QoL is related to the perception of a person's own mental health and psychological wellbeing (Fredriksen-Goldsen, Kim, Shiu, Goldsen, & Emlet, 2014). If individuals suffer poor physical and/or mental health, their overall QoL is likely to be negatively affected. In fact, literature found this population to experience lower mental health-related QoL and life satisfaction when compared to both general and cisgender populations (Bockting & Coleman, 2007; Bouman, Davey, Meyer, Witcomb, & Arcelus, 2016; Davey, Bouman, Arcelus, & Meyer, 2014; Newfield, Hart, Dibble, & Kohler, 2006).

Literature has suggested that good interpersonal functioning and fulfilling relationships are important for wellbeing and for a good self-esteem, with high interpersonal issues predictive of poor QoL, in both general and transgender populations (Berscheid & Peplau, 1983; Bouman *et al.,* 2016b). In fact, literature suggested interpersonal functioning and self-esteem to be crucial factors affecting the well-being of transgender people (Bouman s*et al.,* 2016b). Past research carried out with a transgender clinical population found that low self-esteem and poor interpersonal functioning play a key role as predictors of poor mental health and psychopathology (Arcelus, Claes, Witcomb, Marshall, & Bouman, 2016). Low self-esteem predicted poor mental health, such as anxiety symptoms, depressive disorders and suicidality (Arcelus *et al.,* 2016; Bouman *et al.,* 2017a; Bouman *et al.,* 2016b; Clements-Nolle *et al.,* 2006; Witcomb *et al.,* 2018). Whilst poor interpersonal functioning and interpersonal issues were identified as factors associated with anxiety, depressive symptomatology as well as general psychopathology (Arcelus *et al.,* 2016; Bouman *et al.,* 2017a; Bouman *et al.,* 2016b; Witcomb *et al.,* 2018)

Possibly as a consequence of experiencing transphobic acts, transgender people feel exhausted and fearful, which has a strong negative impact upon both physical and mental well-being (Nadal, Skolnik, & Wong, 2012). Undergoing transphobic experiences, gender discrimination, verbal gender victimisation and violence were

found to be predictors of both general psychopathology and suicidality in the transgender population (Arcelus *et al.,* 2016; Clements-Nolle *et al.,* 2006; Nemoto, Bödeker, & Iwamoto, 2011; Rood, Reisner, Surace, Puckett, Maroney & Pantalone, 2016). Being young also predicted greater psychopathology, depression and suicidality (Bouman *et al.,* 2016b; Clements-Nolle *et al.,* 2006; Rood *et al.,* 2016; Testa, Sciacca, Wang, Hendricks, Goldblum, Bradford & Bongar, 2012; Witcomb *et al.*, 2018). Suffering from depression was found to be associated with suicide attempts and the transgender population reports higher rates of both non-suicidal self-injury and suicidality compared to cisgender people (Clements-Nolle *et al.,* 2006; Marshall *et al.*, 2016; Rood *et al.,* 2016). Amongst other variables predicting depressive symptomatology, older age and low levels of social support were found to be associated factors (Witcomb *et al.,* 2018). Finally, poor social support, transition status and greater body dissatisfaction predicted greater psychopathology, depression and anxiety (Bouman *et al.,* 2016b; Budge *et al.,* 2013).

4. Interpersonal difficulties in the transgender population

As previously mentioned, key factors predictive of mental health problems in the transgender population are experiencing low self-esteem and presenting with interpersonal problems (Arcelus *et al.,* 2016). In fact, a clinical sample of transgender people from the UK reported facing increased rates of interpersonal difficulties when compared to a sample of cisgender matched controls; more specifically, they reported struggling with being sociable, supportive and involved in social interactions (Davey *et al.,* 2015). Interpersonal issues are the negative outcomes of specific behavioural and cognitive actions needed to achieve successful social interactions and comprise a range of difficulties related to socialisation and social interactions (Dickson & Bamford, 1995).

This could be explained by transgender people facing a number of difficulties and interpersonal challenges such as disclosing their gender identity as well as to having undergone negative experiences and rejection from society, family and loved ones (Bockting & Coleman, 2016; Claes *et al.,* 2015; Dispenza, Watson, Chung, & Brack, 2012; Grossman *et al.,* 2009; Kattari, Whitfield, Walls, Langenderfer-Magruder, & Ramos, 2016; Koken, Bimbi, & Parsons, 2009; Lombardi, Wilchins, Priesing, & Malouf, 2002). The struggle of being accepted by society in addition to the

individuals non-acceptance, in some cases, may explain the interpersonal conflicts that some transgender people present with (Lenning & Buist, 2013).

5. Aetiology of interpersonal difficulties in the transgender population

Transgender people report experiencing less social support compared to their non-transgender siblings and these feelings are associated with experiences of discrimination and violence (Factor & Rothblum, 2008), which are linked to poor interpersonal functioning and interpersonal factors such as family support and community connectedness (Bradford, Reisner, Honnold, & Xavier, 2013) as well as mental health complaints for both community-based and clinical samples (Davey *et al.,* 2014).

Lack of social support (especially from the families) is related to the use of avoidant coping strategies to deal with social interactions (Budge *et al.,* 2013) and it is often associated with discomfort and lack of both security and safety (Factor & Rothblum, 2008). This in turn leads to an increase in symptoms of anxiety and depression (Budge *et al.*, 2013) and thus potentially representing a direct link to poor mental health and suicidal ideation (Trujillo, Perrin, Sutter, Tabaac, & Benotsch, 2017).

Transgender people suffer because of the absence of individuals who support them when they are facing negative events. Transitioning to the gender they identify with can place significant demands on their relationships with family, friends and in general when interacting with others. For instance, raising a transgender child is a challenging experience and parents are often faced with difficulties when finding out that the identity of their children is different from what they have envisioned, which might lead to experiencing feelings of loss and grief when the child transitions (Di Ceglie, 1998). Parents might also feel responsible for their child's feelings related to their gender, which might lead to relational and family conflicts (Dierckx, Motmans, Mortelmans, & T'sjoen, 2016). Children of transgender people might suffer social stigmatisation for having a transgender parent and they might react by denying social support to the parent (Veldorale-Griffin, 2014). Thus, transition becomes a process that the whole family needs to undergo (Dierckx *et al.,* 2016). Consequently, transitioning impacts close relationships and transgender individuals might

experience relational conflicts with family and peers, often leading to social stigmatisation (Dierckx *et al.,* 2016).

5.1. Lack of social acceptance

Possibly as a consequence of experiencing these interpersonal issues and of the struggles with societal acceptance and victimisation, many people experience high levels of social anxiety and social phobia (Millet *et al.,* 2017; Roberts, Schwartz, & Hart, 2011) as well as low self-esteem (Erich, Tittsworth, & Kersten, 2010). As previously mentioned, self-esteem is important in social interactions and low levels are amongst the strongest predictors of emotional and behavioural issues (Leary, Schreindorfer, & Haupt, 1995). People with low self-esteem are more likely to be socially isolated, enjoy less social relationships and report a variety of social and personal problems (Leary *et al.,* 1995; Mecca, Smelser, & Vasconcellos, 1989).

Lack of social acceptance has been linked to poor social support, which was found to impair transgender people's ability to socialise and it is a risk factor for poor interpersonal functioning and poor mental health (Bockting *et al.,* 2013; Davey *et al.,* 2014; Factor & Rothblum, 2008). Transgender people perceive receiving less social support because of the limited social network available to rely upon as well as of lack of acceptance, leading to experience fears in social environments and to the development of poor self-esteem, which might in turn further exacerbate poor social functioning (Bockting *et al.,* 2013; Witcomb *et al.,* 2018).

5.2. Stigma, discrimination and victimisation

Transgender people are often subjected to significant stigma and transphobia, such as prejudice, discrimination and gender-related violence due to negative beliefs, attitudes, irrational fear and society's aversion towards transgender individuals (Mizock & Lewis, 2008; Mizock & Mueser, 2014).

Stigma may contribute to impairment in social and vocational functioning as well as prolonging mental health symptoms (Mizock & Mueser, 2014). It can also negatively affect the individual's ability to cope with stressors, reduce self-efficacy and diminish the ability to remain resilient when facing negative events (Hughto, Reisner, & Pachankis, 2015; Mizock & Mueser, 2014). Additionally, these experiences of victimisation have been linked to depressive symptomatology and transgender people often try to deal with these issues by avoiding social interactions and by utilising avoidant coping mechanisms (Boza & Nicholson Perry, 2014; White Hughto,

Pachankis, Willie, & Reisner, 2017). White Hughto *et al*., (2017) in an American survey study of a community sample of 402 people aged between 18 and 75 who self-identified as transgender found that avoidant coping partially mediated the relationship between victimisation experiences and depression. However, this was a cross-sectional study so difficult to establish causal relationships. Furthermore, the bivariate associations between avoidant coping and everyday discrimination (r=0.3), bullying (r=0.16) and family harassment (r=0.15) were weak and actual levels of victimisation and avoidant coping were not reported.

5.3. Transphobia by others

Transgender people are subject to significant transphobia, such as prejudice, gender-related violence and bullying due to negative beliefs, attitudes, irrational fear and society's aversion towards transgender individuals, which have a negative impact upon interpersonal functioning (Boza & Nicholson Perry, 2014; Greene, Britton, & Fitts, 2014; McGuire, Anderson, Toomey, & Russell, 2010; Mizock & Lewis, 2008; Mizock & Mueser, 2014; Russell, Murphy, Wilson, Gillan, Brown, Robertson, Craig, Deeley, Zinkstok, Johnston & McAlonan, 2016). For instance, Boza and colleagues (2014) investigated gender-related victimisation in an Australian sample of 243 transgender people (83 assigned females at birth and 160 assigned males) and found that 69% reported being victimised at least one time. Chronic experiences of discrimination and rejection increase hypervigilance and lead to rumination as transgender people suffer a substantial risk of being victimised compared to cisgender people (Hatzenbuehler, 2009).

The majority of the interpersonal issues faced by transgender people are based upon experiencing multiple acts of transphobia, both internalised and coming from others (Budge, 2013). Due to having undergone acts of transphobia, macroaggressions and being denied the right to self-identify can be invalidating and humiliating, negatively affecting the individual's interpersonal functioning and relationships, often culminating in loneliness and social isolation (Hendricks & Testa, 2012; Nadal *et al.,* 2012).

Transphobic and discriminatory experiences are known to occur across environments (e.g. educational, work, housing) and are known to negatively affect interpersonal interactions, QoL and possibly lead to and self-destructive behaviours (Kattari *et al.,* 2016; Kelleher, 2009; Marshall *et al.,* 2016). These have been linked to poor social

skills as well as intrapersonal issues such as hopelessness and pessimism, as they are considered stigma-related stressors, which might render this population particularly vulnerable to the development of mental health concerns and internalising psychopathology, such as depression (Hatzenbuehler, 2009). Negative interpersonal events are known to lead to the development of maladaptive social skills often resulting in social and interactional difficulties, for both transgender and cisgender individuals (Davey *et al.,* 2015).

5.4. Internalised transphobia

As a result of gender-related victimization, such as childhood bullying, rejection by one's family, employment and housing discrimination, feelings of self-blame, low self-esteem and internalised transphobia may arise (Boza & Nicholson Perry, 2014; Greene *et al.,* 2014; Hendricks & Testa, 2012; McGuire *et al.,* 2010; Russell *et al.,* 2016; Scandurra, Amodeo, Valerio, Bochicchio, & Frost, 2017; Testa *et al.,* 2012). The internalisation of such transphobic feelings has an impact upon transgender people's ability to socialise and it is associated with worsening in interpersonal as well as social functioning and lowering in self-esteem (Austin & Goodman, 2017), which are linked with a wide range of mental health complaints, such as depression (Barrett & Barber, 2007) and eating behaviours (Arcelus, Haslam, Farrow & Meyer, 2013). For instance, Austin and Goodman (2017) surveyed a sample of 65 transgender people that participated to a national transgender conference in the USA and found that self-esteem is negatively impacted by internalised transphobia whilst positively affected by social connectedness. Additionally, internalisation of transphobic feelings are linked to social issues and dysfunctional interpersonal behaviours, which are known to be main features of many personality disorders (pincus & wiggins, 1990); thus issues with interpersonal functioning trigger negative societal responses (such as transphobic feelings) and internalisation of such negative feelings elicits responses that perpetuate negative patterns of behaviour.

Internalisation of experiences of victimisation often culminates in a strong sense of vulnerability, worry and to a reduction in confidence when socialising (Ellis, Bailey, & McNeil, 2016). In fact, transgender people often worry about being victimised again in the future and these fears are often internalised and have negative repercussions such as the development of negative self-schemas (Ellis *et al.,* 2016; Hatzenbuehler, 2009). Consequently, their social interactions are thoughtful, planned, deliberate and

skilful, reflecting the general stress associated with negative social spaces as highly stigmatised and readily targeted individuals (Rood *et al.,* 2016).

6. Description of gender-affirming treatment

Occasionally, because of the experienced incongruence between the gender people identify with and bodily characteristics, marked feelings of distress known as dysphoria might arise. To reduce this incongruence that might impair the individual's functioning, to feel better about themselves and, in some cases, to address the Gender Dysphoria (GD) experienced, some transgender people access transgender healthcare services in order to medically transition (Bouman & Arcelus, 2017; Cohen-Kettenis & Gooren, 1999).

These services provide patients with Gender Affirming Treatment (GAT), which includes Cross-Sex Hormone Treatment (CHT) and Gender-Affirming Genital Surgeries (GAGS) (Coleman *et al.,* 2012). However, medical transition is a personal choice and not all transgender people have a wish to undergo GAT in order for their body to feel congruent with their gender identity, thus not everybody will access transgender health services (Beek *et al.,* 2016; Bouman & Arcelus, 2017). However, for those who desires to, the World Professional Association for Transgender Health (WAPTH) provides the Standards of Care (SoC) for transgender health. The WAPTH is the only global multidisciplinary professional association that deals with and help maximising the health and wellbeing of transgender people. The SoC produces a common protocol, clinical guidelines and support for health professionals to assist transgender and gender non-conforming people with a framework to ensure that people receive appropriate assessment, care and treatment whilst protecting them from dangerous medical treatments (Annas, 1997; Coleman *et al.,* 2012). There have been seven versions of the SoC, the latest one was published in 2012, and the eighth version is now being written and should be released in 2019.

In the UK, for the individuals who wish to medically transition to their desired gender, a formal diagnosis is needed for GAT to be covered by insurances and by the National Health Service (NHS) (Beek *et al.,* 2016). Two classification systems can be used to provide transgender people with a diagnosis; the first is the Diagnostic and Statistical Manual of Mental Disorders (DSM) developed by the American Psychiatric Association (APA) and the second is the International Classification of Diseases (ICD)

by the World Health Organisation (WHO). The DSM is the most widely used as the most recent edition was published in the 2013 (DSM-V), whilst the latest edition of the ICD (ICD-10) was published in 1992.

Notwithstanding the fact that these diagnoses are needed to provide covered healthcare for transgender people if an individual desires to medically transition, they can be profoundly stigmatising and can cause further distress (Bouman & Richards, 2013).

The DSM-V states that when a person experiences clinically significant dysphoria together with impaired functioning in social, occupational or other important areas, lasting for a minimum of six months (APA, 2013) can receive a diagnosis of Gender Dysphoria (GD). The discrepancy between gender identity and gender assigned at birth are part of the core symptomatology, but to be given a diagnosis distress must be present. The distress is not limited by desiring to be of the opposite gender but it could also be linked to a desire to be of an alternative gender, as in the case of non-binary individuals (APA, 2013).

With regard to the ICD-10, the diagnostic label of *Transsexualism* is adopted, which is defined as a desire to live and be accepted as a member of the opposite sex', which is co-occurring with a sense of discomfort and distress regarding one's own sexual characteristics and usually followed by a desire for surgery and hormonal treatment to become as congruent as possible with the preferred sex (santé, Organization, & WHO, 1992). In order for the diagnosis to be made, the individual needs to experience these desires for at least two years. However, the terms related to the diagnosis are outdated and the concepts are often times stigmatising, such as the utilisation of the term *Transsexual* is not well accepted in today's society and can cause distress (Bouman & Richards, 2013). If individuals receive a diagnosis only when distress and impairment in functioning are present, patients might think that under-reporting wellbeing and over-reporting mental heath complaints could help them being accepted for treatment. Thus, as the definition of an individual as transgender does not, in itself, imply the existence of comorbid psychological issues (Byne *et al.*, 2012) and as there has been an increase in the number of individuals identifying as non-binary (Twist & de Graaf, 2019). In the next version of the ICD (ICD-11), which is expected to be released in 2019, the term *Transsexualism* will be replaced with the term *gender incongruence*. This is a step forward in the reduction

of stigmatisation of transgender people and the diagnosis should reflect individuals who do not identify within the dichotomous system of gender identification by providing less gendered wording (Beek *et al*., 2016). Additionally, the classification should remove the presence of distress as part of the core symptomatology, thus moving the diagnosis towards a depathologisation (Beek *et al*., 2016). This will allow individuals only experiencing gender incongruence but that do not feel dysphoria to access GAT through healthcare services.

However, individuals severely distressed and suffering from mental health issues might feel the need to report fake results in order to appear less distressed and more able to function thus increasing the chances to be accepted for GAT, thus generation a social desirability bias (Heppner, Wampold, Owen, Thompson & Wang, 2016).

Once an individual receives a formal diagnosis and is accepted for GAT, the first step in the medical transition is hormonal treatment. CHT consists of suppressing the production of a person's sex hormones and replace it with the hormones of the gender they identify with, so as to produce the desired secondary sex characteristics, thus the same physical changes as would occur in puberty (Seal, 2017). The effects of CHT are largely reversible and if an individual stops taking hormones the body restores the natural functions of the assigned gender, with the exception of some bodily changes such as lowering of the voice's pitch and breasts development (Seal, 2017). Thus, testosterone treatment is required for life, especially for individuals who have undergone GAGS with removal of the ovaries leading to a cessation of hormone production.

To further reduce the mismatch between bodily characteristics related to the assigned gender and gender identity, many transgender people undergo gender-affirming surgeries. However not all transgender and non-binary people decide to opt for these procedures as they feel that CHT itself is enough to attain the gender they identify with. The extent to which a person decides to undergo surgeries and Gender Affirming Medical Interventions (GAMIs) is a personal choice and thus varies between individuals.

When patients feels that they have reached the end of the transitioning process and that they do not need to be under the care of further by the transgender healthcare services they are discharged. Their General Practitioner (GP) will then monitor

hormonal levels, as CHT is a life-long treatment and complications might arise (Seal, 2017; Wylie *et al.,* 2014).

However, GAT follows distinctive pathways depending on the gender the individual identifies with and desires to transition to; consequently transgender men and transgender women undergo different procedures.

6.1. Gender-affirming treatment for transgender women

For transgender women oestrogen treatment produces physical changes in line with female puberty, leading to breast development (Meyer *et al.,* 1986) as well as to muscles reduction and weight gain through increase in skin fat deposits conforming to a female fat distribution (Elbers *et al.*, 2003). CHT also leads to softening of the skin and to a decrement of facial hair growth (Seal, 2017). However, as there is not a full cessation of facial hair growth, transgender assigned males at birth often opt to undergo laser therapy for hair removal (Seal, 2017). Negative side effects of oestrogen therapy might arise, such as risk for blood clotting, development of an abnormal liver function and a slight increased in the risk of developing breast cancer (Seal, 2017). In addition, a reduction in libido (sex drive) and in penile function result, which are generally considered a positive outcome of treatment (Seal, 2017). Due to these adverse effects, it is advised monitoring of hormone levels by health professionals.

As oestrogen therapy does not lead to a change in the voice, transgender assigned males at birth often attend speech and language therapy to learn how to increase the voice's pitch to aid conforming to gender they identify with (Adler, Hirsch, & Mordaunt, 2012). Due to the reversible effects of hormone therapy cessation and in the cases of people having undergone GAGS (and thus removal of the testis) oestrogen treatment is administered for life.

Some transgender women, in addition to CHT, may wish to undergo orchidectomy and vaginoplasty. The former is a surgical procedure for the removal of the testicles and the latter for the creation of a vagina, labia and clitoris. As these are surgical procedures, people need to take into consideration that negative physiological side effects might arise, such as risk for blood clotting and infections, risk of injuring rectum, risk for urethral functional difficulties as well as pain and lack of sensations (Selvaggi & Andreasson, 2017).

Transgender assigned males at birth might wish to undergo further medical interventions to increase their perceived gender congruence, such as Facial Feminisation Surgery (FFS), breast augmentation and cricothyroid (Adam's apple) reduction. Additionally, either if speech and language therapy is not efficacious or if the individual perceives the voice not to be feminine enough, people may decide to undergo Voice Feminisation Surgery (VFS) with the aim of surgically increase the pitch of the voice by altering vocal chords (Antoni, 2015).

6.2. Gender-affirming treatment for transgender men

Transgender men as well as transmasculine non-binary individuals assigned females at birth generally decide to undergo testosterone treatment. This therapy produces physical changes in line with a male puberty, thus it requires between two to five years to complete (Hembree *et al.,* 2009). Testosterone increases facial and body hair, whilst also inducing baldness (Meyer *et al.,* 1986; Seal, 2017). It also induces fat redistribution, decreases body fat and hip to waist ratio, and increases lean body mass and upper body strength (Meyer *et al.,* 1986), whilst vocal chords thicken leading to a deepening of voice (Hembree *et al.,* 2009). With regard to genital changes, testosterone increases the clitoris size and ovaries become similar to polycystic ovaries leading to amenorrhea (lack of menstruation) and thus to a reduction in distress caused by having a menstrual cycle (Meyer *et al.,* 1986). Transgender men should discuss fertility preservation before the commencement of testosterone treatment, as it is not yet known if CHT leads to permanent infertility (Seal, 2007).

Testosterone treatment might induce some physiological side-effects, such as a minor increase in levels of triglycerides (pure fat) and decrease of good cholesterol in the blood, thickening of the blood leading to an increased risk of having a stroke, and development of abnormal liver function and a risk for development of endometrial cancer due to a thickening of the womb's lining as a consequence of an excess of oestrogen without progesterone production (Seal, 2017).

Occasionally, transgender men and non-binary people interrupt CHT as they wish to become pregnant. There is an increase in transgender assigned females at birth going through pregnancy and as there is lack of literature specifically investigating the effects of testosterone treatment upon infertility professionals should be open to discuss this option. Disruption of hormone treatment and the reversal of secondary

sex characteristics due to the cessation of testosterone as well as to pregnancy itself (e.g. breast enlargement) might lead to dysphoria (Bouman & Arcelus, 2017).

The presence of breast tissue can be cause of dysphoria for transgender assigned females at birth and it is linked to body dissatisfaction and to poor well-being (van de Grift *et al.,* 2016). Due to testosterone treatment having little impact upon the volume of breast tissue a significant proportion of transgender assigned females at birth use binding as a strategy to manage the presence of breasts (Yelland, 2017a). As binding is often painful and may lead to difficulties breathing, many transgender men and non-binary people assigned females at birth undergo mastectomy and Chest Reconstructive Surgery (CRS) to remove breast tissue and reach a masculine body shape. Thus, undergoing CRS is considered a positive step towards an improvement in mental well-being and body satisfaction (Davis & Colton Meier, 2014). However, as CRS is a surgical procedure it might lead to physiological side effect, such as increased risk of blood clotting and of infections. In addition, scarring, collection of clear fluids post-surgery and pouching of the skin might develop as adverse physiological reactions (Yelland, 2017b).

For some people testosterone treatment and undergoing CRS are considered enough to reach an alignment with the gender they identify with due to breast removal and clitoris enlargement (Yelland, 2017a). However, some individuals wish to undergo GAGS to cosmetically create a phallus. There are two types of gender-affirming surgeries that transmen can undergo; one is phalloplasty, which consists in the creation of a phallus and it can be used for penetrative sex as it includes the addition of erectile and testicular prostheses (Christopher, Ralph & Garaffa, 2017). The other gender-affirming intervention that transmen can choose to be subject to is metoidioplasty; thus the creating of a micro-phallus.

These procedures help aligning bodily characteristics with the experienced gender, however physiological side-effects might develop; these are the same as for all other medical operations as well as scarring, swelling, pain, loss of sensations, loss of the phallus, collection of blood and/or clear fluid and over-stretching of skin due to presence of prosthesis (Christopher *et al.*, 2017). Other adverse secondary effects might be issues with sexual functioning, with cosmetic appearance and with global satisfaction (Christopher *et al*., 2017).

7. Effect of gender-affirming treatment on mental health and quality of life

There is some evidence in the literature suggesting that transitioning improves mental health of transgender people as they report an amelioration in mental health complaints following GAT (Davis & Colton Meier, 2014; Dhejne *et al.,* 2016; Heylens, Verroken *et al.,* 2014; Lindqvist *et al.,* 2017; Ruppin & Pfäfflin, 2015). The systematic review carried out by Dhejne and colleagues (2016) points out that levels of psychopathology and psychiatric disorders are higher in transgender people compared to the general population, but that they improve following gender-affirming medical interventions and in some cases they even reach normative values.

Some literature suggests that satisfaction with life, satisfaction with self-image, mental and physical functioning significantly improve post-GAT (Weyers *et al.,* 2009), whilst still remaining lower than the general population's level (Papadopulos *et al.*, 2017). For instance, Heylens and colleagues (2014b) longitudinally studied a clinical sample of 57 transgender individuals recruited through the European Network for Investigation of Gender Incongruence and measured psychological problems and symptoms of psychopathology with the aid of the SCL-90 at three time points (at presentation to the clinic, at commencement of CHT and post-GAGS). They found a significant reduction in psychopathology during the process of GAT, with a marked decline following the initiation of hormone therapy.

This amelioration is likely to be a consequence of the GAT itself in addition to feeling being validated and accepted (Nuttbrock *et al.*, 2012). Thus, as the mental health of transgender people seems to ameliorate post-GAT, it is plausible to think that mental health related QoL will also ameliorate. However, we do not know the actual impact of transitioning and undergoing GAT upon mental health-related QoL as the literature is scant and there the results are mixed. Thus a systematic review of the literature is needed in order to fill this gap in the literature (see Chapter 2).

Having undergone some form of GAT has been found to be a contributor to better mental health and reduction in depressive symptomatology (Boza & Nicholson Perry, 2014). Treatment was found to alleviate symptoms of GD, but transgender people still report more mental health issues, psychiatric morbidity and suicidal behaviour than general population (Dhejne *et al.,* 2011). This shows that notwithstanding the positive changes brought up by GAT, transgender people remain a fragile population

(De Cuypere *et al.*, 2006). The positive effects of undergoing medical treatment are further corroborated by the lack of regret experienced by this population once fully transitioned to the gender they identify with, as the positive and desired changes brought up by GAT prevail on the negative and undesired consequences (Lawrence, 2003; Papadopulos *et al.,* 2017; Ruppin & Pfäfflin, 2015).

Literature linked GAT with a reduction in symptoms of both GD and in general psychopathology; pre-treatment transgender people reported increased mental health complaints than the general population whilst at levels at post-treatment were approximately the same (Heylens *et al.,* 2014b). This is particularly true when dealing with young people, as shown by an amelioration of depressive symptomatology (Witcomb *et al.,* 2018).

Undergoing CHT has been linked to a decrease in psychological dysfunctioning and transgender people on CHT have been found to be less anxious, depressed, distressed and angry than people not on CHT (Bouman *et al.,* 2016a; Davis & Colton Meier, 2014; Gómez-Gil *et al.,* 2012; Heylens *et al.,* 2014b). Hormones were found to have a positive effect upon body satisfaction as they help to align physical characteristics with the identified gender (Davis & Colton Meier, 2014). In fact, literature found a relationship between being on hormones and an increase in levels of body satisfaction, which have a positive effect upon mental health and self-acceptance (van de Grift *et al.,* 2016). Additionally, by reducing the mismatch between bodily characteristics and gender identity, CHT improves social distress and functioning, QoL and self-esteem (Colton Meier, Fitzgerald, Pardo, & Babcock, 2011).

GAGSs were instead associated with a reduction in anxiety, depression, somatisation, hostility, interpersonal sensitivity and overall psychoneurotic distress in a Belgian sample (Heylens *et al.,* 2014b). However, possibly due to experiencing distress related to stigma and because of the decrease in euphoria experienced after having undergone these interventions, psychoneuroticism and levels of somatisation were shown to increase again (Heylens *et al.,* 2014b). Finally, 10-years post-GAGS a sample of German transgender people reported a high degree of wellbeing, good social interactions and strongly increased life satisfaction, when compared to pre-treatment (Ruppin & Pfäfflin, 2015).

Notwithstanding the positive effects that undergoing GAT plays on people's mental health and mental health-related QoL, physiological side-effects following medical

treatments can have a detrimental impact; for instance, studies on different clinical populations suggested complications of surgical procedures, side-effects and residual symptoms to have a negative impact by reducing physical health-related QoL (Davies, Schiff, Lindsay, Albrecht, Bodenheimer, Balart, …, Sanghvi, 1994; Lean, Han & Seidell, 1998; Marchesini, Bianchi, Amodio, Salerno, Merli, Panella, … & Abbiati, 2001; Wu & Harden, 2015). In fact, poor physiological functioning has been linked to a low QoL (Johansen, 1999).

Secondary side-effects of GAGSs can lead to experiencing body dissatisfaction and cosmetic appearance, which is known to have a negative impact upon individuals' satisfaction with life as well as QoL in transgender populations (Christopher *et al*., 2017; Röder, Barkmann, Richter-Appelt, Schulte-Markwort, Ravens-Sieberer, & Becker, 2018).

Physiological side effects of GAGSs can lead to issues with sexual functioning (Christopher *et al*., 2017). A Belgian research on 86 transgender people linked levels of QoL to post-operative sexual functioning with studies suggesting that post-GAGS (Wierckx *et al*., 2011). Transgender people's QoL and sex-related QoL has been shown to be lower than for the general population (Kuhn *et al*., 2009; Wierckx *et al*., 2011). However, rates of satisfaction with gender-affirming surgeries are high and operations are rarely regretted, thus undergoing GAT has generally been demonstrated to positively affect QoL (Defreyne, Motmans & T'sjoen, 2017). However, there is paucity of research that specifically looks at health-related QoL in transgender populations.

8. Challenges associated with gender-affirming treatment

Transgender people are known to experience significant challenges throughout the whole transitioning process, from before coming out and thus since the first instances in which they start developing doubts regarding their gender, through gender affirming treatment, until the end of transition. Some of these challenges are related to experiences of abiding anxiety in relation to gender, often overflowing in struggles with social anxiety, which can result in difficulties with social functioning, poor self-esteem and issues with both societal and self-acceptance (Devor, 2004). This section explores the challenges experienced by transgender people throughout the different stages of the transitioning process.

8.1. Challenges pre-social transition

Transgender people face many challenges when transitioning, which impact their mental health and their experiences of transition. First of all, individuals need to come to terms with the feelings they experience and often there is an attempt at suppressing thought and beliefs about their gender identity (Budge, 2013; Budge *et al.,* 2013). People tend to experience guilt for feeling different and not being able to behave as peers do in terms of gender identity, and social anxiety because of having to face a society often not accepting of transgender people and social burdens due to not conforming to the societal norms (Devor, 2004; Gagné, Tewksbury, & McGaughey, 1997; Lenning & Buist, 2013). This internal and psychological struggle is then followed by having to come out and express their true identity to family, friends and to an often non-accepting society, as these internal conflicts arise from society's disapproval of who they really are and to the experiences and expectations of rejection and stigmatisation (Gagné *et al.,* 1997). They often face considerable losses of significant others and people tend to live in constant fear of being rejected, even if they have never experienced it (Lenning & Buist, 2013). Consequently, they might struggle with disclosing their transgender identity, which increases their feelings of internalised stigma and fear of being rejected (Rossman, Salamanca, & Macapagal, 2017). The process of recognition, exploration, acceptance and resolution of the transgender identity is a complicated and at times an impossible process (Gagné *et al.,* 1997) and people often struggle as they need to undergo substantial changes in order to fulfil being true to themselves and their own gender identity (Budge, 2013; Budge *et al.,* 2013).

8.2. Challenges after coming out and social transition

After coming out, transgender people face daily issues with family and society's lack of acceptance, hostility and experiences of rejection that they often undergo because of being transgender (Winter *et al.,* 2016). Due to societal stigma, lack of acceptance, prejudice, transphobia and negative attitudes transgender people develop feelings of internalised stigma that impacts their affective, cognitive and behavioural processes (White Hughto *et al.,* 2015). The anxious anticipation of rejection and discrimination leads to avoidance of interpersonal situations and leads to social isolation (White Hughto *et al.,* 2015; Reisner *et al.,* 2015). Due to society's lack of acceptance and negative attitudes transgender people often try to conceal their identity by remaining stealth as a form of stigma management but it is the

cause of considerable stress and has negative repercussions on mental health (White Hughto *et al.,* 2015).

At this point people generally start living in the gender they identify with, which is often a very stressful step in transgender people's transition, as individuals need to negotiate living in the gender they identify with and this requires good interpersonal skills and ability for resilience (Budge, 2013).

8.3. Challenges accessing gender-affirming treatment

Many transgender people decide to access healthcare services in order to undergo GAT and align their gender identity with their bodily characteristics. However, accessing these services and clinics is not easy and straightforward. In the UK, in order to access these services transgender people need to be referred by either their local GP or by secondary care services and they might struggle to obtain due to the doctor's lack of acceptance and feelings of stigma (Rossman *et al.,* 2017). Self-referral to transgender health clinics is not accepted. There are seven nationally commissioned transgender health clinics for adults in the UK that serve the area of England and Wales (Daventry, Exeter, Leeds, London, Nottingham, Newcastle and Sheffield). The waiting lists to access NHS funded transgender healthcare services reaches times as high as three years and it can be considered a consequence of the heightened acceptability of transgender people in society, which encourages them to pursue GAT (Bouman & Arcelus, 2017).

The existence of any mental health issues is assessed at initial assessment but its presence does not, per se, preclude acceptance for GAT (Wylie *et al.,* 2014) but the long waiting time before being assessed by the services can aggravate the complaints. In fact, psychological issues often exacerbate due to the stressor of waiting and as a consequence to the further development of secondary sex characteristics of their assigned gender, which have a negative impact upon transgender people's mental health (Bouman & Arcelus, 2017).

Additionally, people on the autistic spectrum might find it challenging to access GAT, as clinicians might be reluctant to initiate treatment due to concerns about issues with communication and in social interactions. Clinician may fear they might face further problems due to society's lack of acceptance and to the stress that this might put them under, as well as to their lack of ability to cope with such. Furthermore,

autistic people might struggle to properly communicate and explain how they feel with regard to their gender, which could also prove to be a barrier to treatment.

Presence of autism should not preclude gender transition, as especially high functioning individuals are able to make informed consent regarding their health and wellbeing (Jacobs, Rachlin, Erickson-Schroth & Janssen, 2014). However, if people suffer from severe autism they present with significant interpersonal issues and communication impairments (Lord, Cook, Leventhal & Amaral, 2000), which might preclude them to access treatment. This would bring bias to the research, as the whole autistic population would not be represented within the studied samples. Furthermore, in the instances in which they would be able to access GAT, they may be less willing or less able to participate in research studies, especially qualitative research.

8.4. Challenges during medical transition

Transitioning is a lengthy process and it is subdivided into several steps for which people need to wait and be properly assessed for suitability. Once accessing transgender healthcare services in the UK, people need to undergo an initial assessment. This process takes place at the first appointment and stretches over a few appointments for a total of approximately six months. Here **clinicians** decide if people are accepted for treatment and can start the treatment path and gather information regarding Gender Role Transition (GRT); people need to have lived in the gender they identify with for a minimum of six months before being considered suitable to receive CHT. This is required by the SoC in order to make a fully informed decision regarding irreversible treatments (Bockting, 2013). RLE consists in using name as well as gender pronouns, and having an appearance consistent with the individual's gender identity, and being known in one's experienced gender role by significant others (Coleman *et al.*, 2012; Collazo, Austin & Craig, 2013). However, RLE can be also a barrier to treatment as clinicians are alone relying upon their best clinical judgment when appraising the outcome of RLE as they cannot count upon clearly defined criteria (Baker & Wylie, 2008; Collazo *et al*., 2013; Levine, 2009). Additionally, clinicians might struggle to accept and/or recognise what “living in the identified gender” entails for non-binary people; hence they might expect transgender people to present within and endorse a binary gender. This might lead to not acknowledging the attempts of people to live in the gender they identify with

and thus denying treatment, as well as to a risk that clinicians and policies are complicit with gender binary.

This might also be a particular issue for autistic people as they struggle understanding other people's emotions and reactions (Baron-Cohen, 1997), thus they might present and endorse their experienced gender in a way that might not be accepted and approved by others and that does not match with clinicians' expectations on what they consider to be the right way to present. Therefore they might be denied access to treatment.

Consequently, clinicians can become adversaries rather than advocates for transgender people, which might induce patients to exaggerate and construct experiences and appearances to conform with their idea of clinicians' expectations (Bess & Staab, 2009; Mizok & Lewis, 2008).

Additionally, treatment-seeking individuals might either over- or under-report levels of wellbeing as well as of mental health issues by presenting a different mental health status from their own because of concerns over what they think clinicians might believe it is needed to allow access to GAT and to avoid negative repercussions upon their treatment path. This might cause problems for clinicians needing to judge the mental health of patients in order to provide appropriate clinical support as well as for researchers as patients' self-reported data might not be representative of the of the population's mental health status thus biasing the results of research studies.

Once people carry out the GRT, they can start receiving hormone treatment. CHT is linked to a variety of positive physical and psychological outcomes as secondary sexual characteristics of the identified gender start developing and this leads to a reduction in mental health issues (Bouman & Arcelus, 2017; Fraser, 2009). However, people still face considerable challenges, such as possible medical side effects of the treatment (Seal, 2017). Initiating hormone treatment is a considerably stressful experience as people undergo a “second adolescence” with all the issues, challenges and burdens that are related to adolescence (Bockting & Coleman, 2007; Fraser, 2009). CHT is a lifelong therapy and people need to take hormones for life in order to avoid the reversible effect of hormone therapy cessation and thus to avoid the advancement of secondary sexual characteristics of the assigned gender as well as the development of dysphoric feelings.

Approximately six months following the initiation of CHT, people can be referred to GAMIs, such as CRS and GAGS. These procedure are generally linked to an amelioration in mental health problems but they can still lead to experiencing challenges related to the stressor of being placed again in a waiting list and of possible physiological side effects of surgeries.

8.5. Challenges following gender-affirming treatment

Notwithstanding the possible improvement in QoL, overall satisfaction with life and mental health post-GAT (Costa & Colizzi, 2016; Weyers *et al.,* 2009), transgender people can still experience challenges associated with transition.

Undergoing GAT helps align bodily characteristics with the gender people identify with, however some features and aspects of the birth assigned gender might still be apparent, especially when people started the process of transition that all secondary sex characteristics fully developed and long after puberty. Consequently, people might still experience some feelings of dysphoria and distress related to such physical features as well as lack of societal acceptance and all the consequences that this might lead to, such as transphobia, victimisation, discrimination and lack of social support (Winter *et al.,* 2016).

Additionally, part of the challenges that transgender people might still undergo are physical and related to the possible side effects and complications of surgeries and medical interventions (Bouman & Arcelus, 2017).

9. Effect of social support on a positive quality of life

An important protective factor for the wellbeing, mental health and mental health-related QoL of transgender people is social support (Başar, Öz, & Karakaya, 2016; Davey *et al.,* 2014). Literature suggested social support to have a buffering effect against experiences of negative interactions, such as discrimination and victimisation (Davey *et al.,* 2014). Perceptions of being supported from family and significant others help buffering the negative impact of rejection, harassment and suicidal ideation (Trujillo *et al.,* 2017). In fact, social support from family has been found to be an especially important predictor of wellbeing as it is associated with improvements in QoL (Başar *et al.,* 2016), reductions in psychological distress (Bockting *et al.,* 2013) and it is linked to less mental health issues (Nemoto *et al.,* 2011; Pflum, Testa, Balsam, Goldblum, & Bongar, 2015). Overall, social support and

connectedness to family, significant others, trans-specific sources of social support (such as support groups) and the transgender community, as well as any positive relationship with individuals that are accepting and supportive, might be a sufficient protective factor against negative experiences and helps reducing mental health issues (Pflum *et al.*, 2015). Additionally, entering into a community of supportive and accepting individuals allows transgender people to explore and resolve issues related to their identity (Gagné *et al.,* 1997).

10. Need for good interpersonal skills

Undergoing GAT and managing the associated changes in appearance and gender roles requires considerable interpersonal and social skills.

Interpersonal interactions are likely to improve by transitioning, as shown by the scant past literature. Studies suggested CHT to be associated with a reduction in social issues and amelioration in both family and social life, but this population remains more prone to experience interpersonal issues than the general population (Bouman *et al.,* 2016a; De Cuypere *et al.,* 2006).

There is paucity of past research investigating interpersonal issues in transgender people as well as lack of literature on the effects of GAT and medical interventions on transgender people's interpersonal issues and functioning. Only one mixed-methods follow-up study from Germany looked at a sample of transgender people 10-years post-treatment and participants were found to experience fewer psychological problems and interpersonal difficulties at follow-up than at the time of the initial consultation (Ruppin & Pfäfflin, 2015).

As in the last years there has been an increase in awareness and acceptance of transgender issues as well as an increase in knowledge regarding what being transgender entails, people are seeking medical help and to undergo medical procedures at increasingly younger ages. For instance, it is more and more common for young people to be prescribed puberty hormone blockers in order to suppress the development of the undesired secondary sex characteristics of their assigned gender before being referred to adult transgender health clinics (Bouman & Arcelus, 2017).

However, quantitative research is needed to properly understand the role of transition and mental health upon interpersonal issues as well as transgender people's own experiences of interpersonal interactions. For this reason, a qualitative study exploring the experiences of social interactions of young transgender people was carried out as part of this thesis (see Chapter 5).

11. Minority Stress Model

As shown above, transgender people face many interpersonal challenges, which might reflect the nature of the social demands placed upon these individuals. In the attempt to explain the interpersonal issues that minority groups face and the subsequent mental health complaints experienced by this population, Meyer (2003) developed the Minority Stress Model (MSM). This theory is based on the concept that societal, environment and interpersonal interactions are crucial for the wellbeing of an individual and that prejudice and negative evaluation by others induce negative psychological outcomes (Meyer, 2003). Bockting and colleagues (2013) guided by the MSM investigated the link between stigma and mental health by studying a sample of 1093 transgender participants and found a positive association between stigma and psychological distress.

The MSM states that minority groups (e.g. sexual minorities) are subject to unique and chronic societal stressors, such as prejudice, victimisation, and violence, simply because of being minorities (Meyer, 2003). Individuals experience stressful conditions coming from the environment, which lead to the expectation of negative events and finally to the internalisation of such societal attitudes (Meyer, 2003). Thus, they face stressors specific to their population; expectations of rejection, identity concealment, experiences of stigma and internalised transphobia (Meyer, 2003). For instance, the qualitative study of Wong and colleagues (2014) carried out in the United States shows that stressors such as discrimination and victimisation are associated with the internalisation of minority stigma and enhanced distress. Findings also highlighted that minority stressors are interrelated to negatively impact mental health (Wong, Schrager, Holloway, Meyer & Kipke, 2014).

Interpersonal communication and functioning are often complicated by the added effect of stigma as a psychological stressor (Duggan, 2006). Stigma in this context can be described as a negative societal attitude, which is then internalised (internalised

stigma) as well as a stressor associated with the expectation of negative experiences (Meyer, 2003; Stuber, Meyer, & Link, 2008). Additionally, anticipatory stigma suggests that trans people may deal with transphobia by expecting and preparing for it in order to either prevent or counteract such stigmatising feelings (Mizock & Mueser, 2014).

Disclosure can also be perceived as a stressor due to the demands that concealing one's own true identity entails. Transgender people try to counteract this stressor through 'passing' and attempting to remain stealth, which are also used as strategies to avoid transphobia (Bockting *et al.,* 2013). These coping mechanisms are themselves stress-inducing (Bockting *et al.,* 2013) and could be both positive and negative. Additionally, transgender people respond by developing both resilience and group identity to aid emotional functioning (Meyer, 2003). For instance, Pinto and colleagues (2008) interviewed treatment-seeking transgender women from the USA and found that many of these people created social networks within the clinic that helped the development of strategies to cope with adverse experiences.

Healthy emotional functioning might be disrupted by stigma-related stressors, which lead to emotion regulation deficits. For instance, when people use rumination as an emotion regulation response to general life stressors, this can have negative influences on an individual's mental health by interfering with interpersonal relations (Hatzenbuehler, 2009). Due to this, stigma-related stressors are likely to lead to social isolation and avoidance of interpersonal interactions (Hatzenbuehler, 2009).

Transgender people fear being rejected and negatively evaluated by others, which contribute to worsening of social functioning negatively impacting social interactions and people attempt to conceal feelings of internalised stigma to avoid close relationships for fear of others (Pachankis, 2007; Rood *et al*., 2016). Expectations of rejection are positively associated with psychological distress and feelings of fear, anxiety, sadness, anger, mental exhaustion and loneliness, which further lead to expectations of violence, confrontation, harassment, discrimination (Rood *et al.*, 2016).

12. Link between interpersonal difficulties and individual differences

Interpersonal difficulties can also be linked to individual differences and personality traits, such as being shy, conflict-averse and judgemental (REF). These traits might

exacerbate negative experiences of social interactions and can be associated to the experience of gender incongruity through intensification of dysphoric feelings (Bouman & Arcelus, 2017). Personality traits might also impact social interactions and skills by affecting self-esteem and self-stigma through social evaluation and negative social experiences (Crocker & Major, 1989).

Furthermore, there are individual differences related to neurological development and physiological characteristics that might have a negative impact upon social interactions by influencing people's reactions to the individual as well as by having a direct impact upon social skills, such as dimorphism, being mute and autism (APA, 2013; Brinton & Fujiki, 1993; Veale, 2004).

13. Transgender people and autism spectrum conditions

Transgender people seem to be increasingly prone to experience social and interpersonal difficulties as this population is apparently more likely to suffer from poor mental health as well as high rates of Autism Spectrum Conditions (ASC), both of which have the tendency to negatively affect social skills. In fact, literature suggested that the interpersonal difficulties faced by transgender people could be due to the apparent high levels of ASC experienced by this population (Turban, 2018; Turban & van Schalkwyk, 2018).

ASC is a neurodevelopmental condition mainly characterised by impairment in interpersonal functioning and communication as well as by restricted and repetitive patterns of behaviour (APA, 2013). Individuals dealing with ASC experience difficulties empathising whilst tend to be better at systematising, which is the ability to analyse and/or construct a system made of rules; this means that the autistic brain is an extreme version of the male brain, as suggested by Baron-Cohen (2002) with the Extreme Male Brain (EMB) theory of autism.

Interpersonal difficulties are at the core symptomatology of ASC and literature found an increased prevalence of autistic traits in the transgender populations, in both children and adolescents as well as adults (Glidden, Bouman, Jones, & Arcelus, 2016).

There are still a limited amount of studies that look at the prevalence of autistic traits in transgender people, however literature investigating transgender clinical populations suggested that almost one third of the patients referred to gender clinics

show a probable, possible and/or very likely presentation of ASC (Kaltiala-Heino, Sumia, Työläjärvi, & Lindberg, 2015; Shumer, Reisner, Edwards-Leeper, & Tishelman, 2015; Skagerberg, Di Ceglie, & Carmichael, 2015). When patients reporting cases of GD were compared to typically developing children in the Netherlands, studies found a likelihood of displaying clinically significant autistic traits of about 10 to 14 times higher in GD samples (de Vries, Noens, Cohen-Kettenis, van Berckelaer-Onnes, & Doreleijers, 2010; van der Miesen, de Vries, Steensma, & Hartman, 2018). When looking at gender differences, one Dutch study found an overrepresentation of ASC in transgender assigned males at birth (de Vries *et al.,* 2010), another Finnish study in females assigned at birth (Kaltiala-Heino *et al.*, 2015) whilst the remaining researches from the UK, the Netherlands and USA, found no gender differences (Shumer *et al.,* 2015; Skagerberg *et al.,* 2015; van der Miesen *et al.,* 2018).

Research on adult transgender populations is also scant and all studies measured autistic traits with the aid of the Autism spectrum Quotient (AQ). The AQ is a self-reported tool that measures autistic traits and scoring above the clinical cut-off might suggest the presence of possible ASC (Baron-Cohen, 2002). However, this is not a diagnostic tool and outcomes should be cautiously interpreted.

Three studies were carried out and all were conducted in the UK. The study of Jones and colleagues (2012) compared rates of autistic traits amongst a sample of 259 transgender people attending a transgender health clinic, 174 typically developing cisgender individuals and 125 people with diagnosed Asperger's Syndrome (AS), using the AQ-50. The results suggested that people with AS score the highest, but no differences in levels of autistic traits were found between transgender people and typically developing individuals. However, with regard to gender differences, transgender males reported more issues than transgender females as well as of the cisgender population. They also calculated that 14.8% of transgender men scored above the clinical cut-off for autistic caseness, whilst 1.5% of transgender women did.

Another study by Pasterski *et al.* (2014) compared a clinical sample of 91 transgender people to 840 people from a community control group using the AQ-50. They reported no significant differences in AQ scores between the transgender sample and the control group, irrespective of their gender assigned at birth. When using a validated cut-off of 32+, no gender differences were noticeable within the transgender sample. The study suggested that 5.5% of the transgender sample

scored above the clinical cut-off, whilst 7.1% of transgender males and 4.8% of transwomen did.

Kristensen & Broome (2016) used the AQ-10 (Allison, Auyeung, & Baron-Cohen, 2012) to carry out an online survey. They analysed results of 446 respondents, which showed that transgender assigned men scored significantly higher on autistic traits than transgender women and that transgender assigned females at birth scored significantly higher than transgender assigned males. No statistically significant gender differences with regard to the presence of a formal ASC diagnosis surfaced, with 17% of transgender assigned females and 10% of assigned males reporting it. However, this is an online study and it is subject to strong bias, which might inflate the findings by overestimating the prevalence of ASC (Kristensen & Broome, 2015).

The abovementioned studies suggested that transgender assigned females at birth (or possible transmen) report high levels of autistic traits than transgender assigned males (or possible transwomen). However, they suffer of substantial limitations as they used small non-matched samples, adopted different self-reported tools to measure autistic traits that are subject to bias and were cross-sectional in nature. No longitudinal studies have yet been carried out looking at the impact of treatment neither upon autistic traits nor on interpersonal issues, which would help understand if people are dealing with actual autistic traits as such interpersonal issues might be due to negative past experiences, such as bullying and transphobia (Turban, 2018; Turban & van Schalkwyk, 2018). Furthermore, the majority of the research in this field has been conducted using samples of either treatment-seeking transgender individuals or community samples, which makes it difficult to determine the impact of transition on mental health-related QoL, interpersonal issues and autistic traits. There is the need for more literature investigating autistic traits in this population to try to understand if transgender people display higher levels of these traits compared to cisgender people. This is why a matched control study comparing levels of autistic traits between transgender and cisgender people was carried out (see Chapter 3). Additionally, longitudinal studies looking at the effect of GAT on autistic traits are needed to be able to draw firm conclusions on the existence of such traits and to inform the development of transgender health services. For this reason, the first longitudinal study comparing levels of autistic traits between pre- and post-CHT was conducted (see Chapter 4).

14. Aims of the thesis

The research carried out in this thesis aims to explore the impact that transitioning away from the birth assigned gender towards the experienced gender has on mental health-related QoL, interpersonal interactions and autistic traits, particularly of young transgender people.

Specifically, the aims of this thesis are to:

1) Conduct a systematic review of the QoL of transgender adults and to explore evidence that mental health-related QoL improves post transition (Study 1 – Chapter 2);
2) To explore the differences in levels of autistic traits in treatment-seeking transgender adults compared to cisgender people (Study 2 – Chapter 3);
3) To determine the impact of CHT and transitioning away from birth assigned gender on levels of autistic traits in treatment-seeking transgender people (Study 3 – Chapter 4);
4) To explore the experiences of interpersonal interactions in young adults post-transition (Study 4 – Chapter 5).

Chapter 2 - Study 1

Quality of Life of Treatment-Seeking Transgender Adults: A Systematic Review and Meta-Analysis

Abstract

The study aims to systematically extract and analyse data about Quality of Life (QoL) in the transgender population. A systematic literature search and meta-analysis were conducted using the MEDLINE, EMBASE, PubMed, and PsycINFO databases, up to July 2017. Only English language quantitative studies, in adults, which reported the means for validated QoL measures were included. Random-effect meta-analysis was adopted to pool data and estimate the 95% Confidence Intervals (CI). From 94 potentially relevant articles, 29 studies were included within the review and data extraction for meta-analysis was available in 14 studies. The majority of the studies were cross-sectional, lacked controls and displayed moderate risk of bias. Findings from the systematic review suggested that transgender people display poor QoL, independent of the domain investigated. Pooling across studies showed that transgender people report poorer mental health QoL compared to the general population (-0.78, 95% CI= -1.08 to -0.48, 14 studies). However, meta-analysis in a subgroup of studies looking at QoL in participants who were exclusively post-CHT found no difference in mental health QoL between groups (-0.42, 95% CI= -1.15 to 0.31; 7 studies). There was insufficient data for a pre-treatment subgroup. Evidence suggests that transgender people have lower QoL than the general population. Some evidence suggests that QoL improves post-treatment. Better quality studies that include clearly defined transgender populations, divided by stage of gender affirming treatment and with appropriate matched control groups are needed to draw firmer conclusions.

