

**Minority stress in people who identify as transgender: Testing the minority
stress model**

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THESIS ABSTRACT

Objectives: People who identify as transgender are reported to experience high levels of mental health problems in comparison to people who do not identify as transgender. The minority stress model has been used to explain these high prevalence rates. But this model was designed to be used in lesbian, gay and bisexual (LGB) populations (Meyer, 1995, 2003). Researchers have applied some of the hypothesised processes of the model to people who identify as transgender. However, evidence testing the minority stress model in this population is limited. The model postulates that minority stress processes (namely, distal stress, internalised stigma, vigilance and concealment) lead to adverse mental health outcomes. It also states that coping and social support moderate and ameliorate the stress processes. However research on this aspect is inconclusive, with other researchers stating that coping and social support mediate the relationship between internalised stigma and psychological distress. In light of the current literature, this research aimed to test the application of the minority stress model in a sample of people who identified as transgender. It also aimed to test the moderating and mediating roles of coping and social support. Furthermore, this research endeavoured to develop an alternative model (i.e. based on the findings and the literature).

Methods: A cross-sectional design was used. Participants were recruited from transgender forums, social groups, transgender events and social media. Those who identified as transgender, under the umbrella term, were invited to complete an online survey ($N = 270$; mean age = 27.5). The majority of participants (60.4%) described their gender identity as trans women.

Results: Multiple linear regression, mediations and moderations analyses were conducted. Results showed that, individually, all the stress processes (distal stress process, internalised stigma, vigilance and concealment) were significantly associated with psychological distress. However, when assessed in combination, only certain stress processes emerged as being significant. With internalised stigma emerging as being significant in all the regression models (i.e. depression, anxiety and stress). No moderation effects were found for coping and social support. Instead, passive coping and social support were found to partially mediate the relationship between internalised stigma and psychological distress. Structural equation modelling was also used to develop hypothesised models based on this data.

Conclusion: Limited support was found for the minority stress model within this sample. Hypothesised models were developed instead, to highlight the stress processes involved in depression, anxiety and stress. However, future research is warranted to test these models.

ACKNOWLEDGEMENTS

I would like to take this opportunity to thank Dave Barber for putting forward the initial idea of examining the effects of prejudice and discrimination on transgender people. This research would not have started without your input. I want to thank my research supervisors for helping me in persevering with this challenging but interesting research project. In addition, to helping me see the silver lining throughout the research process.

I would like to thank my Steering group (Diane Palmer, Lynn Jones and Nicky Lucas) for their contribution in assisting with adapting the scales and helping with recruitment ideas. Also in sharing their personal experiences and stories. I truly appreciated this.

A huge amount of gratitude goes to my proof readers for persevering in reading my thesis. Thank you so much Dad and Dwayne.

Lastly, I would like to thank my family and loved ones for all their support during this tedious journey of conducting research.

STATEMENT OF CONTRIBUTION

The idea of assessing the effects of prejudice events on the transgender people was developed by a SUCAP member (Dave Barber). However, the trainee contributed to the focus of the project; to assess the minority stress model in people who identified as transgender. The trainee completed the following with guidance from their supervisors (Dr Michael Rennoldson and Professor Roshan das Nair): systematic literature review (i.e. assistance on developing the question, search terms, development of inclusion and exclusion criteria), research design for the thesis, completion and submission of the ethical form and selection of measures for the thesis. The trainee contributed to the adaptations and development of measures and information sheets, with assistance from a steering group, Dr Michael Rennoldson and Dave Barber. The trainee created the online research platform, receiving guidance from Dr Nima Moghaddam. The trainee also recruited participants (assisted by ideas from the steering group) and scored measures. The trainee entered all the data into SPSS and AMOS, analysed all the data and interpreted the data, with guidance Dr Nima Moghaddam. Lastly, the trainee conducted the literature review on this research idea and wrote the thesis and systematic literature review.

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1. SYSTEMATIC LITERATURE REVIEW

What is the predictive validity of the minority stress model in LGBT populations?: A systematic literature review on the minority stress model¹.

Authors: Sabrina Stennett, Dr Michael Rennoldson and Professor Roshan das Nair

¹ Proposed Journal for submission: Psychology of Sexual Orientation and Gender Diversity Journal

Abstract

Purpose. The minority stress model has been extensively used to explain the mental health disparities in LGBT populations but its predictive validity has not been determined. This review aimed to critically evaluate research on the minority stress model and establish the predictive validity of the model within LGBT populations.

Method. A systematic search, using search terms that related to the minority stress model and LGBT populations, was carried out and composed of three phases: database searches (conducted on Embase, PsycInfo, Medline, ASSIA, Web of Science and Cinahl); a citation search (on the Web of Science) and a hand search (reference lists consulted). Data was extracted and studies were critically appraised using a quality review adapted by the researchers.

Results. 13 studies met the inclusion criteria. None of the studies examined all the processes of the minority stress model and the main finding was that distal and proximal stressors led to poor mental health. A meta-analysis was not conducted due to the heterogeneity of studies.