1. Introduction

The term transgender (or trans) describes people whose gender identity differs from the sex they were assigned at birth based on their sexual characteristics, whilst the appellation cisgender refers to any individual who is not transgender and whose gender identity matches the sex assigned at birth (Bouman, Schwend, Motmans, Smiley, Safer, Deutsch, Adams & Winter, 2017b). Due to the mismatch between gender identity and sex assigned at birth, many transgender people experience severe distress, generally known as gender dysphoria, which tends to ameliorate following transition to the experienced gender (Coleman *et al.*, 2012).

The process of physical transition consists of different stages. Guidelines for the assessment and treatment of transgender and gender non-conforming people have been developed by the World Professional Association of Transgender Health (WPATH) to facilitate this process (Standards of Care, SOC) (Coleman *et al.,* 2012). The SOC aims to describe the different treatments that transgender people might wish to undergo, known as Gender Affirming Treatments (GAT), which may include puberty suppression, Cross-sex Hormonal Treatment (CHT), Chest Reconstructive Surgery (CRS) and Gender Affirming Genital Surgeries (GAGSs) (Coleman *et al.,* 2012). Thus, for the present review, the term 'treatment' is also used to describe GAT.

GAT produces bodily changes that impact and alter gender role and its expression by developing secondary sexual characteristics of the experienced gender in order for the body to become more congruent with the gender identity of the individual (Coleman *et al.,* 2012). These changes might be sufficient to mitigate the gender dysphoric symptoms (Coleman *et al.,* 2012) and hence improve the individual's QoL. However, not every transgender person requires gender affirming treatment and the dysphoria may improve through gender social role transition only. Thus, treatment might vary depending on the specific needs of the transgender person seeking treatment (Coleman *et al.,* 2012).

Many transgender people, particularly prior to their physical transition, face considerable challenges. These challenges can be physiological (development of some of the secondary sexual characteristics of the sex assigned at birth), social (lack of social support, rejection, discrimination, victimisation, transphobia) (Budge *et al.*, 2013; Clements-Nolle *et al.*, 2006; Davey, Arcelus, Meyer & Bouman, 2016; Jones,

Haycraft, Bouman, Brewin, Claes & Arcelus, 2018; Jones, Haycraft, Bouman & Arcelus, 2017; Jones, Arcelus, Bouman & Haycraft, 2017a; Kattari *et al.*, 2016; Nemoto *et al.*, 2011; Rotondi, Bauer, Scanlon, Kaay, Travers & Travers, 2012; White Hughto, Reisner & Pachankis, 2015) and psychological (e.g. anxiety, depression, low self-esteem) (Budge *et al.,* 2013; Dhejne *et al.*, 2016; Leibowitz & de Vries, 2016; Marshall *et al.*, 2016; Millet *et al.*, 2017). All these factors have been found to have a negative impact on the quality of life (QoL) of transgender people (24; Fredriksen-Goldsen *et al.*, 2014).

QoL is a complex and broad concept. It has been described in different ways, such as the quality of one's life conditions, one's satisfaction with life conditions, and as a combination of life's conditions and satisfaction (Borthwick-Duffy, 1992). De Vries and colleagues (11) defined QoL as the individuals' perceptions of their life satisfaction and happiness that has an impact on objective and subjective wellbeing. Hence, QoL measures can be considered as a way of quantifying the level of functioning and perceived wellbeing of people's lives (24). The concept of QoL encompasses a range of different physical and psychosocial domains. Several factors have been shown to affect QoL in transgender populations, such as presence or absence of depression and psychopathology, transitional status (such as the use of cross sex hormone treatment), levels of social support and perceived discrimination (12; 13; 14; 16; Jokić-Begić, Lari Korajlija & Jurin, 2014; Kattari *et al.,* 2016; Lawrence, 2003; Murad, Elamin, Garcia, Mullan, Murad, Erwin & Montori, 2010; Smith, Van Goozen, Kuiper & Cohen-Kettenis, 2005; White Hughto & Reisner, 2016).

The literature regarding QoL in transgender people mainly focuses on four QoL dimensions: voice-related (vQoL); sexrelated QoL; body image-related QoL; and general QoL. Voice-related QoL can be described as the impact that the perception of one's own voice, in terms of femininity and masculinity, has on the QoL of the individual (15). This dimension is very important for transgender people, as the pitch of the voice is an important aspect of gender expression and perception (21, 22). Sex-related QoL is a state of social, physical and mental wellbeing related to sexual life (World Health Organization, 2002). This concept refers to the sexual functioning and general satisfaction with sexual life (3). Body image-related QoL stems from the notion that experiencing a positive body image is linked with more satisfactory relationships, sexuality, improved well-being and overall general QoL (27). Thus, transgender people's incongruence between gender identity and bodily

characteristics could potentially impact their body satisfaction and as a consequence their QoL (27; Witcomb, Bouman, Brewin, Richards, Fernandez-Aranda & Arcelus, 2015; Jones, Arcelus, Bouman & Haycraft, 2017b; Jones, Haycraft, Murjan & Arcelus, 2016). Finally, general QoL describes the overall satisfaction with life not linked to specific physical health conditions and which includes subcategories linked to aspects of mental, physical, and social life (WHO Group, 1998).

There are mixed results regarding the QoL in the transgender population. While most of the literature suggests that transgender people have lower QoL compared to the general population (24), which increases once on CHT or post-GAGS (Smith *et al*., 2005; de Cuyper *et al.,* 2006; Rehman, Lazer, Benet, Schaefer & Melman, 1999), other studies have not replicated such findings (9, 28). These mixed results may be explained by the lack of homogeneity in the population studies, as well as by the different types of QoL and measurements used. For instance, the effect of CHT and genital surgery on the QoL of transgender people when compared to the general population is unclear, as studies often use mixed samples in terms of treatment status and/or focus onto different states of transition. The review carried out by Murad and colleagues (2010) suggested that CHT improves QoL, sexual and psychological functioning as well as gender dysphoria; however these findings are based on low quality evidence and the actual impact of both medical and social transitions upon QoL needs to be better understood (Bockting & Coleman, 2013).

Therefore, the primary aim of this study is to conduct a critical systematic review and meta-analysis of studies of QoL in transgender populations and to explore the range of QoL assessed. The present research also aims to investigate the impact of CHT by exploring QoL in transgender people at different stages of gender transition.

Additionally, as there is a lack of understanding of the QoL domains most relevant to transgender people and of how demographic, psychosocial and treatment-related factors influence those domains, this review specifically aims to assess the different dimensions of QoL in transgender populations and their associated factors.

2. Method

2.1. Eligibility criteria

Studies were included if they aimed to measure QoL in transgender populations using validated QoL tools. Articles were eligible for inclusion if they reported a mean

QoL score for a transgender population and were either written in the English language or had an available translation into English. Both cross-sectional and longitudinal studies were included and there was no restrictions on settings. Studies were excluded from this systematic review if they investigated QoL in transgender children (<18 years) as QoL vary with age (Skevington, Lotfy & O'Connell, 2004). Additionally, articles were excluded if they had fewer than 20 participants as in small studies there is a high risk of selection bias and a lack of statistical power (Button, Ioannidis, Mokrysz, Nosek, Flint, Robinson & Munafò, 2013; Dickersin, 1990). Where different articles utilised the same database and same measures, the most recent article was taken into consideration and included within the meta-analysis. Qualitative studies, case studies, conference abstracts and review articles were also excluded. See Table 1 for summary of the review's eligibility process.

Table 1. Criteria for Inclusion of Studies within the Review

Category	**Criteria**
Study Population	Transgender people Gender Dysphoria, Transsexualism as well as previous diagnoses according to DSM or ICD, or self-defined as transgender LGBT studies only if describing transgender people as separate category All races, ethnicities, and cultural groups Adults
Sample Size	At least 20 participants
Study Settings	All settings No exclusion criteria based on research setting
Time period	Published from 1946 to July 2017
Publication Criteria	Articles in English Articles in peer reviewed journal
Study design	Observational studies using standardised measure of QoL. Cross-sectional or longitudinal designs

2.2. Search Strategy

PRISMA guidelines were followed (Moher, Shamseer, Clarke, Ghersi, Liberati, Petticrew, Shekelle & Stewart, 2015) to carry out this review. Ovid (PubMed,

EMBASE, PsycINFO) and Medline databases were searched from 1946 to July 2017. Terms for transgender people (Transgender, Transsexual, Gender Identity Disorders, and Gender Dysphoria) were searched using the OR function and combined with the terms related to (Quality of Life, QoL, Life Satisfaction) using the "AND" operator. Additionally, the reference lists of pertinent articles were searched to identify any further potential relevant papers.

2.3. Quality Assessment

Risk of bias was assessed using an instrument adapted from Ibrahim *et al.* (2013) as this instrument covered the most relevant criteria to assess risk of bias in descriptive studies. Criteria were 1) a clear definition of the target population, 2) adoption of either random, complete or consecutive recruitment or an attempt at recruiting every participant in the sampling frame, 3) sample as representative of the target population or the report presents evidence that results can be generalised to transgender people, acknowledging that most studies included treatment-seeking transgender people attending gender clinics 4) response rate equal or greater than 70%, 5) adequate sample size with a minimum of 300 participants as smaller sample sizes produce large confidence intervals and less precise results (Guyatt, Oxman, Kunz, Brozek, Alonso-Coello, … & Jaeschke, 2011; Loney, Chambers, Bennett, Roberts & Stratford, 1998) and 6) use of validated measures. The chosen criteria were evaluated as providing either a risk of bias (or unclear risk of bias) (1 point) or no risk of bias (0 point). Scores are then summed and an overall risk of bias rating is created where higher scores indicate greater risk of bias. Studies were rated as low risk of bias (++) (when all or most of the criteria were satisfied), moderate risk of bias (+) (when some of the criteria were satisfied) or high risk of bias (−) (when either a few or no criteria were satisfied), as per the NICE (2012) guidelines for risk of bias assessment.

Risk of bias was double-rated by researcher AN as well as by researcher JA, then results were discussed to minimise inconsistencies by finding agreement between authors. Issues of bias were addressed by not excluding studies based on their quality assessment, which would have increased the researcher bias and reduced the generalisability of findings. However, selection bias was indirectly increased by not excluding studies, as some researches incurred significant limitations such as the use of cross-sectional methodology and diverse samples, which hampered the

interpretation of the studies' results. These papers were included within the review and limitations were acknowledged and taken into consideration when comparing studies and drawing conclusions.

2.4. Data extraction

A data extraction table was used to record authors, date of publication, country where the study was conducted, participants' information (sample sizes, mean age of sample at assessments), information on treatment status, study design, control group and follow-up (if applicable), QoL measures used, results, factors associated with QoL and conclusions. Separate tables were constructed differentiating depending on the QoL domain investigated.

2.5. Meta-analysis

Mental health-related QoL was used as the outcome of interest for the meta-analysis, as it was the most widely reported outcome and physical QoL is more sensitive to the effects of age (Hawthorne, Herrman & Murphy, 2006). The most frequently used QoL measures (e.g. SF-36, SF12) do not calculate a total score but calculate separate composite scores for mental and physical health. Generic (i.e. not condition specific) mental health-QoL scores for all samples with means and Standard Deviations (SDs) reported were eligible for inclusion in the meta-analysis. When the means and SDs for a cisgender group were provided, these were used as the comparison in the meta-analysis. Where these were not available, normative data most applicable to the study country were obtained from the articles providing validation of the specific measures adopted and were used as comparison. If normative data for specific country and measure was adopted by another paper in the review, such values were copied and used for comparison. When normative data was not present in other reviewed studies, papers testing the highest number of participants and representative of the country's general population were utilised. These methods helped minimising the selection bias. Utilisation of normative data as a control might cause methodological concerns, as this might increase effect sizes; however, to not lose valuable data and to be able to carry out the meta-analyses, this method was deemed as the best approach. This approach was adopted for four studies (1, 6, 17, 29).

In longitudinal studies, data from the first time point at which the participants met the age criterion for the review were used. Where studies reported incomplete

results, values were either manually calculated (e.g. SDs from means) or authors were contacted to provide the missing data.

A second meta-analysis with a sub-group of studies reporting data for samples of participants who were exclusively post-GAGS, and therefore post-CHT, as the big majority of people undergoing gender affirming surgeries are already on hormonal treatment, was conducted. Pre-treatment-QoL was not assessed due to a lack of studies using exclusively pre-treatment samples. RevMan 5 (Review Manager, 2014) was utilised to conduct the meta-analyses.

It was hypothesised that the results would be heterogeneous because of differences between studies in the stages of transition investigated (e.g. mixed samples, pre-CHT, post-CHT, post-GAGS), in the diverse types of recruitment utilised (e.g. consecutive, snowballing), in the presence of clinical and/or non-clinical individuals within the samples as well as in the focus onto the different gender identities of the participants (e.g. transman, transwoman, both). Consequently, Random Effects Models (RAM) with 95% confidence interval was used for the analyses as it implies that the selected studies are carried out in diverse populations (Deeks, Higgins & Altman, 2008). I^2 statistics were calculated to examine heterogeneity, which is expressed in percentages suggesting different degrees of heterogeneity with 25% indicating low, 50% moderate and above 75% high (Higgins & Green, 2011). Additionally, *Q* statistics were calculated to determine the statistical significance of heterogeneity (Huedo-Medina, Sánchez-Meca, Marín-Martínez & Botella, 2006).

2.6. QoL Measures Used in the Review

See Table 2 for a description of the measures used in the studies to assess QoL. Voice-related QoL was assessed using the Voice Handicap Inventory (VHI) and the Transgender Self-Evaluation Questionnaire (TSEQ), sex-related QoL using the sexual subdomain of the WHOQOL-100 and the King's Health Questionnaire (KHQ), body image-related QoL using the body image-related subdomain of the WHOQOL-100 as well as the Body Image Quality of Life Inventory (BIQLI), and generic (non-condition specific) QoL was measured using the Short Form 36 Health Survey (SF-36), version 2 of the Short Form 36 Health Survey (SF-36-v2), version 2 of the Short Form 12 Health Survey (SF-12-v2), WHOQOL-100, WHOQOL-BREF, WHOQOL-BREF-TR or the Subjective Quality of Life Analysis (SQUALA). See Table 2 for a description of the measures.

Table 2. Quality of Life Measures Used in the Review

Measure	Details
1. **Short Form 36 Health Survey** **SF-36** (Ware, 2000; Ware & Sherburne, 1992)	This tool was developed to measure multiple operational health indicators of QoL (Ware & Sherburne, 1992). It is a well-validated international measure of health-related QoL consisting of 36-items providing scores for two summary components (Physical and Mental), which encompass 4 subdomains each. The Physical component includes Physical functioning, Role limitations related to Physical problems, Bodily pain, and Perception of general health, whilst the Mental component comprises of Vitality, Social functioning, Role limitations due to Emotional problems, and Mental health. The scores range from a minimum of 0 until a maximum of 100, where higher scores indicate greater functioning and enhanced perception of QoL. The cut-off for the population norm is around 50. The measure was validated in a wide variety of clinical and non-clinical populations, and it displayed an internal consistency value of .88 when used with transgender populations (Ware, 2000). This tool was employed by six studies reported on within this review (1, 19, 23, 25, 28, 29).
2. **Short Form 36 Health Survey Version 2** **SF-36v2** (Ware, Kosinski, Bjorner, Turner-Bowker, Gandek & Maruish, 2008)	This measure was developed out of the SF-36. It includes more up-to-date norms and QoL domains. It is a standardised, comprehensive and validated QoL measure assessing two summary scores (Physical and Mental components), which encompass 4 subdomains each. The Physical component includes Physical functioning, Role-physical, Bodily pain, General health, whilst the Mental component comprises of Vitality, Social functioning, Role-emotional, and Mental health. It uses a 5-point Likert-scale ranging from 1 (poor/true) to 5 (excellent/false). Higher scores represent higher perceived QoL levels. This measure has also been used and corroborated in an online sample of transgender men displaying a Cronbach's alpha for reliability ranging from .93 to .95 (24). This tool was employed by seven studies reported on within this review (2, 4, 5, 8, 9, 22, 24).
3. **Short Form 12 Health Survey Version 2** **SF-12v2** (Ware, Kosinski, Turner-Bowker & Gandek, 2002)	This instrument is a subset of the SF-36. It comprises of two summary component scores (Physical and Mental), which encompass 4 subdomains each. The former component includes Physical functioning, Role-physical, Bodily pain, General health, whilst the latter component refers to Vitality, Social functioning, Role-emotional, and Mental health. This measure utilises a 5-point Likert-scale ranging from 1 (poor/true) to 5 (excellent/false). Scores range from 1 to 100, with higher perceived QoL represented by higher scores. This measure was validated and showed a good internal consistency, with Cronbach's alphas of .89 for the

	Physical component summary and of .86 for the Mental component summary (Ware *et al*., 2002). This tool was employed by one study reported on within this review (22).
4. **WHOQOL-100** (WHO Group, 1998)	This is a self-administered, self-rated measure to assess QoL developed by the World Health Organization QoL group. It has been developed cross-culturally and it maintains excellent psychometric properties and internal consistency. This tool comprises a total of 100-items; 96 measures 24 specific QoL facets, whilst the remaining 4-items estimate General QoL and Overall QoL. The facets are distributed across 6 domains, such as Physical health, Psychological health, Independence, Social relationships, Environment, and Spirituality/Religion/Personal beliefs. In order to investigate the Sexual QoL the specific Sexual activity facet was measured, whilst to examine Body image-related QoL the Body image facet was assessed. Items are rated on a 5-point Likert-scale ranging from 1 (very poor/very dissatisfied/not at all) to 5 (very good/very satisfied/extremely). Higher scores indicate greater reported QoL. The scale's internal consistency values have been found to range between 0.65 and 0.93 (WHO Group, 1998). This tool was employed by four studies within this review (3, 6, 7,20).
5. **WHOQOL-BREF** (Skevington *et al*., 2004)	This is a self-rated measure that has been validated in field studies involving approximately 30 languages (Murad *et al*., 2010). It is an abbreviated version of the WHOQOL-100. This tool has 26-items and uses a 5-point Likert-scale measuring 4 domains (Physical, Psychological, Social relationships, and Environment). In addition, there are two questions regarding General QoL and General health. Higher scores indicate greater QoL. Internal consistency values cross-culturally have been found ranging from .51 to .89 (Skevington *et al*., 2004). This tool was employed by three studies within this review (11, 12, 17).
6. **WHOQOL-BREF-TR** (Eser, Fidaner, Fidaner, Eser, Elbi & Göker, 1999**)**	The WHOQOL-BREF-TR is a 27-items 5-point Likert-scale measuring four domains (Physical, Mental, Social and Environmental) in two categories (Perceived QoL in general and Perceived health status). It displays acceptable psychometric properties when used on the Turkish population (Cronbach's alpha ranging from .53 to .83) (Eser *et al*., 1999). This is the Turkish version of the WHOQOL-BREF and it was used by one study included in this review (4).
7. **Subjective Quality of Life Analysis SQUALA** (Zannotti & Pringuey,	This is a self-administered, self-rated, multidimensional QoL measure. It covers 23 QoL domains (e.g. Mental well-being, Perceived health, Physical autonomy, Social relations, Environment) as well as general QoL-related concepts (e.g. justice, freedom, truth, beauty and politics), which identify

1992)	internal and external reality of everyday life (Chrastina, Ivanová, Krejčirová & Ježorská, 2014). The measures' items need to be rated in importance and satisfaction by the person and higher scores indicate better QoL. Cronbach's alpha was not available. This measure was utilised by one study included within this review (14).
8. **King's Health Questionnaire** **KHQ** (Reese, Pleil, Okano & Kelleher, 2003)	This is a validated measure used to assess QoL, and with the aid of specific questions it is often used to estimate levels of incontinence related-QoL. This is a 29-item Likert-scale assessing ten domains (General health, Physical limitations, Personal limitations, Social limitations, Role limitations, Personal relationships, Emotion, Symptom severity, Sleep/energy and Incontinence) and two categories (QoL and Limitation of daily life). The QoL category is measured with 20-items using a 4-point Likert-scale ranging from 1 (not at all) to 4 (a lot), whilst the incontinence category is measured with 9 items ranging from 1 (a little) to 3 (a lot). A change of 5 points is considered to be significant. It has been validated on a sample of urinary incontinent women with Cronbach's alpha values ranging from .73 to .89 (Kelleher, Cardoso, Khullar & Salvatore, 1997). This tool was employed by one study reported on within this review (18).
9. **Voice Handicap Inventory** **VHI** (Jacobson, Johnson, Grywalski, Silbergleit, Jacobson, Benninger & Newman, 1997)	This is a validated measure used to self-assess the QoL related to the relative impact of a person's voice upon daily activities. It is also used to measure QoL of transgender people concerning the impact and influence of their voices. The VHI is a 30-item 5-point Likert-scale ranging from 0 (never) to 4 (always). The items are regularly divided within three domains; Functional (F), Emotional (E) and Physical (P). The total score (T) is achieved by summing up E, F and P, and it ranges from 0 (normal voice) to 120 (severely affected voice). Scores below 40 represent either mild or absent disability, values between 40 and 60 reflect moderate disability, whilst scores above 60 represent disability. Internal consistency value was found to be .95 (Jacobson *et al*., 1997) This measure has been employed by four studies reported on within this review (15, 16, 21, 26).
9. **Transgender Self-Evaluation Questionnaire** **TSEQ** (Davies, Adler, Hirsh & Mordaunt, 2006)	This is a standardised, subjective measure of voice handicap and vQoL specifically developed for transgender people. It is based on the VHI but adapted to the specific concerns of transgender individuals, such as the impact of masculinity/femininity of voice. It is a 30-item self-reported 5-point Likert-scale ranging from 1 to 5. A total score ranging from 30 to 150 is calculated by adding up the 30 items' scores and lower scores reflect greater vQoL. The TSEQ was found to have good test-retest reliability (r=.97) (Hancock, Owen, Seigfriedt & Brundage, 2009). Cronbach's

	alpha was not available. This tool was adopted by two studies reported on within this review (15, 16).
11. **Body Image Quality of Life Inventory BIQLI** (Cash & Fleming, 2002)	This is a 19-item 7-point Likert-scale ranging from -3 (very negative effect) to +3 (very positive effect) that assesses body image-related effects onto 19 different areas of life including sexuality and emotional well-being. Higher scores imply better body image-related QoL. Internal consistency was found to be excellent (α=.95). This tool was used by one study included in this review (27).

3. Results

A total of 403 studies were identified through database searches, 288 through Ovid and 115 through PubMed. An additional 12 articles were selected for inclusion in the review after screening reference lists of relevant papers. After removing duplicates, 94 abstracts were screened by the first researcher (AN), which resulted in 43 studies that were read in full. Of these, fifteen were excluded due to reasons such as lack of a validated QoL measure (n = 4), of direct measurement of QoL (n = 6), of results reported specifically for transgender people (n = 4) and one study was qualitative. Finally, a sample of 29 papers was discussed, agreed with the other researchers (JA and CG) and included within this review. See Figure 1 for description of the study's selection process.

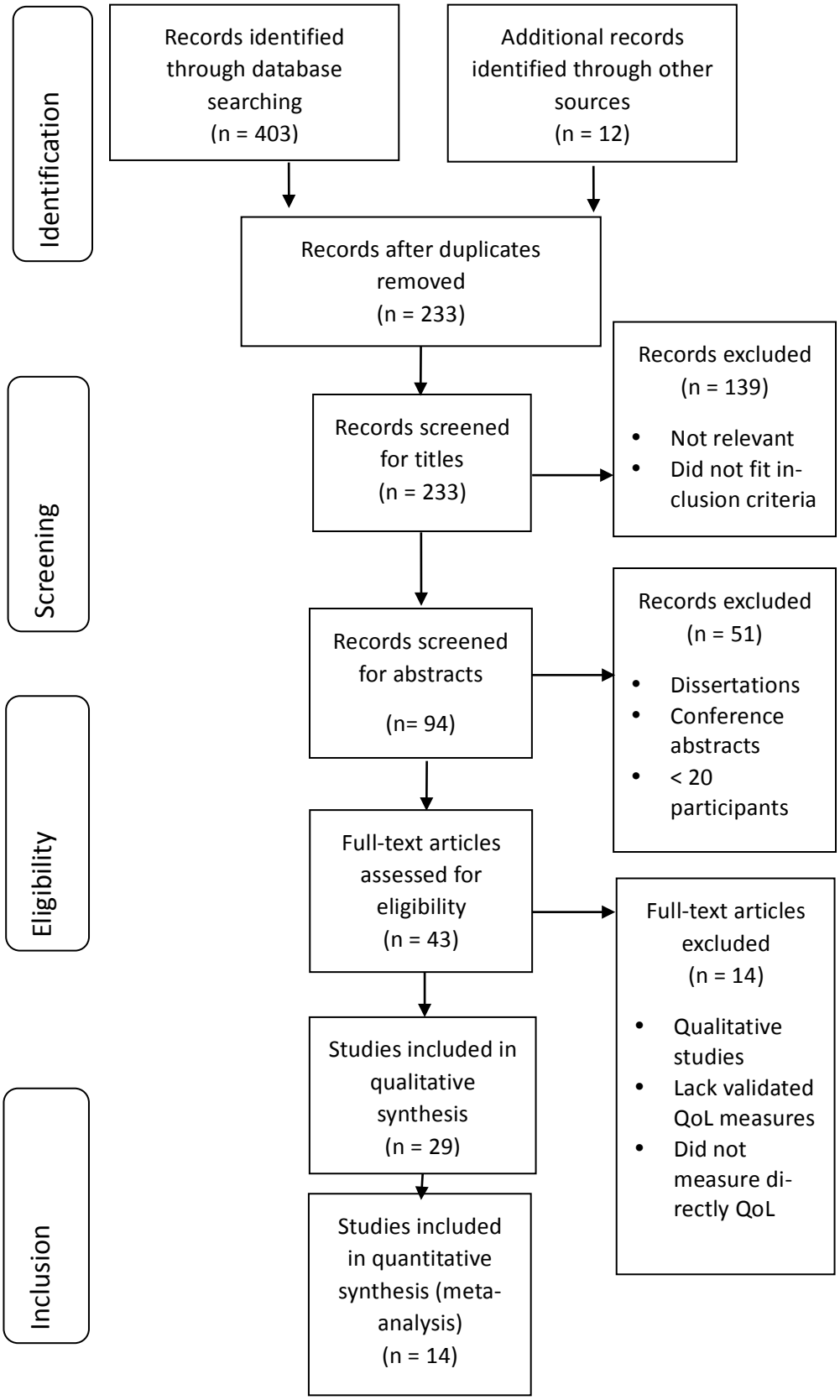


Figure 1. Process of identification of eligible studies for inclusion within the review

3.1. Study Characteristics

The earliest articles included within this review were published in 2006 (24, 26) whilst the most recent papers were published in 2017 (1, 17, 19, 21, 22).

The majority of the studies were conducted in European countries (n = 20). Three studies were carried out in Spain (3, 12, 22), in France (13, 14, 25) and in Belgium (23, 26, 28). Two studies were conducted in Italy (7, 20), UK (5, 10), the Netherlands (11, 27) and Germany (1, 21), whilst one study was carried out in Switzerland (18), one in Sweden (19) and one in Turkey (4). With regard to non-European countries one study was from Brazil (6), one from China (29) and the remaining articles were from the USA (n = 7).

Out of the 29 included articles; a) four explored vQoL (15, 16, 21, 26), b) four looked at sex-related QoL (3, 7, 18, 20), c) three assessed body image-related QoL (2, 20, 27), and e) 22 studies measured generic (non-condition specific) QoL (1, 2, 4-14, 17, 19-25, 28, 29). With regard to vQoL, the study by Mora and colleagues (22) measured vQoL with the aid of a non-validated measure as well as general QoL with a well-validated tool, thus the article was included in the subgroup of general QoL. The study conducted by Parola and colleagues (25) was excluded from the sex-related QoL domain, as it did not employ a validated measure to assess sex-related QoL. Studies reporting generic-QoL that either separated mental and psychological subscales or provided a total QoL score (e.g. Castellano *et al*. – 8) were included in the systematic review. Of the four papers that measured sex-related QoL, three used the sex-related facet of the WHOQOL-100 (3, 7, 20) whilst one paper measured QoL related to incontinency in transgender women post-GAGS and was included within the sex-related QoL domain (18). Finally, with regard to body image-related QoL, one article used a specific body image-related QoL measure (BIQLI) (27) whilst the others used the body image-facet of the WHOQOL-100 (7, 20).

In terms of study design, 22 studies were cross-sectional (1-5, 7-9, 12-18, 23-26, 28, 29) and seven were longitudinal (6, 11, 19-22, 27), although three of the longitudinal studies (11, 21, 22) only reported cross-sectional data for QoL. Of the 29 included studies, eight compared scores of transgender people to normative data (2, 3, 9, 12, 19, 23, 24, 28), and eight compared transgender to cisgender individuals (5, 10, 12,

13, 15, 18, 20, 21) of which four studies used a matched comparison group (5, 10, 13, 20). However, for one matched study (10) the gender identity of the comparison group was unclear. Four articles compared QoL in transgender women to QoL in transgender men (4, 14, 25, 26). The majority of studies (n = 23) recruited transgender people through clinical services (1-7, 10-15, 18-23, 25-28). The remaining five studies recruited participants through opportunity sampling, word of mouth, flyers, advertisement and through community outreach (8, 9, 17, 24, 29).

3.2. Risk of bias

Risk of bias was evaluated for the 29 studies according to the criteria stated in Table 1. Only three studies recruited more than 300 participants (9, 8, 24) and the majority either reported response rates lower than 70% or did not mention this information (n = 21) thus increasing the risk of sampling bias (1-3, 9-11, 14-16, 18, 19-24, 26-29). Overall, only two studies were rated having a low risk of bias (13, 5), twenty studies had a moderate risk of bias (1, 3, 4, 6-12, 14, 17-20, 23, 24, 26, 27, 29) and seven a high risk of bias (2, 15, 16, 21, 22, 25, 28). See Table 3 for details regarding studies' quality assessment and risks of bias.

Table 3 Risk of Bias of Studies Included in the Review

Source	Sample Definition (INCLUSION CRITERIA)	Recruitment (RANDOM, COMPLETE, CONSECUTIVE)	Representativeness of Sample (EXCLUSION CRITERIA and CLINICAL/NON-CLINICAL POPULATIONS)	Response Rate (min 70%)	Sample Size (min 300)	Comparison	Use of Validated Measures	Quality Rating
1. **Auer** *et al.* (2017)	0	1	0	1	1	1	0	+
2. **Ainsworth & Spiegel** (2010)	1	1	1	1	1	1	0	-
3. **Bartolucci** *et al.* (2015)	0	0	1	0	1	1	0	+
4. **Basar** *et al.* (2016)	0	0	1	0	1	1	0	+

5. **Bouman** *et al*. (2016) UK	0	1	0	0	1	0	0	++
6. **Cardoso da Silva** *et al.* (2016)	0	0	1	0	1	1	0	+
7. **Castellano** *et al.* (2015)	0	1	1	0	1	0	0	+
8. **Colton Meier** *et al.* (2011)	1	1	0	1	0	1	0	+
9. **Colton Meier** *et al.* (2013)	1	1	0	1	0	1	0	+

10. **Davey** *et al.* (2014)	0	1	1	1	1	0	0	+
11. **de Vries** *et al.* (2014)	0	0	1	1	1	1	0	+
12. **Gomez-Gil** *et al.* (2014)	0	0	1	0	1	1	0	+
13. **Gorin-Lazard** *et al.* (2012)	0	0	1	0	1	0	0	++
14. **Gorin-Lazard** *et al.* (2013)	0	0	1	1	1	0	0	+
15. **Hancock** *et al.* (2011)	0	1	1	1	1	1	0	-

16. **Hancock** *et al.* (2016)	1	1	0	1	1	1	0	-
17. **Hoy-Ellis** *et al.* (2017) USA	0	1	1	0	1	1	0	+
18. **Kuhn** *et al.* (2009)	0	0	1	1	1	1	0	+
19. **Lindqvist** *et al.* (2017) Sweden	1	0	0	1	1	0	0	+
20. **Manieri** *et al.* (2014)	0	0	1	1	1	1	0	+

21. **Meister** *et al.* (2017) Germany	1	0	1	1	1	1	0	-
22. **Mora** *et al.* (2017) Spain	1	0	1	1	1	1	0	-
23. **Motmans** *et al.* (2012)	0	0	1	1	1	1	0	+
24. **Newfield** *et al.* (2006)	1	1	0	1	0	1	0	+
25. **Parola** *et al.* (2011)	0	1	1	1	1	1	0	-

26. **T'Sjoen** *et al.* (2006)	0	0	1	1	1	1	0	+
27. **van de Grift** *et al.* (2016)	0	0	1	1	1	1	0	+
28. **Wierckx** *et al.* (2011)	0	1	1	1	1	1	0	-
9. **Yang** *et al.* (2016)	0	1	0	1	1	1	0	+

0 = No risk of Bias; 1 = Risk of Bias; ++ = Low Risk of bias; + = Moderate Risk of Bias; - = High Risk of Bias

3.3. Results of the Literature review

3.3.1. Voice-related QoL

Of the four papers describing vQoL, three used a crosssectional design (15, 16, 26), whilst one article used a longitudinal design with cross-sectional data for vQoL (21). There were no studies looking at pre-treatment transgender people. Two studies were conducted in the USA (15, 16), one in Belgium (26) and the last one in Germany (21). Only one study offered comparisons of transgender people post-treatment with normative data and reported worse vQoL for transgender people when compared to controls (21). The cross-sectional studies that looked at people posttreatment (GAGS, CHT, Voice Feminisation Treatment - VFT) found transgender people to experience voice-related disability, in that they feel handicapped in everyday life because of their voice (21, 26). This could be due to the fact that hormone therapy for transgender women had not affected their voice. Only one study compared people according to their gender identity; this study by T'Sjoen and colleagues (26) found that transgender men report better vQoL compared to transgender women post-GAT. Overall, vQoL appears to be worse in transgender people, particularly in women, even post-GAT. See Table 4 for details.

The few studies investigating predictors of vQoL found increased age of the transgender individual, increased femininity of the voice (16) and low dihydrotestosterone as well as high Luteinising Hormone (LH) in the blood (26) to be factors predictive of a positive vQoL in populations of transgender women.

Table 4 Studies Investigating Voice-Related Quality of Life in Transgender People (n = 4)

Authors (year) Country	Number of Trans Participants, Mean Age at Assessment	Treatment Status	Study Design	Comparative Groups, Follow-up	Outcome Measures	Results	Factors Associated	Conclusions
15. Hancock *et al.* (2011) USA	20 TW 48.8 yrs	Post-VFT 100% Post-GAGS 45%	Single centre Clinical group Cross-sectional	CG1 Speakers: 5 cis women (46.8 yrs) 5 cis men (40.8 yrs); CG2 Listeners: 12 cis men (18.8 yrs) 13 cis women (19.65 yrs) (No follow-up)	TSEQ	Self-ratings: Femininity = 529 Likability = 552 Listener ratings: Femininity = 493 Likability = 533	None studied	For TW vQoL moderately correlated with how others perceive their voice. vQoL correlated more strongly with speaker's perception of voice compared with others' perceptions
16. Hancock (2016) USA	81 TW 43 yrs	VFT 46%	Clinical and non-clinical group Cross-sectional	Online vs. paper Completed VHI vs. completed VHI+TSEQ (No follow-up)	VHI TSEQ	General: VHI = 37.5 TSEQ = 76.5 VHI+TSEQ: VHI = 37.6 TSEQ = 76.5	-vQoL: Increased age Femininity of voice	TW reported a wide range of vQoL; some individuals are severely affected by their voices whilst others are not.

21. **Meister** *et al.* (2017) Germany	T0 21 TW 42.1 yrs T1 18 TW 46 yrs	T0 = Pre-VFT 100% T1 = Post-VFT 100%	Single centre Clinical group Prospective longitudinal with cross-sectional data regarding VHI	T0 vs T1 German control group	VHI	VHI_{mean} = 32.29	None studied	Despite the elevation of vocal pitch, elevated VHI scores indicate transwomen feel handicapped in everyday life because of their voice
26. **T'Sjoen** *et al.* (2006) Belgium	28 TW 20 TM 33 yrs TW 49 yrs TM	GAGS 100% CHT 100%	Single centre Clinical group Cross-sectional	TW vs. TM (No follow-up)	VHI	TM: Total = 4(0-10) (F = 1, E = 0, P = 3, Phone = 0) TW: Total = 12(6-31) (F = 1, E = 2, P = 6, Phone = 2)	TM + vQoL: Lower DHT Higher LH	Better vQoL for both TW and TM above the cut-off for disability, meaning that they do experience voice-related disability

CG, Control Group; **CHT**, Cross-sex Hormonal Treatment; **Cis**, Cisgender; **DHT**, Dihydrotestosterone; **E**, Emotional; **F**, Functional; **FFS**, Face Feminisation Surgery; **GAGS**, Gender Confirming Genital Surgery; **LH**, Luteinizing Hormone; **P**, Physical; **TM**, Transgender men; **TW**, Transgender women; **VFT**, Voice Feminisation Treatment.

3.3.2. Sex-related QoL

Four studies investigated sex-related QoL by adopting a crosssectional design (3, 7, 20, 18); one offered comparisons with normative data (3), one compared the transgender group with a cisgender group matched for experienced gender (7), one carried out comparisons between transgender men and transgender women as well as between pre- and post-CHT (20) and the fourth study compared QoL linked to incontinence in transgender people post-GAGS to twenty members of the clinical staff who underwent at least one previous abdominal or pelvic operation (18). This last study was included within this section as it is linked to surgery outcomes and to , 20)satisfaction with sexual life. Two studies were carried out in Italy (7, 20), one in Spain (3) and one in Switzerland (18).

Only one study looked at a transgender sample pre-GAGS and found that transgender people report worse sex-related QoL than the general population (3). Studies including people post-GAGS suggested that transgender people still experienced lower sex-related QoL than their matched controls (7, 18). When looking at gender differences, Castellano *et al.* (7) suggested that, at post-GAGS, transgender women did not display significantly different sex-related QoL compared to cisgender women, whilst transgender men showed lower sex-related QoL than cisgender men. Instead, studies comparing transgender people according to gender identity reported a significantly lower sex-related QoL in transgender men when compared to transgender women, independently of the transitional status (3, 7). Only one study described changes in sex-related QoL using a longitudinal methodology (20). This study found a significant improvement in sex-related QoL for both transgender men and transgender women post-CHT (20). Overall, it appears that sex-related QoL improves post-GAT. However, such appears to be poor particularly in transgender men when compared to cisgender men. See Table 5 for details.

Regarding predictors of sex-related QoL, CHT (3), low LH in the blood (7), having a partner and experiencing less negative mood symptoms (3) have been found to be factors associated with more positive sex-related QoL.

Table 5 Studies Investigating Sex-Related Quality of Life in Transgender People (n = 4)

Authors (year) Country	Number of Trans Participants, Mean Age at Assessment	Treatment Status	Study Design	Comparative Groups, Follow-up	Outcome Measures	Results	Factors Associated	Conclusions
3. **Bartolucci** *et al.* (2015) Spain	67 TW 36 TM DSM-IV-TR 31.46 yrs TW 28.69 yrs TM	Pre-GAGS 100% CHT 40% (TW 46% TM 28%) Post-CRS 30% (TW 35% TM 19%)	Single centre Clinical group Cross-sectional	Normative data (No follow-up)	WHOQOL -100	sQoL TW: Poor/very poor 48% Good 23% Very good 20% TM: Poor/very poor 54% Good 27% Very good 28%	+ sQoL: CHT Having a partner Less negative feelings	Pre-GAGS about half of trans sample perceived sexual QoL as either poor or very poor compared to the control group
7. **Castellano** *et al.* (2015) Italy	46 TW 14 TM 32.7 yrs TW 30.2 yrs TM	+ 2 years post-GAGS 100% CHT 100%	Single centre Clinical group Cross-sectional	60 matched cis control sample (No follow-up)	WHOQOL -100	sQoL TW = 65.85 TM = 54.21	+QoL: Lower LH	Trans people reported levels of QoL similar to cis controls
18. **Kuhn** *et al.* (2009) Switzerland	52 TW 3 TM 51 yrs Trans	CHT 100% GAGS 100%	Single centre Clinical group Cross-sectional	20 healthy female medical staff, not matched (No follow-up)	KHQ	KHQ = 27.31	None studied	15-years post-GAGS QoL is lower for trans people in domains of General health, Role, Physical and Personal limitation than the cis control group

20. **Manieri** *et al.* (2014) Italy	56 TW 27 TM 32.7 yrs TW 30.2 yrs TM	T0=initiation of CHT 100% T1=3 months post-CHT 100% T2=6 months post-CHT 100% T3=9 months post-CHT 100% T4=1 year post-CHT 100%	Single centre Clinical group Prospective longitudinal	Pre- vs. during CHT	WHOQOL-100	T4 TW: sQoL = 50.25 TM: sQoL = 62.05	None studied	TW reported significant improvement in sexual and general QoL 1 year post-CHT

BI, Body Image; **CHT**, Cross-sex Hormonal Treatment; **Cis**, Cisgender; **CRS**, Chest Reconstructive Surgery; **GAGS**, Gender Confirming Genital Surgery; **LH**, Luteinizing Hormone; **sQoL**, Sexual QoL; **SR**, Social Relationships; **TM**, Transgender men; **TW**, Transgender women.

3.3.3. Body Image-Related QoL

Three papers described body image-related QoL, however none of these studies investigated QoL pre-GAT (7, 20, 27). Two studies were carried out in Italy (7, 20) and one in the Netherlands (27). The cross-sectional study conducted by Castellano *et al.* (7) found no difference in body image-related QoL between the transgender sample post-medical treatments and a matched cisgender sample. The two longitudinal studies reported an improvement in body image-related QoL after treatment, specifically after CHT (20) and mastectomy for transgender men (27). This suggests that gender-affirming treatments are of benefit to body image-related QoL in transgender samples. The limited research in this area shows that body image-related QoL improves post-GAT. See Table 6 for details.

Only one study looked at factors associated to body image quality of life and found low levels of LH in the blood to be associated to a positive body image-related QoL (7).

Table 6 Studies Investigating Body Image-Related Quality of Life in Transgender People (n = 3)

Authors (year) Country	Number of Trans Participants, Mean Age at Assessment	Treatment Status	Study Design	Comparative Groups, Follow-up	Outcome Measures	Results	Factors Associated	Conclusions
7. Castellano *et al.* (2015) Italy	46 TW 14 TM 32.7 yrs TW 30.2 yrs TM	+ 2 years post-GAGS 100% CHT 100%	Single centre Clinical group Cross-sectional	60 matched cis control sample (No follow-up)	WHOQOL-100	Body QoL TW = 64.64 TM = 67.91	+QoL: Lower LH	Trans people reported levels of QoL similar to cis controls
20. Manieri *et al.* (2014) Italy	56 TW 27 TM 32.7 yrs TW 30.2 yrs TM	T0=initiation of CHT 100% T1=3 months post-CHT 100% T2=6 months post-CHT 100% T3=9 months post-CHT 100% T4=1 year post-CHT 100%	Single centre Clinical group Prospective longitudinal	Pre- vs. during CHT	WHOQOL-100	T4 TW: BI = 21.85 TM: BI = 68.75	None studied	TW reported significant improvement in sexual and general QoL 1 year post-CHT

27. van de Grift *et al.* (2016) The Netherlands	26 TM 26.1 yrs	T0: CHT 100% T1: CRS 100% CHT 100%	Single centre Clinical group Prospective longitudinal	Pre- vs. post-CRS (T0 = baseline T1 = 6 months after CRS)	BIQLI	Pre-CRS = 0.32 Post-CRS = 0.38	+QoL: Body satisfaction Feelings of "passing" in social situations	Body satisfaction and "passing" in social situations are associated with higher QoL and self-esteem in TM

BI, Body Image; **Body QoL**, Body image-related quality of life; **CHT**, Cross-sex Hormonal Treatment; **Cis**, Cisgender; **CRS**, Chest Reconstructive Surgery; **GAGS**, Gender Confirming Genital Surgery; **LH**, Luteinizing Hormone; **sQoL**, Sexual QoL; **SR**, Social Relationships; **TM**, Transgender men; **TW**, Transgender women; **VFT**, Voice Feminisation Treatment.

3.3.4. General (non-condition specific) QoL

Out of the 22 studies that assessed generic (non-condition specific) QoL, there were no cross-sectional studies looking specifically at people pre-GAT. Five studies investigated post-GAT (2, 7, 11, 25, 28), twelve were mixed in term of treatment status (1, 4, 5, 8-10, 12-14, 23, 24, 29), three were longitudinal (6, 19, 20), one did not report information on treatment status (17) and one study reported only that participants were pre-facial feminisation treatment (22).

There is pre-CHT data available from the longitudinal studies showing that transgender people have lower QoL than the general population (6, 20). Of the six cross-sectional studies looking specifically at people pre-GAGS (2, 8, 12-14, 29), two studies, one from the USA (2) and one from Spain (12), found transgender people to report poorer QoL than the general population and one from France found similar scores to their matched cisgender controls (13). The remaining studies did not include comparisons with the general population but they suggested that transgender people report poor QoL.

Five studies investigated QoL at post-GAGS; three studies found that transgender people at this stage still report lower QoL than the general population (2, 25, 28) whilst two studies suggested transgender people to display similar QoL to the general population (11, 7). The former three studies are from the USA (2), France (25) and Belgium (28), whilst the latter ones are from Italy (7) and the Netherlands (11).

With regard to mixed samples, one English study suggested transgender people to report worse QoL than their matched cisgender controls (5), two reported poorer QoL than the cisgender non-matched controls (12, 10) and one Belgian study suggested worse QoL than the general population (23). The two studies that found transgender people to report lower QoL than their matched controls are Spanish (12) and English (10). Studies looking at people according to their gender found that some of the results regarding QoL in transgender men were contradictory and all from the USA; one study indicated that they suffer from worse QoL than the general population (24) whilst another study suggested the opposite (9). Transgender men

were also found to report a better QoL when undergoing CHT than when not on hormones (8). Instead, transgender women displayed high physical health-related QoL and poor mental health-related QoL in a Chinese study (29). The remaining three mixed sample studies made comparisons between transgender men and transgender women, and the results are inconsistent. Two studies, one French (14) and one Turkish (4), found that transgender women report better QoL than transgender men (4, 14) and one German study found no difference between transgender men and transgender women (1). In another mixed study, Motmans and colleagues (23) from Belgium found that transgender men had worse QoL than the cisgender population. However the results of the above mixed sample studies need to be interpreted carefully.

Regarding the three longitudinal studies (6, 19, 20), one Italian study found an improvement in QoL 1-year post-CHT when compared to pre-CHT levels (20). A different study from Brazil also found an improvement in transgender women 1-year post-GAGS when compare to pre-CHT values (6). The third study compared QoL pre-GAGS (on CHT) and 1, 3 and 5-years post-GAGS. This Swedish study found that although QoL pre-GAGS was lower than the general population it improves 1-year post-GAGS. However, the study also found that it reduces 3 years post-GAGS and even more 5 years after genital surgery. This could be explained as the first year post-GAGS is often known as the “honeymoon period” and people tend to report overly enhanced QoL, which are not representative of a long-term picture of patients’ psychological status and QoL (28). When investigating longitudinal results according to gender, the Italian study found that transgender women displayed greater improvements in QoL 1-year post-CHT compared to transgender men (20).

Overall, the studies investigating general QoL in transgender people found poorer QoL pre-GAT than the general population, which improve after GAT in the short term. See Table 7 for details.

Medical and surgical treatments (i.e. CHT, CRS, GAGS) (2, 4, 6, 8, 12-14, 24, 25), post-surgical well-being (11) and sexual functioning (28), presence of social and family support (12, 9, 1, 10), decreased depression, anxiety and stress levels (9, 1), lack of

chronic pain symptomatology (1), hope and resilience (29), high self-esteem and low levels of interpersonal issues (5), lack of identity stigma (17), having a good body image and good sleep quality (1), low levels of LH in the blood (7) as well as being employed and in a relationship, younger age, higher education, a high household income (23) and having undergone military service (17) were found to be factors predictive of a positive QoL.

Table 7 Studies Investigating General Quality of Life in Transgender People (n = 22)

Authors (year) Country	Number of Trans Participants, Mean Age at Assessment	Treatment Status	Study Design	Comparative Groups, Follow-up	Outcome Measures	Results	Factors Associated	Conclusions
1. Auer *et al.* (2017) Germany	82 TW 72 TM	TW: CHT 79.3% Pre-GAGS 79.5% TM: CHT 80.6% Pre-CRS 56.9% Pre-GAGS 72.2%	Multicentre (4 sites) Clinical group Cross-sectional	(No follow-up)	SF-36	MCS = 77.66	+QoL: +Sleep quality -Depressive symptoms -Chronic pain (TM) -Anxiety (TW) +Social support (TW) +Body image (TW)	QoL levels did not statistically differ between TW and TM. Substantial portion of low QoL in trans is due to poor sleep quality, anxiety in TW and chronic pain in TM
2. Ainsworth & Spiegel (2010) USA	247 TW 28 FFS (51yrs) 28 FFS (51 yrs) 25 GAGS (50 yrs) 47 FFS+GAGS (49 yrs) 147 No surgery (46 yrs)	28 FFS (CHT 86%) 25 GAGS (CHT 100%) 47 FFS+GAGS (CHT 98%) 147 no surgery (CHT 27%)	Clinical group Cross-sectional	CG1=FFS only CG2=GAGS only CG3=FFS+GAGS CG4=No surgery CG5=General population (No follow-up)	SF-36-v2	CG1 = 50 CG2 = 49.3 CG3 = 49.2 CG4 = 39.5	+QoL: Surgical treatments	TW have lower QoL than Dutch general female population

4. **Başar** *et al.* (2016) Turkey	22 TW 72 TM DMS-IV-TR DSM-V 27.73 yrs TW 26.82 yrs TM	CHT: 54.5% TW 20.8% TM; GAGS: 36.4% TW 12.5% TM	Single centre Clinical group Cross-sectional	TW vs. TM (No follow-up)	WHOQOL-BREF-TR	TW = 15.3 TM = 12.7	+QoL: Social support -QoL: Discrimination	Perceived personal discrimination and social support predicted QoL
5. **Bouman** *et al.* (2016b) UK	64 TW 40 TM 36.52 yrs	Assessment 6.7% CHT 78.8% 17.3% Post-GCGS	Single centre Clinical group Cross-sectional	140 matched cis control sample (No follow-up)	SF-36-v2	MCS = 70.9	mQoL: Self-esteem Interpersonal issues (too dependent)	Trans people have lower mQoL compared to the cis group
6. **Cardoso da Silva** *et al.* (2016) Brazil	47 TW 21.23 yrs	T1 at entrance to programme 100% T2 at least 1 year post-GAGS 100%	Single centre Clinical group Prospective longitudinal	Pre- vs. post-GAGS (T1 = baseline T2 = at least 1 year post-GAGS)	WHOQOL-100	T1 = 14.77 T2 = 15.52	+QoL: GAGS	GAGS promotes improvement of psychological aspects of QoL and social relationships, but 1-year post-GAGS TW still report problems with physical health and independence
7. **Castellano** *et al.* (2015) Italy	46 TW 14 TM 32.7 yrs TW 30.2 yrs TM	+ 2 years post-GAGS 100% CHT 100%	Single centre Clinical group Cross-sectional	60 matched cis control sample (No follow-up)	WHOQOL-100	TW = 67.87 TM = 69.21	+QoL: Lower LH	Trans people reported levels of QoL similar to cis controls

8. **Colton Meier** *et al.* (2011) USA	369 TM 28 yrs	CHT 66% CRS 41%	Online Cross-sectional	CHT vs. No CHT (No follow-up)	SF-36-v2	hQoL: CHT = 65.2 No CHT = 53.7 Trans = 61.3	+QoL: CHT	CHT is associated with improved mental health in TM
9. **Colton Meier** *et al.* (2013) USA	581 TM 27 years	CHT 67% CRS 41% GAGS 4%	Online Cross-sectional	AM vs. AW vs. AB Normative data (No follow-up)	SF-36-v2	AM = 58.85 AW = 64.77 AB = 60.81	+ QoL: - Depression - Anxiety - Stress + Social Support	TM displayed higher QoL levels than the norm
10. **Davey** *et al.* (2014) UK	63 TW 40 TM 56.9 yrs TW 28.05 yrs TM	TW: Post-GAGS 17.5% CHT currently 79.4% TM: Post-GAGS 15% CHT currently 0%	Single centre Clinical group Cross-sectional	Matched cis control sample No follow-up	SF-36-v2	MCS = 69.31	+ MCS, VT, SF QoL: Social support	Trans clinical sample reported lower QoL than matched cis sample
11. **de Vries** *et al.* (2014) The Netherlands	22 TW 33 TM TW: T0=13.6 yrs T1=16.5 yrs T2=21 yrs TM: T0=13.7 yrs	T0 = pre-puberty suppression T1 = post CHT T2 = 1 year post-GAGS	Single centre Clinical group Prospective longitudinal with cross-sectional data regarding QoL	T0 vs. T1 vs. T2 Participants vs. non-participants (T0 = pre-puberty suppression	WHOQOL-BREF	T2 pQoL = 14.66	+pQoL: Post-surgical well-being	Well-being in trans same or enhanced compared to same-age general population young adults

	T0=13.7 yrs T1=16.8 yrs T2=20.5 yrs	post-GAGS		suppression T1 = when CHT introduced T2 = 1 year post-GAGS)				
12. Gomez-Gil *et al.* (2014) Spain	119 TW 74 TM ICD-10 31.2 yrs Trans	CHT 62.2% No CHT 37.8%	Single centre Clinical group Cross-sectional	101 cis people (No follow-up)	WHOQOL-BREF	pQoL = 56.09	+QoL: CHT Family support Working/ studying	Trans reported lower perceived QoL compared to the cis sample. Additionally, TM reported higher social QoL than TW
12. Gorin-Lazard *et al.* (2012) France	31 TW 30 TM 39.4 yrs TW 29.9 yrs TM	No CHT: TW 19.4% TM 36.7% CHT: TW 80.6% TM 63.3%	Multicentre (3 sites) Clinical group Cross-sectional	French age- and sex-matched control Normative data (No follow-up)	SF-36-v2	MCS = 47.92	+ mQoL: CHT - mQoL: Depression	Positive effect of CHT on QoL. Trans QoL did not differ from cis matched controls except for RP
13. Gorin-Lazard *et al.* (2013) France	36TW 31 TM 35.1 yrs Trans	No CHT: TW 38.9% TM 61.1% CHT: TW 59.2% TM 40.8%	Multicentre (3 sites) Clinical group Cross-sectional	TW vs. TM CHT vs. No CHT (No follow-up)	SQUALA	TW = 12.1 TM = 11.34 Total = 11.72	+ pQoL: CHT	CHT predicted positive self-esteem, less severe depression, and greater psychological dimensions of QoL

17. **Hoy-Ellis** *et al.* (2017) USA	84 TW 51 TM 48 Other 46.88 yrs TW 27.48 yrs TM 25.64 yrs Other	None reported	Online and/or paper Non-clinical group Cross-sectional	Military service vs No military service (No follow-up)	WHOQOL-BREF	pQoL = 64.12	-pQoL: Identity stigma +pQoL: Prior military service	Those with prior military service had lower depressive symptomatology and higher pQoL
19. **Lindqvist** *et al.* (2017) Sweden	T0 = 146 TW T1 = 108 TW T2 = 64 TW T3 = 43 TW 36 yrs	T0 = pre-GAGS + CHT 100% T1 = 1 yr post-GAGS 100% T2 = 3 yrs post-GAGS 100% T3 = 5 yrs post-GAGS	Single centre Clinical group Prospective longitudinal	T0 vs T1 vs T2 vs T3 Swedish normative data	SF-36	MCS: T0 = 73.8 T1 = 74.1 T2 = 71 T3 = 67.6	None studied	TW (both pre and post-GAGS) reported lower QoL than general population; GAGS improves QoL 1 year post-GAGS but it tends to gradually diminish over time
20. **Manieri** *et al.* (2014) Italy	56 TW 27 TM 32.7 yrs TW 30.2 yrs TM	T0=initiation of CHT 100% T1=3 months post-CHT 100% T2=6 months post-CHT 100% T3=9 months	Single centre Clinical group Prospective longitudinal	Pre- vs. during CHT	WHOQOL-100	T4 TW: QoL = 63.25 TM: QoL = 72.2	None studied	TW reported significant improvement in sexual and general QoL 1 year post-CHT

		post-CHT 100% T4=1 year post-CHT 100%						
22. **Mora** *et al.* (2017) Spain	T0 = 30 TW T1 = 18 TW 30 yrs	Pre-FFS 100%	Single centre Clinical group Prospective longitudinal with cross-sectional data regarding SF12v2	None (No follow-up)	SF-12v2	MCS = 48.63	None studied	Trans women suffer poor QoL
23. **Motmans** *et al.* (2011) Belgium	63 TW 58 TM 42.26 yrs TW 37.03 yrs TM	TW: CHT 94.6% FFS 18.7% GAGS 64% TM: CHT 96.7% GAGS 67.8%	Clinical group Cross-sectional	Normative data (No follow-up)	SF-36	MCS = 72.04	+QoL: Being Employed Being in a Relationship Young age, Higher Education Higher household income	TM reported reduced mQoL than Dutch male sample. Older, low educated, unemployed, with a low household income and single trans people had significantly lower QoL

24. **Newfield** *et al.* (2006) USA	376 TM 32.6 yrs	CHT 64% CRS 37% GAGS 11%	Opportunity sampling Cross-sectional	Normative data (No follow-up)	SF-36-v2	MCS = 39.51	+ QoL: Testosterone Usage CRS	TM reported significantly lower mental health-related QoL than US general population
25. **Parola** *et al.* (2010) France	38 Trans 32-65 yrs range	+2 years CHT and GAGS 100%	Single centre Clinical group Cross-sectional	TW vs. TM; Extraversion vs. Introversion; Neuroticism vs. Emotional stability (No follow-up)	SF-36	TW: Better Social QoL = 11/15 people Better Quality of family relationships = 4/15 people TM: Better Social QoL = 10/15 people Better Quality of family relationships = 6/15 people Extroverted = 54.28 Introverted = 52.02 High neuroticism = 53.16 Low neuroticism = 50.77	+QoL: CHT	TM reported better social and professional QoL, and friendly lifestyles than TW

28. **Wierckx** *et al.* (2011) Belgium	49 TM 37 yrs	Post-GAGS 100% CHT 100%	Single centre Clinical group Cross-sectional	Dutch normative data (No follow-up)	SF-36	MCS = 75.8	QoL: Post-operative sexual functioning	TM have good QoL post-GAGS compared to general Dutch population but still lower than the normative data
29. **Yang** *et al.* (2016) China	209 TW 26.7 yrs	FFS 34.93% CHT 17.70%	Non-clinical group Cross-sectional	None (No follow-up)	SF-36	MCS = 68.28	mQoL: Hope Resilience PhQoL: -Lower age	Chinese TW reported high levels of physical QoL but low levels of mental QoL

AB, Attracted to Both; **AM**, Attracted to Men; **AW**, Attracted to Women; **BI**, Body Image; **CG**, Control Group; **CHT**, Cross-sex Hormonal Treatment; **Cis**, Cisgender; **CRS**, Chest Reconstructive Surgery; **FFS**, Face Feminisation Surgery; **GAGS**, Gender Confirming Genital Surgery; **hQoL**, Health-related QoL; **LH**, Luteinizing Hormone; **MCS**, Mental Component Score; **mQoL**, Mental health-related QoL; **pQoL**, Psychological QoL; **p-hQoL**, Psychological Health-related QoL; **RP**, Role-Physical; **SF**, Social Functioning; **sQoL**, Sexual QoL; **SR**, Social Relationships; **TM**, Transgender men; **TW**, Transgender women; **VT**, Vitality

3.4. Results of the meta-analysis

3.4.1. Meta-Analysis – Mental health-related QoL of Transgender People Compared to the General Population

Measurements of QoL provide information regarding physical and mental health-related QoL but only a minority of studies looked at physical health-related QoL; therefore the meta-analysis focused on mental health-related QoL compared to those of the general population. Of the 22 studies assessing general QoL in transgender populations, 14 were considered suitable for inclusion in the meta-analysis (1, 2, 5, 6, 10-13, 17, 19, 23, 24, 28, 29). These studies include people pre-GAT, post-GAT and mixed groups at different stages of medical transition. Studies were excluded from meta-analysis due to the absence of the mean, SD and/or sample size (20, 25), mental health-related quality of life not reported separately (7), insufficient detail about scoring (8, 9, 22) and the lack of access to appropriate normative data (4, 14). Data at pre-treatment were utilised for the two longitudinal studies included in the meta-analysis (6, 19). Additionally, normative data as comparison was obtained for four studies (1, 6, 17, 29).

The results of the meta-analysis (14 studies) showed that transgender people report a statistically significantly lower mental health-related QoL than the general population (standard mean difference − 0.78, 95% CI = −1.08 to −0.48, Z = 5.16, p < 0.00001). Heterogeneity was high (I 2 = 97%, p < 0.00001) (see Figure 2).

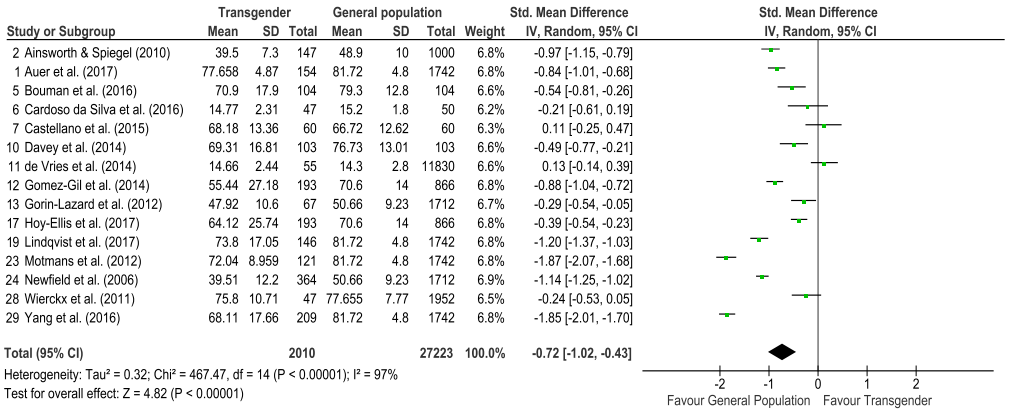


Figure 2. Meta-analysis on mental health-related QoL of transgender people compared to the general population

3.4.2. Meta-Analysis – Subgroup Analysis – Mental health-related QoL Post-Hormonal Treatment of Transgender People Compared to the General Population

A second meta-analysis was conducted with only the 7 studies that included exclusively post-treatment QoL scores (2, 6, 10, 11, 19, 23, 28). The longitudinal study of Lindqvist *et al.* (19) investigated QoL post-GAGS but as the first time measurement was pre-GAGS and thus post-CHT, this measure was included in this analysis. Whilst for the longitudinal study of de Vries *et al.* (11), values at the latest time-point were used, as they measured QoL post-CHT in a sample of individuals older than 17 years of age.

The meta-analysis of 7 studies found that there was no statistically significant difference in mental health-related QoL of transgender people following CHT compared to the general population (standard mean difference = −0.42 CI 95% = −1.15 to 0.31; Z = 1.13; p = 0.26). Heterogeneity was high (I 2 = 98%; p < 0.00001) (see Figure 3).

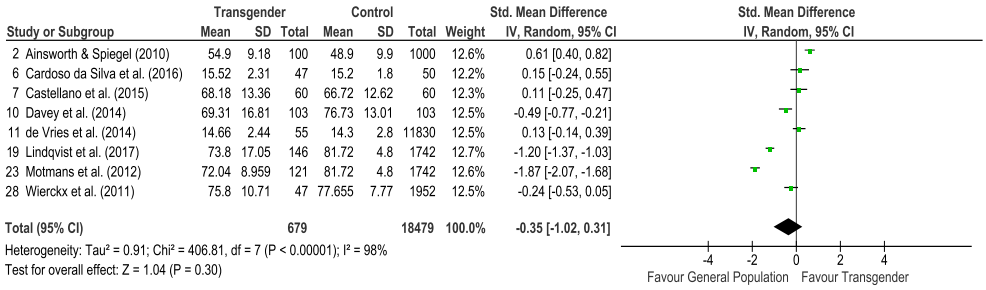


Figure 3. Meta-analysis on mental health-related QoL transgender people post-hormonal treatment compared to the general population

4. Discussion

The aim of this study was to systematically and critically review the literature pertaining to quality of life in transgender people, to meta-analytically investigate mental-health related QoL compared to cisgender populations and to investigate the impact of GAT on the QoL of this population. A total of 29 studies met the inclusion criteria and were used for the systematic review and, of these, 14 studies were suitable for inclusion in the meta-analysis. Most papers in this area investigated general QoL and only a few focused on either vQoL, sex-related QoL or body image-

related QoL. The majority of these articles displayed either high or moderate risk of bias. Many studies used transgender samples that are not homogeneous in terms of gender-affirming medical treatment status, which makes it difficult to draw firm conclusions about the impact of GAT.

Findings from the meta-analysis of mental health-related QoL suggest that the QoL of transgender people is significantly poorer than that of the general population, with a medium to large effect size (standard mean difference = 0.78). The subgroup meta-analysis including only the samples of transgender people who were classifiable as post-hormonal treatment found that transgender people post-CHT still had lower mental health-related QoL than the general population. This difference was not significant and the effect size was reduced (standard mean difference = 0.42). The possibility that treatment is associated with improvements in mental wellbeing is supported by the findings from the small number of longitudinal studies in this review. These found that both CHT and GAGS improve QoL (6, 19, 20). However, these results need to be treated with caution, as the only study to employ a longer term follow-up (19) reported that after an initial improvement in QoL at 1-year post-GAGS, scores tend to steadily decrease in the following years until reaching 5-years post-GAGS, when QoL is lower than at pre-treatment (19). During the first year post-GAGS people tend to report overly enhanced QoL, which may not be representative of a long-term picture of patients' psychological status and QoL (28). The improvement in QoL experienced by transgender people at short-term could be attributed to relief at being able to live as the experienced gender. Additionally, as QoL in the general population has been shown to decrease with age (Hawthorne *et al*., 2006), a decline in these scores is somewhat expected as time passes.

In contrast, the small number of studies that explore general physical health-related QoL suggest that at post-GAT, transgender people's reported QoL scores either similar to (13) or better than that found in the general population (24, 28). However, only a minority of studies report findings related to physical health-related QoL and it is difficult to draw accurate conclusions.

4.1. Condition specific QoL

When looking at condition-specific QoL, studies investigating vQoL reported that CHT has been shown to have a positive impact on transgender men. This is not surprising, as testosterone is known to affect voice by thickening vocal chords and by decreasing

the pitch (Perrone, Cerpolini, Salfi, Ceccarelli, De Giorgi, Formelli, … & Meriggiola, 2009). On the other hand, studies in transgender women, including post-voice feminising surgery, found that they still feel handicapped regarding their voice in their everyday life, irrespective of the transitional status. In fact, studies have suggested that the more feminine a transgender person perceives her own voice, the higher the experienced vQoL (15, 21). However, these studies are limited by focusing on transgender women who transitioned post-puberty. This means that by the time they initiated physical transition, testosterone has already negatively altered their voice. Thus, findings from vQoL cannot be generalised to the overall transgender population. Future studies should explore differences in vQoL between those who transitioned pre-puberty and therefore before the breaking of the voice, and those who transitioned post-puberty, when the voice has already been affected.

Regarding sex-related QoL, longitudinal studies suggest that undergoing GAT improves sex-related QoL (20) but the QoL of transgender men post-GAGS is still worse than that of cisgender men. However, the articles investigating sex-related QoL in transgender men did not distinguish whether patients underwent phalloplasty or metoidioplasty. Surgical treatments help the transgender person reach the desired physical changes and lead towards a more congruous body with their gender identity. This may lead to people feeling more comfortable with their own bodies and consequently when being intimate with others.

Longitudinal studies also supported an amelioration in body image-related QoL (20, 27). In fact, Castellano and colleagues (7) reported no difference between the transgender population and their matched controls. This could be due to the fact that people undergoing GAGS are generally already on CHT and hormonal treatment is known to have a positive effect on body image (Fisher, Castellini, Bandini, Casale, Fanni, Benni, … & Jannini, 2014; Jones *et al*., 2018; Witcomb *et al*., 2015) by aiding in the development of desired secondary sexual characteristics of the experienced gender, whilst helping to alter some of the attributes relative to the sex assigned at birth. Consequently, this leads to an improvement in body image-related QoL. Nonetheless, van de Grift *et al.* (27) proposed body image-related QoL to be lower for transgender people post-CRS, than for the general population. This might be caused by the fact that following CRS, some people's genital dysphoria may increase. However, caution is still needed when generalising the findings due to the studies' moderate risk of bias as well as their methodological limitations.

4.2. General QoL

Studies regarding general QoL have found that transgender people's QoL is poorer than that of cisgender people, but that it improves post-GAT. The poorer QoL found in the transgender population pre-CHT (6, 20) could be explained by the high degree of mental health problems reported in this population (Bouman *et al.*, 2017a; Millet *et al*., 2017) as well as by the difficulties that many have in socialising and living a fulfilling life (Jones *et al*., 2017c; Jones *et* al., 2017a; Jones *et al*., 2017b; Jones *et al*., 2018). However, the studies that focus only on people pre-CHT were rare and only included those seeking medical transition, which does not allow for a generalisation of these findings to the general transgender population.

When looking at general QoL post-GAT, only a small number of studies provided control data and none of them had a low risk of bias. Findings of the subgroup meta-analysis at post-treatment showed that there is no difference in general QoL between transgender people and the general population. The improvement in QoL post-GAT could be due to the effect of treatment in the reduction of dysphoria and mental health problems, such as self-harm and depression (Dhejne *et al*., 2016; Witcomb *et al.*, 2018).

Overall, findings support the idea that QoL improves following hormonal treatment (20) as well as post-genital surgeries (6, 28). As people undergoing surgery are generally already on hormones, the exact role of genital surgery in QoL cannot be extrapolated from these studies. Often, even after an improvement in QoL post-surgical treatment, transgender people reported lower QoL compared to cisgender individuals (6, 19, 10). This could be due to the fact that, even if being happier with their own bodies, society is still not ready to accept transgender people; thus work, education or relationships can be affected by being transgender (Kattari *et al*., 2016; Levitt & Ippolito, 2014; Lombardi *et al.*, 2002). This is confirmed by the findings of studies investigating factors predictive of QoL in this population, as described in the section below (see section 4.3 Factors Associated with QoL).

Caution is needed while interpreting the results in comparison to cisgender individuals as not all studies have matched controls and sample sizes are generally small. Additionally, as the majority of the studies investigated QoL in transgender clinical populations, generalisation of findings for the general transgender population is hindered.

Studies on differences between transgender men and transgender women advance contrasting results. Two studies seemed to suggest that transgender men display lower QoL compared to transgender women (4, 14), two studies suggested the opposite (12, 25), whilst one study proposed no statistically significant differences between groups (1). Literature also suggested that at 2-years post-treatment transgender men display higher QoL than transgender women (25), whilst still lower than cisgender people (7). These findings might be due to baseline differences in QoL scores (23) as well as because of the utilisation of mixed samples in terms of treatment status. Results need to be interpreted with caution as none of the articles displayed a low risk of bias. A possible explanation for transgender men to report higher QoL than transgender women might be due to the wider social acceptance towards masculinity than femininity. This presents itself with transgender men reporting less marked psychopathology, getting involved more easily in society and being employed in more stable jobs, whilst feeling less limitations in daily life related to their physical and emotional state (12, 25). Additionally, studies that reported transgender women to display higher QoL than transgender men suggested that these findings are unexpected and surprising (4) considering the low social status of and amount of discrimination faced by transgender women in some countries (e.g. Turkey).

4.3. Factors Associated with QoL

QoL can be influenced by a wide array of factors, which can predict both its increment, as well as its decline. Literature looking at variables associated with a positive QoL for transgender people suggested that undergoing medical and surgical treatments (i.e. CHT, CRS, GAGS) are the main predictive factors, irrespective of the QoL domain studied (2, 3, 8, 12-14, 24, 25). These findings were confirmed by longitudinal studies, which indicated an improvement in QoL from pre- to post-treatment (6, 20, 27).

Additionally, social and family support, being employed, being in a relationship, being younger, having a partner, being highly educated, having a high household income, and the presence of past military service were associated with improved scores on general and sex-related QoL (3, 12, 17, 23, 29).

Instead, anxiety, poor sleep quality, experiencing pain, reduced self-esteem and high interpersonal issues are factors that have been linked to poor QoL in both

transgender populations (13, 9, 1, 5, 10, 4) as well as in the general population (Schalock, 2004).

5. Conclusion

As with all systematic literature reviews, this study is also limited by the amount and quality of the published literature available. Future studies should employ more robust methodologies, which explore QoL in a more homogeneous population and using matched control groups.

Despite the limitations of the published literature, this review concludes that overall transgender people display poorer QoL than the general population, particularly pre-GAT, and that QoL improves once people are on CHT.

When specifically looking at the different dimensions of QoL (vQoL, sex-related QoL, and body image-related QoL), findings of the systematic review suggest that transgender people display poorer QoL than the general population, independent of the QoL domain investigated. As per general QoL, all dimensions of QoL have been shown to improve post-GAT. However, as the effect of GAT is linked to gender, a more positive vQOL was found for transgender men than transgender women at post-GAT, whilst opposite findings were obtained for sex-related QoL.

As long-term follow-up studies are limited in numbers and methodology, more studies are required exploring long-term QoL. This information may aid the development of support and interventions aiming at increasing resilience for those at risk of a poor QoL post-GAT.

Chapter 3 - Study 2

Autistic Traits in Treatment-Seeking Transgender Adults

Abstract

The present study aimed to compare prevalence of autistic traits measured by the self-reported Autism Spectrum Quotient Short version (AQ-Short) in a transgender clinical population (n=656) matched by age and sex assigned at birth to a cisgender community sample. Results showed that transgender and cisgender people reported similar levels of possible autistic caseness. Transgender people assigned female were more likely to have clinically significant autistic traits compared to any other group. No difference was found between those assigned male. High AQ-Short scores may not be indicative of the presence of an autism spectrum condition as the difference between groups mainly related to social behaviours; such scores may be a reflection of transgender people's high social anxiety levels due to negative past experiences.

1. Introduction

Transgender is an umbrella term used to describe individuals whose gender identity does not match their sex assigned at birth based on sexual characteristics. This includes people who do not identify within the binary gender of male and female (non-binary people) (Beek *et al.,* 2015; Richards, Bouman & Barker, 2017). Transgender women are those assigned male at birth but who identify as female whilst transgender men are individuals assigned female at birth, who identify as male (Bouman *et al.,* 2017b). Some transgender people access transgender health services as they have a wish to transition medically to their experienced gender. These services include Cross-Sex Hormone Treatment (CHT) and referral for gender affirming surgeries, among other supports (Coleman *et al.,* 2012).

Transgender people attending transgender health services experience high levels of mental health problems, including anxiety, depression and self-harm (Arcelus *et al.*, 2016; Bouman *et al.*, 2017a; Claes *et al.,* 2015; Davey *et al.*, 2016; Dhejne *et al.*, 2016; Heylens, Elaut, Kreukels, Paap, Cerwenka, Richter-Appelt, … & De Cuypere, 2014a; Millet *et al.*, 2017). In addition, recent reports have hypothesised high levels of autistic traits amongst transgender people attending gender services (Glidden *et al.*, 2016; van der Miesen, Hurley & de Vries, 2016). However, the populations selected and the lack of appropriate comparison groups of cisgender participants (individuals whose experienced gender matches their sex assigned at birth) limits the results of many of these studies (Glidden *et al.,* 2016; Jacobs *et* al., 2014; Shumer *et al.*, 2015; Strang, Kenworthy, Dominska, Sokoloff, Kenealy, Berl, … & Luong-Tran, 2014).

Literature on the prevalence of autistic traits showed that a large number of individuals displaying non-autistic psychopathology scored in the clinical range of Autism Spectrum Conditions (ASC) screening instruments without dealing with true ASC (Pine, Guyer, Goldwin, Towbin & Leibenluft, 2008; Tonge, Rodebaugh, Fernandez & Lim, 2016; White, Bray & Ollensick, 2012). Despite these findings, there are strong clinical impressions suggesting a high prevalence of autistic traits in clinical transgender populations that are supported by a number of published case studies looking at both children and adults and by a few quantitative studies (Kraemer, Delsignore, Gundelfinger, Schnyder & Hepp, 2005; Lànden and Rasmussen 1997; Lemaire, Thomazeau & Bonnet-Brilhault, 2014; Mukkades, 2002; Parkinson, 2014;

Robinow, 2009; Tateno, Tateno & Saito, 2008; Vanderlaan, Leef, Wood, Hughes & Zucker, 2015). A recent systematic review exploring the frequency of Autism Spectrum Disorder (ASD) or Autism Spectrum Conditions (ASC) in transgender people suggested the presence of a relationship between being transgender and presenting with autistic traits in children and young people (Glidden *et al.,* 2016). However, evidence to support the assumption of an excess of autistic traits in adult populations is still lacking (Jones *et al.*, 2012; Pasterski *et al.*, 2014).

Three studies with adult samples assessed rates of autistic traits in the transgender populations. All three studies from the UK used versions of the Autistic spectrum Quotient (AQ) (Baron-Cohen, Wheelwright, Skinner, Martin & Clubley, 2001). The AQ is a self-report instrument used to quantify autistic traits in adults of average or above average intelligence (Baron-Cohen *et al.,* 2001). As the AQ-Short is not a diagnostic tool, the definition of caseness might be misinterpreted as a diagnosis of this condition; thus caution is needed when interpreting the results (Hoekstra, Bartels, Cath & Boomsma, 2008, 2011; Wheelwright, Auyeung, Allison & Baron-Cohen, 2010).

AQ items are summed to give a total score, with suggested cut-offs for potentially clinically significant ASC. The scale measures two main higher order factors that related to represent areas describing either difficulties or core traits that are typically present in people with ASC; hence difficulties in social behaviours and a fascination with number and patterns. The first factor is further divided into subdomains relating to social skills and communication, attention switching and to detail, routine behaviours, and imagination.

Although there is no evidence that adult transgender populations as a whole have higher AQ scores compared to cisgender populations, the findings from all three studies suggest that transgender populations assigned female sex at birth may have elevated levels of autistic traits compared to cisgender females (Jones *et al.,* 2012; Kristensen & Broome 2016; Pasterski *et al.,* 2014).

Jones *et al.* (2012) compared autistic traits in a clinical, adult transgender sample with 61 transgender men (mean age 34 years) and 198 transgender women (mean age 45 years) to a cisgender (where the person's gender matches the sex they were assigned at birth) control group (mean age 37 years) drawn from the general population (76 cisgender males, 98 cisgender females). Higher AQ scores in the

transgender group were accounted for by a highly significant interaction between sex assigned at birth and transgender status. Transgender men had higher AQ scores compared to typical cisgender females with a large effect size (d=1.0), but there was no difference between transgender women and typical cisgender males. Nearly 30% of transgender men had scores above 28 on the AQ putting them more than two standard deviations above a typical population mean and suggesting they fell within the autistic phenotype compared to only 2% of cisgender females. For transgender women the comparable rate was 5% and for cisgender males it was 6.6%.

Pasterski *et al.* (2014) compared 91 transgender individuals (63 transgender women and 28 transgender men; mean age 36.5 years) attending a transgender health service to a community control group. The study found no difference in total AQ scores between cisgender and transgender groups regardless of sex assigned at birth, but transgender males scored significantly higher in the social skills (d=0.44) and attention switching (d=0.68) sub-domains compared to cisgender females. These differences were not observed in transgender women using a validated cut-off of 32+ (Woodbury-Smith *et al.,* 2005). Seven point one percent of transgender men had AQ scores that might indicate the presence of a clinical diagnosis of ASC compared to only 1% in cisgender women, although this difference was not significant. For transgender females and cisgender males the rate was 4.7 and 3.9% respectively.

Finally, an online survey through social media of 446 adults, who self-identified as transgender (Kristensen & Broome, 2016) found that respondents assigned female sex at birth had significantly higher AQ scores as assessed by the brief AQ-10 (Allison *et al.*, 2012) compared to transgender respondents assigned male sex at birth. This study found high rates of ASC, but did not include a cisgender comparison group. Nearly 40% of the sample scored above the AQ-10 cut-off, indicating risk for possible clinical ASC and 14% self-reported a clinical diagnosis of ASC (17% for assigned females at birth and 10% for assigned males at birth). These values are considerably higher than the prevalence of ASC in the general population, which is estimated at 1.5% for men and 0.2% for women (Brugha, McManus, Bankart, Scott, Purdon, Smith, Bebbington, Jenkins & Meltzer, 2011).

Therefore, the existing evidence suggests that the high rates of autistic traits found in studies including adult transgender people appears to apply to those assigned a female sex at birth (Jones *et al.*, 2012). This may be explained by the extreme male

brain theory (EMB) (Baron-Cohen, 2002), which suggests that a higher number of autistic traits is associated with exposure to higher levels of foetal testosterone (Auyeung, Baron-Cohen, Ashwin, Knickmeyer, Taylor, & Hackett, 2009; Baron-Cohen, Auyeung, Nørgaard-Pedersen, Hougaard, Abdallah, Melgaard, L., ... & Lombardo, 2015). Affected individuals may therefore have more traits associated with a 'male brain' such as an increased drive to systemize and lower levels of empathy (Baron-Cohen, 2003). Only one study has used the AQ to investigate which specific autistic traits are particularly prominent in transgender populations (Pasterski *et al.*, 2014). This study did not exclude participants who had received cross-sex hormone therapy before their first assessment at the transgender health service. As cross-sex hormone therapy reduces anxiety this may have a direct effect on social skills (e.g. increase in social confidence and social functioning, experiencing fewer problems with socialisation and less social distress), one of elevated autistic traits (Bouman *et al.*, 2016a; Bouman *et al.,* 2017a; GómezGil *et al.*, 2014). Other limitations in the small existing literature are lack of an adequate cisgender comparison group and small, poorly matched samples.

In view of the above limitations and in order to investigate whether there is any validity to clinicians' impressions of higher autistic traits among the adult transgender population attending transgender health services, this study aims to compare the frequency of autistic traits in a large representative sample of patients attending a transgender health service to a large cisgender community population matched by age and sex assigned at birth. Additionally, the study aims to compare the profile of autistic traits between the two samples stratified by sex assigned at birth. Based on previous research (Jones *et al.,* 2012; Pasterski *et al.,* 2014), it is hypothesised that transgender participants assigned female at birth will have higher total scores on a measure of autistic traits compared to cisgender females.

2. Methods

2.1. Participants

Transgender group: All patients (n=1020) invited to attend an initial assessment at a national adult transgender healthcare service in the UK between November 2012 and July 2016 were invited to participate in the study. Of these, 1002 (98.2%) consented. People on cross-sex hormone previous to assessment were excluded

(n=293) and data were missing from 48 people. Therefore a total of 661 (69.6%) were included in the study and eligible for matching.

Cisgender group: The control group consisting of cisgender individuals was drawn from a community sample recruited through the Cambridge Psychology (http://www. cambridgepsychology.com) website. This is a general psychology research website for adults, which aims at recruiting individuals in the general population who wish to take part in research studies. People become aware of this website by word of mouth and online searches. Participants who self-identified as transgender were excluded from the control group. Thus, a total sample consisting of 4070 cisgender people was considered for matching.

2.2. Settings

Transgender participants were recruited from the Nottingham Centre for Transgender Health in the UK. This is a nationally commissioned service for people living in England and Wales. The centre is one of the largest transgender health clinics in Europe, receiving more than 1000 referrals annually of people over the age of 17 years. The transgender health clinic's treatment programmes incorporate assessment for treatment suitability, psychological support (if needed), cross-sex hormone therapy and provides patients with referrals for gender-affirming surgeries.

2.3. Design

A case–control design was used for this study. Transgender participants were matched with cisgender participants 1:1 for age and sex assigned at birth by a researcher (AN) blind to AQ score. Of 661 eligible participants in the transgender group it was possible to find 656 sex assigned and age matched controls from the cisgender sample. Participants were matched by sex assigned at birth in order to not exclude non-binary identities, when matching to the cisgender group.

2.4. Main Outcome Measures

2.4.1. Autism Spectrum Quotient Short Version—AQ-Short (Hoekstra, Vinkhuyzen, Wheelwright, Bartels, Boomsma, Baron-Cohen, Posthuma, & van der Sluis, 2011)

The AQ-Short is a self-administered 28-items scale designed to measure autistic traits in individuals with average intelligence and thus to give an indication of where

a person lies on the continuum of the spectrum, ranging from healthy to autistic (Woodbury-Smith Robinson, Wheelwright, & Baron-Cohen, 2005). The AQ-Short is a shortened form of the well-validated AQ-50 (Baron-Cohen *et al.,* 2001) and was developed by selecting the 28 most relevant items with the aid of factor analysis. It comprises two higher order factors related to autistic traits, including numbers and patterns, which assesses the extent to which people are fascinated by numbers, dates, patterns and categories, and social behaviours. The social behaviours factor represents skills related to social functioning and it comprises four subscales: (1) social skills, which assesses abilities and struggles in social interactions, (2) routine, which assesses the extent to which people use routine to manage new situations, (3) switching, which assesses how easily people can move from one demand to another as well as attention switching difficulties, and (4) imagination, which assesses the extent to which people can understand others' perspectives, intentions as well as to create mental pictures (also known as empathic imagination). The latter subscale is also related to Theory of Mind (ToM) (Baron-Cohen, 1991). Hence, the AQ-Short captures difficulties or core traits typically found in people with autism, such as adapting to change, developing less rigid mental and behavioural flexibility as well as social skills (Hoekstra *et al.,* 2008). Like the AQ-50, the AQ-Short utilises a 4-point Likert scale ranging from "definitely agree" to "definitely disagree". Item scores were reversed as appropriate so that higher values equated to more autistic traits. Total scores range between 28 and 112. Although not intended to be diagnostic tool, a cut-off of ≥70 was found to have a sensitivity of 0.94 and specificity of 0.91 to discriminate between an autism sample and a community sample. Cronbach's alphas ranged between 0.77 and 0.86 (Hoekstra, Vinkhuyzen, Wheelwright, Bartels, Boomsma, Baron-Cohen, Posthuma, & van der Sluis, 2011).

2.5. Procedure

Transgender participants were invited to complete a series of questionnaires as part of a longitudinal study prior to the first assessment appointment. The questionnaire package included socio-demographic information and the AQ-Short. Information regarding cross-sex hormone treatment was also collected. Cisgender participants completed an online version of the AQ-50 and provided socio-demographic information. AQ-Short items were extracted from the AQ-50 for the cisgender group (Hoekstra *et al.,* 2011) and total AQ-short scores, factor scores and subscale scores were calculated for each participant. Participants in the transgender group meeting

inclusion and exclusion criteria were matched blind 1:1 by age and sex assigned at birth with participants in the control group (see Figure 1).

Ethical approval was received for the study from the NHS Ethics Committee (14/EM/0092) and by the Research and Development Department of the Nottinghamshire Healthcare NHS Foundation Trust in line with the Health Research Authority guidance (HRA, 2013).

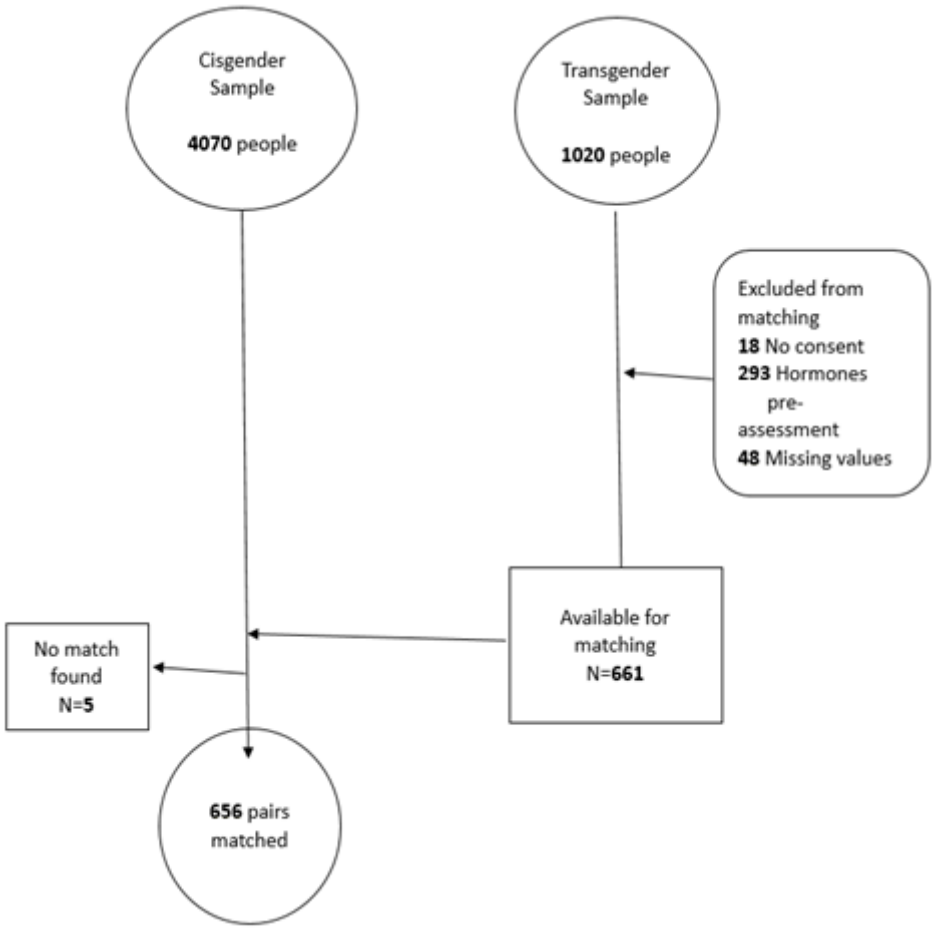


Figure 1. Flow chart of exclusion and matching procedures.

2.6. Data Analysis

Data analyses were performed using the Statistical Software Package SPSS 23 (IBM, 2015). First, frequencies and descriptive statistics were applied to the samples. As the variables were normally distributed, parametric analyses were performed. Chi square analysis was used to compare possible ASC caseness (AQ-short≥70) between the groups and odds ratios calculated to express the likelihood of possible ASC caseness occurring in one group compared to another (Field, 2009). Paired t-tests

were used to compare AQ-Short scores between groups. Independent t-tests were used to ascertain differences in groups between assigned females and assigned males at birth. An analysis of variance (ANOVA) with age as a covariate was carried out to explore potential interactions between group and sex assigned at birth. Finally, Cronbach's alphas were executed to determine if the AQ-Short is a reliable measure for use with transgender populations attending clinical services. The level of significance used for the statistical analyses was $p<0.05$.

3. Results

3.1. Sociodemographic Characteristics of the Matched Samples

A total of 1312 people participated in the study (656 transgender and 656 cisgender). The mean age for each group was 28.28 years (SD=12.25, range 16–74 years). A total of 260 people (39.6%) in each group were assigned female at birth whilst 396 (60.4%) were assigned male. There was a significant difference in employment status between the groups (χ^2=144.85, df=3, $p<0.001$) with more unemployed participants in the transgender group and more students in the cisgender group (Table 1). However, as employment data is missing for 58.84% (n=386) people, results are not reliable and it is not possible to state firm conclusions on participants' employment status.

Table 1. Descriptive Statistics for the Transgender and Cisgender Groups.

Variable	Transgender [M±SD] or [N (%)] N=656	Cisgender [M±SD] or [N (%)] N=656
Mean age (SD)	28.25 ± 12.25	28.25 ± 12.25
Assigned females at birth (%)	260 (39.6)	260 (39.6)
Assigned males at birth (%)	396 (60.4)	396 (60.4)
Employment status*		
Employed	114[a] (37.6)	262[b] (43)
Unemployed	80 (26.4)	17 (2.8)
Student	64 (21.1)	275 (45.1)
Other	45 (14.9)	56 (9.2)

* $p<0.001$; [a]353 not asked for employment status, 33 missing values; [b]39 missing values

3.2. Differences in Clinical Caseness Between Groups

Within the cisgender group 218 people (33.2%) were found to have scores at or above 70, indicating possible ASC caseness, compared to 238 (36.3%) in the transgender group (Table 2). The difference between the groups was not statistically significant ($\chi2=1.344$, df=1, p=0.271).

When comparing participants assigned female sex at birth, a statistically significant difference was found between groups with 45% of the transgender group scoring ≥70 in total AQ scores, compared to 30% in the cisgender group (30%) ($\chi2 = 13.102$, df = 1, $p < 0.001$). This represents nearly twice the risk of scoring above the screening cut-off (OR=1.939, 95% CI 1.35–2.78, p<0.001) for the transgender group. There was no difference between groups for assigned males at birth ($\chi2=2.29$, df=1, p=0.15).

Table 2. ASD Cases Reaching Clinical Significance by Group and Sex Assigned at Birth [N (%)] (n=1312)

Group	Transgender [N (%)] N=656	Cisgender [N (%)] N=656
Total sample		
ASD caseness	238 (36.3)	218 (33.2)
Non ASD caseness	418 (63.7)	438 (66.8)
Assigned females at birth (n = 520)		
ASD caseness	118 (45.4)	78 (30)
Non ASD caseness	142 (54.4)	182 (70)
Assigned males at birth (n = 792)		
ASD caseness	120 (30.3)	140 (35.4)
Non ASD caseness	276 (69.7)	256 (64.6)

Note. Confidence interval = 95%; *p<0.01

3.3. Differences in AQShort Total and Subscale Scores Between Groups

Taking the group as a whole, the transgender group had statistically significantly lower AQ-Short total scores compared to cisgender people [t(1188)=1.96, p=0.05, two tailed], but the effect size was small (d=0.11). The transgender group had slightly, but statistically significantly higher scores for the higher order factor of social behaviours (p=0.004) and lower scores for the higher order factor of numbers and

patterns (p<0.001). Analyses of the social behaviours subscale scores found that the transgender group had higher scores, indicating more difficulties with the social skills, routine and switching. However, they reported lower scores for imagination subscale and the higher order factor of numbers and patterns suggesting fewer problems with understanding the perspective of others and less preoccupation and/or fascination with logical sequences related to numbers and patterns (Table 3).

Table 3. T-test Results Comparing Transgender and Cisgender People on AQ-Short Subscales and Total Scores (M ± SD) (n=1312)

AQ-Short subscales	**Transgender N=656**	**Cisgender N=656**	***t***	**df**	**Effect size Cohen's d**
Social Behaviours	54.95 ± 10.72	53.52 ± 7.11	2.85*	1137.562	0.16
Social Skills	17.75 ± 4.9	16.65 ± 2.77	4.951**	1029.204	0.28
Routine	10.77 ± 2.71	9.12 ± 2	12.565**	1204.599	0.69
Attention Switching	10.09 ± 2.54	9.09 ± 2.33	7.446**	1300.088	0.41
Imagination	16.34 ± 4.23	18.65 ± 3.12	11.28**	1205.385	-0.62
Numbers & Patterns	10.82 ± 3.4	13.36 ± 3.52	13.31**	1310	-0.73
Total AQ-Short	65.77 ± 11.81	66.88 ± 8.48	1.96*	1188.384	-0.11

*p≤0.05 **p<0.001

3.4. AQShort Total and Subscale Scores by Assigned Gender at Birth

To test the hypothesis that higher levels of autistic traits are found in transgender participants who were birth assigned females compared to cisgender females, a two way ANOVA was carried out with total AQ-Short as the dependent variable and sex assigned at birth (male/female) and group (transgender/cisgender) as the independent factors. Age was included as covariate. There were no main effects of sex assigned at birth or group, but there was a statistically significant interaction between the variables [$F(11307)=22.006$, $p<0.001$] (see Figure 2). The covariate was not significant [$F(11307)=0.195$, $p>0.05$] indicating that age was unrelated to AQ-Short total scores. Post hoc analyses found that birth assigned females in the transgender group had higher total scores ($d=0.2$, $p=0.22$) compared to the cisgender group, whilst for birth assigned males the cisgender group had higher scores ($d=-0.32$, $p<0.001$) (Table 4).

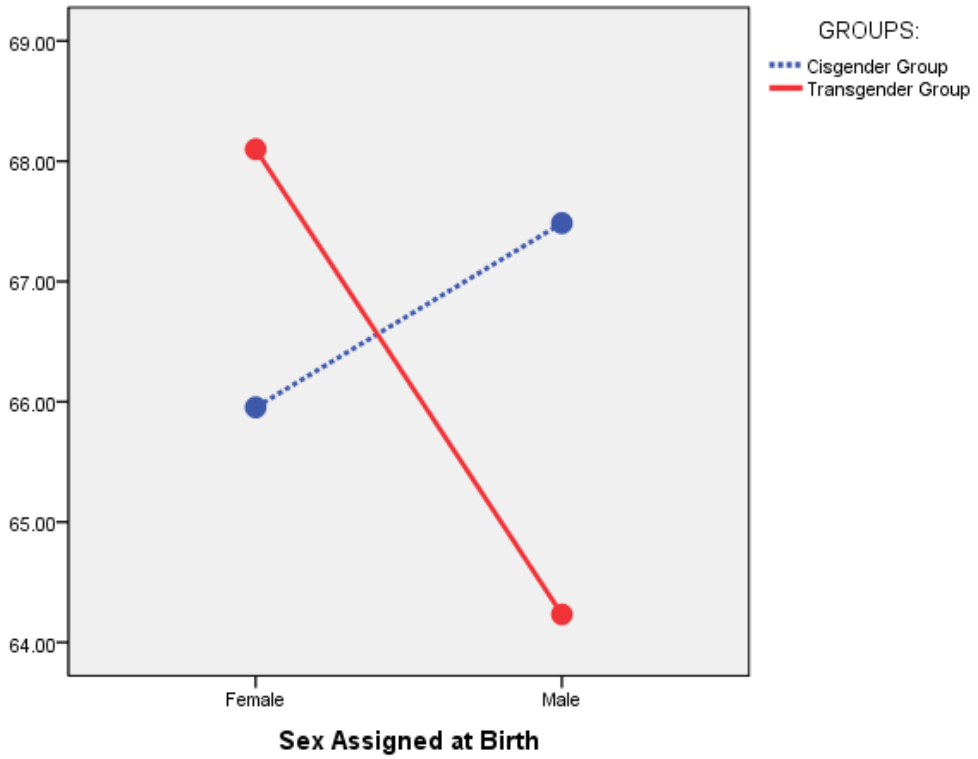


Figure 2. Estimated marginal means of AQ-Short total scores for transgender and cisgender groups, by sex assigned at birth

Analysing the factors separately suggested that higher AQ-Short scores for the transgender group within the birth assigned females were due to substantially higher scores for social behaviours. For assigned males there was no significant difference in social behaviours scores between the groups. For numbers and patterns the cisgender group had higher scores regardless of gender. In terms of subscales, there was a significant group difference in social skills for birth assigned females, but not birth assigned males. For other subscales the pattern of differences was similar for birth assigned males and birth assigned females, with higher scores in the transgender group for routine and switching and higher sores in the cisgender gender group for Imagination and numbers and patterns (Table 4).

Finally, Cronbach's alphas for internal consistency were carried out to investigate if the AQ-Short is a reliable measure for use with transgender populations. The AQ-Short scale was found to have good internal consistency for the transgender group (28 items; α= 0.845) and acceptable internal consistency with the cisgender sample (28 items; α=0.674).

Table 4. AQ-Short Total and Subscale Scores by Group and birth Assigned Gender (M ± SD) (n=1312)

	Birth Assigned Females (n=520)				Birth Assigned Males (n=792)			
AQ-Short subscales	Trans N=260	Cis N=260	*t* (df)	Effect size Cohen's d	Trans N=396	Cis N=396	*t* (df)	Effect size Cohen's d
Social Behaviours	57.26 ± 11.26	52.76 ± 6.33	5.809 (259) **	0.49	53.43 ± 10.08	54.02 ± 7.54	-.937 (395)	-0.05
Social Skills	18.76 ± 5.1	16.44 ± 2.64	6.687 (259) **	0.57	17.08 ± 4.74	16.79 ± 2.85	1.063 (395)	0.07
Routine	11.19 ± 2.76	8.87 ± 1.98	10.994 (259) **	0.97	10.5 ± 2.64	9.29 ± 1.99	7.488 (395) **	0.52
Attention Switching	10.53 ± 2.62	9.17 ± 2.19	6.359 (259) **	0.56	9.8 ± 2.45	9.03 ± 2.42	4.368 (395) **	-0.31
Imagination	16.78 ± 4.48	18.27 ± 2.91	-4.529 (259) **	-0.39	16.05 ± 4.03	18.9 ± 3.23	-10.741 (395) **	-0.78
Numbers & Patterns	10.78 ± 3.51	13.23 ± 3.65	-7.804 (259) **	-0.66	10.84 ± 3.33	13.44 ± 3.44	-10.838 (395) **	-0.77
Total AQ-Short	68.05 ± 12.53	65.99 ± 7.84	2.305 (259) *	0.2	64.27 ± 11.08	67.46 ± 8.84	-4.478 (395) **	-0.32

4. Discussion

Clinical reports and previous studies have suggested the existence of high levels of autistic traits among transgender people attending clinical services seeking gender-affirming medical interventions (Glidden *et al.,* 2016). Although previous studies have investigated levels of ASC in children attending gender identity services (de Vries *et al.*, 2010) very few have focused on the adult population. Those studies recruiting adult transgender people, whether via clinical services or online surveys, have reported high levels of autistic traits and diagnoses (Kristensen & Broome, 2016; Pasterski *et al.*, 2014). However, those studies have failed to compare their results with a matched controlled population of cisgender people. The need for matching in this field is particularly important, as autistic traits are higher on average amongst males (Baron-Cohen *et al.,* 2001; Baron-Cohen, 2002). Therefore, with the aim of investigating the levels of autistic traits in the transgender population attending services and whether those traits were different to a matched cisgender group, this study recruited a large population of treatment-seeking transgender adults and compared them to a large cisgender control group.

The study found that when comparing both groups there were no significant differences in the number of people who presented with scores suggesting a possible diagnosis of ASC. In fact, the levels of possible caseness of ASC was found to be high in both groups, with nearly a third of participants in both the transgender (36.3%) and the cisgender (33.2%) groups scoring above the clinical cut-off for possible ASC caseness. The findings of this study suggest higher prevalence rate of possible ASC cases among transgender individuals than some studies (Pasterski *et al.,* 2014), but lower than others (Jones *et al.,* 2012; Kristensen & Broome, 2016). The sampling techniques and different cut-offs used by previous studies make direct comparisons difficult. However, the general clinical impression of an over-representation of people displaying autistic traits among transgender clinical populations when compared to cisgender people from the general population (Glidden *et al.,* 2016) was not confirmed by the findings of the present study.

This study confirmed previous findings from adult studies that there is no evidence of increased rates of autism in transgender populations as a whole. It should be noted that the number of possible ASC caseness in both cisgender and transgender people is significantly higher than the prevalence of ASC which has been estimated

at 1.1% in the general population (Brugha *et al.,* 2011). Thus, the large number of cisgender people with possible ASC may have affected the results of the study. A possible explanation may be that the AQ demonstrates a stronger negative predictive value for ASC than a positive predictive value in the samples. The AQ being a screening tool rather than a diagnostic tool fits with this interpretation. Studies investigating levels of ASC in the general population have found similar rates of clinical ASC caseness (Kristensen & Broome, 2016). Hoekstra *et al.* (2011) developed and validated the AQ-Short and found that both UK and Dutch control samples reported average AQ-Short total scores of approximately five points lower than our cisgender sample.

It was when exploring the results according to gender that the findings become more significant. Although no differences were found between people assigned male at birth (possible transgender female and/or non-binary people) and cisgender males, a significant difference was found when comparing people assigned female at birth. The study found that within people assigned female at birth the transgender group (possible transgender males and/or non-binary people) was about twice as likely to have clinically significant levels of autistic traits compared to cisgender females. This is in keeping with the findings of previous research using different versions of the same measure (AQ) (Jones *et al.,* 2012; Kristensen & Broome 2016; Pasterski *et al.,* 2014). With regard to the cisgender sample the findings of the present study appear to support previous research suggesting the presence of a male bias in the presentation of autistic traits (i.e. EMB theory) (Baron-Cohen *et al.,* 2001; Baron-Cohen, 2002; Hoekstra *et al.*, 2008, 2011).

With regard to the transgender sample, the present results suggesting that transgender assigned females at birth suffer from higher overall autistic traits than transgender assigned males at birth are partially in line with findings of previous research (Kristensen & Broome, 2016; Jones *et al.,* 2012). A possible explanation for this might still be the abovementioned EMB theory (Baron-Cohen *et al.,* 2001), which posits that assigned males at birth are more likely to and have the tendency to suffer from higher levels of autism. Consequently, transgender men might also face more social difficulties and worries related to having to change gender roles and thus gender-specific behaviours (e.g. not feeling masculine enough, fear of being perceived as female), which might lead to experiencing higher levels of social anxiety. These results are in conflict with past literature suggesting higher levels of

social anxiety in transgender women due to the reduced social acceptance of gender variant behaviours amongst assigned males than assigned females (e.g. society being more accepting of masculinity than femininity) (Yu, Zuo, Blum, Tolman, Kågesten, Mmari ... & Lian, 2017). Future research should try to properly understand the different impact of autistic traits onto transgender assigned females as well as on assigned males at birth.

There is a feeling amongst clinicians that current screening and diagnostic tools may be biased towards identifying and diagnosing assigned males. As a consequence, assigned females have been under diagnosed by current clinical practice (Gould and Ashton-Smith, 2011; Lai, Lombardo, Pasco, Ruigrok, Wheelwright, Sadek … Baron-Cohen, 2011; Brugha, Spiers, Bankart, Cooper, McManus, Scott … Tyrer, 2016).

The present study also examined AQ-Short subscale scores to understand differences in autistic traits between groups. The study found that there were differences in the autistic traits between groups. Transgender people (particularly those assigned female at birth) were found to have specific difficulties in relation to social behaviours, including social skills, mental flexibility and problems switching attention, the disruption of which could lead to increments in anxiety levels (Batten, 2005). These findings could be associated with social anxiety, which is known to be highly prevalent among the transgender population (Millet *et al.*, 2017). The transgender group, however, reported fewer difficulties in relation to other autistic traits of poor imagination, and fascination with numbers and patterns. Therefore, there may be a confounding element where the transgender sample scored higher on the AQ without the presence of ASC. This may indicate that some transgender people do not really present with ASC but the high levels of social difficulties due to anxiety, depression and years of victimisation may affect the way they interact with others, as suggested by Turban and van Schalkwyk (2018). In fact interpersonal difficulties among this population have already been described (Davey *et al.,* 2016). However, this would not explain higher scores on attention switching or attention to detail.

Enhanced scores on the subscales for routine and attention switching in the transgender population might be linked to the elevated social anxiety symptomatology experienced by this population. In fact, previous research has suggested that autistic individuals report similar scores on the attention switching

subscale of the AQ-50 to people with a diagnosis of social anxiety disorder (Cath, Ran, Smit, Van Balkom & Comijs, 2008). They also stated that socially anxious people have been found to display higher scores than non-clinical controls (Cath *et al.*, 2008). Thus, high scores on the routine subscale might reflect an increase in social anxiety levels due to the social difficulties related to changes in routine behaviours (e.g. switching gender roles, which imply learning and practicing different gender-specific behaviours), whilst high scores on the attention switching subscale might indicate difficulties in altering the focus of attention from negative and anxiety-producing experiences (e.g. being looked at in the street might lead to an increase in social anxiety levels due to the transgender individual's fear of being recognised as trans) to more positive and adaptive coping behaviours (e.g. taking into consideration that being looked at in the street might be due to reasons other than the person being recognised as transgender). Transgender people are known to face these social challenges during the time of transition (Grossman & D'augelli, 2006), which might result in them scoring higher than cisgender people on the subscales related to such difficulties.