Conclusions. This review was unable to find the predictive validity of the minority stress model. There was empirical evidence for some of the processes within the model, and a lack of evidence or contradictory evidence for other processes (such as minority identity characteristics and coping). Further research is need to examine the predictive validity of the minority stress model in LGBT populations, using analysis that reflects model testing (structural equation modeling).

Keywords. *minority stress model; minority stress; LGBT; sexual minorities; mental health*

Introduction

A large volume of research has shown that lesbian, gay, bisexual, and transgender (LGBT) individuals, have a higher risk of developing mental health problems than heterosexual and cisgender (refers to individuals whose gender conforms to their gender at birth) individuals (Cochran, Sullivan & Mays, 2003; King et al., 2008; McNeil, Bailey, Ellis, Morton & Regan, 2012). For example, Cochran et al. (2003) found that gay and bisexual men were three times more likely to meet the criteria for major depression than heterosexual men. LGBT individuals are also reported to have an increased risk of committing suicide. A systematic literature review reported that lesbian and bisexual women had approximately a 1.82 times increase risk of lifetime suicide attempts compared to heterosexual women (King et al., 2008). Although, research strongly supports the increased risk of mental health problems in LGBT populations, the research is limited. Many studies use cross-sectional designs which do not allow for strong conclusions about temporal relations or causation to be made like longitudinal methods.

A commonly used explanation for the higher prevalence of mental health difficulties within LGBT populations is that they experience minority stress (Brooks, 1981; Meyer, 1995, 2003). Minority stress is socially based, chronic and an additive stressor (on top of general stressors an individual experiences). It is reported to be experienced by stigmatised social groups and creates a stressful social environment. Consistent with this, LGBT individuals have been found to experience increased stigma and discrimination (Diaz, Ayala, Bein, Henne & Marin, 2001; Kelleher, 2009; McNeil et al., 2012). This is acknowledged in professional practice guidelines produced by the British Psychological Society (BPS), which highlights the numerous prejudice events experienced by LGBT individuals, as a means to increase clinicians awareness (BPS, 2012).

Minority stress has been encapsulated within a minority stress model (Figure 1). This model incorporates a complex set of social and psychological processes that are reported to lead to mental health difficulties in sexual minorities (Meyer, 1995, 2003). It is a popular model and it has been extensively cited in literature (1842 papers citing Meyer's 2003 paper on Google Scholar). Although, Meyer's initially developed the model for LGB populations other authors have extended the model to transgender populations (Bocking, Milner, Swinburne, Hamilton & Coleman, 2013; Kelleher, 2009). The minority stress model describes the stress processes

experienced by LGB populations. It includes stressors such as: the experience of prejudice events (known as distal stressors), expectations of rejection, hiding and concealing, and internalised homophobia (latter three are viewed as proximal stressors and are explained below). It also appreciates the ameliorative coping processes as well as highlighting the positive and negative effects these factors have on mental health outcomes (Meyer, 2003). Although this theory was not empirically tested at the time, support was gained through a meta-analysis of reviewed studies in the LGB populations.

Meyer's (1995, 2003) viewed minority stressors along a continuum from distal stressors, (defined as objective stressors because they are external to the person) to proximal stressors (subjective stressors which rely on the individuals perceptions and appraisals). These stressors, in addition to general stressors, are defined as being interdependent. Although it can be seen that distal stressors cause proximal stressors, the report of distal stressors depends on the individuals appraisals and whether they identify with their minority status.

The minority stress model highlights four hypothesised processes of minority stress. From distal to proximal stressors they are:

- (a) LGB individuals may experience minority stress from their environment due to their minority status in the form of prejudice events, acts of discrimination and/ or stigmatisation.
- (b) LGB individuals may internalise stigmatising attitudes (coined, internalised homophobia).
- (c) LGB individuals may become more vigilant to being rejected by others due to their minority status (e.g. expectations of rejection).
- (d) LGB individuals may hide their identity (known as concealment) in order to reduce their experience of discrimination and stigmatization.

The latter was an additional process included in Meyer's (2003) paper. These stressors are postulated to increase an individual's susceptibility to experiencing psychological distress.