As suggested by Lombardi (2001), transgender individuals' extreme marginalisation and vulnerability might lead them to experience increased psychological and health issues, and especially social isolation, when compared to other social groups. Consequently, some transgender people might score particularly high on some AQ-Short items and subscales because of their dysphoria and related anxiety as well as negative past experiences (e.g. transphobia, bullying) (Skagerberg *et al.*, 2015). Thus, certain scores on the AQ-Short might simply indicate increased social difficulties, which would increase their AQ-Short total scores reaching an ASC caseness level, while not being driven by the presence of ASC. This idea is supported by literature investigating autistic traits in socially anxious populations with the use of both AQ-50 (White *et al.*, 2012) and AQ-Short (Tonge *et al.,* 2016). These studies suggested that the scores in the subscales related to social functioning and behaviours might be inflated by the difficulties experienced in social interactions and that scores on the AQ subscales related to social functioning need to be interpreted with caution when the subjects display marked social difficulties (Tonge *et al.*, 2016; White *et al.*, 2012). Against this, studies recruiting those with social anxiety may well be sampling individuals who have higher levels of autistic traits. It will be important to try to disentangle these in the future.

Notwithstanding the strengths of the present research (e.g., large sample size, matched controls, and homogeneity of sample in terms of treatment status), there are several limitations. First, as a case–control study was adopted participants should have been matched on additional variables other than age and sex assigned at birth (e.g., IQ, educational level) to properly eliminate the issue of confounding and gaining appropriate efficiency. Second, as previously discussed the AQ-Short is a self-reported assessment tool for autistic traits instead of a diagnostic tool. Third, the data relative to the cisgender participants was gained through the Cambridge Psychology website and snowballing sampling and response bias might have biased the results as high levels of autistic traits were found in this population. Fourth, transgender and cisgender groups completed different versions of the AQ, which might have had an impact on how the participants approached and answered the items of the scale, although the items collected from the AQ-50 were the same as per the AQ-Short.

Future studies may focus on analysing the role of gender-affirming treatment (cross-sex hormones) in autistic traits as measured by the AQ. It has been noted clinically that transgender people with a previous diagnosis of ASC express fewer and less obvious autistic traits following medical transition. This has raised questions about the diagnostic safety of an ASC diagnosis made in transgender people. Studies which include diagnostic tools such as a clinical interview and/or formal diagnostic tools such as the Autism Diagnostic Interview Revised (ADI-R — Lord, Rutter & Le Couteur, 1994), Autism Diagnostic Observation Schedule (ADOS — Lord, Rutter, DiLavore & Risi, 2002) and Diagnostic Interview for Social and Communication Disorders (DISCO — Wing, Leekam, Libby, Gould & Larcombe, 2002) and which control for transitional status and anxiety are needed to fully explore the nature of elevated autistic traits in transgender populations.

Overall, this study found that autistic traits appear to be more prevalent in transgender people assigned female at birth, but not in those assigned male at birth. The autistic traits found in both groups appear to be particularly connected to social skills, which may be associated to the high levels of anxiety and low self-esteem that this group often experiences (Claes *et al.,* 2015; Bouman *et al.,* 2016b; Bouman *et al.,* 2017a; Millet *et al.,* 2017). As transgender people displayed issues with the social features of ASC whilst reduced difficulties with autistic traits that may be less likely to be mimicked by the experience of gender dysphoria, undergoing gender affirming

medical treatment might have a positive impact by improving interpersonal skills and social interactions. Longitudinal studies investigating the role of cross-sex hormone treatment on autistic traits are therefore needed as they may help reach more robust evidence as to whether the observed autistic traits equate to clinical ASC or not.

Chapter 4 – Study 3

Longitudinal study exploring the stability of autistic traits in treatment-seeking transgender adults following cross-sex hormone treatment.

Abstract

Cross-sectional studies using validated scales suggest that transgender assigned females at birth have an increased risk of scoring above the cut-off for probable autism. However, the extent to which elevated levels of autistic traits reflect a stable clinical condition, rather than heightened social anxiety associated with transgender status, is unclear. This study aims to explore the impact of Cross-Sex Hormone Treatment (CHT) and transition to experienced gender on levels of autistic traits in transgender adults.

Transgender adults attending a transgender health service (n=91) were eligible for inclusion in this study if they had initiated CHT treatment at the study clinic and completed a measure of autistic traits (AQ-Short) pre-CHT and one year post-treatment. We assessed levels of anxiety using the HADS anxiety sub-scale at the same time points. Repeated measures ANOVA was used to determine the relationship between birth-assigned sex and change in AQ-Short scores, with change in anxiety as a covariate. Overall, levels of autistic traits remained stable over time. Change in levels of autistic traits after treatment was positively associated with change in levels of anxiety ($r= 0.46$, $p<0.001$). Controlling for change in anxiety and age, we found a significant interaction between birth-assigned sex and change in level of autistic traits ($p<0.05$). Transgender participants assigned female at birth tended to increase their AQ-Short scores post-treatment, with transgender birth assigned males reducing their scores slightly. The only significant simple main effect showed that transgender birth-assigned females had higher AQ-Short scores compared to birth assigned males post-treatment.

Findings suggest that high levels of autistic traits in transgender males are maintained following transition to the experienced gender. There is some evidence that the disparity in levels of autistic traits between transgender birth-assigned

males and birth-assigned females increases following testosterone treatment, providing some support for the extreme male brain theory of autism.

1. Introduction

Past literature has suggested a link between the presence of Autistic Spectrum Conditions (ASC) in children and young people and higher rates of gender dysphoria: a discrepancy between gender assigned at birth and experienced gender (Glidden *et al.*, 2016). To-date only five studies have investigated the prevalence of ASC in transgender adults (Heylens *et al.,* 2018; Jones *et al.,* 2012; Kristensen & Broome, 2015; Nobili, Glazebrook, Bouman, Glidden, Baron-Cohen, Allison, Smitth & Arcelus, 2018b; Pasterski *et al.,* 2014), with all five utilising versions of the Autism Spectrum Quotient (AQ) (Baron-Cohen *et al.*, 2001). Scoring above the AQ cut-off might suggest ASC diagnosis, but a cautious interpretation of the results is needed as clinical caseness does not necessarily imply the need for a diagnosis (Hoekstra *et al.*, 2008). There is no strong evidence from these studies that transgender adults as a group have higher levels of autistic traits compared to cisgender adults, whose gender identity matches that assigned at birth, but there is evidence for higher rates of autistic traits in transgender adults assigned female at birth compared to cisgender women (Jones *et al.,* 2012; Nobili *et al.,* 2018b; Pasterski *et al.,* 2014).

ASC is a neurodevelopmental condition mainly characterised by social and communicational difficulties as well as restricted, impaired and repetitive behavioural patterns (APA, 2013) and interpersonal issues lie at the core of this symptomatology. It has been argued, therefore, that elevated traits in transgender adults might reflect high levels of anxiety and increased social difficulties associated with being transgender and experiences of gender dysphoria, such as bullying and transphobia, rather than true ASC (Nobili *et al.,* 2018b; Turban & van Schalkwyk, 2018). This form of 'quasi-autism' is potentially likely to be reversible over time through undergoing transition and consequent increases in social engagement (Turban, 2018). An alternative explanation, which accounts for the excess of ASC traits in transgender adults, who were assigned female at birth relates to established differences in the male brain, which is stronger in terms of systematising and weaker in relation to empathising as well as understanding of others' perspectives in social situations (Baron-Cohen, 2002; Baron-Cohen, 2010; Greenberg, Warrier, Allison, & Baron-Cohen, 2018). These are constructs closely linked to traits assessed by the AQ and gave rise to the extreme male brain theory of autism (Baron-Cohen, 2010; Greenberg, Warrier, Allison & Baron-Cohen, 2018). There is some evidence that Cross-Sex Hormone Treatment (CHT), which enables people to transition to the

gender they identify with by enhancing desired secondary sex characteristics is associated with increased quality of life (see Chapter 2) (Murad *et al.,* 2010; Nobili, Glazebrook & Arcelus, 2018a). If this is reflected in a reduction in anxiety and interpersonal difficulties then one might expect to see a reduction in AQ scores following CHT. However, some evidence suggests testosterone therapy to impair social cognitions and reduce empathy (Adhya*,* Annuario, Lancaster, Price, Baron-Cohen & Srivastava, 2018); hence for birth assigned females this treatment may be associated with stable or even increased levels of autistic traits.

This study aims to explore the relationship between reduction in anxiety and levels of autistic traits in transgender adults following CHT and transition to the gender they identify with. It further aims to explore evidence for the extreme male brain theory by comparing the trajectory of AQ-Short scores following CHT between birth-assigned males and birth assigned females. We hypothesised that any reduction in anxiety post-CHT would be associated with a reduction in AQ-Short scores. In line with the extreme male brain theory, we also hypothesised that levels of autistic traits in transgender adults assigned female would increase post-CHT, independently of any change in anxiety.

2. Methods

2.1. Participants

Participants were consecutive attenders at a national adult transgender health-care service in the UK between November 2014 and June 2018. Inclusion criteria were initiation of CHT at the clinic and completing the AQ-Short prior to treatment (baseline) and at one-year post-CHT (follow-up). Exclusion criteria were CHT treatment prior to the first assessment at the clinic and failure to give consent to participation. The participant flow is shown in Figure 1.

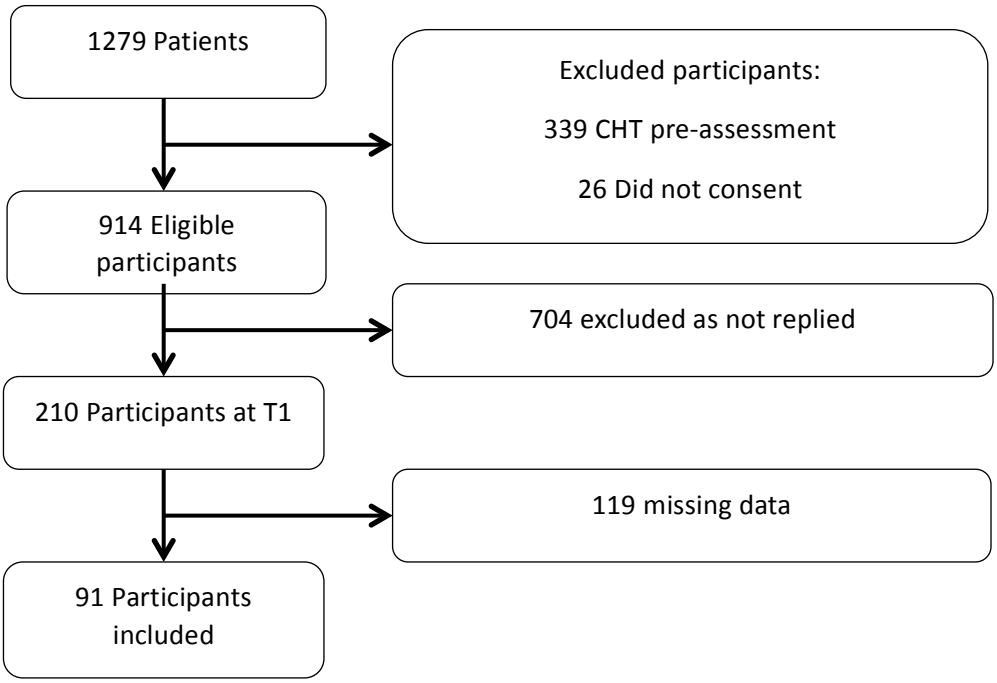


Figure 1. Flow chart of exclusion of participants.

2.2. Setting

The centre is a national transgender health service that offers gender-affirming medical treatment to people living in England and Wales. It is one of the largest adult transgender health services in Europe offering treatment programmes, incorporating assessment for treatment suitability, psychological support, endocrinological treatment, speech therapy and referrals for gender-affirming surgeries.

2.3. Design and Procedure

A retrospective study with longitudinal design was adopted for the present study with data collection pre-treatment and one-year post-CHT. Questionnaire packs were sent out by a research assistant one-month prior to the first assessment together with the information sheet and consent form. The pack consisted of socio-demographic information, the AQ-Short to measure autistic traits and HADS-A to measure anxiety levels. Participants who returned completed questionnaires and signed consent form were included in the study. One-year post-CHT, patients were provided with a second questionnaire pack either face-to-face by the clinicians or sent by post. To know which patients reached one-year post-CHT, we relied upon the research assistant to look at the medical notes. One-year post-CHT was chosen as

follow-up period in order to better control for participants' stage of transition, and to ensure that the changes in results are due to the effect of CHT. One year after the commencement of hormone treatment is enough time to ensure that the changes in appearance brought up by CHT would become evident but after this time patients either tend to get the referral to undergo further GAMIs or get discharged by the clinic if they do not wish to undergo further medical procedures, which might complicate and change the results.

Sex assigned at birth was used so as not to exclude any participant based on gender identity as a big part of the transgender population identifies as non-binary.

Ethical approval for the research was received from the NHS Ethics Committee (14/EM/0092) and by the Nottinghamshire Healthcare NHS Foundation Trust Research and Development Department in agreement with the Health Research Authority guidance (HRA, 2013).

2.4. Main Outcome Measures

2.4.1. Autism Spectrum Quotient Short Version – AQ-Short (Hoekstra *et al.,* 2008)

The AQ-Short is a self-reported 28-items 4-point Likert-scale ranging from 1 'definitely agree' to 4 'definitely disagree'. It is used to assess autistic traits in adult individuals with normal intelligence and to indicate where a person falls in the autistic spectrum ranging from typical to autistic (Woodbury-Smith, Robinson, Wheelwright, & Baron-Cohen, 2005). The measure assesses difficulties and core traits related to ASC symptomatology, such as abilities linked to adaption to change, mental and behavioural flexibility and social skills (Hoekstra *et al.*, 2008). The AQ-Short is an abridged validated version of the well-established AQ-50 (Baron-Cohen *et al.*, 2001). Total scores range from 28 to 112 and a clinical cut-off of ≥70 is used to assess a narrow autistic phenotype. Cronbach's alphas for this measure range between .77 and .86 (Hoekstra *et al*., 2008).

2.4.2. Anxiety subscale of the Hospital Anxiety and Depression Scale - HADS-A (Zigmond & Snaith, 1983)

The HADS is a 14-items 4-points self-reported Likert-scale used to assess states of anxiety and depression present within the preceding week. This measure consists of

two subscales both consisting of 7-items, HAD-Anxiety (HAD-A) and HAD-Depression (HAD-D). Examples of items included in the anxiety subscale are: “Worrying thoughts go through my mind”, “I can sit at ease and feel relaxed”. Whilst examples of items part of the depression subscale are: “ I feel cheerful”, “I still enjoy the things I used to enjoy”. The items are rated ranging from 0 (definitely/most of the time) to 3 (not at all/only occasionally). Total scores per subscale range between 0 and 21, whilst scores between 0 and 7 indicate normal range (no symptoms), 8 to 10 suggest the presence of possible symptoms, and scores higher than 11 represent presence of symptoms of the respective state (depression and/or anxiety). For the present study only the subscale related to anxiety was utilised. The HADS is a reliable measure in assessing symptoms’ caseness and severity of anxiety disorders in both clinical and general populations (Bjelland, Dahl, Haug, & Neckelmann, 2002) as well as within clinical transgender populations (Bouman *et al.*, 2016b, 2017a). With regard to the anxiety subscale, the established cut-off point is 8/21. The measure’s specificity is 0.78, sensitivity is 0.9 and reliability is excellent with Cronbach’s alphas ranging from 0.68 to 0.93 (Bjelland *et al.,* 2002).

2.5. Data Analysis

Data analyses were performed using the Statistical Software Package SPSS 24 (IBM, 2016). In addition to appropriate univariate analysis, repeated measures ANOVA was used to explore change in AQ-Short scores over time and interactions between assigned gender at birth and change in autistic traits over time with anxiety change and age included as covariates.

The significance level used for the statistical analyses was $p<0.05$.

3. Results

There were a total of 440 patients who were sent follow-up questionnaires of whom 292 were eligible to participate. Ninety-one patients returned a fully completed questionnaire, giving a response rate of 31.2%. Responders did not differ from non-responders in terms of either demographic characteristics or baseline AQ-Short scores but they were less anxious at baseline than non-responders (median 8 vs. 9, $p=0.001$; $z=3.225$).

Of the 91 participants in the study, 44 (48.4%) were assigned females at birth, whilst 47 (51.6%) were assigned males. Transgender assigned females at birth were significantly younger (M_{age}=23.09±8.5) than transgender assigned males at birth (M_{age}=32.94±13.8), (*t*=4.128, df=77.044, p<0.001). The majority of participants (70.3%) described themselves as single. A higher proportion of birth assigned females (79.5) were single compared to birth assigned males (61.7%) (X^2=15.218, df=6, p=0.019) (see Table 1).

Table 1. Descriptive statistics for overall sample as well as divided by sex assigned at birth.

	Birth assigned females [n (%)] or [*M*±*SD*] (n = 44)	**Birth assigned males [n (%)] or [*M*±*SD*] (n = 47)**	**Total sample [n (%)] or [*M*±*SD*] (n= 91)**
Age	23.09±8.5	32.94±13.8	28.18±12.5
Employment status			
Unemployed	4 (9.1)	4 (8.5)	8 (8.8)
Employed	9 (20.5)	14 (29.8)	23 (25.3)
Student	16 (36.4)	9 (19.1)	25 (27.5)
Other	1 (2.3)	4 (8.5)	5 (5.5)
No answer	14 (31.8)	16 (34.0)	30 (33.0)
Civil status			
Single	35 (79.5)	29 (61.7)	64 (70.3)
Married	1 (2.3)	6 (12.8)	7 (7.7)
Civil partnership	3 (6.8)	0 (0)	3 (3.3)
Divorced	1 (2.3)	7 (14.9)	8 (8.8)
Widowed	0 (0)	1 (2.1)	1 (1.1)
In a relationship	2 (4.5)	0 (0)	2 (2.2)
No answer	2 (4.5)	4 (4.4)	6 (6.6)

Over a third of participants (n=34, 37.4%) scored above the cut-off indicating clinically significant autistic traits at baseline. The proportion was non-significantly higher for assigned females (n=18, 40.9%) compared to assigned males (n=16, 34%).

Post-CHT, the proportion of people meeting the criteria for AQ caseness had fallen slightly to 34.1% (n=31), a non-significant difference. With regard to assigned females, the percentage of clinical caseness remained almost stable (n=19, 43.2%), whilst for assigned males it decreased (n=12, 25.5%) but this change was not statistically significant (see Table 2).

There were no significant changes in total AQ-Short scores either over time for the whole group or when looking at assigned males and assigned females separately (see Table 3). There was a strong association between AQ-Short scores at time 1 and at time 2 (ICC = 0.766, CIs 0.665-0.839, p<0.001) for the group as a whole.

Anxiety ratings were only moderately consistent over time (ICC=0.404, CI 0.216 to 0.564, p<0.001) but there was no significant change in anxiety post CHT. A HADS-A change score was calculated with higher scores indicating increased levels of anxiety over time. The median AQ-Short change scores was 0 with a range from –15 to 9.

Table 2. ASC clinical caseness for baseline and follow-up measurements, overall and by sex assigned at birth.

	Clinical [n (%)]	**Non-clinical [n (%)]**
Total sample (n=91)		
T0	34 (37.4)	57 (62.6)
T1	31 (34.1)	60 (65.9)
Birth assigned females (n=44)		
T0	18 (40.9)	26 (59.1)
T1	19 (43.2)	25 (56.8)
Birth assigned males (n=47)		
T0	16 (34.0)	31 (66.0)
T1	12 (25.5)	35 (74.5)

Confidence interval = 95%; * p<0.05

There was a significant positive relationship between change in anxiety and change in AQ-Short scores following CHT (r_s=0.463, n=90, p<0.001). For participants assigned male at birth the association between change in AQ-Short scores was strong (r_s=0.583, n=47, p<0.001) but for assigned females the association was only moderate (r_s=0.406, n=43, p=0.007).

3.1. Change in AQ scores controlling for change in anxiety

A two-way repeated measures ANOVA was conducted to assess change in AQ-Short scores after CHT independent of change in anxiety over the same period and to explore possible interactions between gender assigned at birth and change in AQ-Short over time. AQ-Short total scores at T0 and T1 were entered as within-subjects variables, and gender assigned at birth (male/female) as the between subjects factor.

Age and change in anxiety were entered as covariates. There was no main effect of AQ-Short scores but there was a significant interaction between the covariate anxiety change with a reduction in anxiety scores associated with a reduction in autistic traits over time [F(1, 86) =30.87, p<0.001, partial eta^2=0.264]. There was also a significant interaction between change in AQ-Short scores over time and assigned gender [F(1.86)=5.824, p=0.018, partial eta^2=0.063] (see Figure 2).

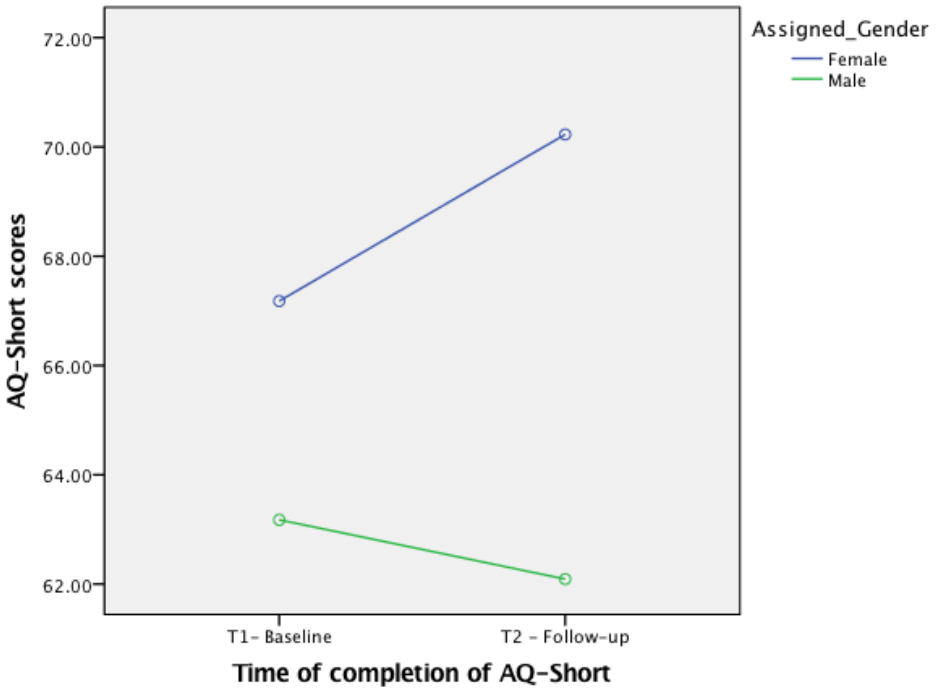


Figure 2. A graph showing the interaction between total AQ-Short scores and birth assigned gender when controlling for age and change in anxiety scores. The covariates were evaluated at the following values: age = 28.31 and change in anxiety scores = 0.322.

Post-hoc analyses of simple main effects showed that there was no difference in AQ between gender groups at baseline or between pre- and post- scores, but post-CHT birth assigned females have higher AQ-Short scores compared to males [*t*(89)=2.158, p=0.034, d=0.452] (see Table 3).

Table 3. Paired samples t-test examining change for total sample in total AQ-Short total and anxiety scores from T0 to T1, for the overall sample as well as split by assigned gender at birth.

	T0 (M±SD)	T1 (M±SD)	*t* (df)	Effect size (d)
AQ-Short - Total (n=91)	65.34 ± 12.18	66.20 ± 13.15	-.944 (90)	0.068
Anxiety (n=90)	7.94 ± 4.41	8.27 ± 3.84	-.678 (89)	0.08
Birth assigned females				
AQ-Short - Total (n=44)	67.14 ± 12.27	69.21 ± 12.70	-1.419 (43)	0.166
Anxiety (n=44)	8.67 ± 4.49	8.77 ± 3.78	-.132 (42)	0.022
Birth assigned males				
AQ-Short - Total (n=47)	63.67 ± 11.98	63.39 ± 13.06	.257 (46)	0.022
Anxiety (n=47)	7.28 ± 4.26	7.81 ± 3.87	-.822 (46)	0.131

*p<0.001

4. Discussion

In the group as a whole, levels of autistic traits remained stable over time as demonstrated by the strong intraclass correlation coefficient (0.76). However, there was a significant interaction between change in AQ-Short scores over time and gender assigned at birth, which was independent of any changes in anxiety and provided some support for our hypothesis that CHT with testosterone would increase levels of autistic traits. Although the change in AQ-Short scores was not significant, birth assigned females AQ-Short scores had increased while assigned males AQ-Short scores had reduced slightly so that scores for assigned females post-CHT were significantly higher than birth assigned males' scores. Contrary to expectation, levels of anxiety did not fall following CHT but, as hypothesised, any changes in anxiety were associated with corresponding changes in levels of autistic traits.

Despite some evidence that quality of life improves post-CHT for transgender adults (Nobili *et al.,* 2018a) we found no evidence that levels of autistic traits were reduced following treatment, suggesting that AQ-Short scores reflect relatively stable traits in this population. The association between anxiety and autistic traits is to be expected since there is a significant overlap in symptomatology between anxiety and ASC (Cath *et al.,* 2008) and people with ASC have been found to experience increased

rates of anxiety and social anxiety due to a reduced ability to cope with change and adverse life events (Eaves & Ho, 2008; Gillott & Standen, 2007; Mazefsky, Folstein, & Lainhart, 2008).

Unlike our previous research (Nobili *et al.,* 2018b) this study was not powered to detect a significant difference in levels of autistic traits between transgender adults assigned female at birth and those assigned male at birth pre-treatment. The significant interaction between assigned gender at birth and increase in level of autistic traits following treatment demonstrates that the gap between assigned males and assigned females widens post-CHT and provides tentative evidence that testosterone treatment may enhance autistic traits. This is in line with previous research that suggests increased testosterone to reduce empathy and impair social cognitions (Adhya *et al.,* 2018). These findings provide support for the extreme male brain theory of autism (Baron-Cohen, 2002) whereby males have, on average, lower empathising abilities and social sensitivity and higher levels of systematising traits: characteristics all assessed by the AQ-Short. It also supports previous research suggesting that transgender men self-report elevated levels of autistic traits (Jones *et al.,* 2012; Kristensen & Broome, 2015; Nobili *et al.,* 2018b; Pasterski *et al.,* 2014). However, the findings of this study are in conflict with previous research suggesting the presence of autistic traits and social difficulties to be due to high levels of anxiety caused by having undergone negative past experiences (Nobili *et al.,* 2018b; Turban, 2018; Turban & van Schalkwyk, 2018).

Little research has been conducted into the potential impact of CHT on psychological and cognitive function in transgender adults. It may be that for transgender males (assigned females at birth) living as their experienced gender allows freer expression of more typically male characteristics. There is also the possibility that testosterone treatment may enhance the expression of male brain characteristics. Previous research suggested that testosterone has an impact upon social connections as fluctuations in hormonal levels can divert people's interests away from social interactions (Pennebaker, Groom, Loew, & Dabbs, 2004). Thus, there is need for more research into the psychological effects of cross-sex hormone treatment.

The strong relationship between change in autistic traits and change in anxiety levels supports previous evidence that higher levels of anxiety are associated with greater impairment associated with autistic spectrum disorders (Cath *et al.,* 2008).

Transitioning and living as the experienced gender may present particular challenges and those who experience an increase in anxiety may find their autistic traits more difficult to manage. Conversely, those who experience a reduction in anxiety may be less troubled by social impairments and a need to systematise and order the world.

Results advocate the need to properly support transgender people (especially transgender assigned females) when transitioning, as the severity of autistic traits seems to be independent of and does not ameliorate by undergoing hormone treatment. Support can be specifically tailored and delivered with online interventions as they might be particularly suited for this population (Perry, Strauss, & Lin, 2018).

This study represents an important advance in the research on autism in transgender populations, as it is the first study that longitudinally explores the effect of cross-sex hormone treatment on autistic traits. However, there are also limitations to the study, which include the use of a treatment-seeking clinical sample hindering the generalisability of findings for the general transgender population. A moderate response rate at follow-up and an under-representation of more anxious participants in the sample may have limited the study's capacity to demonstrate a fall in anxiety. However, participants' AQ scores were representative of the wider clinic population. The AQ-Short is a self-reported tool to measure autistic traits rather than a diagnostic measure for ASC but it has a number of strengths as a valid reliable and widely used measure in clinical research. Finally, some transgender assigned males at birth might have been on T-blockers as well as on CHT, which might have had an impact on their scores, but this information was not present in the clinic's database. Future research should try to control for this variable as participants receiving oestrogen were shown to display lower AQ-Short scores.

5. Conclusion

Levels of autistic traits remained stable following cross-sex hormone treatment, but this longitudinal study demonstrated a significant difference in the pattern of response to CHT, with participants receiving testosterone treatment tending to report higher levels of autistic traits post-treatment and participants receiving oestrogen having lower scores. Although this may reflect the fact that living as the experienced gender allows stronger expression of male traits, a better understanding

of the psychological impact of hormone treatment is needed in order to properly support transgender people through transition and to enable them to make informed decisions about gender-affirming medical treatment.

Chapter 5 - Study 4

A qualitative study on the perception of factors influencing interpersonal events in young transgender people

Abstract

Transgender people appear to struggle with social interactions and report more interpersonal issues than cisgender people (Davey *et al*., 2015). A possible explanation can be found in the Minority Stress Model (Meyer, 1995) suggesting that members of sexual minority groups experience significant internalised stigma. This study aims to investigate the personal experiences of interpersonal interactions and the perception of factors influencing these events for young transgender people post-treatment.

Semi-structured interviews were carried out with 18 transgender young adults (18-35 years) who were post-hormone treatment at a transgender nationally commissioned service in the United Kingdom. Interview transcripts were analysed using thematic analysis. Six main themes were identified: (1) Transitioning has a positive impact on interpersonal interactions; (2) Underlying individual differences are still important; (3) Perceived stigma is a barrier to social interactions; (4) Fears and worries contribute to negative interactions; (5) Managing interpersonal interactions; and (6) The importance of shared interests.

From the interviews three main findings emerged; transitioning was strongly perceived as benefiting interpersonal interactions mainly through its impact on social confidence. Interviewees also recognised the importance of interpersonal factors unrelated to transgender status such as personality and shared interests. Additionally, the results of this qualitative study support the Minority Stress Model as participants described feelings of stigma and fears of negative interactions but few personal examples of enacted stigma. These findings could inform the development of educational interventions to prepare young people for transition to their identified gender by reducing perceptions of stigma, promoting coping self-efficacy and developing more effective communication skills.

1. Introduction

Mental health problems have been specifically linked to a variety of interpersonal events affecting the development of adaptive interpersonal skills resulting in social and relational difficulties for both transgender and cisgender populations (Bouman *et al.,* 2016b; Davey *et al.*, 2015). In fact, transgender people's interpersonal difficulties have been specifically associated to psychological distress, levels of both enacted and perceived stigma, victimisation and transphobia in the form of prejudice, discrimination, harassment and rejection especially in the work, school and family environments, which in turn are associated to high levels of depression, anxiety and social anxiety (Bockting *et al.*, 2013; Dhejne *et al.,* 2016; Duke, 2011; Lenning & Buist, 2013; McGuire *et al.*, 2010; Millet *et al.*, 2017; Nemoto *et al.*, 2011; Testa *et al.,* 2012; Toomey, Ryan, Diaz, Card, & Russell, 2010; White Hughto, Reisner, & Pachankis, 2015) (for a more in-depth discussion see Chapter 1 - Section 5).

Concerns linked to physical and verbal violence have a strong impact on the person's abilities to create meaningful social relationships (Davey *et al.,* 2015; Nemoto *et al.,* 2011). Prior research in both cisgender and transgender populations suggested that school-related victimisation and bullying, hearing criticisms regarding gender identity as well as negative comments from peers during interpersonal interactions have negative repercussions on mental health, which are still apparent in adult life (Greene *et al.*, 2014; McGuire *et al.,* 2010; Russell, Ryan, Toomey, Diaz, & Sanchez, 2011). Additionally, transgender youth specifically are more prone than the general population to develop social anxiety and avoid social situations as a consequence of facing unique challenges as well as trans-specific risk factors (such as transphobia and gender-related discrimination), which can be considered as a consequence of adverse social, psychological and physical events (Roberts *et al.*, 2011). Both interpersonal and intrapersonal events also impact transgender youth's experiences of social interactions, expectations and consequently their wellbeing both directly and indirectly through stigma and by lowering self-esteem (Kelleher, 2009). As suggested by Blais and colleagues (2014) low self-esteem is a consequence of feelings of exclusion and rejection triggered by both real and perceived bullying and stigma. These lead to internalisation of transphobic attitudes, which cause psychological distress, depression and anxiety as well as impairments in social interactions, reduced ability to cope with stressful events and decline in resilience (Blais, Gervais, Boucher & Lavoie, 2013; Hendricks & Testa, 2012). Transgender

people often endorse avoidant behaviours and strategies in order to tackle potentially negative social interactions, which have a negative impact upon an individual's Quality of Life (QoL) and can lead to increased isolation and potentially to an increase in levels of social anxiety (Fredriksen-Goldsen *et al.*, 2014; Hatzenbuehler, 2009; Seaton, Upton, Gilbert, & Volpe, 2014). In fact, the systematic review and meta-analysis carried out as part of this thesis looked at QoL in this population found that transgender people suffer poorer QoL than the general population, especially pre-Gender Affirming Treatment (GAT) (see Chapter 2).

Interpersonal problems have been found to be among the main predictors of depression and self-harm for transgender youth and research found that clinical samples of transgender people experience more interpersonal issues than cisgender people (Davey *et al.,* 2015). Risk factors for transgender youth's poor mental health are associated with interpersonal causes such as bullying, harassment, hearing criticisms and negative comments regarding gender identity from peers (McGuire *et al.,* 2010) as well as the internalisation of such negative experiences. A possible explanation for this effect can be found in the Minority Stress Model (MSM) (Meyer, 1995) stating that members of minority groups (i.e. sexual minority groups) are faced with chronically elevated levels of stress, which accumulate over time, leading to poor mental and physical health, particularly in young people (Hendricks & Testa, 2012; Meyer, 2003) (see Chapter 1 – Section 11).

As a consequence of both expected stigma as well as experiences of rejection, negative internal problem solving strategies such as the development of worry might evolve as a way to deal and cope with possible negative social interactions, which might then lead to social isolation (Fernie, Wright, Caselli, Nikčević, & Spada, 2017). A negative self-evaluation in terms of identity might be less detrimental on mental health than expecting to be rejected and stigmatised because of one's own identity (Breslow, Brewster, Velez, Wong, Geiger & Soderstrom, 2015). In fact, previous research found associations between the development of resilience and a decrease in psychological distress, anti-transgender discrimination, internalised transphobia, stigma awareness and consequently against the negative effects of minority stress (Bockting *et al*., 2013; Breslow *et al*., 2015; Jäggi, Jellestad, Corbisiero, Schaefer, Jenewein, Schneeberger, Kuhn & Garcia Nuñez, 2018). Furthermore, the development of transgender self-identification as well as experiencing acceptance of

gender expression is associated with an improvement in interpersonal relationships (Bockting *et al.,* 2013; Riggle, Rostosky, McCants & Pascale-Hague, 2011).

Individual traits such as shyness and introversion are also likely to impact on social interactions. Recent literature as well as Chapter 3 have shown an abnormally high incidence of Autism Spectrum Conditions (ASC) and Asperger's Syndrome in treatment-seeking transgender populations, especially for transgender assigned females at birth (de Vries *et al.,* 2010; Janssen, Huang, & Duncan, 2016; Kraemer *et al.,* 2005; Leibowitz & de Vries, 2016; Nobili *et al.,* 2018b; Shumer *et al.*, 2016; Skagerberg *et al.,* 2015; Turban & van Schalkwyk, 2018; van der Miesen *et al.*, 2016; van Schalkwyk, Klingensmith, & Volkmar, 2015). Experiencing both social anxiety and a poor understanding of social interactions are considered core symptoms of ASC (Tonge *et al.*, 2016; White *et al.,* 2012) and can lead to difficulties in the establishment of interpersonal relationships and consequently to the onset of depression and anxiety (Duke, 2011; Shumer *et al.,* 2016; Skagerberg *et al.,* 2015; Strang *et al.,* 2014; van der Miesen *et al.,* 2016). The suspicion regarding this high incidence of clinically significant autistic traits in clinical transgender populations might be enhanced by repeatedly undergoing negative social experiences (such as bullying and transphobia), which significantly affect social functioning and lead to substantial interpersonal issues (Nobili *et al*., 2018b; Tonge *et al*., 2016). Evidence coming from Chapter 3 suggested that, when specifically looking at ASC subscale profiles, transgender people experience particular difficulties with social communication, skills and behaviours (Nobili *et al.,* 2018b). Thus, poor QoL together with evidence of high rates of ASC, particularly regarding issues with social communication, further support the idea that transgender people experience substantial difficulties in interpersonal interactions.

This study uses a qualitative approach, as it is important to find out what the personal experiences of social interactions for transgender people are in order to be able to offer them more effective support during the time of transition and whilst undergoing Gender Affirming Treatment (GAT); these cannot be captured with quantitative methodologies only. Additionally, as there is lack of research about the interpersonal experiences of young transgender people and the Inventory of Interpersonal Problems (IIP-32), which is a tool used to measure social functioning and interpersonal issues, lacks specificity to the particular needs of transgender individuals and as there is no measure that explores the specific interpersonal

difficulties of this population, a qualitative approach was deemed best to tackle such a novel field of research. This research uses semi-structured interviews to capture the full spectrum of interpersonal events that affect the life and daily experiences of transgender people and to understand in which ways such experiences shape the individuals' intrapersonal characteristics as well as social interactions. Additionally, qualitative methods are well suited to investigate experiences of marginalised and minority populations (Bogdan & Knopp Biklen, 2007) and an understanding of both positive and negative interpersonal events and experiences is important to help develop appropriate interventions to support transgender youth throughout treatment, build resilience and to improve mental health outcomes.

As the published literature lacks in-depth evaluation on the perceived protective elements that might help transgender people face daily challenges as well as of the actual interpersonal experiences and intrapersonal elements that affect transgender people's social functioning, the present study aims to:

1) Explore the social interactions and interpersonal experiences, both positive and negative, of young transgender people attending a transgender health clinic;
2) Understand interpersonal and intrapersonal factors perceived to influence social interactions for young transgender people;
3) Identify strategies used to reduce interpersonal difficulties.

2. Method

2.1. Design

This cross-sectional qualitative study used semi-structured interviews to explore participants' perceptions of their interpersonal experiences and social interactions.

Participants' comfort in discussing their personal experiences was considered of the foremost importance, thus one-to-one interviews were carried out. Participants were given the choice between being interviewed either face-to-face or via phone call, depending on their preference in discussing their personal experiences. Semi-structured interviews were adopted as they are useful and adaptable tools for the exploration of sensitive topics and they were considered the most appropriate data gathering tool to investigate and properly explore personal and interpersonal

experiences as they are well suited to look for reason behind the investigated experiences and beliefs (Fylan, 2005).

Quantitative data regarding participants' interpersonal functioning and social issues was collected using the IIP-32. This tool was adopted as it measures interpersonal issues and it gives a broad view on the level of participants' social functioning and communication skills. The IIP-32 was used descriptively to set the sample in context compared to the wider transgender population and to the wider community in order to acknowledge possible sources of bias. This measure was also used to establish whether a diverse sample (maximum variation sampling) had been recruited in terms of the construct of interest (communication difficulties). Furthermore, as this study has been developed with the aim of looking at people's interpersonal functioning rather than focusing upon ASC and autistic trait, it was deemed more important to utilise a measure of interpersonal functioning and problems specifically, to remain consistent with the subject of research.

For the present study, social constructivism was adopted as epistemological approach due to the importance that the influences of culture, environment and society have upon the understanding of participants' experiences and the impact that context and interpersonal interactions play upon shaping such experiences and beliefs (Derry, 1999). Additionally, social constructivism suggests that reality is created through interactions amongst individuals as well as through the environment they live in (Kim, 2001); thus it is particularly well-suited as this study tries to understand participants' own experiences and the meaning given to them, which are strongly affected by context and the society people interact with. Consequently, following the social constructivist approach to qualitative research, broad and general questions were used so the participants could create meaning of a social situation based on the interactions they had with others (Creswell, 2007).

2.2. Ethical Considerations

The present study was reviewed and approved by the Nottingham Research Ethics Committee (ref: 16/EM/0313, Appendix A). The study protocol was developed after determining all potential scenarios that could occur during the interviews (e.g. if a participant becomes severely distressed) (see Protocol, Appendix B). Advice was sought from the clinicians of the Nottingham Centre for Transgender Health on how to respond to participants expressing severe distress. Additionally AN is a health

psychologist who received training in basic therapeutic skills as well as Cognitive Behavioural Therapy (CBT) as part of the academic background. As there are only a few transgender Health clinics in the UK with waiting lists reaching at least 3 years, the majority of the interviews (n=17) were carried out at the Nottingham Centre for Transgender Health on the same day of the patient's appointment with the clinician and/or the speech therapist. This would ensure that participants could attend the interviews. During the interviews, the researcher AN observed the participants' non-verbal behaviour and made sure to ask how the participants were feeling and if they wished to pause the interview when looking upset, distressed or highly anxious. Contact details of relevant services were provided in both information and debriefing sheets supplied to the interviewees.

At the commencement of the interview all participants were informed about the right to withdraw, about confidentiality and that the interview would be audio-recorded to properly understand and meaningfully utilise the information provided.

2.3. Participants

Participants aged between 17 and 25 years, post-hormone treatment and attending the Nottingham Centre for Transgender Health NHS clinic in the East Midlands during the study period (October 2016 - June 2017) were eligible for inclusion in the study. The centre is one of the largest clinics in Europe, receives approximately 1000 referrals yearly and treats people with a range of issues regarding gender, sexuality and identity. This is a national commissioned gender service for people living in England and Wales. The clinic's treatment procedure incorporates psychological and counselling support, CHT and referral to gender related surgeries and speech therapy.

Clinicians selected participants by going through their caseload and thus the only exclusion criterion was not being considered suitable for participation. Moreover, as participants were recruited by clinicians through their caseload, the sample was relatively well adjusted socially and it is not fully representative of the entire clinical transgender population.

Purposive sampling was used for recruitment and to ensure that the views of people with a range of gender identities are accurately represented. The objective was to recruit 20 young transgender people undergoing gender treatment at a national transgender health clinic. Twenty participants was considerate adequate to satisfy

saturation. Thus, target sample size was 20 participants. Recruitment was undertaken until no more participants could be recruited within the available time-frame (n=18) and until data saturation was reached.

2.4. Recruitment

Recruitment occurred between October 2016 and June 2017. Clinicians of the Nottingham Centre for Transgender Health went through their caseload suggesting possible patients who might be suitable to take part in the study and who could be contacted. In some instances, the clinicians spoke directly to a few patients on the possibility to take part in the research, what the study was about and on the fact that they would be contacted with a letter by the lead researcher. Consequently two different invitation letters from the clinician (JA) were written; the first letter was addressed to the patients who had previously spoken with the psychiatrist about the study (Appendix C) and the second one was directed to the patients who were not yet aware of the research (Appendix D). The letters of the clinicians were sent out in the mail to the patients together with an invitation letter written by the researcher AN (Appendix E), an information sheet (Appendix F) explaining the purpose of the research and contacts of researchers, a cover letter to the project by AN (Appendix G), an expression of interest slip (Appendix H) and a pre-paid envelope to send the interest slip back to the clinic filled out by who wished to be interviewed. Participants returning the expression of interest slip were contacted and if the participants wanted to be interviewed face-to-face interviews were scheduled for the same day as their next appointment with the clinician and/or speech therapist. Instead, if participants preferred to be interviewed over the phone, the interviews were organised depending on the individual's convenience and availability. Two participants opted for phone interviews, whilst 16 were interviewed face-to-face.

No incentive was provided for participation in this research study. Participants were reimbursed the expenses of their journey if they went to the clinic especially to be interviewed and only if coming from the outskirts of Nottingham.

2.5. Materials

The sociodemographic data was gathered on age, relationship status, gender identification, transitioning phase, educational level, employment status and ethnicity.

2.5.1. Inventory of Interpersonal Problems - IIP-32 (Barkham, Hardy & Startup, 1996)

This is a measure used to assess interpersonal issues as well as difficulties with social skills and that arise in social interactions. This measure consists of eight subscales that measure social behaviours, which are either engaged in 'too much' (too dependent, too caring, too aggressive, too open) or that are 'too difficult' to be engaged in (hard to be assertive, hard to be sociable, hard to be supportive, hard to be involved) during social interactions. The IIP-32 is a 5-points Likert-scale ranging from 0 (not at all) until 4 (extremely). After reversing scores for items 13 and 17, scores for the 32 items were summed and the mean score per item calculated. Scores ranged from 0.34 to 2.16 with higher scores indicating more difficulties. Subscale total scores were calculated by simply averaging the sum of all the items belonging to the subscale. Cronbach's alphas for internal consistency reported coefficients between 0.87 and 0.9 (Barkham *et al*., 1996). Cut-off scores are not provided, as they have not been validated.

2.6. Interview Guide

At the commencement of the interview, the researcher introduced herself to the participants as a PhD student working in collaboration between the University of Nottingham and the Nottingham Centre for Transgender Health. AN also spoke about her being Italian and she let the interviewees know that there might be some instances in which she might ask to repeate sentences and/or words as she might not be able to fully understand everything due to lack of familiarity with some English accents, slang words and sayings; hence, participants were reassured about the researcher actively trying to understand everything said and that asking for repetitions would not mean a lack of interest towards what the participants might be talking about. The researcher did not disclose being cisgender, but the interviewees would be aware that she identified as female. Participants were free to question the interviewer's gender status and one potential participant declined to be interviewed by a cisgender interviewee. Finally, she briefly explained the purpose of the research.

The interview guide (see Appendix I) was developed and structured based on the investigation of different topics, such as differences in social life between pre- and post-transition, examples of negative and positive social interactions, personal experiences related to making new friends, impacts of transition upon social

interactions, changes in relationships with family members and in the work and/or university environments, ways of coping with negative social interactions and of dealing with disagreement, experiences related to romantic relationships and online socialising behaviours and use of transgender-specific websites. Prompts were utilised to further delve into participants' replies to the main questions and to gain further insight into their experiences. Additionally, if the examples of social interactions reported by the interviewees were considered either not specific enough or not related to social interactions, participants were asked for an additional example. The interviews were carried out in one sitting and notes were written by AN only post-interviews as not to lose focus on what was said nor the flow of the conversation.

2.7. Procedure

Clinicians at the Nottingham Centre for Transgender Health went through their caseload in order to select people that could be considered eligible for the interviews. Potential participants were then contacted via mail and were then re-contacted either via email or through phone call by the researcher AN to decide on a possible time and date suitable for the interview to take place. Participants were offered the possibility to be interviewed either face-to-face at the Nottingham Centre for Transgender Health or over the phone. Phone interviews were organised at convenience of the participants, whilst face-to-face interviews were scheduled on the same day as the next patient's appointment with the clinician and/or speech therapist. This is due to patients coming from all over England and Wales to attend the appointments, which are arranged quarterly. Interviews were carried out within private interview rooms, where the disposition of furniture was provided to offer appropriate distance, eye contact and comfort for the interviewees. Before being interviewed, the participants were asked to complete a brief 5-10 minutes questionnaire consisting of a few questions on sociodemographic information (see Table J) and of the short version of the Inventory of Interpersonal Problems (see Appendix K).

For phone interviews, participants were provided via email with links to online consent form (Appendix L), socio-demographic questionnaire and IIP-32 a few days before the interview took place. Whilst for face-to-face interviews such documents were administered before the commencement of the interviews.

At the beginning of the interview process, participants were reminded that they had the right to withdraw from the study at any time without the need to give explanations, that whatever would have been said in the interview would have remained confidential (apart for instances in which the interviewee would reveal intention to harm self or others) and that the interviews would be audio recorded and transcribed by a member of the research team to increase accuracy of data interpretation. The interview was audio-recorded with the aid of a Dictaphone. Interviews ranged from 26.34 to 115.15 minutes (median 49.25 minutes).

Following the interview guide, AN asked questions to investigate the social life and experiences of interpersonal experiences of young transgender people. Participants were also asked about how they found making new friends, what they worry about when meeting people and if it is a problem to meet new people, go to crowded place and to social events. Examples of both positive and negative social interactions, strategies to deal with disagreement and cope with negative social situations were also investigated. Interviewees were asked about the impact that transition had upon oneself as well as on the relationships with family and friends and if they think that the people around them noticed such change. The final part of the interview explored romantic relationships, online behaviours related to socialisation and use of trans-specific online resources.

At the end of the interview AN stopped the recording, participants were orally debriefed, provided with a debriefing form (Appendix M) and given the possibility to ask any questions.

Interviews were transcribed verbatim by researchers AN or SC, a medical student that worked on the project as part of the third year dissertation. All transcribed interviews were subsequently replayed, checked for accuracy of transcription and any names mentioned by the participants were anonymised.

2.8. Analyses

The qualitative part of the present research was analysed using thematic analysis. This method entails the recognition of meaningful patterns (themes) within the data, which are related to a common research question (Braun & Clarke, 2006). An inductive approach (data-driven) was used for the analysis, where the generated themes are strongly associated to the data and their development is not guided by the preconceptions of the researchers (Braun & Clarke, 2013). The data were

repeatedly read, analysed and were subject to initial labelling of potential codes, by the researchers AN and SC. Codes were then grouped with other similar codes and potential themes emerged. Themes and subthemes surfaced inductively from the analysis and, in some cases, were grouped into bigger overarching themes. Nvivo 11 Qualitative Data Analysis Software (QSR International Pty Ltd, 2016) was used to code the data and to group it into themes and subthemes. A codebook (Appendix N) to describe each theme and subtheme was subsequently developed by the researchers AN and SC, as recommended by Boyatzis (1998). Each theme was described in terms of:

1. Meaningful theme name
2. Definition of the theme
3. Description of how to determine if the theme is present
4. Description of cases in which the theme is either not applied or with alterations
5. Quotes used as examples of the themes (Boyatzis, 1998).

Following the development of the codebook, a random number generator was extract 30 random quotes (five per each of the six themes) to be coded. This procedure served to ensure feasibility of use of the codebook, assessed through interrater reliability. Interrater reliability can be defined as the degree of agreement of two (or more) individuals on the codes assigned to specific qualitative data (Marques & McCall, 2005). Thus, the quotes were read and coded based on the descriptions provided in the codebook. Utilisation of the same thematic code for coding the quotes was considered as "agreement". Generally, an agreement percentage value of 66.7% is considered as "acceptable" (Marques & McCall, 2005). The overall agreement between researchers was of 76.7%. Finally, some final alterations were made by research AN to the codebook to mirror interrater coding.

T-test were carried out to compare the means and SDs for the total IIP-32 and subscale scores for the transgender sample with the general non-clinical population (Barkham *et al.,* 1996). IIP-32 scores for the study sample were also compared with means and SDs from a representative sample of treatment-seeking transgender adults provided in the study of Samutsakorn (2019).

Quantitative data were also used to understand the sample's level of functioning in order to better interpret qualitative findings in light of the limitations of the study (e.g. clinicians gatekeeping of sample selection and suggestion of possible participants). Additionally, quantitative results were used to check if some individuals were under-represented in the sample collected as part of the present study as in qualitative research it is important to have a diverse sample in order to capture the voices and personal experiences of everybody (Allmark, 2004).

2.9. Reflexive Statement

Quality assessment to ensure the quality of the study was carried out through the use of COREQ-32 (Appendix O).

The consolidated criteria for reporting qualitative research (Tong, Sainsbury, & Craig, 2007) recommend to recognise and clarify the interviewer's characteristics as in this type of research it is impossible to altogether avoid personal bias; this improves the research's credibility as it gives readers an insight on how personal factors and characteristics might have affected the researcher's interpretation of the data. AN is a young Italian cisgender female PhD student in Applied Psychology who obtained a BSc in Psychology and an MSc in Health Psychology. This could have affected the interviews as transgender people might have restrained themselves from fully opening up about their experiences with a cisgender person. In fact, one transgender person was willing to participate in the study but only if interviewed by another transgender person as this individual had had negative experiences with cisgender people, believing them not to be tolerant of transgender issues and tries to actively avoid any interaction with them. Additionally, as AN is cisgender, she might struggle to fully understand the experiences and viewpoints of transgender people, as well as what being transgender entails.

Beforehand, AN practiced the interviews with the clinicians. She also received training in basic therapeutic skills and in CBT; hence she knew how to pay attention to the participants' tone of voice as well as to non-verbal behaviour and body language. She received training in Behavioural Change Techniques (BCTs) and she has been facilitator of Clinical Communication Skills seminars for medical students; thus she used her knowledge on how to effectively communicate with patients through the use of appropriate language and active listening, on the different types of questions to use during the interviews and on the need to avoid a biased

interpretation of the participant's experiences by using specific prompts and clarifying questions.

As AN is Italian, the different cultural background and her speaking Italian as a first language could have had a negative impact when carrying out the interviews, as well as during their interpretation; hence, it was more difficult to interpret nuances, English accents and behaviours that might differ culturally. For instance, at times AN had to ask people for further explanations on what they meant by using certain terms and transgender people had to find easier ways to express their thoughts in order to be properly understood. AN is an exuberant and extroverted person, who has a quite a loud tone of voice due to her first language being Italian; consequently, some people might have felt intimidated and overwhelmed by her presence and stance.

Furthermore, because of the published literature reporting that many transgender people face a variety of issues negatively affecting both their mental health and interpersonal experiences, the researcher expected them to have more social difficulties, more problems in relation to social anxiety as well as to experience poorer quality of life.

Participants had not met AN before the interviews. However, AN's second supervisor (JA) is a consultant psychiatrist at the Nottingham Centre for Transgender Health and some participants were his patients at the clinic. Because of this reason as well as of the fact that the recruitment happened through the clinic, some transgender people might have refrained from talking negatively about their experiences and/or mental health state as they might be afraid of negative repercussions on their treatment path. Additionally, some individuals might have felt pressured and compelled to take part in the study as afraid that not participating might negatively impact their treatment and/or relation with the clinician.

3. Results

3.1. Participants' Characteristics

Of the 27 people who returned the expression of interest slip, five were not interviewed as they did not further reply to book the appointment for the interview, two did not turn up for the interviews (missing also the clinician's appointment) and did not reply to the researchers' attempts to get in touch with them, and one

transgender person did not feel comfortable discussing personal experiences with a cisgender person due to negative past experiences.

Additionally, this gender distribution is quite representative of the general distribution present in the transgender health clinic and of the young people accessing transgender services (see Table 1).

Nineteen young transgender individuals consented participation in the study and were interviewed. Due to mistakes in the participants' dates of birth in the patients' files, two letters were sent out to people older than 25 years. These patients replied to the letters and were included within the sample as they self-identified as "young people". Thus, participants' ages ranged from 17 until 35 years (median 20). All of the sample had English as a first language and were on CHT. More than half of the people were in a romantic relationship at the time of the interview. Students were 47.37% of the sample exceeding the high percentage of students in the clinic's population between 17 and 35 years of age (35.2%) and being roughly similar to the percentage of students in the age group 17-25 years (45.1%). Only one person had not transitioned and was therefore not living as the experienced gender. After careful consideration, that participant was excluded in order to create a more homogeneous sample in terms of treatment status pre-CHT; thus the results are more characteristic of the experiences of people post-CHT. See Table 1 for details regarding the socio-demographic information of the sample.

Table 1. Sociodemographic Composition and Characteristics of the Sample of Young Transgender People (n=18)

Variables	(M±SD) or [N – (%)]
Age	22.17 ± 4.82
Gender Identification	
Man	7 (38.9)
Woman	5 (27.8)
Transman	1 (5.6)
Transwoman	1 (5.6)
Transgender	3 (16.7)
Non-binary	1 (5.6)
Relationship status	
Single	8 (44.4)
In a relationship - cohabitating	10 (55.6)
Transitioning phase	
On cross-sex hormones (+/- blockers)	14 (77.8)
Post chest-reconstructive surgery but pre-gender reassignment surgery	4 (22.2)
Education	
GCCE or O level qualification	1 (5.6)
Further education	11 (61.1)
University degree	5 (27.8)
Postgraduate degree	1 (5.6)
Employment	
Employed full-time	2 (11.1)
Employed part-time	5 (27.8)
Unemployed	1 (5.6)
Medically unfit for work	1 (5.6)
Primarily studying	9 (50)
Ethnicity	
White British	18 (100)

3.2. IIP-32

Appropriate tests were carried out when comparing the sample to a control sample of treatment-seeking transgender adults extrapolated from a longitudinal study on the effects of transitioning on interpersonal issues (Samutsakorn, 2019).

Median total score for the present sample was 1.44, values ranged from 0.34 to 2.16. Compared to a general population the total IIP-32 scores were significantly higher in the transgender participants in this study than the non-clinical sample reported by Barkham *et al.* (1996), [$t(159)=2.708$; $p=0.0075$; $d=0.693$]. This difference was mainly accounted for by the subscales for "hard to be sociable" [$t(159)=3.34$; $p=0.0011$; $d=0.804$], "hard to be assertive" [$t(159)=3.18$; $p=0.0018$; $d=0.752$] and "too dependent" [$t(159)=2.65$; $p=0.0088$; $d=0.667$], with transgender participants having

higher scores than the comparison group. The median score for the subscale "hard to be sociable" was 1.875 with a range between 0.25 and 3.25, for the subscale "hard to be assertive" the median was 2 with a range between 0 and 3.5, and for the subscale "too dependent" the median was 1.25 with a range between 0.25 and 2.75. No other subscales differed significantly from the non-clinical comparison group. When compared to a clinical transgender population pre-hormonal treatment extrapolated from the research of Samutsakorn (2019), there were no differences between samples (see Table 2).

Table 2. IIP-32 Scores for the Transgender Sample Pre-Interviews, for a Clinical Transgender Sample Pre-CHT and for the General Non-Clinical Population. *t* and z Values are Provided for Comparisons Between the Transgender Sample Pre-Interview and the Transgender Clinical Population as well as the General Non-Clinical Population.

Subscales	**Transgender sample (M ± SD) (N=18)**	**Transgender clinical population Pre-CHT (M ± SD) (N=772)**	***t*/z (df=787)**	**General non-clinical population (M ± SD) (N=143)**	***t* (df=159)**
Hard to be sociable	1.72 ± 0.91	1.96 ± 1.13	z=-.863	1.02 ± 0.83	3.336*
Hard to be assertive	1.84 ± 1.02	1.74 ± 1.02	z=-.554	1.12 ± 0.89	3.182*
Too aggressive	0.98 ± 0.78	1.05 ± 0.94	z=-.007	0.84 ± 0.75	0.743
Too open	1.39 ± 0.78	1.35 ± 0.84	z=-.274	1.74 ± 0.84	0.667
Too caring	1.56 ± 0.86	1.49 ± 1	z=-.569	1.25 ± 0.90	1.384
Hard to be supportive	0.58 ± 0.66	0.88 ± 0.93	z=-.372	0.65 ± 0.60	0.461
Hard to be involved	1.22 ± 1.22	1.37 ± 1.08	z=-.809	0.91 ± 0.89	1.332
Too dependent	1.43 ± 0.79	1.5 ± 0.91	z=-.25	0.90 ± 0.80	2.652*
Total	1.33 ± 0.49	1.43 ± 0.65	t=.641	0.98 ± 0.52	2.708*

* p<0.01

3.3. Qualitative Findings

The patient's responses to the open-ended questions were analysed with a thematic analysis approach (Braun & Clarke, 2006). Six overarching themes and eight

subthemes were identified (see Table 3). Each theme is described below together with illustrative participants' quotes. Pseudonyms were used to anonymise participants. '[…]' means that a piece of transcription was either removed in order to aid comprehension of the quotes or was indicative of a different theme.

In the present research, participants spoke about 'transition' referring to the whole process of starting from coming out (living as the experienced gender) and of commencing a social transition; hence to start living as the experienced gender. The term 'medical transition' refers to any medical intervention undergone as part of the treatment process; thus CHT, CRS and GAGS.

Table 3. Overarching themes and subthemes identified from the interviews

Overarching themes	**Subthemes (if present)**
1. Transitioning has a positive impact on interpersonal interactions	1.1 Transitioning improves social confidence and reduces social anxiety 1.2 Transitioning improves resilience 1.3 Transitioning facilitates insights into communication and improves relationships
2. Underlying individual differences are still important	
3. Perceived stigma is a barrier to social interactions	
4. Fears and worries contribute to negative interactions	4.1 Concerns around misgendering and negative reactions to transgender status 4.2 Worries around romantic relationships 4.3 Physical and emotional safety
5. Managing interpersonal interactions	5.1 Avoiding social situations and potential conflict 5.2 Developing problem-focused coping strategies to deal with trans-specific interpersonal challenges
6. The importance of shared interests	

3.3.1. Theme 1 – Transitioning has a positive impact on interpersonal interactions

This theme captures the positive effects that transitioning has upon transgender people's interpersonal skills, issues, interactions and resilience.

The theme is divided into three subthemes that focus upon improvements on different aspects of the experiences of social interactions and abilities to cope with negative social experiences.

3.3.1.1. Subtheme 1 – Transitioning improves social confidence and reduces social anxiety

This was a strong subtheme with all interviewees identifying ways in which transitioning had increased confidence and/or reduced social anxiety.

"*[After beginning to transition] I was being myself more, and I was a little bit more confident, and getting increasingly more confident the more I passed, so the more I was being myself and just accepting myself is nice*…" [102, transgender assigned female at birth]

Five people specifically stated that undergoing transition made them more open in social interactions. Opening up, becoming more comfortable and less worried around others had a positive impact as it led to people getting closer to the transgender individuals.

"*Yeah, before, beforehand, when I'd meet new people I'd be a lot less confident to talk to them, I'd usually let them lead the conversations, I'd just sort of nodding and agreeing along with them, take more of a submissive role when I'm a lot more confident in myself, it has a knock on effect to how I'm... how I, erm, converse with other people, so I'm more open to talking to new people… erm… social situations are a lot less hassle… erm… I'm a lot more confident in myself and just, not just with the way I am but also me in relation to other people, so beforehand… if I'd wanted to talk to someone, now "I'm ok, fine, I can talk to them", it's a lot less, it makes me feel a lot less anxious to talk to new people"* [101, transgender assigned female at birth]

Participants wanted people to know them as their identified gender and felt that social interactions were thus potentially more engaging.

"*You become more confident around people because you want them to know who you are rather than sort of being in the background, […] and you're finding new things about yourself everyday so, you're less, you know, you're more interested about yourself in a way... like, you are interested in how you react to things because you're finding like a new way to express yourself*" [111, transgender assigned female at birth]

Transmen perceived that their newfound confidence related to increased congruence between gender identity and their bodily characteristics, particularly with regard to the impact of hormones on vocal depth.

"*Yeah, I think, I think it's grown quite a lot [the confidence since hormones], erm... I've definitely become more talkative now that I don't have to worry about my voice being super-high or anything especially around new friends in particular, erm, and then on top of that being able to, to voice opinions, talk during lectures in particular at university, erm... disagree with people when it's necessary to do so, erm, that sort of confidence has built quite a bit and since that worry about being perceived as being more feminine as being lost... along with, along with the oestrogen, I suppose (laugh)*" [110, transgender assigned female at birth]

"But since transitioning it has become a lot easier, because… no one gets my name wrong, no one gets the pronouns wrong, so it's a lot easier [to interact with people] […] and it makes me a lot happier when I'm around other people. Because there is a lot less pressure on me to keep on reminding people to get my name right" [101, transgender assigned female at birth].

Another participant highlighted the positive impact of greater congruity between identified gender and physical appearance following GAT.

"*I feel like it made me, with top-surgery, it made me feel a lot happier to talk to people I didn't know, cause I was a lot more happy that they wouldn't be looking at me. I felt less self-conscious about the way my body was, so I was happier to talk to people I wouldn't have talk to before*" [109, transgender assigned female at birth].

3.3.1.2. Subtheme 2 – Transitioning improves resilience

This subtheme captures the positive effects that undergoing transition has upon transgender people's resilience and ability to cope with negative interpersonal interactions. Participants felt that transitioning had improved their tolerance of rejection, lack of acceptance or being misgendered.

"*But now [post-transition] it's kind of... yeah, if somebody isn't prepared to sort of accept what I am, or anything like that, then... they can go (laugh) if that makes sense... […] I'm more prepared for somebody to either go... 'Yes, I accept that' or... 'No' and then I'm like 'Ok, well, go away then'"* [106, transgender assigned male at birth]

During the interviews, participants mentioned improvements in those skills that aid resilience, such as developing more adaptive coping.

"[Post-transition] it's gradually becoming the case that I try and move away from it and, erm, spend some time to think over it, erm, in a situation in which I'm not gonna be angry or aggressive about it or look at it in tunnel vision, erm... It doesn't always help but, erm, I suppose it kind of helps to diffuse it ever so slightly so that you can think about it in more of a logical manner" [110, transgender assigned female at birth]

Participants were also able to reframe in a more positive way their experience of being observed in public.

"*Whereas now I'm going: Ok, well, that child, that's sort of 5 years old has turned and looked at me because I'm in bright white doc martens boots and lalala and they're thinking This and ta ta ta and I'm like 'That's fine'* [106, transgender assigned male at birth].

3.3.1.3. Subtheme 3 – Transitioning facilitates insights into communication and improves relationships

This subtheme captures the positive effects that transitioning has upon transgender people's ability for **empathy**, to understand different perspectives as well as on skills that aid communications and improve relationships.

Participants felt that transitioning had helped them shift their previously inward focus outwards towards the feelings of others.

"That's something that's growing my ability for empathy, it's still not great but... having some kind of empathy is definitely grown... I'd become more empathetic [since starting to transition] […] I'm thinking a lot more about how people see me, but in the same thing I'm thinking a lot more about what other people are thinking and what they're feeling" [106, transgender assigned male at birth]

For some this seemed to be a conscious decision to focus more on the experiences of others in social situations.

[*Thus, since commencing transition, I try to] rationalise and try to understand other people's thought process and what they're thinking and going through*" [106, transgender assigned male at birth]

Others felt that transitioning had allowed them to worry less about how other saw them so that interactions were more natural.

"Now it's... kind of more relaxed I suppose, erm... more and more as we get on with it and stuff, erm, it feels like I can just kind of be myself, flaunt personality and roll with it and not have to worry about try to... prove myself or anything, I guess […] but, I don't know, it's gradually starting to get more and more how it used to be before I came out, erm.... with those sorts of interactions, not really worrying about anybody, what anybody thinks or anything like that" [110, transgender assigned female at birth]

One factor supporting more comfortable and happier interpersonal communications seemed to be the impact of transitioning on the development of secondary sexual characteristics congruent with the identified gender, which reduces the possibility to be misgendered and the worries related to being rejected.

"I feel I'm not as uptight around people at the moment, now that, the things are starting to settle in a bit, erm... people aren't immediately misgendering or anything, erm... since it's not as obvious as it was [before starting to transition] […] So it's kind of back at that stage of, erm... kind of thinking more about, erm, the relationship with the people you are with as opposed to how they are going to perceive you" [110, transgender assigned female at birth]

3.3.2. Theme 2 – Underlying individual differences are still important

This theme captures the importance of individual differences in communication style, regardless of gender status.

Notwithstanding the improvement in interpersonal interactions and skills that transgender people experience throughout transition, stable individual differences still have a big impact upon socialising behaviours, especially when dealing with arguments and negative social interactions.

"So I was sort of like that shy kid... so there's not a whole lot of change, I was still always shy, even before and after coming out" [107, transgender assigned female at birth]

Many people identified a personal tendency to avoid conflict.

"I'm one of these people that doesn't like conflict and arguments and so I'd always shy away from that, whether pre-transition or now or whatever, I'm always sort of... I try and pull back from conflicts and arguments and things life that..." [106, transgender assigned male at birth]

Others felt themselves to be naturally socially anxious.

"I'm, I'm anxious when I'm meeting new people anyway, just because they are new […] I'm anxious because what would they think about me and if meet new people" [111, transgender assigned female at birth]

3.3.3. Theme 3 – Perceived stigma is a barrier to social interactions

This theme captures the self-stigmatising impact of being transgender and the negative effects that perceived transphobic feelings of others play on transgender people's experiences of interpersonal interactions and/or on their social confidence and social anxiety.

"*Partly, I do think it was, one for not, because I was so, erm, hateful toward myself, or I didn't like, like myself physically or... or because I was also emotionally very anxious, I think it just hindered me or prevented me (laugh) from really making any effort in that area [socialising]...*" [105, transgender assigned male at birth]

Because of experiencing internalised transphobia, four participants reported questioning the desire of cisgender individuals to go out with transgender people, as they perceive that those individuals supportive of transgender rights do not actually want to be in a romantic relationship with one of them.

"*People will say one thing but actually mean another […] and... people who are very openly supportive of transgender rights, transgender interactions and stuff like that, have transgender friends, I imagine that many of them wouldn't really want to be in a relationship with a trans person […] that's just how I view, looking at things the way I do*" [115, transgender assigned male at birth]

Additionally, some participants expressed experiencing feelings of transphobia towards other transgender people, which emerged and became apparent during social interactions as well as when being intimate with others. Two people suggested that looking at other transgender people reminded them of being transgender themselves and consequently of the fact that they are not cisgender.

"*[…] They are a reminder to me that I am different* […] *so I feel less female when I am with a transgender person, but it's not their fault, it's just they are a... I am probably doing the same to them. So ironically I don't seek other transgender people to socialise with because I actually prefer the company of non-, of cis-females which makes me actually slightly transphobic, I guess you could say even though I'm trans, which isn't as uncommon as it sounds*" [119, transgender assigned male at birth]

3.3.4. Theme 4 – Fears and worries contribute to negative experiences

This theme captures the variety of fears and worries that transgender people experience in relation to interpersonal interactions. People also describe the impact that such fears have upon interpersonal skills, relationships, interactions, socialising behaviours and ability to socialise.

This theme is divided into three subthemes that focus upon worries specifically related to being misgendered and to reactions of people to being transgender, to being and/or getting into a romantic relationship, and to physical and emotional safety in social interactions.

3.3.4.1. Subtheme 1 – Concerns around misgendering and negative reactions to transgender status

This subtheme captures perceived difficulties associated with either being misgendered or identified as transgender during social interactions. Eight participants specifically spoke about their fear of being misgendered.

"In the past that, sort of, everything you think about when you meet a new person is, sort of "Oh, what do they think about me? Cause you know I've got quite a feminine face. Are they gonna misgender me? Like call me a female, erm, use the wrong pronouns, erm" you get quite worked up about it, you don't really like, sort of, meeting new people because you are scared of what they would think about you […] whether they sort of embarrass you socially because you are around people, then they call you a female and then you'd have to sort of awkwardly, you either you have to make the decision whether to correct them and then make it a bit awkward […] or just to let it go and then you sort of feel awful for the rest of time because they all think you're female" [111, transgender assigned female at birth]

Transgender men worried about their gender being wrongly perceived either because of the voice not being masculine enough whilst waiting for CHT to produce

the desired changes, because of the presence of breasts before receiving Chest Reconstructive Surgery (CRS), or because their mannerisms are not masculine enough as they were born within the female gender.

"But there was still that sort of paranoia that people would click on to the fact that I wasn't cis male […] erm... probably because of my voice or my build or (whispering) everything" [107, transgender assigned female at birth]

Concern about misgendering can impair the quality of ordinary day-to-day interactions.

"It's kind of preparing for a fall, if you... you've got this sense of oncoming dread, or this, this thing is going to happen that's bad... like, if I'm... yeah, talking about social interactions one of the things that I do wanna talk to you about is that, if I come out, say, going to a shop […] if I've got like 5 or 6 items in my hands that I'm going to pay for... very often I get distracted from actually buying what I'm trying to buy in the shop because I'm going to the, the checkout and I'm going in my head "are they going to gender me correctly? is it gonna be ok? is this gonna be alright?" […] and then I'll, yeah, I'll pay for the, the stuff and... I don't know, I'd be checking their eyes to see what their thinking of me and what, how they are judging me or... or things like that […] and I get, you get distracted from sort of doing your day-to-day activities by worrying about what other people are thinking..." [106, transgender assigned male at birth]

In contrast one participant was unconcerned about the reaction of others.

"*Generally speaking I'm not too worried about what people think of me*" [109, transgender assigned female at birth]

Many participants expressed fear of exclusion as a transgender person.

"*I think it's like worrying about being left out, or just like not fitting in, like... just, yeah, you just worry that... if they are going to be alright about it or if it's gonna change, or if they are going to act funny, or if they will act different with you, like they might act, like I think sometimes some of my friends might act different with me compared to like just a normal, like, cis-guy, just a normal..."* [118, transgender assigned female at birth]

Others did not want their transgender status to influence people's responses and reactions.

"Also if they were, if they did know about me being transgender… I didn't want them to focus on that as like an identifying thing cause it's not the only thing that identifies me... […] and that was one of the biggest worries that as soon as I told someone that's how they saw me. Which you know it's not the only part of me, you know? um that was my biggest worry, um… yeah" [116, transgender assigned female at birth]

3.3.4.2. Subtheme 2 – Worries around romantic relationships

This subtheme captures participants' fears around romantic relationships. The majority of the participants expressed concerns about physical intimacy due to the incongruence between gender identification and bodily characteristics.

"I think a lot of the fear is more about being, being physical, than, than the social, I think it is more body, bodily found" [102, transgender assigned female at birth]

Most participants spoke about either being afraid of either not finding a romantic partner or being rejected by one, as they are transgender, due to the belief cisgender people do not want to be with a transgender person.

"Apprehensive to... even kiss because there's the stereotype: kissing means making out and making out leads to intercourse or something, I don't know. But, and then like, the apprehension to tell someone that you are trans... out of fear of rejection […] and then the fear of... from rejections" [107, transgender assigned female at birth]

Several quotes reflect the complexity and challenges faced by transgender people when establishing romantic and intimate relationships. For instance, they fear being in a romantic relationship with a cisgender person due to the sexual orientation of the partner, as being with a transgender person challenges the way people identify with in terms of sexual orientation.

"So my girlfriend identifies as straight, so that always made me like [worry], so she's like, I like guys... and erm like... erm, what if she, like, sees me topless and is like, I can't deal with it, or what if she like, get, wakes up one day and is just like, I want to be with a real guy, that's, like, things like that, are always, like a little bit in my head " [102, transgender assigned female at birth]

3.3.4.3. Subtheme 3 – Physical and emotional safety

This subtheme captures fears and worries related to personal safety and emotional and/or physical harm because of being transgender. This has an impact upon social behaviours as participants report avoiding interpersonal interactions and environments where they fear transphobia might occur.

"I wouldn't go on my own [to a social event] […] I'd almost definitely not go on my own, but I'd take a member, one or two people that I trusted with me and would want to go […] For fear of something… transphobic happening more than anything […] There is always that, sort of, slight fear..." [106, transgender assigned male at birth]

"I'm very anxious, I was still like, all these new people, what if they find out I'm trans, what if there's... you know, because, I know that people still get hurt, for being, transgender people still get hurt, they still, you know, it happens, you know, it's not nice but it still happens" [102, transgender assigned female at birth]

Although the majority of the participants had not been victims of transphobic acts, many reported being scared for their safety as a result of hearing "horror stories" regarding victimisation, harassment and discrimination.

"I've had some friends, who were also transgender, that've had bad experiences in, in social, in social situations so... it's not really a bad experience on my behalf, it's just more what I've heard... erm…" [105, transgender assigned male at birth]

"For transgender people on mass, you have horror stories that everyone's heard of, this happened, that happens, so... you've also, you've got that fear initially, ok, nothing's happened to [me] but I've got, I know these horror stories and things do happen to people. And then you have one bad social experience somewhere, well that colours your view of the world and... […] future social interactions. Then you have another, and another, and another. They might be spread out months apart and it might just be one odd, horrible person..." [106, transgender assigned male at birth]

In addition to worries about personal safety participants also worried about being humiliated or intimidated by people's uninformed reactions.

"Um yeah, I mean, I think there is a fear of how people will react and if they will sort of understand… and if they will be really weird or aggressive or just ask crazy questions or something, that's a fear…" [103, transgender assigned female at birth]

Families often reinforced this fear.

"I think I'm worried about that, but more so because my parents worry about [transphobia], my dad probably the most, um... because he knows that I'm…" [102, transgender assigned female at birth]

From the interviews, it seems that transphobic aggression is of greater concern for transgender women.

"The fear, I mean, especially if you are a trans women, there is a lot of fear with like violence and stuff" [103, transgender assigned female at birth]

3.3.5. Theme 5 – Managing interpersonal interactions

This theme encompasses different strategies that transgender people use to deal with potentially challenging interpersonal interactions and with trans-specific social experiences, such as being misgendered and coming out as transgender in different environments.

3.3.5.1. Subtheme 1 – Avoiding social situations and potential conflict

This subtheme captures instances where transgender people use social avoidance as a strategy to deal with different kinds of interpersonal interactions, social environments and situations in which they do not feel comfortable, as well as to avoid addressing the issue of being transgender.

"I suppose it kind of helps to diffuse it ever so slightly [going away] so that you can think about it in more of a logical manner" [110, transgender assigned female at birth]

Avoidance was found to be useful to avoid complications in communication.

"I get misgendered quite a lot, erm, I went to my local garage yesterday, and I have been dealing with these same people for quite a while now, they know me by name, erm, but they still call me "Mr", erm... […] I was going to, I did it last time, I wasn't going to explain to them, I was like "I'm not even bother" cause it's the last time, I'm selling the car so I won't, in theory I won't be seeing them ever again, so rather than explain or ask for whatever, I just let it slide, and then the car broke again before I could sell it, so I had to take it back again, so again the same place like I was like "now it's definitely the last time we will see them again, so let's not bother

explaining", erm, so it's like, it's not a problem just with strangers, like that, it doesn't feel like it's worth the hassle correcting them, erm" [119, transgender assigned male at birth]

Participants suggested using avoidance of talking about being transgender as well as about transgender issues as a strategy to prevent negative interpersonal interactions and situations, such as for not being rejected and to avoid negative confrontations with people that are not accepting of transgender people.

"I used to play a sport which I loved and um… I chose to quit when I came out […] and I, as I said, I am very risk averse and conflict averse so I suspect I maybe didn't give them a chance to reject me or treat me in, like, a different way, I was like 'I don't think you guys are gonna handle this well so... bye'" [103, transgender assigned female at birth]

3.3.5.2. Subtheme 2 – Developing problem focussed coping strategies to deal with trans-specific interpersonal challenges

This subtheme captures specific strategies and/or recommendations on possible strategies to be used by transgender people to tackle trans-specific interpersonal interactions and issues such as coming out.

With regard to romantic relationships, the majority of the participants suggested disclosing their identity as soon as possible in order not to create problems with intimacy and rejection later on.

"[Disclose my trans identity would] probably the first thing I would do or as soon as possible, because I think that the longer you leave it the more difficult it could be to have that discussion I think, so yeah, absolutely […] personally, I want them to know as soon as possible, I would not want to be in a position where it's... progress quite far and then you have to have this discussion and it could go any way at that point..." [105, transgender assigned male at birth]

Four people suggested trying to understand what a person feels towards transgender people before disclosing their transgender identity in order to make sure that it is safe to come out, that the possible partner is attracted to transgender people and to avoid getting attached to someone that might not reciprocate as non-accepting of transgender people.

"[If] I was interacting with someone just, like, on a romantic level, rather than like us being friends previously, then like I would probably tell them like quite soon, I'd probably like tell them after like the first date, or the first couple of dates or something […] I would tell them quite soon into the like the relationships cause, that's something that like for me personally, that's something that I would want someone to know, like, if I'm going to be kind of close, like, to them in a platonic or a romantic way, I would want them to know" [117, transgender assigned female at birth]

Some people stressed the importance of disclosing only when feeling comfortable and confident enough to make this step. This is important for coming out to family, work colleagues and friends as well as to a possible romantic partner.

"[Disclosure should happen] as soon as you are comfortable to do so, like as soon as possible at the point you are comfortable to tell them is probably the best because it's not for their benefit, purely for your own benefit. Cause, I remember at work telling my line manager just her by herself in a closed meeting room and it took off a load off my shoulders even though it really wasn't, it was just one person knowing in that work place about... just knowing that felt so much better, so, erm... as I say it's more for you own benefit, I would, highly recommend telling someone as soon as you feel comfortable doing so... if not probably before that (laugh)" [119, transgender assigned male at birth]

With regard to coming out in the workplace, two people suggested sending out a letter to all co-workers explaining the situation and the changes that will happen, adding a sentence stating to address the transgender person directly if any questions and/or issues arise.

"I wrote a letter to everyone, made sure everyone was sort of up-to-date on things: this is what's happening and this is the change that's gonna be made, this is what I expect from you guys, if you have any questions about it feel free to ask" [106, transgender assigned male at birth]

As strategy for coming out, two participants suggested creating a new profile with the new name and gender identification on social media as to inform friends and to give them the possibility to think about the change and either accept them or step away from them.

"I ended up coming out on Facebook because, erm, our family has a lot of member, I think I've got over 100 cousins, which made it a little bit difficult to go around all of them and make sure that everybody knew. So I just made one big post" [110, transgender assigned female at birth]

Somebody also suggested using 'cosplaying' as a way to come out and gain confidence before actually coming out to family and friends. Cosplaying (or 'costume play') is a social activity where people impersonate and playact the identity of fictional characters from video games and Japanese animation and comic books (Keenan, 2001).

"There's a surprisingly amount of us in, erm, the cosplay community […] because obviously it's a way to sort of come out before you can actually do it at home" [114, transgender assigned female at birth]

Finally, many people spoke about the need to educate cisgender people on what transgender means and entails, in order to diminish ignorance, transphobia and misconceptions as well as to increase knowledge and possibly acceptance of transgender people.

"You know with, with people that I've met it's, it's typically in a case of essentially educating people, as to, erm... terms, and erm... you know just general concepts essentially… […] Erm, and making sure that people don't have the, the predisposed misconceptions erm… that, that a lot of people have, erm... yeah" [112, transgender assigned male at birth]

3.3.6. Theme 6 – The importance of shared interests

This theme captures the importance of sharing similar interests and hobbies (e.g. love for cooking, gaming, cosplaying, musical taste) for transgender people to support positive socialisation.

"*I need to have, like I have always been a kind of like this, but I need to first find some kind of common interests or, erm, something that can, an icebreaker. […] So it's having that common interest […] so we can just talk about that [if needed]"* [119, transgender assigned male at birth].

Six people emphasised the importance of sharing common interests.

"*Generally it's harder to talk to people when they have such different interests to you*" [114, transgender assigned female at birth].

Sharing hobbies and views was considered a better basis for rewarding social interactions than simply sharing a status as transgender person.

"A *lot of the sort of trans pages and things like that, that I find that are similar to that... when I've had to, I've been to a sort of a few meet-and-greats and things like that and actually met people ... and I sort of walked around the room and you go "Ok, well, we are trans but that's about it for our similarities" […] like, yeah, if I've sort of I don't know, what's one of the things I like? I like cooking, like, I'm a chef for one of my jobs and I've got a group of friends that we all like cooking together so me and my friends Joanna and Jess we'd, would have a nice cooked meal but neither of those two are trans but... our love for cooking, which is something about us on earth, sort of internal personal level is what joins us together. […] Whereas I've been to sort of the meets of trans people and we are not, it's just a case cause you just so happen to be trans*" [106, transgender assigned male at birth]

This was felt to be also true for online interactions.

"*So the websites and rooms that I tend to visit online aren't specifically for any group of identification or anything, in terms of the physical world, it's just a case of interests. Interests and hobbies for the most part, hobbies...*" [115, transgender assigned male at birth]

4. Discussion

Past literature suggested treatment-seeking transgender people to report higher rates of interpersonal issues than cisgender people (Davey *et al.,* 2015). As interpersonal difficulties are linked to poor mental health by the Minority Stress Model (MSM) (Hendricks & Testa, 2012), this study explored the experiences of interpersonal interactions of young transgender people attending a transgender health clinic and who have transitioned to their identified gender.

The sample studied reported having more interpersonal difficulties than the general population ($d>0.8$) and literature suggesting transgender people to display more interpersonal issues than their matched cisgender controls (Davey *et al.,* 2015)

further corroborates these findings. More specifically, transgender people in our sample reported difficulties in being sociable, assertive and too dependent. As suggested in Chapter 3, this might be expected given high levels of autistic traits, especially when looking at the subscales related to social behaviours (Nobili *et al.,* 2018b). Notwithstanding the results of Chapter 4 that highlights autistic traits to remain overall stable, perhaps transition provides a catalyst for tackling interpersonal difficulties and to improve social skills as well as to ameliorate the experiences of social interactions.

IIP-32 mean scores were slightly lower than the scores found in a large representative sample of transgender adults recruited from the same clinic (Samutsakorn, 2019) but the effect size was small and the difference non-significant. This suggests that this sample is broadly representative of the transgender population from which it was drawn from. Additionally, participants' IIP-32 scores had a reasonable range (from 0.34 to 2.16) but individuals with significant social difficulties may be under-represented within the studied sample. In fact, the participants were individuals not facing severe interpersonal difficulties and being relatively well adjusted, and as people with high levels of interpersonal issues are less likely to participate in face-to-face interviews exploring their interpersonal difficulties. These results might be due to participants perceiving an increase in interpersonal functioning at post-treatment even if levels of interpersonal issues might remain relatively stable. A further explanation might be related to transgender people at post-hormonal treatment passing more and being less often misgendered which reduces distress and improve social functioning.

The five themes that emerged suggested that transgender people's experiences of social interactions are affected by external factors, intrapersonal characteristics as well as by the internalisation of interpersonal believes and attitudes. Transgender people's underlying individual differences, fears and worries, internalisation of transphobic attitudes and the importance of sharing common interests have been found to have strong impacts upon socialisation. Hearing "horror stories" and concerns regarding negative interpersonal experiences undergone by other transgender people seemed to have an impact upon avoidance of interactions that might have unfavourable consequences as well as upon the development of strategies used to deal with transgender-specific social interactions such as coming out and disclosure. Additionally, the transitioning process appeared to be a

particularly strong factor positively affecting the experiences of social interactions through amelioration of elements affecting transgender people's mental health.

From the interviews emerged that transitioning is overwhelmingly perceived to have had a positive impact upon socialisation. This theme emerged inductively from the interviews. Participants suggested transitioning to have a positive impact upon factors affecting interpersonal interactions, which are known to improve transgender people's mental health (Davey *et al.,* 2015). In fact, LGBT literature highlighted the importance of coming out and disclosure to achieve health by helping self-affirmation and self-esteem (Brotman, Ryan, Jalbert & Rowe, 2002), which are known to reduce psychological distress and stigma (Bockting *et al.,* 2013; Sánchez & Vilain, 2009). These processes might also be mediated by the effect of social support, as once transgender individuals come out they can rely upon people that are accepting and supportive of them. LGBT literature suggested that disclosure helps in the reduction of anxiety, the improvement in self-esteem and it is positively related to levels of social support (Jordan & Deluty, 1998), as disclosing one's true identity is perceived as a liberating experience (Riggle *et al.,* 2011). Thus, as social support has an important buffering role against anxiety and poor mental health of transgender people (Trujillo *et al*., 2017), and as it has a positive impact upon mental, emotional and physical health (Riggle *et al.,* 2011), transitioning can be considered as a first step towards an amelioration in well-being, as well as on socialisation. This is consistent with past research on a transgender general population from the USA suggesting social support to aid health and well-being (Erich *et al*., 2010).

Transitioning was perceived by the participants to improve social confidence and to reduce feelings of social anxiety. This is in contrast with findings of Chapter 4 as levels of anxiety were found to remain stable over time and thus not to decrease following hormone treatment. An explanation for participants perceiving anxiety to decrease when in reality it remains stable could be due to having interviewed a small sample and their experiences might not reflect the trend of the wider population. Alternatively, people might perceive a decrease in anxiety only during certain interactions but not in all social situations, thus when quantitatively measuring anxiety the change might not be picked up by the measure. The findings of this study are line with previous research suggesting CHT to have a positive impact upon anxiety and mental health (Colizzi, Costa & Todarello, 2014; Gómez-Gil *et al*., 2012). For instance, the research of Colizzi and colleagues (2014), which is the only

longitudinal study carried out on this subject, studied a clinical sample of 118 transgender people and suggested that undergoing hormone treatment reduces levels of anxiety, depression as well as psychiatric distress.

Interviewees also reported transitioning to have a positive impact upon empathy, which can be due to becoming less inward focused and more open to what others might be thinking and feeling, strengthening interpersonal relationships *(Riggle et al.*, 2011). Additionally, findings from the present study are in line with past research suggesting an improvement in resilience as a consequence of transitioning due to gaining greater self-acceptance, increased satisfaction with own body because of physical changes brought up by transitioning and to an increased sense of social awareness (McGuire *et al.,* 2010).

Participants discussed possessing personality traits and underlying individual differences (such as shyness) that affect interpersonal interactions and that do not change when undergoing transition. Past research suggested that personality traits have an impact upon social relationships, especially with regard to extraversion, shyness and sociability, agreeableness and conscientiousness (Asendorpf & Wilpers, 1998). In fact, results of the present research are supported by findings of the literature highlighting that less shyness is linked to more socialisation and increased ability to develop social connections (Asendorpf & Wilpers, 1998). Moreover, literature on personality traits reported that such features remain stable over time and that personality changes are unrelated to undergoing negative past experiences (Cobb-Clark & Schurer, 2012). In addition to personality traits, autistic traits are enhanced in part of this population (see Chapter 3) and they have been shown to remain stable over time (see Chapter 4). However, people might learn how to better manage difficulties related to these traits, such as by developing coping strategies and social skills, which might be the reason why interviewees reported interpersonal difficulties to reduce and empathising abilities to improve. For instance, consciously developing empathy might be an example of a problem-focused strategy.

Internalised transphobia (or internalised transphobic stigma) is the negative process of complying to the stigmatising responses that society has towards transgender people and the internalisation of such identity-based stigma (Austin & Goodman, 2017). The experience of stigma (structural, interpersonal and individual) as well as other minority stressors as discrimination are highly prevalent in transgender people

and it is linked to negative physical and mental health outcomes, for instance psychological distress, depression, anxiety, suicidality, substance abuse and HIV (Breslow *et al.*, 2015; Clements-Nolle *et al*., 2006). Literature carried out on a general transgender sample collected online in Australia found that experiences of internalised transphobia are associated with life satisfaction and the association is mediated by the effect of attachment anxiety (Cronin, Pepping & Lyons, 2019). Results of this study support findings of the literature that transgender people experience feelings of stigmatising self-concepts leading to internalised transphobia as well as to a reduction of self-esteem, which have a negative impact upon socialising behaviours, interpersonal skills and reported distress, and can negatively affect the individuals' QoL and life satisfaction through experiencing anxiety (Bockting *et al.,* 2013; Cronin *et al.*, 2019).

In addition to experiencing transphobic feelings towards themselves, transgender people reported feeling transphobic towards other transgender individuals, which is considered a significant stressor negatively affecting interpersonal interactions with other members of the trans-community. These results are in conflict with past research suggesting that seeing other transgender people fosters social support and resilience, increases self-esteem, promotes group-level coping and reduces psychological distress (Bockting *et al.,* 2013; Meyer, 2003; Testa, Jimenez, & Rankin, 2014).

Transgender people spoke about worrying about possible negative interactions. Worry is a process of cognitive avoidance to anticipated dangers, which leads to the maintenance of anxiety and negative coping (Borkovec, Ray & Stober, 1998) as well as to the development of beliefs regarding the uncontrollability of interpersonal interactions and of psychological distress (Fernie *et al.,* 2017). In the case of transgender people recruited online, a study suggested that worry might act as an internal problem solving strategy because of expected stigma and social isolation, limiting the opportunities to deal with interpersonal interactions (Fernie *et al.,* 2017). Specifically, fear of being wrongly perceived, misgenedered and not being able to predict people's reactions in social situations leads to expectations of rejection, which is a substantial threat when trying to "pass" and remain "stealth" (Levitt & Ippolito, 2014). This creates and exacerbates social anxiety, as expectations of rejection and attempts at avoiding stigma might be more harmful to mental health than internalised transphobia and negative self-evaluation (Breslow *et al.,*

2015). This could finally lead to further avoidance of interpersonal interactions, with negative implications for mental and physical health (White Hughto *et al.,* 2015). Participants stated wanting to remain "stealth" in social interactions in order to decrease the need to come out, which has the dual effect of being a strong minority stressor per se, as well as a form of stigma management by attempting to protect oneself from persecution (Rood, Maroney, Puckett, Berman, Reisner & Pantalone, 2017). Thus, the stress constituted by remaining stealth could lead to experiencing more stress (Smart & Wegner, 1999). Transgender people need to navigate between minority stressors, which develop social worries, as they preclude adaptive coping and contribute to the preservation and possible increment of emotional disturbances and internalisation of stigma-related issues (Borkovec *et al.*, 1998).

Transgender people also voiced worries specifically related to being in and getting into a romantic relationship. As suggested by previous research that recruited participants through American support groups, transgender people need to be able to feel at ease with a sexual partner and to find someone that treats them and their bodies in a gender-affirming manner so as not to discredit their identity (Levitt & Ippolito, 2014) whilst help them coping with negative self-esteem, self-evolution and with the internalisation of negative attitudes.

Participants spoke about fearing violence and transphobia further exacerbated by hearing and internalising "horror stories" of victimisation and transphobia, which have the effect of establishing a fearful and vulnerable community (Ellis *et al*., 2016; Westbrook, 2008) as well as by negatively impacting feelings of safety and of both mental and physical wellbeing (Veldhuis, Drabble, Riggle, Wootton & Hughes, 2018).

Participants highlighted avoidance mechanisms generally used to avoid confrontation with the aim of reducing the possibility of violence and transphobia to occur. Literature suggests a link between avoidant coping and psychological distress either as a way to not deal with the issue at hand (Budge *et al*., 2013) or to avoid being rejected (Rood *et al.,* 2017). Furthermore, past research reported that younger individuals use more avoidant coping mechanisms leading to experience enhanced distress but this tendency decreases at the increment of the transitioning time (Budge *et al.,* 2013) and the present sample consisted of young transgender people that recently commenced their transition. However, the reasons why they used avoidant coping seem more positive and adaptive; such as to avoid possible threats,

as suggested by the study of Rood *et al.,* 2017. Future research should investigate the use of avoidance as a positive coping strategy, especially when used as a way to avoid negative interpersonal interactions and transphobia to escalate.

Transgender participants also suggested problem-solving strategies to deal with potentially negative trans-specific social interactions, such as being misgendered and coming out. These results support previous research that transgender individuals recruited through an American health clinic are able to develop adaptive coping strategies as a way to live with society and based upon problem-solving, as suggested by Bry, Mustanski, Garofalo & Burns, 2017. Additionally, this study supports previous research that suggested transgender people from the American general population use strategies that foster resilience as a way of dealing with both internalised and societal transphobia (such as write a letter to all co-workers to come out at work and avoid potential issues to occur), as proposed by Singh and colleagues (2011).

Interviewees spoke about the importance of sharing common interests to aid socialisation and to be used as 'ice-breakers' to help communication, especially when meeting new people. This is in line with previous research that found common interests to be important for effective communication as they might help information exchange (Tsai, 2000) and to create a healthier environment where transgender people can socially thrive, develop their social skills and improve interpersonal interactions (Mayer*,* Bradford, Makadon, Stall, Goldhammer & Landers, 2008). However, participants reported being transgender not to be a strong enough characteristic to aid socialisation and consequently not taking part in support groups and LGBT meetings as they prefer to socialise based on mutual interests, hobbies and passions. This is in contrast with previous research that suggests meeting with other transgender people aids social support and feeling part of a community (Testa *et al.,* 2014). Future research should investigate this effect in order to develop support strategies that can aid a greater amount of transgender individuals. However, as part of the transgender population does not want to have contacts with cisgender people (as indicated by one individual not wanting to be interviewed by a cisgender person and consequently did not participate in the study), the present research is missing the views of these people and this highlights the importance of maintaining trans-specific support groups.

Research carried out by Bouman and colleagues (2016b) in the UK, suggested to help transgender people improve their interpersonal skills and to build social confidence as a means to improve their psychological wellbeing (Bouman *et al.*, 2016b). The present research shows that undergoing transition can reduce interpersonal difficulties whilst improving social interactions and fostering social confidence. Consequently, future research (possibly longitudinal) should focus on understanding the impact of transition and GAT on interpersonal functioning to be able to target this population by developing focused treatment plans to aid the mental wellbeing of this population.

4.1. Implications

The results of this study corroborate the findings of previous research (see Chapters 2) about the positive impact of undergoing transition on mental health-related QoL. More specifically, results of the present study suggest that, for the sample interviewed, transitioning has a positive effect upon social interactions as well as on characteristics that aid socialisation and improve mental health, which together with the findings of the systematic review that reported an improvement in QoL following transition (Nobili *et al.*, 2018a) are of substantial importance for clinicians as well as for research purposes. This is due to transitioning having a strong positive impact upon transgender people's well-being and should be taken into account when trying to improve mental health and QoL in this population. Clinicians should not disregard the beneficial effects that undergoing GAT has on the individuals' mental health, when developing a treatment plan. Practitioners should acknowledge the strong impact that internalised transphobia plays on perceptions of prejudice, discrimination and victimisation as well as in general interpersonal interactions to help transgender people understand that not all negative perceptions of social interactions are due to others being transphobic, but they might be a consequence of their own internalised feelings at play.

The findings regarding transgender people's experiences of fears and worries help provide further support for the MSM and both researchers and clinicians should consider this model when developing interventions and therapies to support transgender people throughout transition.

When trying to establish support networks, it should be taken into consideration the use of shared interests and hobbies as a way to connect people, as many

transgender individuals do not want to participate in trans-community meetings and support groups.

Researchers developing interventions could collect adaptive strategies to give as recommendations when dealing with potentially negative trans-specific social interactions as well as with issues that might arise from them. Additionally, knowing the detrimental effects that social issues play on mental health, social interactions and resilience, there is a need for future interventions to tackle feelings of internalised transphobia and to help society becoming more understanding and knowledgeable on transgender issues as well as on what being transgender entails.

Organisations should consider this positive impact of transition when promoting policies to aid the wellbeing of this population. As there are only a few transgender health clinics in the UK with waiting lists reaching a minimum waiting time of three years, the governing body should provide more funding as well as more clinicians to help transgender people get the care and treatment needed to improve their mental and physical health as to increase their QoL.

Understanding experiences of worries and fears in relation to personal safety could aid in the development of policies to help transgender people feel less stigmatised, less vulnerable and safer during social interactions and in environments where transphobic acts could be perpetrated. For instance, campaigns that foster the knowledge of what transgender entails might lead to an improvement of the societal attitudes towards transgender people as well as to transgender individuals feeling safer and less worried for their own safety, possibility leading to an improvement in mental health and reduction of self-imposed social isolation.

4.2. Strengths and limitations

This is the first qualitative research looking at the interpersonal experiences of young transgender people. As such, it helped shed light upon both positive and negative interpersonal events and on the factors influencing social interactions. It helped develop a more thorough understanding of the personal experiences of this population, which helps set the base for further research that looks more into depth and tries to measure interpersonal issues specific for the transgender population. Past research had the tendency to focus upon transgender people's negative experiences, whilst the present study points out positive aspects for young transgender people, such as evidence of resilience and of developing positive

strategies, which can help promotion of adapting methods of coping with interpersonal issues and ways to support this population throughout the transitioning process.

There are also methodological strengths; for instance the good agreement between raters with regard to the surfaced themes, which increased the reliability of the presented results. Moreover, the diversity of the sample with regard to the levels of interpersonal difficulties shown by the range of scores recorded (from 0.34 to 2.16) is good for qualitative studies as this methodological approach is used to try to depict a range of different experiences.

This study is also limited by a number of factors, which should be addressed in future research. For instance, the sample interviewed was not ethnically diverse as all participants were white English individuals. Non-binary people were not fully represented in the study as only one trans-masculine non-binary individual have been interviewed. Additionally, quantitative results need to be interpreted with caution due to the large SDs.

5. Conclusion

The present study explored young transgender people's experiences of interpersonal interactions and showed that many different factors can affect their perceptions of social events.

From the interviews three main findings emerged. First, transitioning was perceived as having a positive impact upon socialisation, interpersonal issues, feelings of social confidence, social anxiety, and self-esteem, as well as development of resilience. This aids socialisation, which has positive effects on the mental and physical health of this population, and links in with the research on QoL suggesting an improvement in mental health-related QoL post-hormone treatment (see Chapter 2).

Secondly, participants perceived individual differences and traits as being of particular importance for the experiences of socialisation. In fact, as shown in Chapter 3 part of this population is subject to enhanced levels of autistic traits, which are significantly linked to interpersonal interactions, as social issues are part of the core symptomatology of ASC. Additionally, these traits are known to remain stable over time, as shown in Chapter 4.

Finally, findings of this study support the Minority Stress Model and that transgender people's mental health is affected by perceptions of interpersonal interactions, stigma, fear of being rejected and worries related to undergoing negative social experiences. In fact, the results of this study suggest that transgender people are afraid of encountering transphobia and that they experience internalised transphobia due to societal negative attitudes and hearing "horror stories".

Notwithstanding the contribution of this study to the understanding of transgender people's experiences of interpersonal interactions, further research is needed to be able to develop a sound body of research and focused intervention programmes.

Chapter 6

General Discussion

1. Objective of thesis

The main objective of this thesis was to understand the impact that social and medical transitioning from the sex assigned at birth (based on the sexual characteristics) to the identified gender has upon transgender people's interpersonal interactions.

The thesis focuses on quality of interpersonal interactions as these have been found to be strongly linked to, and predictive of, positive mental health and mental health-related QoL in treatment-seeking transgender people (Bouman, Davey, *et al.,* 2016; Davey *et al.,* 2014).

The thesis had three main aims:

First to explore factors affecting the QoL of transgender people. To fulfil this aim a systematic review and meta-analysis was carried out. This review explored the evidence regarding transgender people's QoL and the impact of Gender Affirming Treatment (GAT) (Chapter 2, Study 1). Secondly, as interpersonal issues lie at the core symptomatology of Autism Spectrum Conditions (ASC) and as there is a strong clinical impression that treatment-seeking transgender people present with high levels of autistic traits, the second aim of the thesis was to explore the prevalence of autistic traits in treatment-seeking transgender adults (Chapter 3, Study 2) and the effect of gender-affirming treatment on autistic traits (Chapter 4, Study 3). Finally, aiming at understanding the perceived effect of GAT on interpersonal relationships a qualitative study was developed. This study explored personal experiences of interpersonal interactions and the factors that are perceived to influence them (Chapter 5, Study 4).

2. Summary of findings

2.1. Chapter 2 – Study 1

The first study carried out was a systematic review of 29 studies investigating the QoL of transgender people, which comprised two quantitative meta-analyses on mental health-related QoL: QoL for all stages of pre-transition compared to the general population and QoL post-transition. The systematic review found that transgender people display poorer QoL independent of the domain investigated (voice-related QoL, sex-related QoL, body image-related QoL, mental health-related QoL and general QoL) than the general population.

The first meta-analysis investigated overall levels of mental health-related QoL in 14 studies and compared outcomes between transgender people independent of the stage of transition and the general population. The analysis found that transgender people report poorer mental health-related QoL. Moreover, the subgroup meta-analysis pooling across results of seven studies, investigated mental health-related QoL in transgender samples post-CHT and found no difference in the levels of QoL between transgender people and the general population.

These results show that transgender people as a whole display worse mental health-related QoL when compared to the general population (SMD = −0.78, 95% CI = −1.08 to −0.48, Z = 5.16, $p < 0.00001$), but meta-analysis of the seven studies that assessed QoL post-transition showed that QoL in transgender people at that stage was comparable to the general population (SMD = −0.42, 95% CI = −1.15 to 0.31, Z = 1.13, $p = 0.26$) providing some support for the possibility that medical and social transition is associated with better QoL. However, results of the meta-analyses need to also be interpreted in light of the high I^2 statistics. These statistics show the percentage of variation across studies due to heterogeneity rather than chance and thus that there is inconsistency in the studies' results (Higgins & Thompson, 2002), but as these meta-analyses are small, I^2 statistics carry a substantial negative bias, which highlights the importance of carefully interpreting the findings (von Hippel, 2015). Thus, it is paramount to take the results of the meta-analyses with caution, as it is not possible to draw firm conclusions.

Poor mental health-related QoL is linked to interpersonal issues, reduced social functioning and poor social skills (Davey *et al.,* 2015 – Bouman *et al.,* 2016a) and these difficulties are known to be related to ASC (APA, 2013). Literature suggests a higher prevalence of autistic traits in transgender samples compared to cisgender people, however this literature has clear bias and the findings are difficult to

interpret (Glidden *et al.,* 2016). Consequently, a matched control study comparing levels of autistic traits between transgender and cisgender people was carried out.

2.2. Chapter 3 – Study 2

The second study was a matched control study where a large group of 656 treatment-seeking transgender people recruited from a national commissioned transgender health service was compared to a community sample consisting of 656 cisgender people. To control for possible confounding variables and to overcome the limitations of previous research, participants were matched based on age and assigned gender at birth. Additionally, transgender people who received hormone treatment previous to the first assessment at the clinic were excluded from the sample in order to better control for the effect of treatment. Findings suggest that transgender people score higher on the subscales related to social behaviours, social skills, routine behaviours and attention switching, which represent difficulties in social interactions as well as anxiety provoking behaviours and habits. When carrying out gender comparisons between groups, a statistically significant difference was identified, with transgender assigned females at birth being twice as likely than cisgender females to score above the cut-off for clinically significant autistic traits (OR=1.939), whilst no difference was found for assigned males at birth. A significant interaction between total scores for autistic traits and assigned gender at birth showed that the difference in scores is mainly accounted for by the high levels of autistic traits displayed by transgender assigned females at birth. Gender differences could be due to the presence of a possible bias towards a male autistic phenotype in the AQ-Short, but the study of Grove and colleagues (2017) investigated such bias and concluded that the AQ-Short detects autistic traits equivalently in males and females. Thus, it appears that transgender assigned females at birth (who possible may be identified as transmen) do display more autistic traits than transgender assigned males as well as of both cisgender males and cisgender females. These results are consisten consistent with the findings of previous research (Jones *et al*., 2012; Kristensen & Broome; 2015; Pasterski *et al*., 2014) but these researches report much lower percentages of clinical ASC cases, both overall as well as per gender groups, compared to the study carried out as part of this thesis. These inconsistencies could be due to diverse reasons, such as the use of different versions of the AQ to measure autistic traits, which might cause slight differences when calculating clinical caseness. The transgender samples come from different sources

and they have been collected with the aid of different methodologies; for instance, Kristensen & Broome (2015) used an online sample, Jones and colleagues (2012) recruited participants through a clinic as well as online, Pasterski *et al*. (2014) through a private clinic, whilst the present study recruited the sample through a nationally commissioned transgender health clinic. Consequently, selection bias had a different impact upon the results of the studies and the limitations of each research influenced differently each dataset. Differences in sample size might have also had an impact upon the findings, as the present study used a large sample, whilst the other researches dealth with much smaller samples.