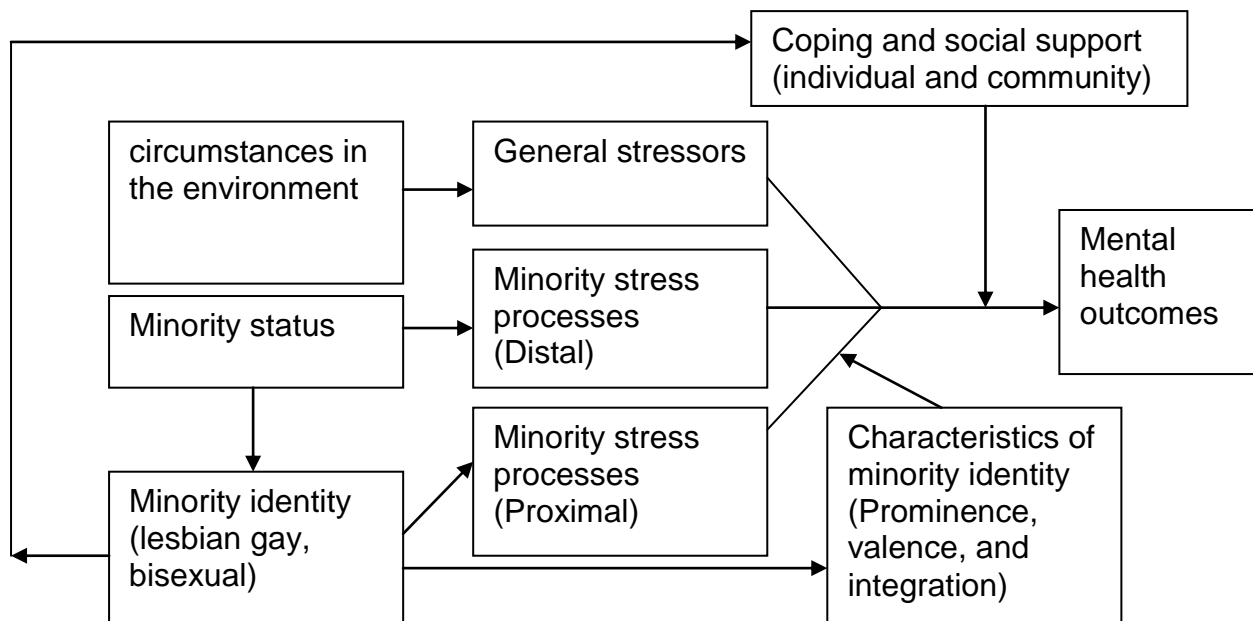
Positive coping styles and sources of social support are reported to moderate the effects of these stressors on mental health outcomes. These factors are thought to increase an individual's resilience to minority stress. It is reported that individuals who have good coping styles and sources of social support will experience these stressors to a lesser degree, thus ameliorating the effects of the stressors.

Lastly, the model incorporates the positive and negative effects minority identity has on mental health outcomes. Minority identity leads to minority identity characteristics (relates to an individual's sense of self) and is argued to affect the operation of stressors and social support. Minority identity characteristics include: the prominence of identity (an individual's relationship with other identities such as gender, religion, ethnicity); integration of identity (relates to the individual's level of integration); and valence of identity (when individuals evaluate their identity). In terms of positive effects on mental health, it proposes that those who manage all their complex identities, rather than view their LGB identity as prominent; evaluate their identity positively and integrate all their identities; will experience less psychological distress. This is because they will have access to social support (community and individual). However, the reverse is speculated to be true for those who experience their identity as prominent, who as a consequence are hypothesised to experience more stressors.

Although, the minority stress model is a popular model within LGBT populations, it has received criticism. Dunn, Gonzalez, Costa, Nardi and Iantaffi (2014) reported inconsistencies within the model, more particularly with the association between concealment of sexual identity (proximal stressor) and how it leads to poor mental health. This relationship is reported to be unclear (Legate, Ryan & Weinstein, 2012). Also, the nature of the processes within the model are not clearly explained, as some processes can either be moderators or mediators and research overlooks this important difference. Moderators are expected to change the strength or direction of the relationship between variables (Wu & Zumbo, 2008). Whereas, mediators are additional variables that explain the causal relationship between two variables. Mediators therefore explain "why" and "how" a cause and effect relationship happens (Baron & Kenny, 1986; Wu & Zumbo, 2008).

For example coping and social support have also been reported to be mediators (Kashubeck-West, Szymanski, & Meyer, 2008), whereas in the minority stress model they are reported to be moderators.

Figure 1. Minority stress model



Research has shown empirical support for the processes outlined within the model (Frost & Meyer, 2009; Newcomb & Mustanski, 2010). Authors have claimed that internalised homophobia (proximal stressor) and prejudice events (distal stressor) are related to increased psychological distress, suicide attempts, substance use and sexual health risks in sexual minorities (Frost & Meyer, 2009; Newcomb & Mustanski, 2010). Thus, showing the damaging effects these stress processes can have on an LGBT individuals' physical and mental health.

However, research on certain models processes within the model is limited. For example, there is limited research on the protective factors, such as coping and social support (Kwon, 2013). Furthermore, there is limited evidence on the expectations of victimization (Van den Berghe, Dewaele, Cox, & Vincke, 2010) and minority identity characteristics. Research on these factors is sparse.

Importantly, the predictive validity of the model has yet to be established. Predictive validity is when a measure is able to predict the future behaviour it was meant to predict (Cronbach & Meehl, 1955). In regards to the minority stress model, this would be whether the processes outlined in the model are able to predict future mental health outcomes. Researchers have focused on specific processes (more so prejudice events, internalised homophobia) rather than researching all the processes within the model.

Also, given the widespread use of the minority stress model in LGBT populations, it is timely to conduct a review of the empirical evidence for the model. This review aims to critically evaluate the research on the use of the minority stress model in LGBT populations. More specifically, this research aims to answer the following research question: "what is the predictive validity of the minority stress model in LGBT populations?". In addition, this review critically evaluates the research guided by the following sub questions:

1. What processes of the model have been tested, modified or neglected in LGBT populations?
2. What research methods have been used to investigate the model in LGBT populations?
3. What is the overall quality, determined by a critical evaluation, of the research in the LGBT populations?