Similarly, inconsistencies between the cisgender samples could be due to differences in data collection, on the effect of selction bias at play as the two studies reporting comparisons with a cisgender sample (Jones *et al*., 2012; Pasterski *et al*., 2014) used the same sample collected through various sources (e.g. online, clinical, advertisements) whilst our sample came from the Cambridge Psychology website and/or on the adoption of different version of the AQ to measure autistic traits.

Another explanation for these findings could be related to transgender people's high level of anxiety caused by having undergone negative experiences (Turban, 2018; Turban & van Schalkwyk, 2018), which due of the overlap in symptomatology between ASC and social anxiety might be picked up by self-reported measures as symptoms of ASC. Literature shows that ASC is associated with high levels of anxiety (Cath *et al*., 2008) and these traits might reflect attempts to manage the experienced anxiety. Therefore, autistic traits might be expected to fluctuate with treatment status. Additionally, there is the possibility that the sample collected as part of this study was particularly anxious compared to the samples of other researches, which could explain the differences in the percentages of clinical caseness.

Consequently, in order to understand the reasons behind the enhanced levels of autistic traits in transgender assigned females at birth and to gain insight in the actual impact that undergoing hormone treatment plays on autistic traits a longitudinal study comparing levels of autistic traits pre- to post-CHT whilst controlling for the effect of anxiety was conducted. The study also looked into gender differences and it was the first longitudinal study carried out that investigated this subject.

2.3. Chapter 4 – Study 3

The third study was conducted to determine gender differences in the presentation of autistic traits and the impact that hormone treatment plays using a longitudinal methodology. This study compared levels of autistic traits pre-treatment (T0) with 1-year post-CHT (T1) whilst controlling for the effect of anxiety. Gender differences were also investigated.

A sample of 91 treatment-seeking transgender people was recruited through a nationally commissioned transgender health service and completed a measure of autistic traits at two time points (at the commencement of the treatment path and 1-year post-CHT). Findings suggest that levels of autistic traits do not change over time for the transgender group as a whole. These results are consistent when controlling for the effect of anxiety.

When looking at gender differences, levels of autistic traits became significantly different at post-treatment between groups ($p = 0.03$; $d = 0.452$), with traits of transgender assigned males remaining stable whilst worsening for assigned females. This may suggest that testosterone treatment exacerbates autistic traits. These findings support the Extreme Male Brain theory of autism that states that the autistic brain is a form of extreme male brain where systematising traits are enhanced whilst empathising abilities are reduced and that these traits are more prevalent and enhanced amongst natal males (Baron-Cohen, 2002). Additionally, as the effect of anxiety was controlled for in the analyses, these findings suggest that these autistic traits are not merely due to difficulties with social skills and interactions because of anxiety experienced as a consequence of having undergone negative experiences, as previously suggested (See chapter 3; Nobili *et al.,* 2018b; Turban, 2018; Turban, 2018; Turban & van Schalkwyk, 2018).

Consequently, aiming at better understanding the interpersonal relationships as well as the effect of GAT on them, a qualitative study was developed. This research aimed at understanding the impact of social interactions upon the QoL, mental health and interpersonal functioning of this population. If transgender people developed social anxiety and interpersonal issues that mimic ASC symptomatology following negative past social events, these experiences would emerge from personal recounts. Similarly, if they truly display increased issues with ASC and enhanced levels of autistic traits, this should be reflected upon their recollections of personal social events. Additionally, the study tried to understand both interpersonal and

intrapersonal factors perceived to influence social interactions for young transgender people, as well as attempting to identify strategies used to reduce interpersonal difficulties that can aid support during the transitioning process and that can help to inform the development of transgender health services.

2.4. Chapter 5 – Study 4

The fourth and last study of this thesis expanded from the results of the first two studies through the use of qualitative methodology and one-to-one semi-structured interviews with 18 young transgender people post-hormone treatment. Participants attended a nationally commissioned centre for transgender health. They were asked questions about their experiences of interpersonal interactions and recounts of the positive effect of undergoing transition upon social skills and interactions, empathising and social anxiety surfaced from the interviews.

Findings support the Minority Stress Model (Meyer, 2003) suggesting that transgender people expect being rejected and discriminated because of being transgender; however fears often arose because of having heard 'horror stories' of the negative social experiences that they might face instead of actually having undergone such negative interactions. These findings support past research recruited through a large survey study in the UK stating that worries in relation to the perceived risk of being victimised exceed the actual negative experiences undergone (Ellis *et al*., 2016).

The MSM also suggested social support to play a buffering role against distress and anxiety as well as a protective effect for the mental health of minorities (Meyer, 2003), such as the transgender community. However, results of the present research suggested transgender people to often avoid socialisation with other transgender individuals as it has a negative impact upon both self-acceptance and mental health. This is due to the fact that they are reminded to be transgender themselves and they prefer to remain stealth and look for support and socialisation based on interests rather than on being transgender as only common characteristic. This has important implications for the development of support groups as they need to be specifically tailored to be able to provide as much support and inclusion within the wider society as possible for the transgender community. This will also hopefully help the society to become more accepting and inclusive of transgender people, which should help reducing minority stress, thus improving their mental health.

Participants stated perceiving an amelioration in interpersonal issues post-CHT. This might be due to hormone treatment initiating physical changes, which make individuals more relaxed and calmer when dealing with social interactions and during interpersonal situations, as they are pass more easily. This might create the impression of facing less social difficulties and problems as well as to an improvement in the way in which people react to others during social interactions.

From the personal recounts of young transgender people it appeared that transitioning is perceived as a positive experience and that participants did not face many negative interpersonal interactions. Results suggest that difficulties with poor social skills, with feelings of anxiety and with empathy seem to be independent of autistic symptomatology, as reflected by an improvement post-treatment, which should not occur if people are dealing with ASC.

People also suggested individual differences and traits to play a major role in social interactions by significantly affecting how individuals interact, and that these characteristics do not change post-transition. In fact, as highlighted by Study 3, autistic traits remain fairly stable post-CHT and as undergoing CHT lessens the mismatch between gender identity and bodily characteristics, this might lead to an improvement in social distress, QoL and social functioning (Costa & Colizzi, 2016). This might also cause an increase in confidence and self-esteem, which becomes apparent with individuals becoming happier and more able to withstand negative social interactions. Additionally, after waiting a long time to commence medical transition and once hormone treatment starts to modify the secondary sexual characteristics of the experienced gender, people might become less concerned about how they are perceived by others, positively affecting social interactions.

However, the findings of this research suggesting a decrease is levels of social anxiety are in contrast with the findings of Study 3 highlighting the stability of anxiety levels post-treatment. Past longitudinal research from Italy suggested levels of anxiety to decrease from pre- to post-CHT (Colizzi, Costa & Todarello, 2014); hence, this calls for more research that need to properly investigate the effects of CHT upon anxiety in order to develop targeted interventions to help this population during the transitioning process. Moreover, these findings call for the development of interventions to help transgender people deal with issues related to autistic traits

and interpersonal issues in order to properly support this population and to improve their mental health and mental health-related QoL.

3. Theoretical underpinning

The studies carried out as part of this thesis were based upon theoretical frameworks that helped interpreting, framing and shaping the studies' findings. In this section, these theoretical underpinnings are addressed and explained.

3.1. Epistemological position

The epistemological and philosophical approach adopted to interpret the findings of this thesis is a blend of positivism and social constructionism. These approaches were used to get a fuller picture of transgender people' social interactions in order to be able to make suggestions to properly support this population.

The quantitative studies that are part of this thesis follow a positivist perspective. Positivism is a scientific approach to research, suggesting that observations should be considered as measurable phenomena and that inquiry should be objective (Creswell, 2007; Tashakkori & Teddlie, 1998). In fact, as positivism postulates that research should examine and determine the causes influencing the outcomes (Creswell, 2003), these studies explored the relationship between autistic traits and gender assigned at birth, which are both concepts that can be observed and measured.

On the other hand, the qualitative study adopted a social constructionist perspective to explore transgender people's experiences of social interactions. This type of approach posits that knower and known cannot be separated and the subjective knower is considered as the source of knowledge and reality (Guba, 1990); thus interviews were carried out to understand the personal experiences of transgender people and the meaning they give to these realities.

Constructivism posits that individuals build concepts and schemes to make sense of experiences and those constructions are continuously tested in light of new experiences (Schwandt, 2000). Consequently, knowledge is derived from social interactions and the environment where people live in (Schunk, 2012), meanings are acquired and shaped through multiple experiences and interactions (Kim, 2001), and objectivity is created in function of social interactions (Longino, 1993). Thus,

qualitative methods and social constructivism have been adopted to argue that people's experiences of interactions are influenced by their interpretations, which are unobservable and not open to measurement.

Gender does not objectively exist but it emerges through a socially constructed process and it is produced through interaction with others (Lindsey, 2015). Through various interactions and learning processes, individuals learn social meanings, values and expectations associated with maleness and femaleness, which shape the ways in which people behave and interact (Richardson, 2015). Consequently, being transgender becomes a social construct, as they are individuals whose gender identity does not match their gender assigned at birth. However, maleness and femaleness cannot be directly observed and measured, whilst it is instead possible to capture the gender a person was assigned at birth based on sexual characteristics. Consequently, the positivist and social constructivist approach complement each other and were both utilised to better interpret the findings of this thesis as well as to expand the current knowledge around transgender people's experiences of social interactions in order to be able to provide recommendations for support and suggestions for the development of interventions.

3.2. Biopsychosocial approach

To properly explain the findings of the present thesis project, results need to be looked at in light of the biopsychosocial model as theoretical framework of interpretation (George & Engel, 1980). The biopsychosocial model is an interdisciplinary approach to research that looks at the interplay between biological, psychological and socio-environmental factors, as they are intrinsic and reciprocally involved in physical and mental health (Álvarez, Pagani & Meucci, 2011; George & Engel, 1980).

For instance, the results of the longitudinal study as well as previous research suggested that testosterone seems to be related to a reduction in empathy (see Chapter 4; Adhya *et al*., 2018). This might have an impact upon transition as people might care less about what others think and feel about them because of being less able to understand others' perspective and emotions. However, it would be reductionist to think that the decline in empathising abilities would solely due to the effect of testosterone. The ability to understand and interpret others' thoughts and behaviours could also be impacted by the individual's mental health status; hence, if

a person is either severely distressed and/or depressed (e.g. because of the fact that changes brought up by hormone treatment takes time to appear) or elated (e.g. because of the euphoria caused by the commencement of medical transition), their interpretation of other's behaviours might be altered. Furthermore, social factors such as the development of a male gender role could affect empathising abilities as it is linked to the idea of "being manly", thus less empathic and less emotional than women. Consequently, this reduction in empathy could have both positive and negative effects on the transitioning process. It could impact transition by facilitating the process because of caring less about others, concentrating more upon being true to oneself and focusing more on the positive outcomes of transition. However, it could make transitioning more difficult as thinking might become more rigid and people might struggle in coping with these changes.

Moreover, the presence of interpersonal issues for transgender people could also be interpreted in light of the biopsychosocial model as they might be due to an interplay between biological (e.g. presence of individual differences and personality traits such as shyness), psychological (e.g. presence of mental health issues such as anxiety and/or depression) and social factors (e.g. having undergone negative interpersonal experiences such as transphobic acts).

4. Implications

The studies carried out as part of this thesis highlighted several practical implications. These implications mainly relate to the need to support transgender people throughout their transitional process. Additionally, implications relate to the need to improve access to as well as the treatment offered by transgender health services, possibly through the development of online self-help tools to support and sustain transgender people during the different steps of GAT.

4.1. Clinical implication

4.1.1 Clinical implications from the systematic review and meta-analysis (Study 1)

Findings of the present thesis in relation to interpersonal issues and feelings of social anxiety support the interpersonal theory of Sullivan (1953) as they show that experiencing anxiety hinders the development of healthy interpersonal relations.

Therapeutically tackling feelings of anxiety was shown to be highly effective in supporting and helping people with depression as well as other complaints linked to social expression and societal acceptance (e.g. eating disorders) (Klerman & Weissman, 1994; Murphy, Straebler, Basden, Cooper & Fairburn, 2012). Thus, following the interpersonal theory, psychological disorders and mental health issues are seen as having interpersonal origins and they need to be understood in light of the social environment (Sullivan, 1953). Psychopathology is perceived as being the product of social and personality issues, which arise in the form of struggles with interpersonal relations, poor communication and difficulties with self-esteem (Sullivan, 1953). For instance, anxiety and depression are significantly related to negative social functioning and issues with socialisation, possibly as a consequence of repeatedly being subject to transphobia, discrimination and rejection for being true and genuine to who they really are (Bouman, Davey *et al.,* 2016; Budge, 3013). Thus, clinicians need to help transgender people dealing with feelings of anxiety and depression to be able to see an improvement in social skills and experiences of social interactions.

Notwithstanding the results of the post-treatment meta-analysis suggesting a non-significant difference in QoL between transgender and cisgender populations, one of the studies (Lindqvist *et al.*, 2017) indicated that in the long-term both physical- and mental health-related QoL worsen when compared to before the commencement of medical treatment. This might be due to disappointment in effects of surgical treatment such as long-term complications and the decline that individuals of the general population are also subject to as a consequence of aging (Hawthorne *et al*., 2006; Lindqvist *et al*., 2017). Even if only one study reports these findings, this has significant clinical implications. For instance, patients should be fully informed about a possible decrease in their quality of life, which might come as a surprise as many individuals might expect that aligning their body with their experienced gender and to finally reach “completeness” will lead to an increase in their satisfaction with life. Thus, clinicians need to discuss this possibility and make people aware of this risk.

These findings, if reproduced, might have negative implications on financial support from the government body and the health system might decrease as they might question the long-term effectiveness of GAT. This will have negative repercussions on transgender healthcare services and consequently on the clinical support of transgender people and their mental health.

4.1.2 Clinical implications from the cross-sectional study in ASC (Study 2)

The findings of this thesis on the increased rates of autistic traits in transgender assigned females have strong clinical implications. As people with ASC present with difficulties with social skills (APA, 2013), specific Social Skills Training could be developed for this specific population aiming at improving social skills. Because of the challenges faced when transitioning, good social skills are vital for a positive outcome of GAT (Budge, 2013). In addition, people with ASC are known to struggle with change and increased levels of anxiety are known to be reported in people with ASC when confronted with unpredictability (Weiss, 2002). Consequently, as the process of social and medical transitioning can be at times unpredictable (Bouman & Arcelus, 2017) services should developed specific structure as part of the assessment and GAT (e.g. providing educational and information packages specifically designed for ASC people) in order to prepare people with high levels of autistic traits for GAT.

4.1.3. Clinical implications from longitudinal study (study 3)

Study 3 found that even after GAT trans people present with high levels of autistic traits. In addition, these traits appear to increase in transgender men suggesting an increase in social difficulties. As suggested by the Extreme Male Brain theory, it can be argued that females present with better social skills than men (Baron-Cohen, 2002) and, in this respect, transgender men become more similar to cisgender men. However, GAT is not the end point of transitioning. It is not uncommon for gender services to discharge people either once they have undergone surgical interventions or those not wishing surgery once they are in the appropriate dose of CHT. The individual (usually a young person) is then left alone with little support. For many transgender people the issue of how to find a romantic partner, to develop friendships as well as a satisfying sexual life, a job and the right type of education will need to be sorted without support. This will be even more challenging if the individual presents with high levels of autistic traits and poor social skills. Therefore, it could be argued that some individuals should be offered a longer involvement from services or community support groups.

Findings suggest that transgender people experience feelings of abiding gender and social anxiety that start before the beginning of the transitioning process and often do not subside following GAT. Dealing with these feelings becomes unbearably challenging for people to function in society (Devor, 2004). It follows the need for

clinicians to help this population dealing with these feelings of gender and social anxiety, in a way to make possible for transgender people to actively and adaptively function within the society in which they live in. In turn, interpersonal issues will hopefully decrease, leading to a better mental health and to an increase in happiness and mental health-related QoL.

4.1.4. Clinical implication from qualitative study (study 4)

Study 4 suggests that although transitioning helps people regaining confidence and self-esteem, young trans people do experience challenges and stressors as suggested by the Minority Stress Model. The MSM states that experiencing transphobia, feelings of internalised transphobia and expectations of rejection have a detrimental impact upon the individuals' mental health and have a negative impact upon interpersonal relations and social skills (Meyer, 2003). This has important clinical implications as clinicians need to properly support transgender people to reduce the negative impact of internalised feelings of transphobia and to develop effective coping mechanisms to be able to deal with acts of transphobia, violence and discrimination.

Additionally, fears, worries and experiences of rejection are known to be linked to feelings of anxiety and are often the primary concerns processed and tackled in therapy (Budge *et al.,* 2013). When these negative feelings are repeatedly triggered after exposure to a stressor, anxiety arises and negative predictions of ambiguous information are generated by anticipating the happening of negative events and affecting decision-making (Borkovec *et al.*, 1998). Consequently, transgender people need to be properly supported in the development of positive coping strategies against adversity and victimisation, especially during coming out, as they are a population particularly prone to face negative interpersonal experiences.

Results also highlight the need to provide tailored support for transgender assigned males at birth as they are faced with high levels of discrimination and transphobia as society is less accepting of feminine man than masculine women; hence, especially when transitioning in older age and having fully developed manly bodily characteristics, it is more difficult for them to pass.

There are individual differences that play a substantial role when socialising and cannot be altered by CHT, for instance being shy. This is particularly important as many individuals think that undergoing GAT will automatically solve many of the

interpersonal and relational issues faced daily. Consequently, people need to take these characteristics into consideration and learn how to accept themselves. Clinicians can help individuals recognising such traits and help them develop positive coping mechanisms and strategies to deal with difficult social interactions based on their individual differences and personalities.

Transgender people are a marginalised population, often suffering from lack of social acceptance leading to social isolation and in turn they experience minority stress (Hatzenbuehler & Pachankis, 2016; Hendricks & Testa, 2012). A decrease in stress is linked to a better mental health and it can come from multiple sources, such as from an increase in societal acceptance, development of better coping mechanisms, amelioration in confidence and self-esteem due to physical changes in line with the identified gender, increase in social support as well as from a combination of such factors and clinicians can help and support transgender people enact these changes (Bouman & Arcelus, 2017). These could be dealt with specific therapeutical approaches such as interpersonal psychotherapy (IPT). Interpersonal psychotherapy (IPT) (Klerman & Weissman, 1994) seems a promising way in which to support and help transgender people tackle and possibly overcome their interpersonal issues and mental health concerns, as well as to assist them in the establishment of social support networks. The focus of IPT for transgender people can be placed on 'role transition' as they need to adopt a new role in their life and issues in this area of development can lead to impairment in functioning that can manifest in social deficits and interpersonal difficulties (Budge, 2013). IPT functions by helping transgender people evaluate old roles (e.g. old gender role, role within family such as from mother becoming father, etc.), facilitating the expression of affect in relation to identity transition, aiding the development of a new social skill set and helping in the establishment of a social support network (Budge, 2013).

4.2. Implications for social support

It is particularly the qualitative study that allows for social implications to be discussed. In tshe qualitative study it emerged that socialising with other transgender individuals is a negative experience as transgender people are reminded to be transgender themselves. This has strong implications for development of support groups as they need to be tailored also depending on interests and passions rather than only relying upon 'being trans' as common characteristic, as it is seen as

being not a strong enough feature to pool people together and feel supported. Thus, it appears that sharing interests to aid socialisation is paramount to develop a proper social support network but it is also important to bear in mind that not all transgender people want to talk and socialise with cisgender individuals. This was shown by one transgender person refusing to be interviewed and participate in the qualitative because the researcher and interviewer was a cisgender person. This highlights the importance of maintaining trans-specific support groups to support this part of the transgender population.

Results of the qualitative study suggest that young transgender people prefer to remain stealth in social interactions and that they do not want to be perceived as being transgender. This also highlights the importance of trans-specific support groups, as people need to learn important strategies and skills that will be used when socialising with cisgender people and to be better integrated within the society. Additionally, socialising with other transgender people and feeling part of a wider community fosters social support and resilience, increases self-esteem, promotes group-level coping and reduces psychological distress, possibly leading to an improvement in quality of life and life satisfaction (Bockting *et al*., 2013; Meyer, 2003; Testa *et al*., 2014). Thus, the way forward could be the development of trans-specific support groups that are also based upon common interests and hobbies, increasing the likelihood of people to feel supported as well as by further aiding socialisation.

Implications for social support also arise from the studies on autistic traits, as they highlight the importance of developing social support networks and provide adequate support specific for autistic people, as they are known to face challenges and issues with communication and with social skills (APA, 2013). This has a significant impact when attempting to socialise and to understand interactions with others. Furthermore, if we take into consideration that testosterone treatment might worsen autistic traits, there is a significant need to assist and provide transgender men with increased social support in order to promote a positive mental health. As shown by the results of the review and meta-analysis, transgender people suffer poor QoL compared to the general population and providing them with adequate social support fosters a good and positive QoL.

4.3. Implications for transgender healthcare services and for the development of interventions

There are exceedingly long waiting lists to access transgender healthcare services and to be accepted for GAT a stable mental health is paramount. As clinics often struggle to provide clients with mental health support due to lack of personnel and as there are only a few transgender services in the UK that are accessed by people coming from everywhere around the country, services should provide clients with tools and support that can be easily accessible and that can serve them during the time of waiting. This help and support can come in the form of online self-help tools and interventions as they can be of great aid to therapies and hey are known to present many advantages; they can be personally tailored to user's needs, user friendly, easily and anonymously accessed, utilisable at any pace, engaging and easy to navigate (Griffiths, Lindenmeyer, Powell, Lowe & Thorogood, 2006; Kohl, Crutzen, & de Vries, 2013). These interventions have the ability to mimic expensive face-to-face sessions (Cummins, Evers, Johnson, Paiva, Prochaska & Prochaska, 2004; Neuhauser & Kreps, 2003), exhibiting the possibility to reach more diverse audiences across an increased geographical area, tackling populations that otherwise would not obtain treatment with either little or no cost for the user, and accessible without waiting lists (Bowen, Jabson & Kamen, 2016; Clarke & Yarborough, 2013; Reyes-Portillo, Mufson, Greenhill, Gould, Fisher, Tarlow & Rynn, 2014; Spek, Cuijpers, Nyklícek, Riper, Keyzer & Pop, 2007). Personal computers also provide a serene, convenient and private environment where to approach sensitive information as well as resources that would be difficult to gain through other means (Bowen *et al.,* 2016; Davies *et al.*, 2014; Ryan, Shochet & Stallman, 2010). Thus, eHealth technologies might be well-suited for transgender populations, but no data has yet been published on this population's use of electronic systems and future research is necessary in order to find out the most effective intervention's delivery method for this population.

Transgender people could benefit from the utilisation of digital technologies as they provide needed communication and intervention to reduce disparities, pathways to access care, and opportunity for communication with experts and peers (Bowen *et al.*, 2016). Additionally, as previously mentioned, transgender people are known to often encounter stigma and discrimination, which make this population an appropriate target for digitally delivered interventions. Hence, eHealth technologies

could be of great aid in solving the problem of face-to-face interactions with a therapist, potentially increasing the effectiveness of therapeutic online interventions (Davies, Morriss & Glazebrook, 2014; Taylor & Luce, 2003).

Interventions delivered through the use of digital technologies are generally based on solid theoretical frameworks (i.e. on the delivery of Behavioural Change Techniques – BCTs) and on previously developed effective interventions (Ritterband & Thorndike, 2006; Webb, Joseph, Yardley & Michie, 2010). They can easily provide individuals with psychoeducation as well as useful tools to both teach and test new effective and appropriate skills. For instance, providing individuals with psychoeducation is known to have a positive impact upon mental health and reduction of psychological complaints such as anxiety and depression (Donker, Griffiths, Cuijpers & Christensen, 2009) and can easily be implemented in online interventions.

Online interventions and eHealth tools also tend to display a variety of active ingredients and characteristics that contribute to their effectiveness; such as being highly structured, adjustable to user needs, interactive, engaging and interesting, user customisable, and developed in order to provide both feedback and follow-up (Crutzen & Ruiter, 2015; Crutzen, Ruiter & de Vries, 2014; Kohl *et al.*, 2013; Webb *et al.*, 2010). Hence, interventions digitally delivered appear to be an appropriate method for reaching vulnerable and difficult to approach minority populations such as transgender individuals (Bowen *et al.,* 2016). Additionally, trans-specific online interventions aimed at supporting transgender people whilst teaching skills and strategies could be of significant importance for people that do not wish to socialise with other transgender people.

Consequently, there is a significant need to develop interventions providing transgender people with support to deal with 'waiting' due to the long waiting times before accessing GAT as well as during the treatment path to access GAMIs, help them coping with change, develop a social support network as well as a new social skill set, reduce interpersonal issues, deal with fears and worries, manage both anxiety and social anxiety, and lessen mental health issues. Additionally, interventions will need to help developing adaptive coping strategies to deal with transphobia, discrimination and victimisation, dealing with the coming out process, and managing the physical and emotional changes happening during transition and

during Real Life Experience (RLE) as they are significant anxiety provoking experiences.

An ideal support intervention could be an online platform where users can log in at ther convenience and learn different skills and techniques that would aid their mental, physical and social wellbeing. A self-help tool could be particularly well-suited as people with social and interpersonal issues might not want to have a stranger, even if a therapist, to look at what they write, which might lead to social desirability bias, drop-outs and to people not being fully honest.

As transgender people have been found to report high rates of mental health complaints (Dhejne *et al.*, 2016), and as web-based psychoeducation is known to foster and enhance wellbeing and mental health (Arnberg, Linton, Hultcrantz, Heintz & Jonsson, 2014), the intervention should provide users with psychoeducation on the main areas related to mental health where individuals struggle with, such as anxiety, depression and ASC. Additioanlly, in order to tackle interpersonal functioning, the tool should provide psychoeducation related to social and interpersonal issues.

As interventions need to be based upon solid theoretical frameworks, an ideal tool would take advantage of the benefits that can derive from the use of Behavioural Change Techniques. Individuals could especially profit from the use of five specific BCTs, which can particularly aid well-being when used together (Avery, Flynn, van Wersch, Sniehotta & Trenell, 2012). These are “goal setting” and “action planning” to deal with anxiety provoking situations, “self-management” skills to handle behaviours which can have a negative repercussion upon interpersonal interactions, providing “feedback” which can be done through the development of feedback messages that can be delivered after the completion of exercises and activities, and “social support” which could be implemented through an online forum. Here individuals can socialise, discuss about trans-related issues, exchange ideas and suggestions of how to deal with specific interpersonal interactions and put into practice the social skills newly developed by using the intervention.

Additionally, to provide users with the needed mental health support and to teach them useful skills, the intervention could be based upon interpersonal psychotherapy (IPT - Klerman & Weissman, 1994). The online tool could provide users with a psychoeducation of what IPT is as well as a treatment path based upon

this therapeutical approach. However, as it is important to try to minimise drop-outs and to maximise adherence, the intervention could provide people with a self-tailored treatment programme where indviduals could decide to either follow fully the programme or to choose which lessons to attend and what to learn, instead of committing to a strict treatment path. Furthermore, lessons would be followed by exercises and activities that people can undertake in order to put into practice the skills just learnt and to make sure they understood the information provided. This could also be a good opportunity to present individuals with a specific feedback. Literature suggested that there are high rates of autistic traits in transgender assigned females at birth (Nobili *et al*., 2018b; Chapter 3), thus a useful and practical online intervention could implement a specific social skills training for autism. Additionally, other individuals not autistic could also benefit from learning and/or reviewing such skills.

Throughout the interviews carried out as part of the qualitative study in this thesis, some individuals suggested strategies to deal with transgender-specific interpersonal interactions, such coming out. Thus, it would be interesting and entertaining to add videos and quotes of people who were already confronted with these anxiety provoking and potentially negative social interactions, making suggestions and giving practical skills to users on how to tackle them.

Moreover, it could be also particularly useful to provide individuals with a section of the online tool designated for emergencies. In this area of the intervention people would be able to find techniques and skills to practice when particularly distressed and in need of immediate help and support; for instance, techniques of distress tolerance such as learning how to calm down their mind and distress by physically altering their condition, emotion regulation, radical acceptance and how to avoid giving into emotional urges. This section of the intervention could also be dedicated to stress management and relaxation, where users could find techniques, such as guided relaxations, meditations and mindfulness, as deliveying mindfulness through online applications has been found to foster and enhance wellbeing (Howells, Ivtzan & Eiroa-Orosa, 2016).

Finally, in order to be effective this intervention should be user tailorable, interactive, tailored to provide feedback and follow-up, and adjustable to user needs (Kohl *et al.*, 2013).

5. Strengths and limitations

Strengths and limitations of the four studies that were carried out as part of this thesis have been discussed in detail in each chapter and those points are not repeated in the overall thesis discussion.

5.1. Strengths

Strengths of the present thesis are mainly related to the methodology, research design and measurements adopted as well as participants' recruitment and sampling. Findings helped generate important advances and progress in under-researched areas of transgender health, which are of significant clinical importance.

The systematic review has significantly added to the literature by drawing together and critically evaluating the results of multiple research studies on different dimensions of QoL. In addition to the systematic review it was possible to carry out two meta-analyses; hence the study added to the literature by drawing firmer conclusions upon the effect of hormone treatment on the mental health-related QoL of transgender people by comparing it to the general population. Additionally, the systematic review highlighted the paucity of research in this field, especially concerning QoL pre-treatment, and the need to carry out more studies to properly determine the impact of CHT upon mental health-related QoL.

Strengths of the second study were mainly related to the methodology adopted as it tried to overcome the limitations of previous research. For instance, the samples were matched based on age and gender assigned at birth, which are important variables to control for. Additionally, as there is an increase in the number of people that identify as non-binary (Richards *et al.*, 2016), the variable assigned gender at birth was used to control for this population and to not exclude non-binary transgender people from the research.

The third study of the thesis was a longitudinal research investigating the effect of hormone treatment on autistic traits. This is the first longitudinal study in this area and longitudinal studies in this field are rare. In this research anxiety was controlled for, which helped increase the internal validity of the research findings, as this is a variable known to have a strong impact on both interpersonal issues as well as ASC. The second and third studies used the AQ-Short as measure of autistic traits. This is a

self-reported measure and as such it is an easy to use and quick tool to collect large sets of data and to facilitate the recruitment of participants, as opposed to complicated and time consuming diagnostic tools. Moreover, the research on autistic traits have the advantage of being exploratory studies that helped develop and make significant advancements in this field of research. For instance, the matched control study was the fourth research conducted that attempted to compare levels of autistic traits between transgender and cisgender people, whilst the longitudinal study was the first study carried out longitudinally exploring the impact of hormone treatment on autistic traits. This enabled to explore the gaps in the literature, which are of strong clinical importance to inform practice and further research.

The final study comprising this thesis was a qualitative research aimed at exploring the experiences of interpersonal interactions in young adults post-transition. The main strength of this study was linked to the exploration of an under-researched area, which was explored using qualitative methodologies through the use of semi-structured interviews. This gave the possibility to standardise the questions asked whilst leaving the interviewer free to prompt and explore participants' nuances and concepts worth further inspection and clarification. Additionally, interviews were transcribed, checked for accuracy and coded separately by two researchers, which increased validity and reliability of the qualitative data collected and analysed.

Finally, samples of treatment-seeking transgender people were recruited for this thesis. This allows for recruitment of homogeneous groups in terms of stage of transition, as information on medical transition was easily obtainable.

5.2. Limitations

Notwithstanding the numerous strengths and benefits highlighted above, the present thesis also suffers from a number of limitations.

For instance, these studies focus upon clinical transgender populations, but not every transgender individual accesses transgender healthcare services and undergoes GAT (Beek *et al.*, 2015), which makes the findings difficult to generalise for the whole transgender population. Participants were recruited through the Nottingham Centre for Transgender Health, which hinders the generalisability of findings for the whole transgender clinical population as well as for the overall transgender population. Additionally, these samples were recruited in the UK, hampering the possibility to make generalisations for transgender communities

outside of the country as different rules apply to the health systems and healthcare insurances of other countries compared to the NHS. For instance, the NHS supports and covers the costs of CHT, CRS and GAGSs, whilst these procedures are not included by the American insurances and patients need to economically support themselves.

With regard to the matched control study, a limitation incurred was the adoption of a cross-sectional design, where cause and effect cannot be determined. Additionally, age and assigned gender at birth are not the only characteristics affecting wellbeing and mental health, thus further research should attempt to match and control for other variables as socioeconomic status, employment and education status. With regard to employment status, this data is missing for 58.84% of the participants, as many people were not asked this information because the question was added in a second instance to the questionnaires delivered to patients at commencement of GAT and as a few participants simply did not reply. Consequently, it is not possible to draw firm conclusions on participants' employment status.

Another limitation regards the choice of control group in the matched control study as it limits the results of this research. Due to the fact that the same control group was used in the studies of Jones and colleagues (2012), Pasterski *et al*. (2014) as well as Kristensen & Broome (2015), it was deemed easier to compare results. However, these studies use a different version of the AQ and findings cannot be directly compared. Furthermore, the control group is a community sample drawn from a large sample of 3415 people representative of the general population, but it comes from only one source (Cambridge Psychology website), which reduces the representativeness of the sample. The choice of comparing a clinical sample to a non-clinical one also reduces the reliability of the findings. Comparison with this cohort control group was carried out, as its size enabled for matching large set of data and comparisons are more reliable than with the much smaller sample that our time and resources would allow to collect. However, we acknowledge the limitations that using this sample bring to the research. Other samples could have been used to increase the reliability of results as well as the ease of interpretation of findings, for instance a sample of people diagnosed with autism.

The studies on autistic traits are limited by the lack of data on the dosage of the delivered hormones, which need to be better controlled for as to improve the

knowledge, understanding and potential impact of CHT upon autistic traits. These studies are also limited by the use of a self-reported measure (AQ-Short), which does not properly capture autistic traits as a diagnostic tool would. Moreover, the most severe cases of ASC would not be represented within the samples because of the inability to comprehend and answer to all the measure's items.

Quantitative research relies upon the use of self-reported data, thanks to which it is possible to gather information that would otherwise either be difficult to get access to or too long to collect (Garcia & Gustavson, 1997). However, this method of gathering data also suffers from several limitations and issues with reliability. For instance, participants can over- and/or under-report information in order to either minimise or maximise certain responses (e.g. distress, mental health issues, wellbeing), and results can be either exaggerated or minimised by the researchers bringing bias to the interpretation of findings (Northrup, 1996). Issues related to honesty and truthfulness also might arise, such as response bias and social desirability bias, where people might provide answers either to make them appear more distressed in order to get the desired services or to present in a favourable view (Heppner *et al.,* 2016; Huang, Liao & Chang, 1998). Additionally, participants might lack introspectivity and/or understanding of the questions asked in the questionnaires and rating scales are interpreted and used differently by different people (Austin, Gibson, Deary, McGregor & Dent, 1998; Krosnick, 1991). Self-reported data tend to be biased on people's feelings at time of completion and if individuals are either unwilling to acknowledge themselves or not true to themselves, they might be unaware of their own tendencies, which would not be reported in their responses (van de Mortel, 2008). This might be the case with people suffering from ASC, which might also struggle understanding and interpreting questions as well as with expressing and articulating responses (Emerson, Felice & Stancliffe, 2013).

When relying upon self-reported data, there might be a possible social desirability bias at play. This is due to participants feeling the need to reply to questionnaires and/or interview questions in a more positive way by over-reporting wellbeing and under-reporting anxiety and interpersonal issues, as afraid of repercussions upon treatment. This might be due to the fact that recruitment was carried out through the clinic, however participants were told that participation wouldn't have any impact upon GAT to reduce this effect.

A limitation of the qualitative method study is clinicians' gatekeeping of sample selection. This procedure increased chances of selection bias and decresed the possibility to get a significantly diverse sample, which is significantly important when carrying out qualitative and mixed-method researches in order to capture the voices and experiences of everybody (Allmark, 2004). To reduce the impact of selection bias partipation letters could have been sent out to all participants fitting the inclusion criteria, irrespectively of the clinicians' recommendations. However, not all clinicians agreed on their patients to be potentially recruited for participation in the study.

Moreover, independelty on the modality of sample selection and of having stated in the participant' information sheet that participation would not have an impact upon treatment, some people might have felt compelled to either participate or deny participation in the study in the hope to get benefits or for fear of negative ripercussions upon the treatment path; hence, social desirability bias might still have had an impact on sample recruitment.

Another limitation of the qualitative study is related to the fact that the interviewer did not specifically disclose her cisgender status, however participants were awere of her identification as female. This might have had an impact upon data collection as some interviewees might have felt uncomfortable discussing personal matters with a non-transgender person, as suggested by the refusal of one person to be interviwed by a cisgender researcher.

Finally, data was interpreted and analysed by an Italian cisgender woman, which might have biased the interpretation of findings as well as the formulation of interview questions. This is due to lacking full understanding of what being transgender entails as well as due to cultural and language barriers, thus it is important to fully acknowledge this limitation.

6. Future research

Future research should aim at overcoming the abovementioned limitations. As research regarding interpersonal experiences and QoL in clinical transgender populations is scant and often suffers of methodological limitations, there is urgent need to consolidate the current evidence regarding social issues, mental health and mental health-related QoL of this population. So far, research investigating the

impact of interpersonal issues and on transgender people's mood and life experiences has been missing. Employment of qualitative methodologies has been widely neglected in the investigation of these issues, however such methodology would enable clinicians to better understand the actual experiences and needs of transgender people attending transgender healthcare services.

Further research should aim at replicating the quantitative studies in order to gain further understanding on the impact of CHT upon autistic traits and interpersonal issues in the transgender population. These studies should also investigate the impact of CHT upon social behaviours and AQ subscale profiles, as findings of the matched control study suggested gender differences to be linked to social interactions and related subscales.

There is also need for further longitudinal studies aiming at replicating these findings as well as at understanding the impact of hormone treatment on transgender individuals' mental health and mental health-related QoL, to be able to properly support them throughout the transitioning process.

An increased number of transgender people are coming out as non-binary and this slice of the transgender population tends to be under-represented in transgender research. Treatment path might differ for these individuals as they might not wish to undergo all steps of gender affirming treatment, thus facing specific issues. Consequently, their mental health-related QoL might differ from the one of the binary transgender population. In fact, literature showed that they display poorer mental health than transgender people who identify as binary (Rimes, Goodship, Ussher, Baker & West, 2017; Thorne, Witcomb, Nieder, Nixon, Yip & Arcelus, 2018; Warren, Smalley & Barefoot, 2016). Therefore, more research is needed that focuses on this portion of the transgender population.

Finally, research should focus on the development of online interventions to decrease minority stress, reduce interpersonal issues, improve coping strategies, mental health and social support, which alongside physical changes ameliorating self-confidence and self-esteem should lead to an improvement in both physical and mental health-related QoL.

7. Conclusion

This thesis explored the quality of life, interpersonal issues and autistic traits of transgender people. The project found that transgender people experience poor mental health-related QoL, especially when compared to the general population, but some evidence suggests an amelioration when undergoing CHT. It was also found that levels of autistic traits in this population were high, as suspected by clinicians, but mainly due to transgender assigned females at birth. Those traits do not change after CHT. In fact, the traits worsen for transgender assigned females at birth, whilst remaining relatively stable for assigned males. These findings support the extreme male brain theory and suggest testosterone treatment to worsen autistic traits. Some of those traits may explain the difficulties socialising that some transgender people have, as found in the last study. However, it emerged that transitioning is perceived as a positive experience having a beneficial impact upon empathising abilities, experiences of fear and rejection, which improves minority stress and mental health.

This thesis draws attention on the importance of developing interventions to improve social support and mental health, to reduce interpersonal issues and to provide adequate support for transgender people presenting with autistic traits, especially for transgender assigned females at birth when undergoing CHT as testosterone treatment seems to pay a major role. Future studies are needed to cast light on the effect of CHT upon autistic traits and interpersonal issues as this field is still under-researched and results are of significant clinical importance.

Social support and interpersonal functioning are significantly linked with mental health and quality of life (Boza & Perry, 2014; Hoffman, 2014; Nemoto *et al.,* 2011); hence, providing support, improving social functioning and undergoing CHT should help ameliorate transgender people's mental health-related QoL. Online interventions are particularly suitable for this population because of their numerous advantages and should be of particular aid in dealing with this difficult to reach population. This will hopefully lead to an amelioration in mental health and will provide the needed support to increase mental health-related QoL and their satisfaction with life.

In light of the findings of this thesis, future interventions should aim at providing psychosocial education for effective management of psychosocial outcomes and of interpersonal difficulties, as psychoeducation is known to positively impact mental

health by improving stress, self-efficacy, interpersonal and communication skills, by reducing depression and anxiety, as well as by aiding the development and maintenance of self-management and problem solving strategies (Lukens & McFarlane, 2004). Additionally, there is need for the implementation of programmes aimed at carefully monitoring the impact of hormones, particularly testosterone treatment, to be able to promote accurate and specific management of physical and psychological outcomes in this population.

References

Adhya, D., Annuario, E., Lancaster, M. A., Price, J., Baron-Cohen, S., & Srivastava, D. P. (2018). Understanding the role of steroids in typical and atypical brain development: advantages of using a “brain in a dish” approach. *Journal of Neuroendocrinology, 30*(2), e12547.

Adler, R. K., Hirsch, S., & Mordaunt, M. (2012). *Voice and communication therapy for the transgender/transsexual client: A comprehensive clinical guide*. CA,USA: Plural Publishing Inc.

Ainsworth, T. A., & Spiegel, J. H. (2010). Quality of life of individuals with and without facial feminization surgery or gender reassignment surgery. *Quality of Life Research, 19*(7), 1019-1024.

Allison, C., Auyeung, B., & Baron-Cohen, S. (2012). Toward brief “red flags” for autism screening: the short autism spectrum quotient and the short quantitative checklist in 1,000 cases and 3,000 controls. *Journal of the American Academy of Child & Adolescent Psychiatry, 51*(2), 202-212.

Allmark, P. (2004). Should research samples reflect the diversity of the population? *Journal of Medical Ethics*, *30*(2), 185-189.

Álvarez, A. S., Pagani, M., & Meucci, P. (2012). The clinical application of the biopsychosocial model in mental health: a research critique. *American Journal of Physical Medicine & Rehabilitation*, *91*(13), S173-S180.

Annas, G. J. (1997). *Standard of care: the law of American bioethics: Law of American Bioethics*. Oxford: Oxford University Press.

Antoni, C. (2015). Service delivery and the challenges of providing service to people who are transgender. *Perspectives on Voice and Voice Disorders, 25*(2), 59-65.

APA. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. Washington, DC: American Psychiatric Pub.

Arcelus, J., Claes, L., Witcomb, G. L., Marshall, E., & Bouman, W. P. (2016). Risk factors for non-suicidal self-injury among trans youth. *The Journal of Sexual Medicine, 13*(3), 402-412.

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*(1), 156-167.

Arnberg, F., Linton, S., Hultcrantz, M., Heintz, E., & Jonsson, U. (2014). Internet-delivered psychological treatments for mood and anxiety disorders: a systematic review of their efficacy, safety, and cost-effectiveness. *PLOSone, 9*(5), e98118.

Asendorpf, J. B., & Wilpers, S. (1998). Personality effects on social relationships. *Journal of Personality and Social Psychology, 74*(6), 1531.

Auer, M. K., Liedl, A., Fuss, J., Nieder, T., Briken, P., Stalla, G. K., . . . Sievers, C. (2017). High impact of sleeping problems on quality of life in transgender individuals: A cross-sectional multicenter study. *PLoS One, 12*(2), e0171640.

Austin, E. J., Deary, I. J., Gibson, G. J., McGregor, M. J., & Dent, J. B. (1998). Individual response spread in self-report scales: Personality correlations and consequences. *Personality and Individual Differences*, *24*(3), 421-438.

Austin, A., & Goodman, R. (2017). The impact of social connectedness and internalized transphobic stigma on self-esteem among transgender and gender non-conforming adults. *Journal of Homosexuality*, *64*(6), 825-841.

Auyeung, B., Baron-Cohen, S., Ashwin, E., Knickmeyer, R., Taylor, K., & Hackett, G. (2009). Fetal testosterone and autistic traits. *British Journal of Psychology*, *100*(1), 1-22.

Barker, H., & Wylie, K. (2008). Are the criteria for the 'Real-Life Experience' stage of assessment for GID useful to patients and clinicians? *International Journal of Transgenderism, 10*(3–4), 121–131.

Bandelow, B., & Michaelis, S. (2015). Epidemiology of anxiety disorders in the 21st century. *Dialogues in Clinical Neuroscience, 17*(3), 327-335.

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.

Baron-Cohen, S. (1991). Precursors to a theory of mind: Understanding attention in others. In A. Whiten (Ed.), *Natural theories of mind: Evolution, development and simulation of everyday mindreading* (pp. 233-251). Oxford: Basil Blackwell.

Baron-Cohen, S. (1997). *Mindblindness: An essay on autism and theory of mind*. MIT press. Cambridge: Massachusetts.

Baron-Cohen, S. (2002). The extreme male brain theory of autism. *Trends in Cognitive Sciences, 6*(6), 248-254.

Baron-Cohen, S. (2003). *The Essential Difference: The Truth about the Male and Female Brain*. London: Allen Lane.

Baron-Cohen, S. (2010). Empathizing, systemizing, and the extreme male brain theory of autism. In *Progress in Brain Research* (Vol. 186, pp. 167-175). CA, USA: Elsevier.

Baron-Cohen, S., Auyeung, B., Nørgaard-Pedersen, B., Hougaard, D. M., Abdallah, M. W., Melgaard, L., Cohen, A.S., Chakrabarti, B., Ruta, L., & Lombardo, M. V. (2015). Elevated fetal steroidogenic activity in autism. *Molecular Psychiatry*, *20*(3), 369-376.

Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The Autism-Spectrum Quotient (AQ): evidence from Asperger Syndrome/High-Functioning Autism, males and females, scientists and mathematicians. *Journal of Autism and Developmental Disorders, 31*(1), 5-17.

Barrett, M. S., & Barber, J. P. (2007). Interpersonal profiles in major depressive disorder. *Journal of Clinical Psychology, 63*(3), 247-266.

Bartolucci, C., Gómez-Gil, E., Salamero, M., Esteva, I., Guillamón, A., Zubiaurre, L., Molero, F., & Montejo, A. L. (2015). Sexual Quality of Life in Gender-Dysphoric Adults before Genital Sex Reassignment Surgery. *The Journal of Sexual Medicine, 12*(1), 180-188.

Başar, K., Öz, G., & Karakaya, J. (2016). Perceived discrimination, social support, and quality of life in gender dysphoria. *The Journal of Sexual Medicine, 13*(7), 1133-1141.

Batten, A. (2005). Inclusion and the autism spectrum. *Improving Schools*, *8*(1), 93-96.

Beek, T. F., Cohen-Kettenis, P. T., Bouman, W. P., de Vries, A. L., Steensma, T. D., Witcomb, G. L., Arcelus, J., Richards, C., Elaut, E., & Kreukels, B. P. (2016). Gender incongruence of adolescence and adulthood: acceptability and clinical utility of the World Health Organization's proposed ICD-11 criteria. *PLoS One, 11*(10), e0160066.

Beek, T. F., Kreukels, B. P., Cohen-Kettenis, P. T., & Steensma, T. D. (2015). Partial treatment requests and underlying motives of applicants for gender affirming interventions. *The Journal of Sexual Medicine, 12*(11), 2201-2205.

Berscheid, E., & Peplau, L. A. (1983). The emerging science of relationships. *Close Relationships*, 1-19.

Bess, J. A., & Staab, S. D. (2009). The experiences of transgendered persons in psychotherapy: voices and recommendations. *Journal of Mental Health Counseling, 31*(3), 264–282.

Bjelland, I., Dahl, A. A., Haug, T. T., & Neckelmann, D. (2002). The validity of the Hospital Anxiety and Depression Scale: an updated literature review. *Journal of Psychosomatic Research, 52*(2), 69-77.

Blais, M., Gervais, J., Boucher, K., & Lavoie, F. (2013). Prevalence of prejudice based on sexual minority status among 14-21 years old youth in the province of Quebec. *International Journal of Victimology, 11*(2).

Bockting, W. O., & Coleman, E. (2007). Developmental stages of the transgender coming out process: Toward an integrated identity. *Principles of Transgender Medicine and Surgery*, *1*, 185-208.

Bockting, W. (2008). From gender dichotomy to gender diversity: Implications for psychotherapy and the real life experience. *Sexologies, 17*(4), 211–224.

Bockting, W. O., Miner, M. H., Swinburne Romine, R. E., Hamilton, A., & Coleman, E. (2013). Stigma, mental health, and resilience in an online sample of the US transgender population. *American Journal of Public Health, 103*(5), 943-951.

Bogdan, R., & Knopp Biklen, S. (2007). *Qualitative research for education: An introduction to theory and practice*. Needham Heights, MA: Allyn and Bacon.

Borkovec, T., Ray, W. J., & Stober, J. (1998). Worry: A cognitive phenomenon intimately linked to affective, physiological, and interpersonal behavioral processes. *Cognitive Therapy and Research, 22*(6), 561-576.

Borthwick-Duffy, S. A. (1992). Quality of life and quality of care in mental retardation. In *Mental retardation in the year 2000* (pp. 52-66). New York, NY: Springer.

Bouman, W. P., & Arcelus, J. (2017). *The transgender handbook: A guide for transgender people, their families and professionals*. New York, USA: Nova Science Publishers, Inc.

Bouman, W. P., Claes, L., Brewin, N., Crawford, J. R., Millet, N., Fernandez-Aranda, F., & Arcelus, J. (2017a). Transgender and anxiety: A comparative study

between transgender people and the general population. *International Journal of Transgenderism, 18*(1), 16-26.

Bouman, W. P., Claes, L., Marshall, E., Pinner, G. T., Longworth, J., Maddox, V., Witcomb, G., Jimenez-Murcia, S., Fernandez-Aranda, F., & Arcelus, J. (2016a). Sociodemographic variables, clinical features, and the role of preassessment cross-sex hormones in older trans people. *The Journal of Sexual Medicine, 13*(4), 711-719.

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

Bouman, W. P., de Vries, A. L., & T'Sjoen, G. (2016c). Gender dysphoria and gender incongruence: an evolving inter-disciplinary field. *International Review of Psychiatry, 28*(1), 1-4.

Bouman, W. P., Schwend, A. S., Motmans, J., Smiley, A., Safer, J. D., Deutsch, M. B., Adams, N., & Winter, S. (2017b). Language and trans health: Taylor & Francis.

Bouman, W. P., & Richards, C. (2013). Diagnostic and treatment issues for people with gender dysphoria in the United Kingdom. *Sexual and Relationship Therapy*, *28*(3), 165-171.

Bowen, D., Jabson, J., & Kamen, C. (2016). mHealth: an avenue for promoting health among sexual and gender minority populations?. *mHealth*, *2*(36), 1-3.

Boyatzis, R. E. (1998). *Transforming qualitative information: thematic analysis and code development.* London: Sage Publications.

Boza, C., & Perry, N. K. (2014). Gender-related victimization, perceived social support, and predictors of depression among transgender Australians. *International Journal of Transgenderism, 15*(1), 35-52.

Bradford, J., Reisner, S. L., Honnold, J. A., & Xavier, J. (2013). Experiences of transgender-related discrimination and implications for health: results from the Virginia Transgender Health Initiative Study. *American Journal of Public Health, 103*(10), 1820-1829.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.

Braun, V., & Clarke, V. (2013). *Successful qualitative research: a practical guide for beginners* London: SAGE.

Breslow, A. S., Brewster, M. E., Velez, B. L., Wong, S., Geiger, E., & Soderstrom, B. (2015). Resilience and collective action: Exploring buffers against minority stress for transgender individuals. *Psychology of Sexual Orientation and Gender Diversity, 2*(3), 253.

Brinton, B., & Fujiki, M. (1993). Language, social skills, and socioemotional behavior. *Language, Speech, and Hearing Services in Schools, 24*(4), 194-198.

Brotman, S., Ryan, B., Jalbert, Y., & Rowe, B. (2002). The impact of coming out on health and health care access: the experiences of gay, lesbian, bisexual and two-spirit people. *Journal of Health & Social Policy, 15*(1), 1-29.

Brugha, T. S., McManus, S., Bankart, J., Scott, F., Purdon, S., Smith, Bebbington, P., Jenkins, R., & Meltzer, H. (2011). Epidemiology of autism spectrum disorders in adults in the community in England. *Archives of General Psychiatry*. 68, 459-465.

Brugha, T. S., Spiers, N., Bankart, J., Cooper, S., McManus, Scott, F. J., Smith, J. , & Tyrer, F. (2016). Epidemiology of autism in adults across age groups and ability levels. *British Journal of Psychiatry*, *209*(6), 498-503.

Bry, L. J., Mustanski, B., Garofalo, R., & Burns, M. N. (2017). Resilience to discrimination and rejection among young sexual minority males and transgender females: a qualitative study on coping with minority stress. *Journal of Homosexuality*, *65*(11), 1435-1456.

Budge, S. L. (2013). Interpersonal psychotherapy with transgender clients. *Psychotherapy, 50*(3), 35-359.

Budge, S. L., Adelson, J. L., & Howard, K. A. (2013). Anxiety and depression in transgender individuals: the roles of transition status, loss, social support, and coping. *Journal of Consulting and Clinical Psychology, 81*(3), 545-557.

Button, K. S., Ioannidis, J. P., Mokrysz, C., Nosek, B. A., Flint, J., Robinson, E. S., & Munafò, M. R. (2013). Confidence and precision increase with high statistical power. *Nature Reviews Neuroscience, 14*(8), 585.

Byne, W., Bradley, S. J., Coleman, E., Eyler, A. E., Green, R., Menvielle, E. J., Meyer-Bahlburg, H.F., Pleak, R.R., & Tompkins, D. A. (2012). Report of the American Psychiatric Association task force on treatment of gender identity disorder. *Archives of Sexual Behavior, 41*(4), 759-796.

Cash, T. F., & Fleming, E. C. (2002). The impact of body image experiences: development of the body image quality of life inventory. *International Journal of Eating Disorders, 31*(4), 455-460.

Castellano, E., Crespi, C., Dell'Aquila, C., Rosato, R., Catalano, C., Mineccia, V., Motta, G., Botto, E., & Manieri, C. (2015). Quality of life and hormones after sex reassignment surgery. *Journal of Endocrinological Investigation, 38*(12), 1373-1381.

Cath, D. C., Ran, N., Smit, J. H., Van Balkom, A. J., & Comijs, H. C. (2008). Symptom overlap between autism spectrum disorder, generalized social anxiety disorder and obsessive-compulsive disorder in adults: a preliminary case-controlled study. *Psychopathology, 41*(2), 101-110.

Chrastina, J., Ivanová, K., Krejčířová, O., & Ježorská, Š. (2014). Results of Subjective Quality of Life Research Using SQUALA Standardized Questionnaire. *Profese On-line, 7*(1), 1-8.

Christopher, N., Ralph, D., & Garaffa, G. (2018). Genital reconstructive surgery for transgender men. In *The transgender handbook: A guide for transgender people, their families and professionals* (pp. 277-300). New York, USA: Nova Science Publishers, Inc.

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. *The Journal of Sexual Medicine, 12*(1), 168-179.

Clarke, G., & Yarborough, B. (2013). Evaluating the promise of health IT to enhance/expand the reach of mental health services. *General Hospital Psychiatry*, *35*(4), 339-344.

Clements-Nolle, K., Marx, R., & Katz, M. (2006). Attempted suicide among transgender persons: The influence of gender-based discrimination and victimization. *Journal of Homosexuality, 51*(3), 53-69.

Cohen-Kettenis, P. T., & Gooren, L. v. (1999). Transsexualism: a review of etiology, diagnosis and treatment. *Journal of Psychosomatic Research, 46*(4), 315-333.

Cobb-Clark, D. A., & Schurer, S. (2012). The stability of big-five personality traits. *Economics Letters, 115*(1), 11-15.

Coleman, E., Bockting, W., Botzer, M., Cohen-Kettenis, P., DeCuypere, G., Feldman, J., Fraser, L., Green, J., Knudson, G., Meyer, W.J., & Monstrey, S. (2012). Standards of care for the health of transsexual, transgender, and gender-nonconforming people, version 7. *International Journal of Transgenderism, 13*(4), 165-232.

Colizzi, M., Costa, R., & Todarello, O. (2014). Transsexual patients' psychiatric comorbidity and positive effect of cross-sex hormonal treatment on mental health: results from a longitudinal study. *Psychoneuroendocrinology*, *39*, 65-73.

Collazo, A., Austin, A., & Craig, S. L. (2013). Facilitating transition among transgender clients: components of effective clinical practice. *Clinical Social Work Journal*, *41*(3), 228-237.

Colton Meier, S. L., Fitzgerald, K. M., Pardo, S. T., & Babcock, J. (2011). The effects of hormonal gender affirmation treatment on mental health in female-to-male transsexuals. *Journal of Gay & Lesbian Mental Health, 15*(3), 281-299.

Costa, R., & Colizzi, M. (2016). The effect of cross-sex hormonal treatment on gender dysphoria individuals' mental health: a systematic review. *Neuropsychiatric Disease and Treatment, 12*, 1953.

Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Creswell, J. (2003). Research design: Qualitative, quantitative and mixed methods approaches (2nd ed.). Thousand Oaks, CA: SAGE Publications.

Crocker, J., & Major, B. (1989). Social stigma and self-esteem: The self-protective properties of stigma. *Psychological Review, 96*(4), 608-630.

Cronin, T. J., Pepping, C. A., & Lyons, A. (2019). Internalized transphobia and well-being: The moderating role of attachment. *Personality and Individual Differences*, *143*, 80-83.

Crutzen, R., Ruiter, R., & deVries, N. (2014). Can interest and enjoyment help to increase use of Internet-delivered interventions? *Psychology & Health, 29*(1), 1227-1244.

Crutzen, R. & Ruiter, R. (2015). Interest in behaviour change interventions: a conceptual model. *The European Health Psychologist, 17*(1)*,* 6-11

Cummins, C., Evers, K., Johnson, J., Paiva, A., Prochaska, J., & Prochaska, J. (2004). Assessing stage of change and informed decision making for Internet participation in health promotion and disease management. *Managed Care Interface*, *17*(8), 27-32.

da Silva, D. C., Schwarz, K., Fontanari, A. M. V., Costa, A. B., Massuda, R., Henriques, A. A., Salvador, J., Silveira, E., Rosito, T.E., & Lobato, M. I. R. (2016). WHOQOL-100 before and after sex reassignment surgery in Brazilian male-to-female transsexual individuals. *The Journal of Sexual Medicine, 13*(6), 988-993.

Davey, A., Arcelus, J., Meyer, C., & Bouman, W. P. (2016). Self-injury among trans individuals and matched controls: prevalence and associated factors. *Health & Social Care in the Community, 24*(4), 485-494.

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. *The Journal of Sexual Medicine, 11*(12), 2976-2985.

Davey, A., Bouman, W. P., Meyer, C., & Arcelus, J. (2015). Interpersonal Functioning Among Treatment-Seeking Trans Individuals. *Journal of Clinical Psychology, 71*(12), 1173-1185.

Davies, E., Morriss, R., & Glazebrook, C. (2014). Computer-delivered and web-based interventions to improve depression, anxiety, and psychological well-being of university students: a systematic review and meta-analysis. *Journal of Medical Internet Research, 16*(5), 18-39.

Davis, S. A., & Colton Meier, S. (2014). Effects of testosterone treatment and chest reconstruction surgery on mental health and sexuality in female-to-male transgender people. *International Journal of Sexual Health, 26*(2), 113-128.

Davis, G. L., Lindsay, K., Albrecht, J., Bodenheimer Jr, H. C., Balart, L. A., Perrillo, R. P., Dienstag, L., Tamburro, C., Schiff, E., Carey, W., Payne, J., Jacobson, I., van Thiel, D., Lefkowitch, J., & Sanghvi, B. (1994). Clinical predictors of response to recombinant interferon-α treatment in patients with chronic non-A, non-B hepatitis (hepatitis C). *Journal of Viral Hepatitis*, *1*(1), 55-63.

de Cuypere, G., Elaut, E., Heylens, G., Van Maele, G., Selvaggi, G., T'Sjoen, G., Rubens, R., Hoebeke, P., & Monstrey, S. (2006). Long-term follow-up:

psychosocial outcome of Belgian transsexuals after sex reassignment surgery. *Sexologies, 15*(2), 126-133.

Deeks, J. J., Higgins, J. P., & Altman, D. G. (2008). Analysing data and undertaking meta-analyses. *Cochrane handbook for systematic reviews of interventions: Cochrane book series* (pp. 243-296).

Defreyne, J., Motmans, J., & T'Sjoen, G. (2017). Healthcare costs and quality of life outcomes following gender affirming surgery in trans men: a review. *Expert Review of Pharmacoeconomics & Outcomes Research*, *17*(6), 543-556.

Derry, S. J. (1999). A fish called peer learning: searching for common themes. *Cognitive Perspectives on Peer Learning*, *9*(1), 197-211.

Devor, A. (2004). Witnessing and mirroring: A fourteen stage model of transsexual identity formation. *Journal of Gay & Lesbian Mental Health, 8*(1), 41–67.

de Vries, A. L., McGuire, J. K., Steensma, T. D., Wagenaar, E. C., Doreleijers, T. A., & Cohen-Kettenis, P. T. (2014). Young adult psychological outcome after puberty suppression and gender reassignment. *Pediatrics*, *134*(4), 696-704.

de Vries, A. L., Noens, I. L., Cohen-Kettenis, P. T., van Berckelaer-Onnes, I. A., & Doreleijers, T. A. (2010). Autism spectrum disorders in gender dysphoric children and adolescents. *Journal of Autism and Developmental Disorders, 40*(8), 930-936.

Devor, A. H. (2004). Witnessing and mirroring: A fourteen stage model of transsexual identity formation. *Journal of Gay & Lesbian Psychotherapy*, *8*(1-2), 41-67.

Dhejne, C., Lichtenstein, P., Boman, M., Johansson, A. L., Långström, N., & Landén, M. (2011). Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden. *PLoS One, 6*(2), e16885.

Dhejne, C., Van Vlerken, R., Heylens, G., & Arcelus, J. (2016). Mental health and gender dysphoria: A review of the literature. *International Review of Psychiatry, 28*(1), 44-57.

Di Ceglie, D. (1998). *A stranger in my own body: Atypical gender identity development and mental health*. Lonodon: Karnac Books.

Dickersin, K. (1990). The existence of publication bias and risk factors for its occurrence. *JAMA, 263*(10), 1385-1389.

Dickson, D., & Bamford, A. (1995). Improving the interpersonal skills of social work students: The problem of transfer of training and what to do about it. *The British Journal of Social Work, 25*(1), 85-105.

Dierckx, M., Motmans, J., Mortelmans, D., & T'sjoen, G. (2016). Families in transition: A literature review. *International Review of Psychiatry, 28*(1), 36-43.

Dispenza, F., Watson, L. B., Chung, Y. B., & Brack, G. (2012). Experience of career-related discrimination for female-to-male transgender persons: A qualitative study. *The Career Development Quarterly, 60*(1), 65-81.

Donker, T., Griffiths, K. M., Cuijpers, P., & Christensen, H. (2009). Psychoeducation for depression, anxiety and psychological distress: a meta-analysis. *BMC Medicine*, *7*(1), 1-9.

Duke, T. S. (2011). Lesbian, gay, bisexual, and transgender youth with disabilities: A meta-synthesis. *Journal of LGBT Youth, 8*(1), 1-52.

Duggan, A. (2006). Understanding interpersonal communication processes across health contexts: Advances in the last decade and challenges for the next decade. *Journal of Health Communication, 11*(1), 93-108.

Eaves, L. C., & Ho, H. H. (2008). Young adult outcome of autism spectrum disorders. *Journal of Autism and Developmental Disorders, 38*(4), 739-747.

Elbers, J. M., Giltay, E. J., Teerlink, T., Scheffer, P. G., Asscheman, H., Seidell, J. C., & Gooren, L. J. (2003). Effects of sex steroids on components of the insulin resistance syndrome in transsexual subjects. *Clinical Endocrinology, 58*(5), 562-571.

Ellis, S. J., Bailey, L., & McNeil, J. (2016). Transphobic victimisation and perceptions of future risk: A large-scale study of the experiences of trans people in the UK. *Psychology & Sexuality, 7*(3), 211-224.

Emerson, E., Felce, D., & Stancliffe, R. J. (2013). Issues concerning self-report data and population-based data sets involving people with intellectual disabilities. *Intellectual and Developmental Disabilities*, *51*(5), 333-348.

Erich, S., Tittsworth, J., & Kersten, A. S. (2010). An examination and comparison of transsexuals of color and their white counterparts regarding personal well-being and support networks. *Journal of GLBT Family Studies, 6*(1), 25-39.

Factor, R. J., & Rothblum, E. D. (2008). 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*(3), 11-30.

Fernie, B. A., Wright, T., Caselli, G., Nikčević, A. V., & Spada, M. M. (2017). Metacognitions as Mediators of Gender Identity-related Anxiety. *Clinical Psychology & Psychotherapy, 24*(1), 264-268.

Field, A. P. (2009). *Discovering statistics using SPSS*. London, England: SAGE.

Fisher, A. D., Castellini, G., Bandini, E., Casale, H., Fanni, E., Benni, L., Ferruccio, N., Meriggiola, M.C., Manieri, C., Gualerzi, A., & Jannini, E. (2014). Cross-sex hormonal treatment and body uneasiness in individuals with gender dysphoria. *The Journal of Sexual Medicine, 11*(3), 709-719.

Fraser, L. (2009). Depth psychotherapy with transgender people. *Sexual and Relationship Therapy, 24*(2), 126-142.

Fredriksen-Goldsen, K. I., Kim, H.-J., Shiu, C., Goldsen, J., & Emlet, C. A. (2014). Successful aging among LGBT older adults: Physical and mental health-related quality of life by age group. *The Gerontologist, 55*(1), 154-168.

Fylan, F. (2005). Semi-structured interviewing. *A Handbook of Research Methods for Clinical and Health Psychology*, *5*(2), 65-78.

Gagné, P., Tewksbury, R., & McGaughey, D. (1997). Coming out and crossing over: Identity formation and proclamation in a transgender community. *Gender & Society, 11*(4), 478-508.

Garcia, J., & Gustavson, A. R. (1997). The science of self-report. *APS Observer*, *10*(1).

George, E., & Engel, L. (1980). The clinical application of the biopsychosocial model. *American Journal of Psychiatry*, *137*(5), 535-544.

Gillott, A., & Standen, P. (2007). Levels of anxiety and sources of stress in adults with autism. *Journal of Intellectual Disabilities, 11*(4), 359-370.

Glidden, D., Bouman, W. P., Jones, B. A., & Arcelus, J. (2016). Gender Dysphoria and Autism Spectrum Disorder: A Systematic Review of the Literature. *Sexual Medicine Reviews, 4*(1), 3-14.

Gómez-Gil, E., Zubiaurre-Elorza, L., Esteva, I., Guillamon, A., Godás, T., Almaraz, M. C., Halperin, I., & Salamero, M. (2012). Hormone-treated transsexuals report less social distress, anxiety and depression. *Psychoneuroendocrinology, 37*(5), 662-670.

Gorin-Lazard, A., Baumstarck, K., Boyer, L., Maquigneau, A., Gebleux, S., Penochet, J. C., Albarel, F., Morange, I., Loundou, A., & Berbis, J., (2012). Is hormonal

therapy associated with better quality of life in transsexuals? A cross-sectional study. *The Journal of Sexual Medicine*, *9*(2), 531-541.

Gorin-Lazard, A., Baumstarck, K., Boyer, L., Maquigneau, A., Penochet, J. C., Pringuey, D., Albarel, F., Morange, I., Bonierbale, M., Lançon, C., & Auquier, P. (2013). Hormonal therapy is associated with better self-esteem, mood, and quality of life in transsexuals. *The Journal of Nervous and Mental Disease*, *201*(11), 996-1000.

Gould, J., & Ashton-Smith, J. (2011). Missed diagnosis or misdiagnosis: girls and women on the autism spectrum. *Good Autism Practice*, *12*(1), 34–41.

Greenberg, D. M., Warrier, V., Allison, C., & Baron-Cohen, S. (2018). Testing the Empathizing–Systemizing theory of sex differences and the Extreme Male Brain theory of autism in half a million people. *Proceedings of the National Academy of Sciences*, *115*(48), 12152-12157.

Greene, D. C., Britton, P. J., & Fitts, B. (2014). Long-term outcomes of lesbian, gay, bisexual, and transgender recalled school victimization. *Journal of Counseling & Development, 92*(4), 406-417.

Griffiths, F., Lindenmeyer, A., Powell, J., Lowe, P., & Thorogood, M. (2006). Why are health care interventions delivered over the internet? A systematic review of the published literature. *Journal of Medical Internet Research, 8*(2), e10.

Grossman, A. H., & D'augelli, A. R. (2006). Transgender youth: Invisible and vulnerable. *Journal of Homosexuality*, *51*(1), 111-128.

Grossman, A. H., Haney, A. P., Edwards, P., Alessi, E. J., Ardon, M., & Howell, T. J. (2009). Lesbian, gay, bisexual and transgender youth talk about experiencing and coping with school violence: A qualitative study. *Journal of LGBT Youth, 6*(1), 24-46.

Grove, R., Hoekstra, R. A., Wierda, M., & Begeer, S. (2017). Exploring sex differences in autistic traits: A factor analytic study of adults with autism. *Autism*, *21*(6), 760-768.

Guba, E. G. (1990). The alternative paradigm dialog. In E. G. Guba (Ed.), *The Paradigm Dialog* (pp. 17–27). Newbury Park, CA: Sage.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods, 18*(1), 59-82.

Guyatt, G. H., Oxman, A. D., Kunz, R., Brozek, J., Alonso-Coello, P., Rind, D., Devereaux, P.J., Montori, V.M., Freyschuss, B., Vist, G., & Jaeschke, R. (2011). GRADE guidelines 6. Rating the quality of evidence—imprecision. *Journal of Clinical Epidemiology*, *64*(12), 1283-1293.

Hancock, A., Owen, K., Seigfriedt, L., & Brundage, S. (2009). *Reliability and validity of the TSEQ.* Paper presented at the World Professional Association of Transgender Health conference, Oslo, Norway.

Hancock, A. B. (2017). An ICF perspective on voice-related quality of life of american transgender women. *Journal of Voice, 31*(1), 115. e111-e118.

Hancock, A. B., Krissinger, J., & Owen, K. (2011). Voice perceptions and quality of life of transgender people. *Journal of Voice, 25*(5), 553-558.

Hatzenbuehler, M. L. (2009). How does sexual minority stigma "get under the skin"? A psychological mediation framework. *Psychological Bulletin, 135*(5), 707-730.

Hatzenbuehler, M. L., & Pachankis, J. E. (2016). Stigma and minority stress as social determinants of health among lesbian, gay, bisexual, and transgender youth: research evidence and clinical implications. *Pediatric Clinics*, *63*(6), 985-997.

Hawthorne, G., Herrman, H., & Murphy, B. (2006). Interpreting the WHOQOL-BREF: Preliminary population norms and effect sizes. *Social Indicators Research, 77*(1), 37-59.

Health Research Authority (HRA) (2013). *Guidance for NHS Research Studies.* London: Health Research Authority.

Hellemans, H., Colson, K., Verbraeken, C., Vermeiren, R., & Deboutte, D. (2007). Sexual behavior in high-functioning male adolescents and young adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 37*(2), 260-269.

Hembree, W. C., Cohen-Kettenis, P., Delemarre-Van De Waal, H. A., Gooren, L. J., Meyer III, W. J., Spack, N. P., . . . Montori, V. M. (2009). Endocrine treatment of transsexual persons: an Endocrine Society clinical practice guideline. *The Journal of Clinical Endocrinology & Metabolism, 94*(9), 3132-3154.

Hendricks, M. L., & Testa, R. J. (2012). A conceptual framework for clinical work with transgender and gender nonconforming clients: An adaptation of the

Minority Stress Model. *Professional Psychology: Research and Practice, 43*(5), 460-467.

Heppner, P.P., Wampold, B.E., Owen, J., Thompson, M.H., Wang, K.T. (2015). *Research Design in Counseling*. 4th ed. Boston, MA: Cengage Learning.

Heylens, G., Aspeslagh, L., Dierickx, J., Baetens, K., Van Hoorde, B., De Cuypere, G., & Elaut, E. (2018). The Co-occurrence of Gender Dysphoria and Autism Spectrum Disorder in Adults: An Analysis of Cross-Sectional and Clinical Chart Data. *Journal of Autism and Developmental Disorders, 48*(6), 2217-2223.

Heylens, G., Elaut, E., Kreukels, B.P.C., Paap, M., Cerwenka, S., Richter-Appelt, H., Cohen-Kettenis, P.T., Haraldsen, I.R., & de Cuypere, G. (2014a). Psychiatric characteristics in transsexual individuals: multicentre study in four European countries. *British Journal of Psychiatry, 204*(2), 151-156.

Heylens, G., Verroken, C., De Cock, S., T'sjoen, G., & De Cuypere, G. (2014b). Effects of different steps in gender reassignment therapy on psychopathology: a prospective study of persons with a gender identity disorder. *The Journal of Sexual Medicine, 11*(1), 119-126.

Higgins, J., & Green S. (2011). *Cochrane handbook for systematic reviews of interventions Version 5.1. 0.* Chichester, England: The Cochrane Collaboration, Wiley-Blackwell.

Higgins, J. P., & Thompson, S. G. (2002). Quantifying heterogeneity in a meta-analysis. *Statistics in Medicine*, *21*(11), 1539-1558.

Hoekstra, R., Bartels, M., Cath, D., & Boomsma, D. (2008). Factor structure, reliability and criterion validity of the Autism-Spectrum Quotient (AQ): A study in Dutch population and patient groups. *Journal of Autism and Developmental Disorders, 38*(8), 1555-1566.

Hoekstra, R., Vinkhuyzen, A., Wheelwright, S., Bartels, M., Boomsma, D, Baron-Cohen, S., Posthuma, D., & van der Sluis, S. (2011). The construction and validation of an abridged version of the Autism-Spectrum Quotient (AQ-Short). *Journal of Autism and Developmental Disorders, 41*(5), 589-596.

Hoffman, B. (2014). An overview of depression among transgender women. *Depression Research & Treatment, 2014*. doi.org/10.1155/2014/394283

Howells, A., Ivtzan, I., & Eiroa-Orosa, F. J. (2016). Putting the 'app' in happiness: a randomised controlled trial of a smartphone-based mindfulness intervention to enhance wellbeing. *Journal of Happiness Studies*, *17*(1), 163-185.

Hoy-Ellis, C. P., Shiu, C., Sullivan, K. M., Kim, H.J., Sturges, A. M., & Fredriksen-Goldsen, K. I. (2017). Prior military service, identity stigma, and mental health among transgender older adults. *The Gerontologist, 57*(suppl_1), S63-S71.

Huang, C. Y., Liao, H. Y., & Chang, S. H. (1998). Social desirability and the Clinical Self-Report Inventory: methodological reconsideration. *Journal of Clinical Psychology*, *54*(4), 517-528.

Huedo-Medina, T. B., Sánchez-Meca, J., Marín-Martínez, F., & Botella, J. (2006). Assessing heterogeneity in meta-analysis: Q statistic or I^2 index? *Psychological Methods, 11*(2), 193.

Ibrahim, A. K., Kelly, S. J., Adams, C. E., & Glazebrook, C. (2013). A systematic review of studies of depression prevalence in university students. *Journal of Psychiatric Research, 47*(3), 391-400.

IBM Corp. (2015). *IBM SPSS Statistics for Windows, Version 23*. Armonk, NY: IBM Corp.

IBM, C. (2016). IBM SPSS Statistics for Windows, Version 24.0. *Armonk, NY: IBM Corp.*

Jacobs, L., Rachlin, K., Erickson-Schroth, L., & Janssen, A. (2014). Gender dysphoria and co-occurring autism spectrum disorders: review, case examples, and treatment considerations. *LGBT Health, 1*(4), 277-282.

Jacobson, B. H., Johnson, A., Grywalski, C., Silbergleit, A., Jacobson, G., Benninger, M. S., & Newman, C. W. (1997). The voice handicap index (VHI): development and validation. *American Journal of Speech-Language Pathology, 6*(3), 66-70.

Jäggi, T., Jellestad, L., Corbisiero, S., Schaefer, D. J., Jenewein, J., Schneeberger, A., Kuhn, A., & Garcia Nuñez, D. (2018). Gender minority stress and depressive symptoms in transitioned swiss transpersons. *BioMed Research International*. doi.org/10.1155/2018/8639263

Janssen, A., Huang, H., & Duncan, C. (2016). Gender variance among youth with autism spectrum disorders: A retrospective chart review. *Transgender Health, 1*(1), 63-68.

Johansen, K. L. (1999). Physical Functioning and Exercise Capacity in Patient on Dialysis. *Advances in Renal Replacement Therapy*, *6*(2), 141-148.

Jokić-Begić, N., Lauri Korajlija, A., & Jurin, T. (2014). Psychosocial adjustment to sex reassignment surgery: A qualitative examination and personal experiences of six transsexual persons in Croatia. *The Scientific World Journal, 2014*.

Jones, B. A., Arcelus, J., Bouman, W. P., & Haycraft, E. (2017a). Barriers and facilitators of physical activity and sport participation among young transgender adults who are medically transitioning. *International Journal of Transgenderism, 18*(2), 227-238.

Jones, B. A., Arcelus, J., Bouman, W. P., & Haycraft, E. (2017b). Sport and transgender people: A systematic review of the literature relating to sport participation and competitive sport policies. *Sports Medicine, 47*(4), 701-716.

Jones, B. A., Haycraft, E., Bouman, W. P., & Arcelus, J. (2017c). The Levels and Predictors of Physical Activity Engagement Within the Treatment-Seeking Transgender Population: A Matched Control Study. *Journal of Physical Activity and Health, 15*(2), 99-107.

Jones, B. A., Haycraft, E., Bouman, W. P., Brewin, N., Claes, L., & Arcelus, J. (2018). Risk Factors for Eating Disorder Psychopathology within the Treatment Seeking Transgender Population: The Role of Cross-Sex Hormone Treatment. *European Eating Disorders Review, 26*(2), 120-128.

Jones, B. A., Haycraft, E., Murjan, S., & 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.

Jones, R., Wheelwright, S., Farrell, K., Martin, E., Green, R., Di Ceglie, D., & Baron-Cohen, S. (2012). Brief report: female-to-male transsexual people and autistic traits. *Journal of Autism and Developmental Disorders, 42*(2), 301-306.

Jordan, K. M., & Deluty, R. H. (1998). Coming out for lesbian women: Its relation to anxiety, positive affectivity, self-esteem, and social support. *Journal of Homosexuality, 35*(2), 41-63.

Kaltiala-Heino, R., Sumia, M., Työläjärvi, M., & Lindberg, N. (2015). Two years of gender identity service for minors: overrepresentation of natal girls with severe problems in adolescent development. *Child and Adolescent Psychiatry and Mental Health, 9*(1), 1-9.

Kattari, S. K., Whitfield, D. L., Walls, N. E., Langenderfer-Magruder, L., & Ramos, D. (2016). Policing gender through housing and employment discrimination: comparison of discrimination experiences of transgender and cisgender LGBQ individuals. *Journal of the Society for Social Work and Research, 7*(3), 427-447.

Keenan, W. J. (2001). *Dressed to impress: Looking the part*: Berg.

Kelleher, C. (2009). Minority stress and health: Implications for lesbian, gay, bisexual, transgender, and questioning (LGBTQ) young people. *Counselling Psychology Quarterly, 22*(4), 373-379.

Kelleher, C., Cardozo, L., Khullar, V., & Salvatore, S. (1997). A new questionnaire to assess the quality of life of urinary incontinent women. *BJOG: An International Journal of Obstetrics & Gynaecology, 104*(12), 1374-1379.

Kim, B. (2001). Social constructivism. *Emerging Perspectives on Learning, Teaching, and Technology*, *1*(1), 16.

Klerman, G. L., & Weissman, M. M. (1994). *Interpersonal psychotherapy of depression: A brief, focused, specific strategy*. Oxford, UK: Rowman & Littlefield Publishers, Inc.

Kohl, L., Crutzen, R., & de Vries, N. (2013). Online prevention aimed at lifestyle beahviours: a systematic review of reviews. *Journal of Medical Internet Research, 15*(7), e146.

Koken, J. A., Bimbi, D. S., & Parsons, J. T. (2009). Experiences of familial acceptance–rejection among transwomen of color. *Journal of Family Psychology, 23*(6), 853.

Kraemer, B., Delsignore, A., Gundelfinger, R., Schnyder, U., & Hepp, U. (2005). Comorbidity of Asperger syndrome and gender identity disorder. *European Child and Adolescent Psychiatry, 14*, 292-296.

Kristensen, Z. E., & Broome, M. R. (2015). Autistic traits in an internet sample of gender variant UK adults. *International Journal of Transgenderism, 16*(4), 234-245.

Krosnick, J. A. (1991). Response strategies for coping with the cognitive demands of attitude measures in surveys. *Applied Cognitive P sychology*, *5*(3), 213-236.

Kuhn, A., Bodmer, C., Stadlmayr, W., Kuhn, P., Mueller, M. D., & Birkhäuser, M. (2009). Quality of life 15 years after sex reassignment surgery for transsexualism. *Fertility and Sterility, 92*(5), 1685-1689.

Lai, M. C., Lombardo, M. V., Pasco, G., Ruigrok, A. N., Wheelwright, S.J., Sadek, S. A., Chakrabarti, B., & Baron-Cohen, S. (2011). A behavioral comparison of male and female adults with high functioning autism spectrum conditions. *PLoS One*, 6, e20835.

Lànden, M., & Rasmussen, P. (1997). Gender identity disorder in a girl with autism: a case report. *European Child & Adolescent Psychiatry, 6*, 170-173.

Lawrence, A. A. (2003). Factors associated with satisfaction or regret following male-to-female sex reassignment surgery. *Archives of Sexual Behavior, 32*(4), 299-315.

Lean, M. E. J., Han, T. S., & Seidell, J. C. (1998). Impairment of health and quality of life in people with large waist circumference. *The Lancet*, *351*(9106), 853-856.

Leary, M. R., Schreindorfer, L. S., & Haupt, A. L. (1995). The role of low self-esteem in emotional and behavioral problems: Why is low self-esteem dysfunctional? *Journal of Social and Clinical Psychology, 14*(3), 297-314.

Leibowitz, S., & de Vries, A. L. (2016). Gender dysphoria in adolescence. *International Review of Psychiatry, 28*(1), 21-35.

Lemaire, M., Thomazeau, B., & Bonnet-Brilhault, F. (2014). Gender identity disorder and autism spectrum disorder in a 23-years-old female. *Archives of Sexual Behavior, 43*, 395-398.

Lenning, E., & Buist, C. L. (2013). Social, psychological and economic challenges faced by transgender individuals and their significant others: Gaining insight through personal narratives. *Culture, Health & Sexuality, 15*(1), 44-57.

Levine, S. B. (2009). Real-life test experience: Recommendations for revisions to the standards of care of the world professional association for transgender health. *International Journal of Transgenderism, 11*(3), 186–193.

Levitt, H. M., & Ippolito, M. R. (2014). Being transgender: Navigating minority stressors and developing authentic self-presentation. *Psychology of Women Quarterly, 38*(1), 46-64.

Lindsey, L. L. (2015). The Sociology of Gender Theoretical Perspectives and Feminist Frameworks. In *Gender Roles* (pp. 23-48). UK: Routledge.

Lindqvist, E. K., Sigurjonsson, H., Möllermark, C., Rinder, J., Farnebo, F., & Lundgren, T. K. (2017). Quality of life improves early after gender reassignment surgery in transgender women. *European Journal of Plastic Surgery, 40*(3), 223-226.

Lombardi, E. (2001). Enhancing transgender health care. *American Journal of Public Health*, *91*(6), 869-872.

Lombardi, E. L., Wilchins, R. A., Priesing, D., & Malouf, D. (2002). Gender violence: Transgender experiences with violence and discrimination. *Journal of Homosexuality, 42*(1), 89-101.

Loney, P. L., Chambers, L. W., Bennett, K. J., Roberts, J. G., & Stratford, P. W. (1998). Critical appraisal of the health research literature: prevalence or incidence of a health problem. *Journal of Chronic Diseases, 19*(4), 170-176.

Longino, H. (1993). Subjects, power, and knowledge: description and prescription in feminist philosophies of science. In Alcoff, L., & Potter, E. (Eds.) *Feminist Epistemologies* (pp. 101-120). NY: Routledge.

Lord, C., Cook, E. H., Leventhal, B. L., & Amaral, D. G. (2000). Autism spectrum disorders. *Neuron*, *28*(2), 355-363.

Lord, C., Rutter, M., & Le Couteur, A. (1994). Autism Diagnostic Interview Revised: a revised version of a diagnostic interview for caregivers of individuals with possible pervasive developmental disorders. *Journal of Autism and Developmental Disorders, 24*(5), 659-685.

Lord, C., Rutter, M., DiLavore, P., & Risi, S. (2002). *Autism Diagnostic Observation Schedule. ADOS Manual.* Los Angeles, USA: Western Psychological Services.

Lukens, E. P., & McFarlane, W. R. (2004). Psychoeducation as evidence-based practice: Considerations for practice, research, and policy. *Brief Treatment and Crisis Intervention*, *4*(3), 205-225.

Manieri, C., Castellano, E., Crespi, C., Di Bisceglie, C., Dell'Aquila, C., Gualerzi, A., & Molo, M. (2014). Medical treatment of subjects with gender identity disorder: the experience in an Italian public health center. *International Journal of Transgenderism, 15*(2), 53-65.

Marchesini, G., Bianchi, G., Amodio, P., Salerno, F., Merli, M., Panella, C., Loguercio, C., Apolone, G., Niero, M., & Abbiati, R. (2001). Factors associated with poor health-related quality of life of patients with cirrhosis. *Gastroenterology*, *120*(1), 170-178.

Marques, J. F., & McCall, C. (2005). The application of interrater reliability as a solidification instrument in a phenomenological study. *The Qualitative Report, 10*(3), 439-462.

Marshall, E., Claes, L., Bouman, W. P., Witcomb, G. L., & Arcelus, J. (2016). Non-suicidal self-injury and suicidality in trans people: a systematic review of the literature. *International Review of Psychiatry, 28*(1), 58-69.

Mayer, K. H., Bradford, J. B., Makadon, H. J., Stall, R., Goldhammer, H., & Landers, S. (2008). Sexual and gender minority health: what we know and what needs to be done. *American Journal of Public Health, 98*(6), 989-995.

Mazefsky, C. A., Folstein, S. E., & Lainhart, J. E. (2008). Overrepresentation of mood and anxiety disorders in adults with autism and their first-degree relatives: What does it mean? *Autism Research, 1*(3), 193-197.

McGeeney, E., & Harvey, L. (2015). Cisgender—Living in the gender assigned at birth *The Palgrave Handbook of the psychology of sexuality and gender* (pp. 149-165): Springer.

McGuire, J. K., Anderson, C. R., Toomey, R. B., & Russell, S. T. (2010). School climate for transgender youth: A mixed method investigation of student experiences and school responses. *Journal of Youth and Adolescence, 39*(10), 1175-1188.

Mecca, A., Smelser, N. J., & Vasconcellos, J. (1989). *The social importance of self-esteem*. CA, USA: Univ of California Press.

Meister, J., Hagen, R., Shehata-Dieler, W., Kühn, H., Kraus, F., & Kleinsasser, N. (2017). Pitch elevation in male-to-female transgender persons—the Würzburg approach. *Journal of Voice, 31*(2), 244-247.

Meyer, I. H. (1995). Minority Stress and Mental Health in Gay Men. *Journal of Health and Social Behavior, 36*(1), 38-56.

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychological bulletin*, *129*(5), 674-697.

Meyer, W. J., Webb, A., Stuart, C. A., Finkelstein, J. W., Lawrence, B., & Walker, P. A. (1986). Physical and hormonal evaluation of transsexual patients: a longitudinal study. *Archives of Sexual Behavior, 15*(2), 121-138.

Millet, N., Longworth, J., & Arcelus, J. (2017). Prevalence of anxiety symptoms and disorders in the transgender population: A systematic review of the literature. *International Journal of Transgenderism, 18*(1), 27-38.

Mizock, L., & Lewis, T. K. (2008). Trauma in transgender populations: Risk, resilience, and clinical care. *Journal of Emotional Abuse, 8*(3), 335-354.

Mizock, L., & Mueser, K. T. (2014). Employment, mental health, internalized stigma, and coping with transphobia among transgender individuals. *Psychology of Sexual Orientation and Gender Diversity, 1*(2), 146-158.

Mora, E., Carrillo, A., Giribet, A., Becerra, A., Lucio, M. J., & Cobeta, I. (2018). Translation, cultural adaptation, and preliminary evaluation of the Spanish version of the transgender voice questionnaire for male-to-female transsexuals (TVQ MtF). *Journal of Voice, 32*(4), 511-516..

Motmans, J., Meier, P., Ponnet, K., & T'sjoen, G. (2012). Female and male transgender quality of life: socioeconomic and medical differences. *The Journal of Sexual Medicine, 9*(3), 743-750.

Mukkades, N. (2002). Gender identity problems in autistic children. *Child: Care, Health and Development*, *28*(6), 529-532.

Murad, M. H., Elamin, M. B., Garcia, M. Z., Mullan, R. J., Murad, A., Erwin, P. J., & Montori, V. M. (2010). Hormonal therapy and sex reassignment: A systematic review and meta-analysis of quality of life and psychosocial outcomes. *Clinical Endocrinology, 72*(2), 214-231.

Murphy, R., Straebler, S., Basden, S., Cooper, Z., & Fairburn, C. G. (2012). Interpersonal psychotherapy for eating disorders. *Clinical Psychology & Psychotherapy*, *19*(2), 150-158.

Nadal, K. L., Skolnik, A., & Wong, Y. (2012). Interpersonal and systemic microaggressions toward transgender people: Implications for counseling. *Journal of LGBT Issues in Counseling, 6*(1), 55-82.

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.

Neuhauser, L., & Kreps, G. L. (2003). The advent of E-Health. How interactive media are transforming health communication. *M&K Medien & Kommunikationswissenschaft*, *51*(3-4), 541-556.

Newfield, E., Hart, S., Dibble, S., & Kohler, L. (2006). Female-to-male transgender quality of life. *Quality of Life Research, 15*(9), 1447-1457.

NICE. (2012) The Guidelines Manual. London: National Institute for Health and Care Excellence. Retrieved from http://www.nice.org. uk/article/pmg6/chapter/6-reviewing-the-evidence/

Nobili, A., Glazebrook, C., & Arcelus, J. (2018a). Quality of life of treatment-seeking transgender adults: A systematic review and meta-analysis. *Reviews in Endocrine and Metabolic Disorders*, 19(3), 199-220.

Nobili, A., Glazebrook, C., Bouman, W. P., Glidden, D., Baron-Cohen, S., Allison, C., Smith, P., &d Arcelus, J. (2018b). Autistic traits in treatment-seeking transgender adults. *Journal of Autism and Developmental Disorders*, 48(12), 3984-3994.

Northrup, D. A. (1997). *The problem of the self-report in survey research*. North York, Ontario, Canada: Institute for Social Research, York University.

Nuttbrock, L., Bockting, W., Rosenblum, A., Mason, M., Macri, M., & Becker, J. (2012). Gender identity conflict/affirmation and major depression across the life course of transgender women. *International Journal of Transgenderism, 13*(3), 91-103.

World Health Organization. (2002). *The world health report 2002: reducing risks, promoting healthy life*: World Health Organization.

Pachankis, J. E. (2007). The psychological implications of concealing a stigma: a cognitive-affective-behavioral model. *Psychological Bulletin, 133*(2), 328-345.

Papadopulos, N. A., Lellé, J.-D., Zavlin, D., Herschbach, P., Henrich, G., Kovacs, L., Ehrenberger, B., Kluger, A.K., Machens, H.G., & Schaff, J. (2017). Quality of life and patient satisfaction following male-to-female sex reassignment surgery. *The Journal of Sexual Medicine, 14*(5), 721-730.

Parkinson, J. (2014). Gender dysphoria in Asperger's syndrome: a caution. *Australasian Psychiatry, 22*(1), 84-85.

Parola, N., Bonierbale, M., Lemaire, A., Aghababian, V., Michel, A., & Lançon, C. (2010). Study of quality of life for transsexuals after hormonal and surgical reassignment. *Sexologies, 19*(1), 24-28.

Pasterski, V., Gilligan, L., & Curtis, R. (2014). Traits of autism spectrum disorders in adults with gender dysphoria. *Archives of Sexual Behavior, 43*(2), 387-393.

Pennebaker, J. W., Groom, C. J., Loew, D., & Dabbs, J. M. (2004). Testosterone as a social inhibitor: two case studies of the effect of testosterone treatment on language. *Journal of Abnormal Psychology, 113*(1), 172-175.

Perrone, A. M., Cerpolini, S., Salfi, N. C. M., Ceccarelli, C., De Giorgi, L. B., Formelli, G., Casadio, P., Ghi, T., Pelusi, G., Pelusi, C., & Meriggiola, M.C. (2009). Effect of long-term testosterone administration on the endometrium of female-to-male (FtM) transsexuals. *The Journal of Sexual Medicine, 6*(11), 3193-3200.

Perry, Y., Strauss, P., & Lin, A. (2018). Online interventions for the mental health needs of trans and gender diverse young people. *The Lancet Psychiatry, 5*(2), e6.

Pflum, S. R., Testa, R. J., Balsam, K. F., Goldblum, P. B., & Bongar, B. (2015). Social support, trans community connectedness, and mental health symptoms among transgender and gender nonconforming adults. *Psychology of Sexual Orientation and Gender Diversity, 2*(3), 281-286.

Pincus, A. L., & Wiggins, J. S. (1990). Interpersonal problems and conceptions of personality disorders. *Journal of Personality Disorders, 4*(4), 342-352.

Pine, D. S., Guyer, A. E., Goldwin, M., Towbin, K. A., & Leibenluft, E. (2008). Autism spectrum disorder scale scores in pediatric mood and anxiety disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, *47*(6), 652-661.

Pinto, R. M., Melendez, R. M., & Spector, A. Y. (2008). Male-to-female transgender individuals building social support and capital from within a gender-focused network. *Journal of Gay & Lesbian Social Services*, *20*(3), 203-220.

QSR International Pty Ltd. (2016). NVivo qualitative data analysis software (version 11): QSR International Pty Ltd.

Reese, P. R., Pleil, A. M., Okano, G. J., & Kelleher, C. J. (2003). Multinational study of reliability and validity of the King's Health Questionnaire in patients with overactive bladder. *Quality of Life Research, 12*(4), 427-442.

Rehman, J., Lazer, S., Benet, A. E., Schaefer, L. C., & Melman, A. (1999). The reported sex and surgery satisfactions of 28 postoperative male-to-female transsexual patients. *Archives of Sexual Behavior, 28*(1), 71-89.

Reisner, S. L., Hughto, J. M. W., Dunham, E. E., Heflin, K. J., Begenyi, J. B. G., Coffey-Esquivel, J., & Cahill, S. (2015). Legal protections in public accommodations settings: A critical public health issue for transgender and gender-nonconforming people. *The Milbank Quarterly, 93*(3), 484-515.

Review Manager, R. (2014). The nordic cochrane centre, the cochrane collaboration: Book [computer program].

Reyes-Portillo, J., Mufson, L., Greenhill, L., Gould, M., Fisher, P., Tarlow, N., & Rynn, M. (2014). Web-based interventions for youth internalizing problems: a systematic review. *Journal of the American Academy of Child & Adolescent Psychiatry*, *53*(12), 1254-1270.

Richards, C., Bouman, W.P., & Barker, M-J. (2017). *Genderqueer and Non-binary Genders*. London: Palgrave Macmillan.

Richards, C., Bouman, W. P., Seal, L., Barker, M. J., Nieder, T. O., & T'Sjoen, G. (2016). Non-binary or genderqueer genders. *International Review of Psychiatry, 28*(1), 95-102.

Richardson, D. (2015). In: Robinson, V. and Richardson, D. (eds.) *Introducing Gender and Women's Studies*. Basingstoke: Palgrave Macmillan (pp.3-22).

Riggle, E. D., Rostosky, S. S., McCants, L. E., & Pascale-Hague, D. (2011). The positive aspects of a transgender self-identification. *Psychology & Sexuality, 2*(2), 147-158.

Rimes, K.A., Goodship, N., Ussher, G, Baker, D., & West, E. (2017). Non-binary and binary transgender youth: Comparison of mental health, self-harm, suicidality, substance use, and victimization experiences. *International Journal of Transgenderism*. doi: 10.1080/15532739.2017.1370627

Ritterband, L., & Thorndike, F. (2006). Internet interventions or patient education web sites? *Journal of Medical Internet Research*, *8*(3), e18.

Roberts, K. E., Schwartz, D., & Hart, T. A. (2011). Social anxiety among lesbian, gay, bisexual, and transgender adolescents and young adults. In C. A. Alfano & D. C. Beidel (Eds.), *Social anxiety in adolescents and young adults: Translating developmental science into practice* (pp. 161-181). Washington, DC, US: American Psychological Association.

Robinow, O. (2009). Paraphilia and transgenderism: A connection with Asperger's Disorder? *Sexual and Relationship Therapy*, *24*(2), 143-151.

Röder, M., Barkmann, C., Richter-Appelt, H., Schulte-Markwort, M., Ravens-Sieberer, U., & Becker, I. (2018). Health-related quality of life in transgender adolescents: Associations with body image and emotional and behavioral problems. *International Journal of Transgenderism*, *19*(1), 78-91.

Rood, B. A., Maroney, M. R., Puckett, J. A., Berman, A. K., Reisner, S. L., & Pantalone, D. W. (2017). Identity concealment in transgender adults: A qualitative assessment of minority stress and gender affirmation. *American Journal of Orthopsychiatry, 87*(6), 704.

Rood, B. A., Reisner, S. L., Surace, F. I., Puckett, J. A., Maroney, M. R., & Pantalone, D. W. (2016). Expecting rejection: Understanding the minority stress experiences of transgender and gender-nonconforming individuals. *Transgender Health, 1*(1), 151-164.

Rossman, K., Salamanca, P., & Macapagal, K. (2017). "The doctor said I didn't look gay": Young adults' experiences of disclosure and non-disclosure of LGBTQ identity to healthcare providers. *Journal of Homosexuality, 64*(10), 1390-1410.

Rotondi, N. K., Bauer, G. R., Scanlon, K., Kaay, M., Travers, R., & Travers, A. (2012). Prevalence of and risk and protective factors for depression in female-to-male transgender Ontarians: Trans PULSE Project. *Canadian Journal of Community Mental Health, 30*(2), 135-155.

Ruppin, U., & Pfäfflin, F. (2015). Long-term follow-up of adults with gender identity disorder. *Archives of Sexual Behavior, 44*(5), 1321-1329.

Russell, A. J., Murphy, C. M., Wilson, E., Gillan, N., Brown, C., Robertson, D. M., Craig, M.C., Deeley, Q., Zinkstok, J., Johnston, K., & McAlonan, G.M. (2016). The mental health of individuals referred for assessment of autism spectrum disorder in adulthood: A clinic report. *Autism, 20*(5), 623-627.

Russell, S. T., Ryan, C., Toomey, R. B., Diaz, R. M., & Sanchez, J. (2011). Lesbian, Gay, Bisexual, and Transgender Adolescent School Victimization: Implications for Young Adult Health and Adjustment. *Journal of School Health, 81*(5), 223-230.

Ryan, M.L., Shochet, I.M., & Stallman, H.M. (2010). Universal online interventions might engage psychologically distressed university students who are unlikely to seek formal help. *Advances in Mental Health, 9*(1), 73-83.

Samutsakorn, J. (2019). Interpersonal issues and influencing factors in treatment-seeking transgender adults. (Unpublished batchelor in Medical Sciences thesis). University of Nottingham, Nottingham, United Kingdom.

Sánchez, F. J., & Vilain, E. (2009). Collective self-esteem as a coping resource for male-to-female transsexuals. *Journal of Counseling Psychology, 56*(1), 202.

Scandurra, C., Amodeo, A. L., Valerio, P., Bochicchio, V., & Frost, D. M. (2017). Minority stress, resilience, and mental health: A study of Italian transgender people. *Journal of Social Issues, 73*(3), 563-585.

Schalock, R. L. (2004). The concept of quality of life: what we know and do not know. *Journal of Intellectual Disability Research, 48*(3), 203-216.

Schunk, D. H. (2012). *Learning Theories an Educational Perspective* (6th ed.) Upper Saddle River, NJ: Pearson.

Schwandt, T. A. (2000). Three epistemological stances for qualitative inquiry: Interpretivism, hermeneutics, and social constructionism. In N. K. Denzin & Y. S. Lincoln, *Handbook of qualitative research* (pp. 189–213). Thousand Oaks, CA: Sage.

Seal, L. (2017). Hormone treatment for transgender adults. In *The transgender handbook: A guide for transgender people, their families and professionals* (pp. 227-249). New York, USA: Nova Science Publishers, Inc.

Seaton, E., Upton, R., Gilbert, A., & Volpe, V. (2014). A Moderated Mediation Model: Racial Discrimination, Coping Strategies, and Racial Identity Among Black Adolescents. *Children Development, 85*(3), 882-890.

Selvaggi, G., & Andreasson, M. (2017). Genital reconstructive surgery for transgender women. In *The transgender handbook: A guide for transgender people, their families and professionals* (pp. 265-275). New York, USA: Nova Science Publishers, Inc.

Shumer, D. E., Reisner, S. L., Edwards-Leeper, L., & Tishelman, A. (2015). Evaluation of Asperger syndrome in youth presenting to a gender dysphoria clinic. *LGBT health, 3*(5), 387-390.

Singh, A. A., Hays, D. G., & Watson, L. S. (2011). Strength in the face of adversity: Resilience strategies of transgender individuals. *Journal of Counseling & Development, 89*(1), 20-27.

Skagerberg, E., Di Ceglie, D., & Carmichael, P. (2015). Brief report: Autistic features in children and adolescents with gender dysphoria. *Journal of Autism and Developmental Disorders, 45*(8), 2628-2632.

Skevington, S. M., Lotfy, M., & O'Connell, K. A. (2004). The World Health Organization's WHOQOL-BREF quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL group. *Quality of Life Research, 13*(2), 299-310.

Smart, L., & Wegner, D. M. (1999). Covering up what can't be seen: concealable stigma and mental control. *Journal of Personality and Social Psychology, 77*(3), 474.

Smith, Y. L., Van Goozen, S. H., 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.

Spek, V., Cuijpers, P., Nyklícek, I., Riper, H., Keyzer, J., & Pop, V. (2007). Internet-based cognitive behaviour therapy for symptoms of depression and anxiety: a meta-analysis. *Psychological Medicine*, *37*(3), 319-328.

Strang, J., Kenworthy, L., Dominska, A., Sokoloff, J., Kenealy, L., Berl, M., Walsh, K., Menvielle, E., Slesaransky-Poe, G., Kim, K.E., & Luong-Tran, C. (2014). Increased gender variance in autism spectrum disorders and attention deficit hyperactivity disorder. *Archives of Sexual Behavior, 43*(8), 1525-1533.

Stuber, J., Meyer, I., & Link, B. (2008). Stigma, prejudice, discrimination and health. *Social science & medicine (1982), 67*(3), 351-357.

Sullivan, H. S. (1953). *Interpersonal Theory of Personality.* New York: W.W. Norton and Company, Inc .

Tashakkori, A., & Teddlie, C. (1998). *Mixed Methodology: Combining Qualitative and Quantitative Approaches.* Applied Social Research Methods Series (Vol. 46). Thousand Oaks, CA: Sage.

Tateno, M., Tateno, Y., & Saito, T. (2008). Comorbid childhood gender identity disorder in a boy with Asperger syndrome. *Psychiatry and Clinical Neurosciences, 62*(2), 238-238.

Testa, R. J., Jimenez, C. L., & Rankin, S. (2014). Risk and resilience during transgender identity development: The effects of awareness and engagement with other transgender people on affect. *Journal of Gay & Lesbian Mental Health, 18*(1), 31-46.

Taylor C., & Luce K. (2003). Computer- and internet-based psychotherapy interventions. *Current Directions in Psychological Science, 12*(1):18-22.

Testa, R. J., Michaels, M. S., Bliss, W., Rogers, M. L., Balsam, K. F., & Joiner, T. (2017). Suicidal ideation in transgender people: Gender minority stress and interpersonal theory factors. *Journal of abnormal psychology, 126*(1), 125-136.

Testa, R. J., Sciacca, L. M., Wang, F., Hendricks, M. L., Goldblum, P., Bradford, J., & Bongar, B. (2012). Effects of violence on transgender people. *Professional Psychology: Research and Practice, 43*(5), 452-459.

Thorne, N., Witcomb, G. L., Nieder, T., Nixon, E., Yip, A., & Arcelus, J. (2018). A comparison of mental health symptomatology and levels of social support in young treatment seeking transgender individuals who identify as binary and non-binary. *International Journal of Transgenderism*, 1-10. doi: 10.1080/15532739.2018.1452660

Tonge, N., Rodebaugh, T., Fernandez, K., & Lim, M. (2016). Self-reported social skills impairment explains elevated autistic traits in individuals with generalized social anxiety disorder. *Journal of Anxiety Disorders, 38*, 31-36.

Trujillo, M. A., Perrin, P. B., Sutter, M., Tabaac, A., & Benotsch, E. G. (2017). The buffering role of social support on the associations among discrimination, mental health, and suicidality in a transgender sample. *International Journal of Transgenderism, 18*(1), 39-52.

Tsai, W. (2000). Social capital, strategic relatedness and the formation of intraorganizational linkages. *Strategic management journal, 21*(9), 925-939.

T'Sjoen, G., Moerman, M., Van Borsel, J., Feyen, E., Rubens, R., Monstrey, S., Hoebeke, P., De Sutter, P., & de Cuypere, G. (2006). Impact of voice in transsexuals. *International Journal of Transgenderism, 9*(1), 1-7.

Turban, J. L. (2018). Potentially Reversible Social Deficits Among Transgender Youth. *Journal of Autism and Developmental Disorders*, *48*(12), 4007-4009.

Turban, J. L., & van Schalkwyk, G. I. (2018). "Gender dysphoria" and autism spectrum disorder: Is the link real?. *Journal of the American Academy of Child & Adolescent Psychiatry*, *57*(1), 8-9.

Twist, J., & de Graaf, N. M. (2019). Gender diversity and non-binary presentations in young people attending the United Kingdom's National Gender Identity Development Service. *Clinical Child Psychology and Psychiatry*, *24*(2), 277-290.

van de Grift, T. C., Cohen-Kettenis, P. T., Steensma, T. D., De Cuypere, G., Richter-Appelt, H., Haraldsen, I. R., Dikmans, R.E., Cerwenka, S.C., & Kreukels, B. P. (2016). Body satisfaction and physical appearance in gender dysphoria. *Archives of Sexual Behavior, 45*(3), 575-585.

van de Grift, T. C., Kreukels, B. P., Elfering, L., Özer, M., Bouman, M.-B., Buncamper, M. E., Smith, J., & Mullender, M. G. (2016). Body image in transmen: Multidimensional measurement and the effects of mastectomy. *The Journal of Sexual Medicine, 13*(11), 1778-1786.

van de Mortel, T. F. (2008). Faking it: social desirability response bias in self-report research. *Australian Journal of Advanced Nursing, 25*(4), 40.