Method

Searching

Relevant online research databases were searched using terms developed by the authors. The keywords related to Meyer's minority stress model (e.g. minorit*² stress model*, "minorit* stress*", minorit* stress theor*, Meyer) and the LGBT population (such as homosex*, lesbian, gay, bisex*, sex* minorit*, LGBT, LGB, LGBTQQI, LGBTIQ, LGBTQA, LGBTQ, TBLG, sex* orientation, gender minorit*, trans*, male to female, female to male, MTF, M2F, FTM, F2M, MSM, cis*). Subject headings were also used on databases, when the option was available (i.e. MESH, EMBASE), to assist in the search (e.g. homosexuality, homosexual female, homosexual male, lesbian, bisexuality, transgender people, transvestism and transsexuality). In addition, search terms were combined (e.g. minority stress model terms AND³ LGBT terms) so only articles citing both were found.

Only databases that included topics on social sciences and psychology were used to conduct the search because the minority stress model is related to those topics. The databases searched included; Embase, PsycInfo, Medline, ASSIA, Web of Science and Cinahl. Meyer's final revised model was developed in 2003, so that dates on the searches were to the years 2003-2014. A citation search was also conducted on the Web Of Science. A hand search was performed on the reference lists of articles included within the review. This ensured the systematic inclusion of articles published on the minority stress model. Only peer reviewed journals were consulted to ensure the articles had completed a prior quality assessment.

Selection

Inclusion and exclusion criteria were developed to ensure that only articles were used that addressed the research question (Figure 2). Agreement was sought from a second reviewer (MR) for papers where there was uncertainty.

Inclusion criteria.

² *truncation to enable search word variations

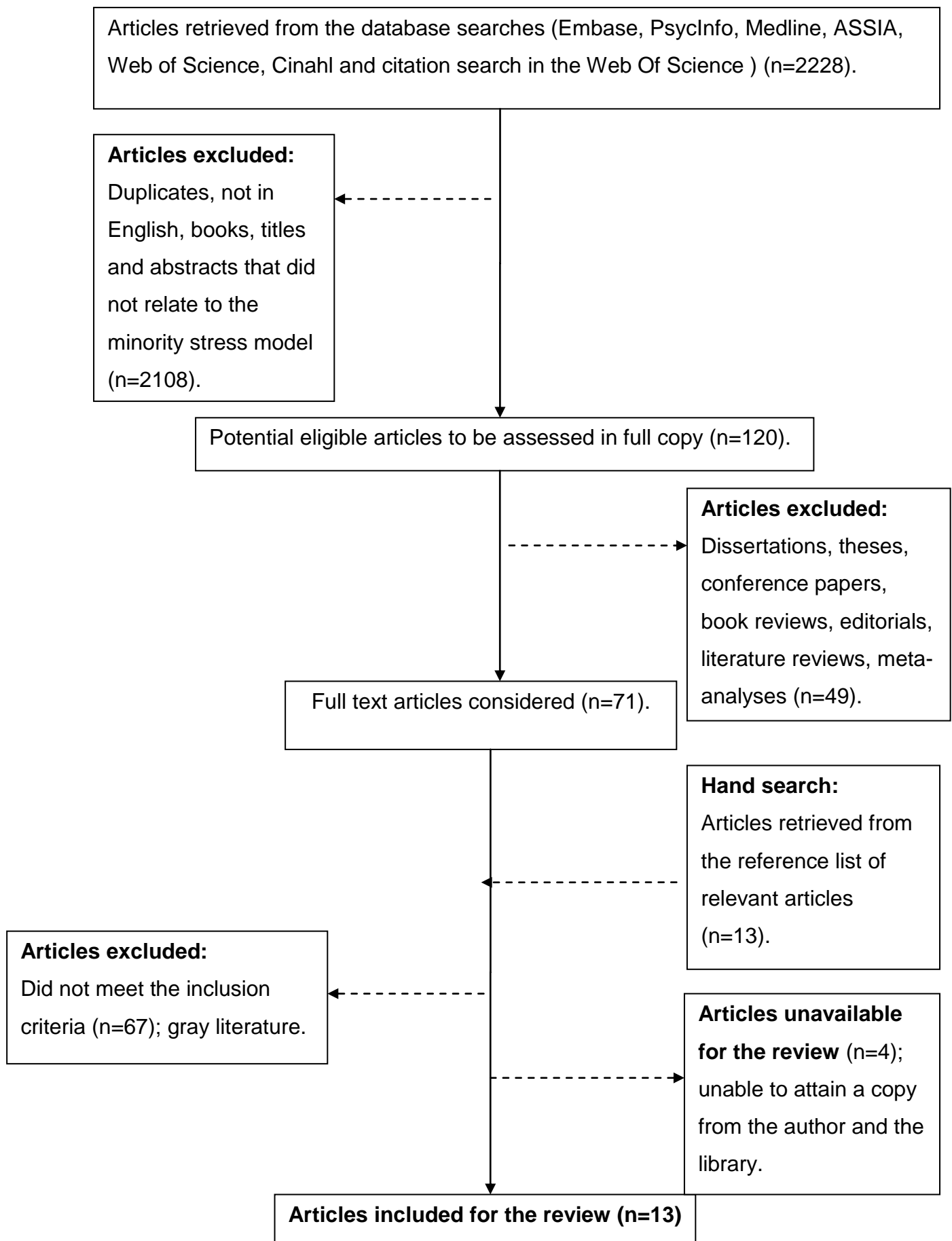
³ AND used to group search terms

1. Articles that reported data and analyses testing Meyer's model in LGBT populations with distress as an outcome variable; or articles that reported data and analyses testing an adapted minority stress model (adapted from Meyer's) in LGBT populations.
2. Articles had to be deductive and theory testing in order to answer the research question.

Exclusion criteria.

1. Articles not citing Meyer's model or not referencing Meyer's model.
2. Articles not published in the English language.
3. Books, theses, and dissertations.
4. Articles reporting mixed data (quantitative and qualitative data).

Figure 2. Quorum Diagram outlining the selection process



Data abstraction

Data was abstracted systematically using a form developed by the authors (Appendix A). This was to reduce bias in the data abstraction. General characteristics of the articles were extracted (i.e. aim, methodology, participants, sampling method, measures, statistical analysis, results, and conclusions). In addition, information specifically relating to the minority stress model (such as the minority model processes researched and how they were measured) were abstracted to aid the quality review and address the research question.

Articles were critically evaluated to assess their overall quality such as their strengths and weaknesses. The Critical Appraisal Skills Program (CASP) checklist form, a recommended tool for critically appraising articles (Ciliska, Thomas, Buffett, 2008), was adapted by two of the authors (SS, MR) to encompass the assessment of the minority stress model. Adaptations included the addition of: partially met criterion; reflection of the minority stress model; and the reliability of the measures used to measure the processes within the minority stress model. The categories of 'authors addressing confounding factors' and 'follow up' were removed. A meta analysis was not performed due to the heterogeneity of articles included within the review.

Results

General characteristics and key findings from the 13 articles are presented in Table 1. Results from the quality review are presented in Table 2.