Vanderlaan, D., Leef, J., Wood, H., Hughes, S., & Zucker., K. (2015). Autism spectrum disorder risk factors and autistic traits in gender dysphoric children. *Journal of Autism and Developmental Disorders*, *45*, 1742-1750.

van der Miesen, A. I., de Vries, A. L., Steensma, T. D., & Hartman, C. A. (2018). Autistic symptoms in children and adolescents with gender dysphoria. *Journal of Autism and Developmental Disorders, 48*(5), 1537-1548.

van der Miesen, A. I., Hurley, H., & De Vries, A. L. (2016). Gender dysphoria and autism spectrum disorder: A narrative review. *International Review of Psychiatry, 28*(1), 70-80.

van Schalkwyk, G. I., Klingensmith, K., & Volkmar, F. R. (2015). Gender identity and autism spectrum disorders. *The Yale Journal of Biology and Medicine, 88*(1), 81.

Veale, D. (2004). Advances in a cognitive behavioural model of body dysmorphic disorder. *Body Image, 1*(1), 113-125.

Veldhuis, C. B., Drabble, L., Riggle, E. D., Wootton, A. R., & Hughes, T. L. (2018). "I Fear for My Safety, but Want to Show Bravery for Others": Violence and Discrimination Concerns Among Transgender and Gender-Nonconforming Individuals After the 2016 Presidential Election. *Violence and Gender, 5*(1), 26-36.

Veldorale-Griffin, A. (2014). Transgender parents and their adult children's experiences of disclosure and transition. *Journal of GLBT Family Studies, 10*(5), 475-501.

von Hippel, P. T. (2015). The heterogeneity statistic I^2 can be biased in small meta-analyses. *BMC Medical Research Methodology*, *15*(1), 35.

Ware, J., Kosinski Jr, M., Turner Bowker, D., & Gandek, B. (2002). *How to score version 2 of the SF-12v2® health survey (with a supplement documenting SF-12® health survey).* Lincoln, RI: QualityMetric Incorporated.

Ware, J., Kosinski, M., Bjorner, J., Turner-Bowker, D., Gandek, B., & Maruish, M. (2008). *sf-36v2 health survey: Administration guide for clinical trial Investigators*. Lincoln, RI: QualityMetric Incorporated.

Ware Jr, J. E. (2000). SF-36 health survey update. *Spine, 25*(24), 3130-3139.

Ware Jr, J. E., & Sherbourne, C. D. (1992). The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Medical Care*, 473-483.

Warren, J. C., Smalley, K. B., & Barefoot, K. N. (2016). Psychological well-being among transgender and genderqueer individuals. *International Journal of Transgenderism, 17*(3- 4), 114-123.

Webb, T. L., Joseph, J., Yardley, L., & Michie, S. (2010). Using the internet to promote health behavior change: A systematic review and meta-analysis of the impact of theoretical tasis, use of behavior change techniques, and mode of delivery on efficacy. *Journal of Medical Internet Research*, *12*(1), e4.

Weiss, M. J. (2002). Hardiness and social support as predictors of stress in mothers of typical children, children with autism, and children with mental retardation. *Autism*, *6*(1), 115-130.

Westbrook, L. (2008). Vulnerable subjecthood: The risks and benefits of the struggle for hate crime legislation. *Berkeley Journal of Sociology*, 3-23.

Weyers, S., Elaut, E., De Sutter, P., Gerris, J., T'sjoen, G., Heylens, G., de Cuypere, G., & Verstraelen, H. (2009). Long-term assessment of the physical, mental, and sexual health among transsexual women. *The Journal of Sexual Medicine, 6*(3), 752-760.

Wheelwright, S., Auyeung, B., Allison, C., & Baron-Cohen, S. (2010). Defining the broader, medium and narrow autism phenotype among parents using the Autism Spectrum Quotient (AQ). *Molecular Autism, 1*(1), 1-9.

White, S., Bray, B., & Ollensick, T. (2012). Examining shared and unique aspects of social anxiety disorder and autism spectrum disorder using factor analysis. *Journal of Autism and Developmental Disorders*, *42*(5), 874-884.

White Hughto, J. M., Pachankis, J. E., Willie, T. C., & Reisner, S. L. (2017). Victimization and depressive symptomology in transgender adults: The mediating role of avoidant coping. *Journal of Counseling Psychology, 64*(1), 41-51.

White Hughto, J. M., & Reisner, S. L. (2016). A systematic review of the effects of hormone therapy on psychological functioning and quality of life in transgender individuals. *Transgender Health, 1*(1), 21-31.

White Hughto, J. M., Reisner, S. L., & Pachankis, J. E. (2015). Transgender stigma and health: A critical review of stigma determinants, mechanisms, and interventions. *Social Science & Medicine, 147*, 222-231.

WHO Group. (1998). The World Health Organization quality of life assessment (WHOQOL): development and general psychometric properties. *Social Science & Medicine*, *46*(12), 1569-1585.

Wierckx, K., Van Caenegem, E., Elaut, E., Dedecker, D., Van de Peer, F., Toye, K., . . . De Cuypere, G. (2011). Quality of life and sexual health after sex reassignment surgery in transsexual men. *The Journal of Sexual Medicine, 8*(12), 3379-3388.

Wing, L., Leekam, S. R., Libby, S.J., Gould, J., & Larcombe, M. (2002). The diagnostic interview for social and communication disorders: background, inter-rater reliability and clinical use. *Journal of Child Psychology and Psychiatry, 43*(3), 307-325.

Winter, S., Diamond, M., Green, J., Karasic, D., Reed, T., Whittle, S., & Wylie, K. (2016). Transgender people: health at the margins of society. *The Lancet, 388*(10042), 390-400.

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.

Witcomb, G. L., Bouman, W. P., Claes, L., Brewin, N., Crawford, J. R., & Arcelus, J. (2018). Levels of depression in transgender people and its predictors: Results of a large matched control study with transgender people accessing clinical services. *Journal of Affective Disorders, 235*, 308-315.

Wong, C. F., Schrager, S. M., Holloway, I. W., Meyer, I. H., & Kipke, M. D. (2014). Minority stress experiences and psychological well-being: the impact of support from and connection to social networks within the Los Angeles House and Ball communities. *Prevention Science*, *15*(1), 44-55.

Woodbury-Smith, M., Robinson, J., Wheelwright, S., & Baron-Cohen, S. (2005). Screening adults for Asperger syndrome using the AQ: a preliminary study of its diagnostic validity in clinical practice. *Journal of Autism and Developmental Disorders*, *35*(3), 331-335.

World Health Organization. (2002). *The world health report 2002: reducing risks, promoting healthy life*. World Health Organization.

Wu, H. S., & Harden, J. K. (2015). Symptom burden and quality of life in survivorship: a review of the literature. *Cancer Nursing*, *38*(1), E29-E54.

Wylie, K., Barrett, J., Besser, M., Bouman, W. P., Bridgman, M., Clayton, A., Green, R., Hamilton, M., Hines, M., Ivbijaro, G., & Ivbijaro, G. (2014). Good practice guidelines for the assessment and treatment of adults with gender dysphoria. *Sexual and Relationship Therapy, 29*(2), 154-214.

Yang, X., Zhao, L., Wang, L., Hao, C., Gu, Y., Song, W., . . . Wang, X. (2016). Quality of life of transgender women from China and associated factors: a cross-sectional study. *The Journal of Sexual Medicine, 13*(6), 977-987.

Yardley, L. (2000). Dilemmas in qualitative health research. *Psychology and Health*, *15*(2), 215-228.

Yelland, A. (2017a). Chest Surgeries. In *Genderqueer and Non-Binary Genders* (pp. 225-245). London, UK: Palgrave Macmillan.

Yelland, A. (2017b). Chest surgery and breast augmentation surgery. In *The transgender handbook: A guide for transgender people, their families and professionals* (pp. 251-264). New York, USA: Nova Science Publishers, Inc.

Yu, C., Zuo, X., Blum, R. W., Tolman, D. L., Kågesten, A., Mmari, K., De Meyer, S., Michielsen, K., Basu, S., Acharya, R. & Lian, Q. (2017). Marching to a different drummer: a cross-cultural comparison of young adolescents who challenge gender norms. *Journal of Adolescent Health, 61*(4), S48-S54.

Zannotti, M., & Pringuey, D. (1992). A method for quality of life assessment in psychiatry: the S-QUA-LA (Subjective QUAlity of Life Analysis). *Quality of Life News Letter, 4*(6), 1992.

Zigmond, A. S., & Snaith, R. P. (1983). The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica, 67*(6), 361-370.

Appendix

Appendix A – Ethical approval letter

UNITED

Investigators: Sophie Cooper, Anna Nobili & Jon Arcelus

Fac

Title of study: A Qualitative study to explore transgender people's experiences of social interactions: implications for the development of health care technologies to support interpersonal skills

Divisio

Duration of study: Until February 2018

Ethics reference number: 317

A favourable opinion has been given to the above named study, as tl approval by another external committee.

David Daley (Professor)

Co-Chair of DPAP Ethics Subcommittee

Amanda Griffiths (Professor)

Co-Chair of DPAP Ethics Subcommittee

Appendix B – Protocol qualitative study

A qualitative study to explore transgender people's experiences of social interactions

Transgender people are individuals whose gender identity does not correspond to the gender assigned at birth based on sexual characteristics (Bouman, de Vries, & T'Sjoen, 2016b). Moreover, the words "transgender women" and "transgender men" are employed to indicate individuals assigned male at birth that transitioned to a female gender, and individuals assigned females at birth, which transitioned to the male gender, respectively. Identification of a person as transgender is not, in itself, necessarily linked to the presence of comorbid health and psychological concerns (Byne *et al.,* 2012).

Research looking at patients attending gender services found that transgender people seeking treatment are especially vulnerable to mental health problems as well as to psychosocial stressors, by displaying higher levels of anxiety and depression (Budge *et al.,* 2013; Dhejne *et al.,* 2016; Leibowitz & de Vries, 2016) as well as lower Quality of Life (QoL) and life satisfaction (Davey, Bouman, Arcelus, & Meyer, 2014; Newfield, Hart, Dibble, & Kohler, 2006) compared to the general cisgender population.

In the general population, mental health problems have been linked to a variety of interpersonal problems affecting the development of maladaptive interpersonal skills resulting in social and relational difficulties in both transgender and cisgender populations (Davey *et al.,* 2015).

Interpersonal events have been defined as any positive as well as negative interaction, communication, process, and general circumstance that emerge in social interactions between individuals (Russell *et al.,* 2011). By interpersonal are also meant the processes through which social interactions are internalised and lead to the development of intrapersonal attitudes, such as self-esteem, self-image and self-efficacy (Kelleher, 2009). Hence, both positive and negative interpersonal interactions have an impact on the intrapersonal realm and help shaping the individual's perceptions and experiences of the self and of the social environment.

Maladaptive social interactions, as well as poor interpersonal skills, are known to lead to a decrease in life satisfaction, thus affecting metal health through the development of mental health complaints (De Vries *et al.,* 2010; van Schalkwyk *et al.,* 2015). Positive intrapersonal characteristics such as optimism, hope and self-esteem are believed to have a strong

impact on psychological adjustment to stressful life experiences and events (De Vries *et al.,* 2010).

With regard to transgender people, research shows that interpersonal and intrapersonal events and attitudes impact personal experiences of social interactions, expectations and consequently wellbeing both directly and indirectly through internal processes such stigma, self-esteem and confidence (Nemoto *et al.,* 2011). Consequently, for a positive interpersonal interaction an individual requires good interpersonal skills, which can be considered as a group of specific behavioural and cognitive actions needed to achieve successful interactions within the social realm (Janssen *et al.,* 2016).

The present study attempts to gain a broader understanding of the interpersonal skills and events that both positively and negatively affect the life of transgender people and in which ways such experiences shape the individuals' intrapersonal characteristics (e.g. mood). This will allow us to develop an interpersonal measurement in the future as currently the only measurement of interpersonal problems is based on questionnaires such as the Inventory for Interpersonal Problems (IIP-32) (van der Miesen *et al.,* 2016). This is biased by retrospective collection of information.

However, there is a strong need for a measure of interpersonal events that is more suitable for the clinical transgender population, that encompasses both positive and negative events and that does not reply on retrospective evaluation of interpersonal events; as such assessments are subject to the individual's mood at the time of completion. In fact, digital technologies can be a helpful and reliable tool in monitoring and recording interpersonal events in the moment in which they take place.

Thus, in order to properly understand what are both the positive and negative events associated to transgender' mental health that impact their interpersonal experiences, and to consequently be able to help this population, the use of eHealth technologies seems the most useful and adequate. Digital technologies have the advantage that can be accessed anonymously, are relatively easily tailored to the users' needs, might help reducing stigma, as well as providing a secure environment where individuals can feel safe in disclosing delicate information (Hellemans, Colson, Verbraeken, Vermeiren, & Deboutte, 2007; Skagerberg *et al.,* 2015; Strang *et al.,* 2014).

Method

The study will use a qualitative research design to explore perceptions of interpersonal skills using extensive in-depth semi-structured interviews. Each participant will participate to a single semi-structured interview, which will be carried out face-to-face at the Nottingham Centre for Gender Dysphoria, as well as by telephone if easier for the patients that travel long distances. This design permits us to gain a broad understanding of the interpersonal skills and events affecting both negatively and positively, the interpersonal experiences of transgender people.

Participants will be recruited by clinicians at the Nottingham Centre for Transgender Health. The following procedure will be carried out in order to recruit people to partake the study:

1) Clinicians will identify from their caseload patients who meet the inclusion/exclusion criteria and to those patients will be sent a letter of invitation to the study;

2) The letter will come from the researcher with a short introduction from the clinician but making it clear that research inclusion will not affect clinical care;

3) The letter will include a copy of the participant information sheet and an expression of interest slip. Patients will be invited to get in touch with the researcher by email, phone or by returning the expression of interest slip in a prepaid envelope. Patients who have agreed participation will be contacted to identify a suitable time and place for the interview. Participants will have the choice of a face to face interview or a telephone interview;

4) Participants will be reimbursed for travel expenses (within reason) in case they need to attend the clinic specifically for the interview appointment at the Centre for Transgender Health;

5) The interviews will last roughly between 45 minutes and one hour. Consent will be sought from the patient to record the interview. If the patient does not agree to being audio-recorded then the interview will not take place as the data cannot be utilised meaningfully (this will be explained in advance before a date for the interview is planned);

6) The interview will also obtain brief sociodemographic information and clinical information such as age, occupation, length of time in treatment and stage of transition;

7) Participants will be able to stop the interview at any point and can ask to leave any questions they feel uncomfortable with. The researcher

will terminate the interview if it seems that the participant has become unduly distressed;

8) After the interview participants will be provided with a debriefing sheet containing a summary of the study, as well as contact details of the Samaritans and MIND (charities that support people with mental health issues) in case more support is needed;

9) Support from the clinicians (one of which is also supervisor) involved in the research will be offered to patients if necessary.

The primary investigator will also keep a journal for the entire duration of the study to enable refection on how personal views and experiences might influence data collection and analysis. A self-reflective account of the interviews will be provided in the discussion section of the final report so the reader can interpret the findings in light of the researcher's perspective and experiences. Additionally, a record of the individuals invited to participate and that refused to take part in the research will be kept, together with the reasons why such people did not take part in the study.

Interviews will be audio recorded at the Nottingham Centre for Transgender Health. The audio files will be stored securely at the Institute of Mental Health (University of Nottingham) in a research folder password-protected and accessible only to the researchers. The audio files will be transferred from the Nottingham Centre for Transgender Health to the Institute of Mental Health with the aid of a NHS password-protected USB pen-drive. Word documents containing transcribed data will be stored under a unique identifier code, will be password protected and only accessible at the University of Nottingham premises. All computers and pen drives are password protected and comply with NHS and University Health and Safety and Access Regulation Policies and will not have identifiable data. Signed consent forms will be stored in a locked filing cabinet at the NHS Nottingham Centre for Transgender Health premise. The contact details of participants will be recorded on a recruitment log (password protected) and saved on a password protected NHS computer separate to all other research data. It is expected that the recruitment of patients and conduction of the interviews will last approximately six months. During this stage, the interviews already conducted will be transcribed verbatim and an additional month will be required to the transcription of the remaining interviews. Once data collection will be

completed, data analysis is expected to last approximately two months as well as the preparation for the final report. In total, after receiving the ethical approval, the study should last roughly 11 months.

Appendix C – Letter sent out to patients who previously spoke to a clinician about possible participation in the study

AN INTERVIEW STUDY EXPLORING TRANSGENDER PEOPLE' SOCIAL INTERACTIONS

You may remember that I talked to you about a study that Anna Nobili, a PhD student at the University of Nottingham, is undertaking at the Nottingham Centre for Gender Dysphoria. We are contacting some of our patients to let them know about the study in case they would like to participate. The project is entitled "**An interview study exploring Transgender people' social interactions**".

She would love you to consider participating in an interview that may help us better understand social interactions in Transgender people.

Whether or not you participate in this study will have no effect on the care that you will receive at the Nottingham Centre for Gender Dysphoria.

If you are interested in learning more about this study, please review the enclosed information from Anna Nobili, complete the enclosed form, and mail it back to her in the pre-paid envelope. You can also contact the research team either at **0115 7484098 ext. 84325**, at **07444797210** or at the email address **anna.nobili@nottingham.ac.uk**

You do not have to respond if you are not interested in this study. If you do not respond, no one will contact you.

Thank you for your consideration.

Sincerely,

Professor Jon Arcelus
(Director of Research)

Appendix D - Letter sent out to patients who did not previously speak to a clinician about possible participation in the study

AN INTERVIEW STUDY EXPLORING TRANSGENDER PEOPLE' SOCIAL INTERACTIONS

We are contacting some of our patients to let them know about the possibility to participate to an interview study that Anna Nobili is undertaking at the Nottingham Centre for Gender Dysphoria. The project is entitled "**An interview study exploring Transgender people' social interactions**".

Anna Nobili is a PhD student at the University of Nottingham and she would love you to consider participating in an interview that may help us better understand social interactions in Transgender people.

Whether or not you participate in this study will have no effect on the care that you will receive at the Nottingham Centre for Gender Dysphoria.

If you are interested in learning more about this study, please review the enclosed information from Anna Nobili, complete the enclosed form, and mail it back to her in the pre-paid envelope. You can also contact the research team either at **0115 7484098 ext. 84325**, at **07444797210** or at the email address **anna.nobili@nottingham.ac.uk**

You do not have to respond if you are not interested in this study. If you do not respond, no one will contact you.

Thank you for your consideration.

Sincerely,

Professor Jon Arcelus
(Director of Research)

Appendix E – Invitation letter written by the researcher AN

Date

[name]
[address]

Dear [name],

I, Anna Nobili, PhD student from the Department of Psychiatry and Applied Psychology, the Nottingham University, invite you to participate in a research project entitled "**A qualitative study examining interpersonal skills of transgender people: Implications for the development of health care technologies to support social interactions**".

We are conducting interviews as part of a research study in order to increase our understanding of how transgender people interact with other people and how the way they interact can affect their mood in a positive or negative way. We hope that by understanding better how the relationship between people affect their mood, we can develop support and in the future interventions to prepare people as well as possible for a successful transition. Should you choose to participate you will be invited to take part in a single one-to-one interview either face-to-face at the Nottingham Centre for Gender Dysphoria or by phone call. During the interview we will discuss different events when you have interacted with other people and how this interaction has affected your mood.

The expected duration of the interview will be of approximately 45 minutes to one hour. The interview needs to be audiotaped with your permission and the registration will be destroyed after transcription. The audiotaping is vital as this is the only way we can look at the information. If you don't want to be audio-tape the project can't go ahead. Your responses to the questions will be kept confidential and to each interview will be assigned a number code to help ensure that personal identifiers are not revealed during the analysis and write up of findings

Participation as well as lack of participation in the research will not have any positive nor negative impact on your treatment at the Nottingham Centre for Gender Dysphoria. You can withdraw at any time from the interview without giving any explanation.

I have included a detailed information sheet about the study with this letter as well as an expression of interest slip. If you are willing to participate, please contact the researchers by sending back to the Nottingham Centre for Gender Dysphoria the expression of interest slip in the prepaid envelope. Alternatively you can send an email to the lead researcher expressing your interest in taking part in the study. The main researcher will then get in touch with you to book your interview appointment.

If you have any question please do not hesitate to ask.

Thank you.
Yours sincerely,

Anna Nobili

Appendix F - Participant information sheet

AN INTERVIEW STUDY EXPLORING TRANSGENDER PEOPLE'S SOCIAL INTERACTIONS.

Participant Information Sheet

Study Investigator: Anna Nobili
Supervisors: Professor Cris Glazebrook and Professor Jon Arcelus

What is the purpose of the study?
This study will explore transgender people's perceptions of their interactions with other people and how they feel these interactions can affect their mood, in positive or negative ways. We also hope to identify potentially successful strategies used to cope with difficult interactions. We hope that by understanding social interactions better we will be able to design an intervention to help transgender people develop supportive and positive interactions and prepare for a successful transition.

Who is doing the research?
The primary investigator for this study is Anna Nobili, a PhD student at the University of Nottingham. The study is supervised by Professor Cris Glazebrook, Professor of Health Psychology and Professor Jon Arcelus, a Consultant in Transgender Health at the Nottingham Centre for Gender Dysphoria.
The research is being organised by with the Nottingham Centre for Gender Dysphoria in collaboration with the University of Nottingham. The University of Nottingham is funding the research.

Who will be taking part in the research?
We wish to recruit approximately 20 participants aged between 17 and 65 who are in the treatment programme at the Nottingham Centre for Gender Dysphoria.

What will I be asked to do?
You will be invited to a one-to-one interview, either face-to-face at the Nottingham Centre for Gender Dysphoria or by phone call. The interview will last approximately 45 minutes to one hour.
You will be first asked to sign a form with which you agree to give consent to be interviewed and for your data to be used in the research. The consent form can be signed in two different ways depending on the method of interview. If you participate in a face-to-face interview the consent will be signed by you in person before the interview. If you are interviewed by phone, you will be provided with a web link and which will lead you to an online form that can be electronically signed. If you do not have internet access we can post you the consent form.
The interview needs to be audiotaped with your permission as it will be transcribed. The audiotaping is important as this is the only way we can capture accurately the information you have given. The recording of your interview will be destroyed after it has been typed out word for word by the researcher Anna Nobili. Direct quotes from the interviews might be used in the study's write-up, however it will be anonymised so that it will not be possible to identify you from these quotes.
If you do not wish your interview to be audio-taped then you cannot be included in the study.

During the interview we will discuss different events when you have interacted with other people and how these interactions have made you feel. . You do not have to answer any questions you do not wish to and you have the right to withdraw from the interview at any point. The interviewer will also stop the interview if it seems that it is causing you undue distress.
At the end of the interview you will be asked for some brief details about your age, gender identification, transitioning phase, educational level, employment status and ethnicity as well as to rate a few sentences regarding different situations and difficulties with social interactions, which should last overall approximately 10-15 minutes.

Once I take part, can I change my mind?
Yes. You may decide to withdraw from the study at any time and without explanation. If you wish you can withdraw from the study within a month of the interview and we will take your data out from the study database. However, after this period of time it will not be possible to withdraw the data already collected from the research.
You also have the right to refuse to answer or respond to any question and to ask any questions you wish about the research's procedure.
If you will disclose information in the interview that suggests that you are at risk of harm then this will be discussed and disclosed to your clinician or other professionals, as appropriate.
If you have any questions as a result of reading this information sheet, you should ask the researcher before the study begins.
Withdrawing from the study will not affect your care at the Nottingham Centre for Gender Dysphoria.

Are there any advantages or disadvantages in participating?
Whether or not you participate in the study will not affect your care in any way. We hope that the opportunity to discuss your feelings about social interactions will be a positive experience but there are no direct advantages to you from your participation in the study. However, we hope that results of the study with help to improve care for transgender people in the future. The study involves giving up some of your time and there is a chance that discussing difficult social interactions could be distressing. If you do l feel either distressed or upset during or after the study then do please raise this with the researcher, your clinician at the Nottingham Centre for Gender Dysphoria, or contact your local GP, The Samaritans or MIND for support. Contact details are below.

Will my taking part in this study will be kept confidential?
At the start of the interview you will be assigned a unique identifier code and all your personal information, interview and questionnaires will be kept under this code. From that point on, there will be no record that links the data collected from you with any personal data from which you could be identified. Any personal identifiers will be removed from the transcript of the interview. All information and data collected during the course of the research will be kept strictly confidential, stored in a secure office, and on a database protected by a password, accessible only by researcher and supervisors. All the data will be kept securely for 10 years. After this time your data will be disposed of securely. Although the content of your interview is confidential if, during the interview, you disclose information that suggests that you are at risk of harm this will be discussed with you and disclosed to your clinician or other professional as appropriate.

What will happen to the results of the study?

The results of this study may be published in a scientific journal or presented at a scientific conference. The results will also contribute to a doctoral dissertation. Participants will not be identified in any report or publication, as the data are kept strictly confidential and securely stored. Extracts from the interviews will be used in the final report and in any publications but all the names and study codes will be changed to protect your anonymity. Others will not be able to identify you from the text extracts used. You can request a summary of the findings upon completion of the overall study.

I have some more questions, who should I contact?

If you have any questions please do not hesitate to contact the lead researcher, Anna Nobili (email: anna.nobili@nottingham.ac.uk, phone: 07444797210) or her supervisors, Professor Cris Glazebrook (email: cris.glazebrook@nottingham.ac.uk, phone: 0115 8230420) or Professor Jon Arcelus (email: jon.arcelus@nottingham.ac.uk, phone: 0115 8760160).

If you would like independent advice about partaking the research, you may wish to contact Patient Advice Liaison Service (PALS), via phone (0800 0153367), via email (pals@nottshc.nhs.uk) or via the website (www.pals.nhs.uk) for general information only.

Further support

If you feel that you require further support then please discuss your issues with your clinician, GP or contact:

MIND – email: info@mind.org.uk, phone: 0300 123 3393, text: 86463, website: http://www.mind.org.uk/

The Samaritans – email: jo@samaritans.org, phone: 08457 909090, website: http://www.samaritans.org/

Appendix G – Cover letter

AN INTERVIEW STUDY EXPLORING TRANSGENDER PEOPLE' SOCIAL INTERACTIONS

As part of my PhD doctorate training, I will be conducting a studying aiming to increase our understanding of the factors that influence social interactions in Transgender people. We hope that in the future this will help us to develop ways to help Transgender people who are struggling with social interactions.

Enclosed you can find a copy of the information sheet about the study and an expression of interest slip. If you wish to participate, please contact me either by 1) sending the expression of interest slip in the prepaid envelope, 2) sending me an email, or 3) contacting me by phone. I will try to organise the interview on the same date as your next appointment at the Nottingham Centre for Gender Dysphoria, either before or after your appointment. If this is not possible, the interview can be done over the telephone.

The interview will be approximately 45 minutes. The interview needs to be audiotaped with your permission and the recording will be destroyed after transcription. The audiotaping is vital as this is the only way we can look at the information we get through the interview. If you don't want to be audio-taped the project can't go ahead. The interview will be kept confidential and each interviewee will be assigned a number code instead of a name, this way your name will not be associated with the interview.

Telephone: 0115 7484098 ext. 84325
Mobile phone: 07444797210
Email: anna.nobili@nottingham.ac.uk

Looking forward to hear from you.

If you have any question please do not hesitate to ask.

Kind regards,

Anna Nobili

Appendix H – Expression of interest slip

I am interested in learning more about this study. Please contact me by providing wither your phone number or your email address

Name:

_____

Telephone(s):

_____

Best time and day to call:

_____

Email:

_____@_____

Appendix I – Interview guide

AN INTERVIEW STUDY EXPLORING TRANSGENDER PEOPLE'S SOCIAL INTERACTIONS.

INTERVIEW TOPIC GUIDE

Hello, my name is Anna Nobili, I am a PhD Student at the University of Nottingham.

First of all, I would like to thank you very much for participating in the interview.

I am carrying out this study as I am interested in understanding a little bit more about how transgender people experience social interactions. In particular I would like to understand how social relationships affect the mood of the person, positively and negatively.

I understand that you have read the information about the study that I sent you. Is that right? Do you have any questions about the project?

As explained in the information sheet, I will be recording this conversation so I can then transcribe it. This will help me to better understand the information that people give me. Additionally, the transcription will be done anonymously and your identity will be kept anonymous and strictly confidential.

If for whatever reason you get upset during the interview, don't worry, it is ok to stop it. We can stop it at any time either for a little bit or we can stop it completely.

If it's OK with you I will start recording, unless you have any questions.

Start recording

1- Could you please tell me a bit about your current social life?
2- How has your social life changed since coming out as trans?
    a. Please give me an example.
    b. Why do you think that is?
3- How has your social life change since commencing the medical transition and having hormones?
    a. Has this changed from the past?
    b. Please, give me an example

c. Why do you think that is?

4- How do you find making new friends now? Do you enjoy meeting new people?
   a. Has this changed from the past?
   b. Please, give me an example
   c. What do you think when you meet a new person?
   d. What do you worry about?
   e. What are the difficulties that a trans person might face in making new friendships?

5- Think about going to a party/to some social event/place where you can have the opportunity to socialise. Would you go?
   a. IF YES, how would you behave in such occasion?
      5.a.i. How do you think your mood would be affected?
      5.a.ii. Why do you think that is?
      5.a.iii. Could you give me an example from real life?
   b. IF NO, why wouldn't you go?
      5.b.i. What are the thoughts that come into your mind?
      5.b.ii. Do you worry? About which kind of things do you worry?
      5.b.iii. How do you think your mood would be affected? Why?
      5.b.iv. Could you give me an example from real life?

6- Please, tell me of a recent situation when you became <u>sad, angry, depressed, or frustrated</u> and that involved an interaction/relationship with another person?
   a. What did it happen? Explain in detail
   b. If this is in relation to another person (family, friends, unknown person) describe it in detail
   c. What were you thinking?
   d. Why do you think your mood was affected?
   e. What could you have done differently?
   f. What could have helped?
   g. Do you think your mood would have been affected in the same way in the past (before coming out? Or before transitioning?)
   h. [If not related to another person, look for another example]

7- How do you generally deal with disagreement?
   a. How do you cope with arguments and/or discussions?

8- Please, tell me about a recent experience/situation with other people that made you happy
    a. What did it happen?
    b. If in relation to another person, describe in detail
    c. What were you thinking?
    d. Do you think your mood would have been affected in the same way in the past (before coming out/transitioning)?
    e. Why do you think you felt happy?
    f. [If not related to another person, look for another example]
9- Did you experience social encounters that have made a particular impression on you?
    a. Why?
    b. How was your mood affected in this situation?
    c. Why do you think that was?
10- If you have a difficult interaction with someone, like an argument, how does it generally make you feel?
    a. How do you cope with it?
    b. Can you give me an example?
11- What do you think it's the biggest change that happened within you since you started transitioning?
    a. How does this impact your mood?
    b. How does it affect you relationships in general?
    c. What about family? Friends?
12- How has coming out a trans affected/changed your relationships in general, including family, friends and love life?
    a. Give an example
    b. Why do you think that was?
13- IF IN TREATMENT, how has treatment had an impact on your relationships?
    a. Give an example
    b. Why do you think that is?

Now I am going to ask you the final questions and those will be about social media and then romantic relationships and love life, is it a problem? Can I continue?

14- Do you use social media and/or forums?

a. When and how you use them?
b. Which ones do you use and why?
c. Do you use them to socialise? How?

15- Are you in a romantic relationship?

d. IF NO, where you in one before coming out/transitioning?
1.d.i. Was transitioning the reason for your break up?
1.d.ii. Are you interested in having one?
1.d.iii. IF NO, why not and when would it be?
1.d.iv. Is it related to transitioning?
e. IF YES, how has coming out/transitioning had an impact on your romantic relationships?

16- What do you think are the main difficulties that trans people face when trying to get into a new romantic relationship?

f. Give an example?
g. Why do you think so?

17- Finally, when do you think is the right time (if ever) to disclose your trans identity when starting a new relationship?

h. Why?

Alright, then. I think I have finished my questions. Was there anything you wanted to ask me about the study?

Thank you very much for participating in the interview. I greatly appreciate your help.

Appendix J – Sociodemographic questionnaire

Participant number: …….

Date: ……

- **AGE** ……
- **MARITAL STATUS**

  a. Single ◯
  b. In a relationship/cohabitating ◯
  c. Married/civil partnership ◯
  d. Divorced/separated ◯
  e. Widowed ◯
  f. Other ◯

- **GENDER IDENTIFICATION**

  a. Man ◯
  b. Woman ◯
  c. Neither man nor woman ◯
  d. Partly man and partly woman ◯
  e. Pangender ◯
  f. Genderfluid ◯
  g. Demigender ◯
  h. Trigender ◯
  i. I don't know ◯
  j. Other ◯

  Please specify what you mean by "Other"

  ……

- **TRANSITIONING PHASE**

  Please check at which point of your transitioning

  a. Before cross-sex hormones or blockers ◯
  b. On blockers only ◯
  c. On cross-sex hormones ◯
  d. After top surgery (for transmen only) ◯
  e. After gender reassignment surgery ◯
  f. Other ◯

Please specify what you mean by "Other"

……

- **EDUCATION**
  What is the highest level of education you have completed?

a. 12th grade or less ◯
b. High school graduate or GED ◯
c. Some college/AA degree/Technical school training ◯
d. College graduate (BA or BS) ◯
d. Graduate school degree: Master's degree ◯
e. Graduate school degree: Doctorate Degree ◯

- **EMPLOYMENT**

Check the box that best corresponds to your current work situation

a. Employed ◯
b. Working part time ◯
c. Unemployed ◯
d. Disabled ◯
e. Retired ◯
f. Primarily studying ◯
g. Housewife/housemaker ◯
h. Volunteer ◯
i. Other ◯

Please specify what you mean by "Other"

……

- **ETHNICITY**

Check the box that best describe your ethnicity

a. White ◯
b. Black Caribbean ◯
c. Black African ◯
d. Black Other ◯
e. Indian ◯

f. Pakistani ◯

g. Bangladeshi ◯

h. Chinese ◯

i. Mixed ethnicity/background ◯

j. Other ◯

Please specify what you mean by "Other"

……

- INVENTORY OF INTERPERSONAL PROBLEMS
  Here it is a list of problems that people report in relating to other people. Please read the list below and, for each item, select the number that describes how **distressing that problem has been for you**. Then thick that box.

Appendix K – Inventory of Interpersonal Problems (IIP-32)

It has been hard for me to …		**0: Not at all**	**1: A little bit**	**2: Some-what**	**3: Very much**
1	Join in on groups				
2	Be assertive with another person				
3	Make friends				
4	Disagree with other people				
5	Make a long-term commitment to another person				
6	Be aggressive toward other people when the situation				
7	Socialise with other people				
8	Show affection to people				
9	Feel comfortable around other people				
10	Tell personal things to other people				
11	Be firm when I need to be				
12	Experience a feeling of love for another person				
13	Be supportive of another person's goals in life				
14	Really care about other people's problems				
15	Put somebody else's needs before my own				
16	Take instructions from people who have authority over me				
17	Open up and tell my feelings to another person				

18	Attend to my own welfare when somebody else is needy				
19	Be involved with another person without feeling				
I did too much:		**0: Not at all**	**1: A little bit**	**2: Some-what**	**3: Very much**
20	I fight with other people too much				
21	I get irritated or annoyed too easily				
22	I want people to admire me too much				
23	I am too dependent on other people				
24	I open up to people too much				
25	I put other people's needs before my own too much				
26	I am overly generous to other people				
27	I worry too much about other people's reactions to me				
28	I lose my temper too easily				
29	I tell personal things to other people too much				
30	I argue with other people too much				
31	I am too envious and jealous of other people				
32	I am affected by another person's misery too much				

Appendix L – Participant consent form

Participant Identification Number:

AN INTERVIEW STUDY EXPLORING TRANSGENDER PEOPLE' SOCIAL INTERACTIONS.

Participant Consent Form

Name of Researcher: **Anna Nobili**

	Please initial box
1. I confirm that I have read the information sheet dated May 2016 (version 1) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.	☐
3. I understand that the information collected about me will be used to support other research in the future, and may be shared anonymously with other researchers.	☐
4. I agree on having the interview audio recorded for research purposes.	☐
5. I agree to take part in the above study.	☐

Name of Participant	Date	Signature
Printed Name of Participant		

Name of Person taking consent	Date	Signature
Printed Name of Person taking consent		

Appendix M – Debriefing form

AN INTERVIEW STUDY EXPLORING TRANSGENDER PEOPLE' SOCIAL INTERACTIONS.

Participant Debriefing Sheet

I would like to start by thanking you for your time and participation in the research, it is much appreciated.

What was the purpose of the research?
The purpose of the study was to identify interpersonal experiences (positive and negative) in transgender people attending gender service by focusing in the positive and negative interpersonal interactions between the person and others and how this affects mood and confidence.
This research will be used to inform the development of an assessment's tool for interpersonal events in transgender people.

Withdrawal
I would like to remind you that you have the right to withdraw your data within one month of your interview, without any reason. If you would like to withdraw you interview then please contact Anna Nobili with your unique identification code provided before commencing the interview (anna.nobili@nottingham.ac.uk).
If you have any further questions about the research please do not hesitate to contact either

Primary Investigator:
Anna Nobili (Email: anna.nobili@nottingham.ac.uk, Phone: 07444797210)

Supervisors:
Professor Cris Glazebrook (Email: cris.glazebrook@nottingham.ac.uk, Phone: 0115 8230420)

Professor Jon Arcelus (Email: jon.arcelus@nottingham.ac.uk, Phone: 0115 8760160)

Further support
If you feel that you require further support then please discuss your issues with your clinician, GP or contact**:**

MIND Email: info@mind.org.uk, Telephone: 0300 123 3393, Text: 86463, Website: http://www.mind.org.uk/

The Samaritans Email: jo@samaritans.org Telephone: 08457 90 90 90 Website: http://www.samaritans.org/

Thank you for your help with this project,

Anna Nobili

Appendix N – Codebook

Codebook for qualitative analysis

Theme 1: Transitioning has a positive impact on interpersonal interactions

Description: participant describe the positive impact that transition and/or the different transitioning phases have on their interpersonal interactions and skills.

Subtheme 1.1: Transitioning improves social confidence and reduces social anxiety

Description: participants describe the positive effects that transitioning and different stages of transition had on their social confidence and on the reduction of social anxiety levels.

Include: examples where the participants describe an improvement in confidence and/or a decrease in social anxiety levels following transition and the impact that such amelioration brought on with regard to their interpersonal interactions. Additionally, instances where the participant says that family and/or friends noticed positive effects of transitioning on the transgender person are included within this subtheme.

Positive example: *"[Post-transition] I have the confidence to talk out about certain issues and correct people if they say anything insensitive towards any minority group really, erm... I suppose I've been more confident in, erm, academic things as well, erm, before I came out I was really really really quiet about absolutely everything and it's taken a massive, massive shift, erm that was... I think it was early in the year before I started college, so, erm, it gradually improved and then suddenly college was a big jump, erm, the confidence spiked a little bit and then as we've come along the timeline, erm, I found not finding it too difficult to, to talk to people, erm, if I have to talk to them. Erm... sometimes getting it started is a little bit difficult but once we're in the swing of it it's ok, I can talk to lecturers and, erm, stay after classes to discuss things with people, erm... there's been situations where I've actually*

formed study-groups with people, which I definitely wouldn't have done before [transitioning]".

Exclude: any examples where the participants state that transitioning had a negative impact on the individual's social confidence and/or social anxiety levels.

Negative example: *"[Since beginning to transition] I stopped being the big confident person but I sort of didn't replace it with anything, I just sort of came in on myself and then slowly I've been... figuring out what to share with people... if that makes sense a bit..."*

Subtheme 1.2: Transitioning improves resilience

Description: participants describe the positive effects that transitioning and/or different stages of transition had on the development of resilience, on an amelioration in the individual's capacities to cope with difficult interpersonal interactions and/or an improvement in social skills needed to deal with negative interpersonal interactions.

Include: examples where the participants describe an improvement in resilience and/or abilities to deal with adverse social interactions.

Positive example: *"I think I'm getting a lot better [post-transition] at realising what's going on in there... sometimes after an event, like, I don't know, a disagreement or an argument I'll say something or they'll say something […] and then I'll go away, think about it, realise why I said something and go back and address the situation, which I wouldn't have done before [transitioning], I don't think".*

Exclude: any examples where the participants describe transitioning as having a negative impact on interpersonal interactions and/or an increase in vulnerabilities when dealing with interpersonal interactions.

Negative example: *"I think it's probably something to do with the fact that I feel a bit vulnerable [in interpersonal interactions] or I feel more vulnerable [since I started to transition] than I used to*

[before transitioning], because I think I'm opening up a bit [to others]".

Subtheme 1.3: Transitioning facilitates insights into communication and improves relationships

Description: participants describe the positive effects that transitioning and/or the different transitioning phases had on developing insights that aid communication, helping to improve interpersonal interactions and increasing empathy.

Include: examples where the participant describes an amelioration in characteristics having a positive impact upon communication and social interactions, such as an increase in empathy, becoming more understanding of others as well as more interested in having meaningful conversations and relationships with others.

Positive example: *"That's something that's growing my ability for empathy, it's still not great but... having some kind of empathy is definitely grown... I'd become more empathetic [since starting to transition] […] I'm thinking a lot more about how people see me, but in the same thing I'm thinking a lot more about what other people are thinking and what they're feeling"*

Exclude: any examples where the participants state that transitioning either caused an improvement in empathy with negative repercussions upon interpersonal interactions or made the person become more concerned about what other people might be thinking about the transgender person.

Negative example: *"In particular meeting strangers, I'm a little more nervous [than before transitioning] cause, again, I don't know what their reaction is gonna be... to me, erm... so I get a little bit more cautious, particularly... if I haven't met someone yet, and they're not aware of, of, of my identity, or that I'm trans. I might become slightly more hesitant, thinking, you know, what are they gonna think, how are they gonna react... so I'm probably a little more... on edge around people [since I transitioned]"*

Theme 2: Underlying individual differences are still important

Description: participants described possessing certain innate characteristics (individual differences that make people distinct from each-others) and personality traits that had always been present both prior to and since transitioning and that have an impact upon interpersonal interactions and skills.

Include: any example that describe an individual reflecting on the fact that they have always (or never) possessed certain characteristics that affect interpersonal interactions and skills.

Positive example: *"I was sort of like that shy kid, so there's not a whole lot of change, I was still always shy, even before and after coming out"*

Exclude: any example where the participants talk about possessing an individual trait that influences interpersonal interactions but that was not always present and/or any example in which participants state having possessed such trait before transitioning but that do not mention still possessing it.

Negative example: *"[Before starting to transition] I was very shy because I was quite new at that school that I was in anyway"*

Theme 3: Perceived stigma is a barrier to social interactions

Description: participants described experiencing feelings of transphobia towards other transgender people and/or internalised transphobia.

Include: examples where participants discussed experiencing negative feelings and attitudes towards themselves and others because of being transgender as well as descriptions of negative experiences and believes towards society, caused by being transgender.

Positive example: *"So, I feel less female when I am with a transgender person, but it's not their fault, it's just they are a... I am probably doing the same to them. So ironically I don't seek other transgender people to socialise with because I actually prefer the company of non-, of cis-females which makes me actually slightly transphobic, I guess you could say even though I'm trans, which isn't as uncommon as it sounds"*

Exclude: any example where participants talk about other people's and/or the society's transphobic views and feelings.

Negative example: *"Being transgender... there's still... some people still take quite negatively towards it in society"*

Theme 4: Fears and worries contribute to negative interactions

Description: participants described the impact that different fears and worries have on their interpersonal interactions, interpersonal skills, socialising behaviours and/or ability to socialise.

Subtheme 4.1: Concerns around misgendering and negative reactions to transgender status

Description: individuals described fear of being misgendered, of how they might be perceived by others, of rejection and/or of attracting attention, and the impact that these have on transgender people's interpersonal interactions.

Include: examples in which individuals talk about worries related to being misgendered, of their gender identity being wrongly perceived, of being rejected, of not fitting in and/or of the implications that these fears have on their social life.

Positive example: *"I think it's like worrying about being left out, or just like not fitting in, like... just, yeah, you just worry that... if they are going to be alright about it or if it's gonna change, or if they are going to act funny, or if they will act different with you, like they might act, like I think sometimes some of my friends might act different with me compared to like just a normal, like, cis-guy, just a normal..."*

Exclude: any example where transgender people mention how not being misgendered has improved their social life and/or when participants talk about worries that are related to romantic relationships and personal safety.

Negative example: *"Yeah, yeah, definitely, I'd be more, more inclined to go [to social events]... erm, now, cause I'm more happy in myself and then being around other people is easier, it's a lot less mentally draining, a lot less mentally exhausting than it was*

beforehand, cause I don't have any of the previous worries about people, erm, making assumptions about my gender, erm, making assumptions about who I am, a lot of people would just assume, when they do make assumptions it's the correct one, it's not the wrong one as it might have been beforehand or earlier on in my transition. Erm, earlier on in my transition where I was in between, people, erm... people getting it wrong, people getting it right, in that situation I would be a lot less inclined to go a social event, whereas... now [that I don't get misgendere anymore] it's a lot easier because I don't have to think about any of those previous worries, I can just focus on enjoying the event as it is..."

Subtheme 4.2: Worries around romantic relationships

Description: participants described the fears they experience associated with either being in or getting into romantic relationships.

Include: any examples in which participants specifically mentioned fears and/or worries in relation to being in, getting into or violence within romantic relationships.

Positive example: *"I think people worry a lot about rejection [when getting into a romantic relationship] because I think there is a big kind of stigma around trans people and a lot of people just kind of, a lot of like cisgender people tend to just kind of straight away, like 'oh no I wouldn't date a transgender person' so I think a lot of trans people worry about that, and I worry about that a lot, and I will worry about being rejected because of the fact that I'm trans […] and like, yeah that's definitely my biggest worry and I think it's a worry of a lot of other transgender people"*

Exclude: any example in which participants describe worries and fears that are not specifically related to getting in and/or being in a romantic relationship.

Negative example: *"I'm not so much now [worried], so, um, because of my voice, but because I was, obviously, I was trying to have a deep voice all the time"*

Subtheme 4.3: Physical and emotional safety

Description: participants described being fearful of receiving emotional and/or physical harm as a result of being transgender.

Include: examples in which individuals have described events where they were fearful of or were the subjects of transphobic acts and examples in which they have heard horror stories of other transgender people's negative experience of transphobia.

Positive example: *"I know that people still get hurt for being, transgender people still get hurt, they still, you know, it happens, you know, it's not nice but it still happens, and I have to be, it's better to be aware of that, than to just, flaunt myself everywhere and be like, dead, so I was very worried, I think I'm worried about that, but more so because my parents worry"*

Exclude: any example in which people describe not being worried of receiving physical or emotional violence.

Negative example: *"I mean the things that I worry about aren't so much, like, any sort of physical danger"*

Theme 5: Managing interpersonal interactions

Description: Participants describe using different coping mechanisms and strategies to deal with negative and/or trans-specific interpersonal interactions, such as dealing with arguments, disclosing transgender identity, coming out, correcting people when misgendered.

Subtheme 5.1: Avoiding social situations and potential conflict

Description: participants described avoiding circumstances related to interpersonal interactions and social environments such as social events, talking to people, dealing with arguments and disagreements, disclosing the transgender identity, coming out as transgender, and correcting people when misgendered.

Include: examples that describe the individual using avoidance as a coping mechanism and/or as a way of dealing with negative

interpersonal interactions, or situations they do not feel comfortable in.

Positive example: *"A lot of times I do try to, to just avoid any confrontation in any, in any respect […] so, yeah, probably in similar, yeah, in a similar way I try and get out of it [of the argument] and just […] and say you know what, I'm not the person, I'm not very good... I get my words muddled up a lot so I'm probably, I'd just, just get out of it (laughing)"*

Exclude: any example where the participant either does not describe avoiding an interpersonal interaction and/or a social environment or not using an avoidance strategy.

Negative example: *"[After being misgendered] I just wanted to get away, I just wanted to get back [home] as soon as possible"*

Subtheme 5.2: Developing problem-focused coping strategies to deal with trans-specific interpersonal challenges

Description: participants describe and/or give recommendations on possible strategies used to deal with trans-specific social interactions, such as coming out, disclosing trans-identity in romantic relationships, dealing with being misgendered and/or called with a wrong name, educating people on trans-specific issues and on being transgender, etc.

Include: examples where participants discuss using and/or give suggestions on strategies to tackle trans-specific negative interpersonal interactions; for instance, having to correct people when misgendered, needing to disclose transgender-identity to a possible romantic partner to avoid subsequent issues, coming out, dealing with disagreement and arguments, being bullied.

Positive example: *"I normally try and get their opinion on trans people as a whole just a suggestion, even before pursuing a relationship so I see what their stances on, erm, the LGBT community as a whole, cause normally if they are ok with lesbian, gay, bi people than they are normally ok with trans people, erm, there are some people who are exceptions to the rules, who's say*

they are ok to say, like, bisexual or gay people but we are not ok with transgender people, but, erm... yeah, most people I find that, I'll and gage how they feel about people who aren't straight or people who aren't cisgendered and then, erm... and I'll then decide, erm, whether or not, like, if... erm, a relationship is gonna come out of it […] cause you can a sort of tell with someone, when you start talking to them about different topics, how they are going to react, how open-minded they are, erm, how progressive they think, erm... […] Yeah, you can sort of tell beforehand and then you can decide whether or not it's in your best interest..."

Exclude: Any example where participants describe coping strategies that do not aid the participant's resilience.

Negative example: *"Usually, usually when something like that happens and I know it's just gonna be, like, a one-time thing I would probably just try and, like... meet that expectations... but, I'm, that like, because they [wrongly] perceive me as female […] so then I'm just gonna be, like, ok well that's what I have to be for this next hour or something, erm... so I think I just try, like, and not confuse them any further and, like, not... try, like, try and not use the like lower register of my voice, erm..."*

Theme 6: The importance of shared interests

Description: participants describe the importance of sharing similar interests, hobbies and viewpoints to facilitate and promote socialisation.

Include: examples in which people discuss how having similar interests and hobbies aid people's abilities to socialise and foster interpersonal interactions.

Positive example: *"My mum had a... my mum has this weird thing where she's really small, my mum, (laugh) randomly. Yeah, my mum is really small and she's in this club for, like, well, no not a club, she meets up with loads of other small women […] and so, like, she's like 5 foot, I don't know, just over 5 foot and she meets with other people that are all over 5 foot but she comes back and she moans about them all the time. She doesn't like them. […] Yeah, I know, it's brilliant! (laughing) They're all there and there're all tiny. I've never really met them but she says they're*

all her little friends. But no, she'll go out and she'll have this one thing that she has in common with these few people, that they're all like around 5 foot... and yet what they do for their job, what they're doing in their spare time, what their hobbies, their interests, their actual... what makes them who they are [are different things] […] They don't actually have any, very much of a... a similarity. So my mum comes back moaning about "Oh, because this person talked all over me for the entire thing, I don't know why I bother! But I'll go next week". It's like "What?" but yeah, a lot of the sort of trans pages and things like that, that I find that are similar to that... when I've had to, I've been to a sort of a few meet-and-greats and things like that and actually met people ... and I sort of walked around the room and you go "Ok, well, we are trans but that's about it for our similarities" […] like, yeah, if I've sort of I don't know, what's one of the things I like? I like cooking, like, I'm a chef for one of my jobs and I've got a group of friends that we all like cooking together so me and my friends Joanna and Jess we'd, would have a nice cooked meal but neither of those two are trans but... our love for cooking, which is something about us on earth, sort of internal personal level is what joins us together. […] Whereas I've been to sort of the meets of trans people and we are not, it's just a case cause you just so happen to be trans"

Exclude: any example where participants discussed the difficulties of socialising with people that do not share the same interests.

Negative example: *"Generally it's harder to talk to people when they have such different interests to you"*

Appendix O – COREQ checklist

COREQ (COnsolidated criteria for REporting Quality research) Checklist

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	AN
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	BSc, MSc
Occupation	3	What was their occupation at the time of the study?	PhD student
Gender	4	Was the researcher male or female?	Female
Experience and training	5	What experience or training did the researcher have?	Health psychologist
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	No
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Reasons for doing the research
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	Reasons and interests in the research topic
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography,	Social constructivism

		phenomenology, content analysis	
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	Purposive
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	Mail
Sample size	12	How many participants were in the study?	18
Non-participation	13	How many people refused to participate or dropped out? Reasons?	1 person refused to be interviewed by a non-transgender researcher
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	Clinic
Presence of nonparticipants	15	Was anyone else present besides the participants and researchers?	No
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	Demographics, IIP-32
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Yes
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	No
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	Audio recording
Field notes	20	Were field notes made during and/or after the inter view or focus group?	After the interviews
Duration	21	What was the duration of the inter views or focus group?	± 45 minutes
Data saturation	22	Was data saturation discussed?	Yes
Transcripts returned	23	Were transcripts returned to participants for comment and/or correction	No

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	2
Description of the coding tree	25	Did authors provide a description of the coding tree?	No
Derivation of themes	26	Were themes identified in advance or derived from the data?	Inductive approach
Software	27	What software, if applicable, was used to manage the data?	Nvivo
Participant checking	28	Did participants provide feedback on the findings?	No
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	Yes
Data and findings consistent	30	Was there consistency between the data presented and the findings?	Yes
Clarity of major themes	31	Were major themes clearly presented in the findings?	Yes
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	Yes