Table 1. General Characteristics and key findings

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Dunn et al. Iantaffi (2014) Brazil	<p>Examine the generalizability of the minority stress model on a non-US sample of sexual minority men.</p> <p>Examine the role of resilience on minority stressors.</p>	<p>Model was used to test for generalizability in Brazil in a sample of sexual minority⁸ men (n=388).</p>	<p>Cross-sectional, online survey.</p>	<p>Prejudice events (authors called this enacted stigma which related to the same concept).</p> <p>Internalised homophobia (authors called this internalised homonegativity which related to the same concept).</p> <p>Concealment.</p> <p>Mental health.</p>	<p>Hierarchical linear regression (HRL).</p>	<ul style="list-style-type: none"> • Minority stress model generalised to a non-US sample. • Enacted stigma** and internalised homonegativity* predicted depressive symptomatology. • Resilience did not buffer the effects of enacted stigma or internalised homonegativity on depressive symptomatology; however, low levels of resilience among those with high levels of concealment predicted increased depressive symptomology*.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Bockting et al. (2013) USA	Examine the relationship between minority stress, mental health and potential moderators (resilience, family support, peer support, identity pride).	Research was guided by the minority stress model and tested on transgender people (n=1093).	Cross-sectional, online survey.	<p>Prejudice events (authors called this enacted stigma which related to the same concept).</p> <p>Internalised stigma (authors called this felt stigma which related).</p> <p>Minority identity (authors called this identity pride which related to the same concept).</p> <p>Concealment (authors called this outness which related to the same concept).</p> <p>Coping and support.</p> <p>Mental health.</p>	Hierarchical regression	<ul style="list-style-type: none"> • Psychological distress was associated with enacted ($B=0.137$)^{***} and felt stigma($B=0.108$)^{***}. • Peer support significantly moderated the association between enacted stigma and mental health^{***}.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Brewster, Moradi, DeBlaere & Velez (2013) Predominantly USA	Extend the minority stress model by incorporating bicultural self-efficacy (defined as an individual's competence in navigating multiple cultures) and cognitive flexibility (defined as an individual's competence to flexibly adapt their thinking in situations).	Model was adapted and on tested bisexual people (n=411).	Cross-sectional, online survey.	Prejudice events (authors called this perceived anti bisexual prejudice which relates to the same concept). Expectations of stigma. Concealment. Internalised homophobia (authors called this internalised biphobia which relates to the same concept). Mental health.	Test of moderated mediation.	<ul style="list-style-type: none"> • High levels of perceived prejudice, expectations of stigma and internalised biphobia, and low levels of outness, self efficacy and cognitive flexibility were associated with greater psychological distress^{***} but lower psychological well being^{**}. • Proximal stressors mediated the link between distal minority stressors and mental health^{***}.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Szymanski & Ikizler (2013) USA	Examine their hypothesised model drawn from the minority stress model and gender role conflict theory.	Hypothesised model drawn from minority stress model and was tested on sexual minority men (n=203).	Cross-sectional, online survey.	Prejudice events (authors called this heterosexual events which related to the same concept). Internalised homophobia. Mental health.	Structural equation model (SEM).	<ul style="list-style-type: none"> • Found evidence that patterns of gender role conflict (such as conflict between work/school and family relations) are important to the mental health and lives of sexual minority men*. • Conflict between work/school and family relations was a direct predictor of depression*. • Internalised homophobia had a mediator role in restrictive affectionate behaviour*.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Wong, Schragger, Holloway, Meyer & Kipke (2013) USA	<p>To illustrate the relationship between minority stress and psychological well-being in a male sample from House and Ball communities (communities that provide solidarity and support to African American and Latino LGBT individuals).</p> <p>Investigate how connection and support to their social network affect the above relationship.</p>	Used the minority stress framework on sexual minority men (n=233).	Cross-sectional, self interview survey.	<p>General stress.</p> <p>Distal minority stress.</p> <p>Internalised homophobia.</p> <p>Coping and social support.</p> <p>Minority identity (authors called this gay identification which related to the same concept).</p> <p>Mental health.</p>	SEM	<ul style="list-style-type: none"> • Distal minority stressors predicted experiences of internalised homophobia which predicted depressive symptoms **. • Support and connection to social networks buffered the effects of minority stress on mental health*. • Connection to social networks moderated the effects of minority stress on mental health*.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Logie, Newman, Chakrapani & Shunmugam (2012) India	Test an adapted minority stress model (incorporated HIV related stigma and gender non-conformity stigma) for use with men who have sex with men in India.	Adapted the model to use on men who have sex with men (n=200).	Cross-sectional, interview format.	Prejudice events (author included sexual stigma, gender non-conformity stigma, HIV related stigma within prejudice events). Coping and support. Mental health.	Hierarchical regression.	<ul style="list-style-type: none"> • Support for the adapted minority stress model. • Gender non conformity stigma was associated with higher depression*. • Social support and resilient coping did not moderate the impact of HIV stigma or gender non conformity stigma on depression.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Shilo & Savaya (2012) Israel	<p>Examine if minority stress adversely affects mental health in disadvantaged social groups (LGBT youths and young adults).</p> <p>Examine if the stressors are alleviated by coping resources.</p>	<p>Model was developed from the minority stress model and adapted to be used on LGB youths and young adults (n=461).</p>	<p>Cross-sectional, online survey.</p>	<p>Internalised homophobia.</p> <p>Concealment (authors called this sex orientation disclosure which related to the same concept).</p> <p>Coping and social support.</p> <p>Mental health.</p>	<p>SEM</p>	<ul style="list-style-type: none"> • Being religious, young and bisexual augments the stress and leads to poorer mental health**. • Impact of mental health on bisexual individuals was attenuated when the mediating role of minority stress and coping were taken into account*. • No support for coping moderating the effects of minority stress on mental health. Coping had a direct association with mental health*.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Kuper & Fokkema (2011) Netherlands	Examine the robustness of the minority stress model in explaining mental health problems between sexual minority gender and sexual orientation.	Test the robustness of the model on sexual minority men and women (n=396).	Cross-sectional, online survey.	<p>Prejudice events (authors called this negative reactions which related to the same concept).</p> <p>Internalised homophobia (authors called this internalised homonegativity which related to the same concept).</p> <p>Concealment (authors called this openness which related to the same concept).</p> <p>Mental health.</p>	Multivariate regression and hierarchical regression.	<ul style="list-style-type: none"> • LGB individual's experienced negative reactions and internalised homonegativity which affected their mental health***. • Bisexual people reported lower levels of negative reactions and openness and higher levels of internalised homonegativity***. • Minority stress model is suitable to explain mental health problems in lesbian/gay and bisexual people.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Lehavot & Simoni (2011) USA	To test an adapted minority stress model. Model theorises that gender expression will influence the experience of minority stress which will diminish the use of social-psychological resources and leave the individual vulnerable to negative mental health outcomes.	Model developed based on the minority stress model and tested on sexual minority women (n=1381).	Cross-sectional, online survey.	<p>Minority status (authors called this gender expression which related to the same concept).</p> <p>Prejudice events (authors called this victimisation which related to the same concept).</p> <p>Coping and support.</p> <p>Mental health.</p>	SEM	<ul style="list-style-type: none"> • Hypothesised model was supported *. • Gender expression was associated with more victimisation* but less internalised homophobia*** and concealment***. • Substance use mediated the effect of social-psychological resources (coping and support)***.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Van Den Bergue, Dewaele, Cox & Vincke (2010) Belgium	Study how the experience of LGB-specific minority stress affects the mental well-being of LGB youths.	Examined the internal minority stressors (proximal stressors) on sexual minority males and females (n=2921).	Cross-sectional, online survey and postal survey.	Expectation of rejection (authors called this stigma consciousness which related to the same concept). Internalised homophobia (authors called this internalised homonegativity which related to the same concept). Coping and social support. Mental health.	HLR	<ul style="list-style-type: none"> • Significant difference between men and women in depressive symptomology*. • Higher levels of LGB-specific unsupportive social reactions were associated with higher levels of depressive symptomology*. • Higher levels of internalised homonegativity and stigma consciousness and low levels of confidant support were associated with more depressive symptomology*.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Szymanski (2009) USA	<p>Assess general heterosexual stressors in sexual minority men.</p> <p>Examine the relationships between heterosexual events, psychological events and potential moderators.</p>	<p>Used the framework of the minority stress model. Studied sexual minority men (n=210).</p>	<p>Cross-sectional, online survey.</p>	<p>Prejudice events (authors called this heterosexual events which related to the same concept).</p> <p>Social support and Coping.</p> <p>Mental health.</p>	<p>Multiple Regression.</p>	<ul style="list-style-type: none"> • Heterosexual events positively related to psychological distress^{***}. • Self esteem moderated the link between heterosexual events and psychological distress, with significant risk associated with low self esteem ^{***}. • Contrary to the minority stress model, heterosexual events did not interact with avoidant coping or social support.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Bruce, Ramirez-Valles & Campbell (2008) Predominantly USA	Test hypothesised model. The model theorises that substance use is a potential mediator between stressors from stigma (including racial and homosexual stigmas) and sexual risk behaviours.	Model was based on the minority stress model and tested in gay, bisexual and transgender people (n=643).	Cross-sectional, computer assisted interview.	Prejudice events Internalised homophobia.	SEM	<ul style="list-style-type: none"> • Distinctive pathway showed that stress lead to substance use and sexual risk behaviour*. • Paths from the model led from experiences of homosexual stigma and internalised racial stigma to unprotected anal intercourse through substance misuse*. Also from experiences of racial stigma and internalised homosexual stigma to unprotected anal intercourse through alcohol use*.

Table 1. Continued

Author(s) and location	Aims of study	How the minority stress model was used and what population it was used on	Methodology	Processes of the minority stress model researched ⁷	Statistical analysis used to test the minority stress model	Summary of findings
Szymanski & Owens (2008) USA	Examine the moderating and mediating roles of coping styles in the relationship between internalised heterosexism and psychological distress.	Test the moderator hypothesis of coping on sexual minority women (n=323).	Cross-sectional, online survey.	Internalised homophobia (authors called this internalised heterosexism which related to the same concept). Coping. Mental health.	Multiple regression.	<ul style="list-style-type: none"> • Internalised homophobia was negatively related to mental health regardless of coping styles***. • Avoidant coping partially mediates the relationship between internalised heterosexism and psychological distress***.

Note. ⁷Factors relate to Meyer's Model, names in brackets are names given by authors for the processes in Meyer's model.

⁸The term sexual minority includes homosexuals, bisexuals and people not sure of their sexual identity.

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2. Quality review

Author(s)	Clearly focussed question	Population recruited	Recruitment bias	Reflection of the minority stress model	Reliable and valid measures	Statistical analysis
Dunn et al. (2014)	Partial	Partial	Partial	Partial	Partial	Partial
Bockting et al. (2013)	Yes	Partial	Partial	Partial	Partial	Partial
Brewster et al. (2013)	Yes	Partial	Partial	Partial	Partial	Partial
Szymanski & Ikizler (2013)	Yes	Partial	Partial	Partial	Partial	Yes
Wong et al. (2013)	Yes	Yes	Partial	Partial	Partial	Yes
Logie et al. (2012)	Yes	Partial	Partial	Partial	Partial	Partial
Shilo & Savaya (2012)	Yes	Yes	Partial	Partial	Partial	Yes
Kuper & Fokkema (2011)	Yes	Partial	Partial	Partial	Partial	Partial
Lehavot & Simoni (2011)	Yes	Yes	Partial	Partial	Partial	Yes
Van Den Bergue et al. (2010)	Yes	Partial	Partial	Partial	Partial	Partial
Szymanski (2009)	Yes	Partial	Partial	Partial	Partial	Partial
Bruce et al. (2008)	Yes	Partial	Partial	Partial	No	Yes
Szymanski & Owens (2008)	Yes	Partial	Partial	Partial	Partial	Partial

Note. Criteria adapted from the CASP.

(1) **Clearly focussed question:** Yes, study addressed a clearly focussed question; Partial, study partially focussed on a

question(s); No, study did not address a clearly focussed question. (2) **Participant recruitment:** Yes, recruited participants in an

acceptable way; Partial, recruited in a partially acceptable way; No, participants not recruited in an acceptable way. (3)

Recruitment bias: Yes, risk of recruitment bias minimised; Partial, risk recruitment bias partially minimised; No, no efforts made to

reduce risk of recruitment bias. (4) **Reflection of the minority stress model:** Yes, reflects all aspects of the minority stress model;

Partial, reflects some aspects of the minority stress model; No, does not reflect the minority stress model. (5) **Reliable and Valid**

measures: Yes, measures for the minority stressors had high reliability and high validity; Partial, measures for the minority stressors had adequate reliability and adequate validity; No, measures for the minority stressors had no reported reliability and validity. (6) **Statistical analysis:** Yes, statistical analysis clearly reflects model testing; Partial, Statistical analysis partial reflects model testing; No, statistical analysis does not reflect model testing.

This section will address the sub research questions before addressing the overarching research question: "what is the predictive validity of the minority stress model in LGBT populations?". A summary will also be provided of all the results.

Processes of the minority stress model that had been tested, modified or neglected

Processes tested. The studies mainly focused on the distal and proximal stressors (such as prejudice events, internalised homophobia), followed by coping and support. Mental health was the most commonly assessed outcome variable (Bockting et al., 2013; Brewster et al., 2013; Dunn et al., 2014; Kuper & Fokkema, 2011; Lehavot & Simoni, 2011; Szymanski, 2009; Szymanski & Ikizler, 2013; Szymanski & Owens, 2008; Van Den Bergue et al., 2010; Wong et al., 2013). However, it was noted that none of the studies tested all the processes of the model (see processes neglected section).

Modifications to the model. The majority of the authors focused on models they adapted from the minority stress model (Brewster et al., 2013; Bruce et al., 2008; Lehavot & Simoni, 2011; Logie et al., 2012; Shilo & Savaya, 2012; Szymanski & Ikizler, 2013). Adaptations to the models included the additions of other supported models such as bicultural self-efficacy and cognitive flexibility within a bisexual population (Brewster et al., 2013); gender expression in sexual minority women (Lehavot & Simoni, 2011); and gender role conflict (Szymanski & Ikizler, 2013). They also included the addition of processes such as: substance misuse (Bruce et al., 2008; Lehavot & Simoni, 2011); and other prejudice events such as HIV stigma and sexual stigma (Logie et al., 2012). All studies found empirical evidence for their adapted models. For example, Logie et al. (2012) found that HIV-related stigma and gender non conformity were additional stressors that was associated with depression, which is not included in Meyer's Minority stress model. In addition, Brewster et al. (2013) found support for their model, which was a simplified version of Meyer's model that incorporated only distal and proximal minority stressors. Lastly, adapted models examining substance misuse (Bruce et al., 2008; Lehavot &

Simoni, 2011) and sexual risk (Bruce et al., 2008) as outcome variables, highlighted that the minority stress model could be adapted to include additional outcomes.

However, in criticism to the adapted models, the adaptations were specific to the populations assessed. For example, bicultural self-efficacy can only be applied to the bisexual population. Therefore generalizability of these models cannot be assumed. Also adaptations were not compared to the minority stress model to establish whether these modifications were needed. Furthermore, adaptations should be made to models when models have fully been examined (i.e. including all the processes). None of the research presented within this review tested all the processes of the minority stress model to establish. Therefore the overall effectiveness and predictive nature of this model is largely unknown. One can argue that until this test of the minority stress model has been conducted, researchers should be cautious in their adaptations and also it may not be wise for them to adapt this model.

Processes neglected. Minority identity characteristics were not assessed in any of the studies. Therefore, it is not possible to determine whether there was a relationship between minority characteristics and minority stressors, or minority identity characteristics and minority characteristics as stated by the minority stress model. In addition, even though minority identity and minority status processes were explored in studies (Bockting et al., 2013; Lehavot & Simoni, 2011; Wong et al., 2013), they were only explored in isolation of each other. Therefore none of the studies could determine if there was a link between minority status and minority identity as stated by the minority stress model.

Research methods used to investigate the minority stress model

Population. The majority of the studies were conducted in the United States. There were a few studies conducted in other cultures (Dunn et al., 2014; Kuper & Fokkema, 2011; Logie et al., 2012; Shilo & Savaya, 2012; Van Den Bergue et al., 2010), for example Brazil, Netherlands, India, Israel, and Belgium,

respectively. Even though, minority stress models have been implemented in different cultures, its generalizability cannot be assumed.

Studies did recruit LGBT individuals, but most studies focused on sexual minority men (Dunn et al., 2014; Szymanski, 2009; Szymanski & Ikizler, 2013; Wong et al., 2013). Only two studies examined between group difference in lesbian, gay and bisexual people (Kuyper & Fokkema, 2011; Shilo & Savaya, 2012). They both included male and female sexual minorities however they did not assess gender differences.

Sampling. Participants were mainly recruited from online support groups or Facebook groups. This increased sampling biases because there was an uncertainty in whether genuine participants from the minority group were being investigated. In addition, most of the authors used opportunistic sampling, either online or direct (face to face). For example, Wong et al. (2013) used opportunity sampling to recruit from a specific minority group that attended House and Ball communities. The researchers recruited participants after events (meetings, balls, social activities) held by the communities and recruitment was over a period of one year. Whereas Logie et al. (2012) recruited men who had sex with men who were near their recruitment sites. This technique increased sampling bias because samples derived may not have fully represented the population of interest. Only two studies extended their recruitment by using snowballing to attempt to address this bias (Lehavot & Simoni, 2011; Shilo & Savaya, 2012).

Methodology. All studies used a cross-sectional design. Although cross-sectional designs are relatively quick and easy to conduct and enable data to be collected at a single time point, they do not allow researchers to assess longitudinal factors or allow strong conclusions about temporal relations or causations. The minority stress model is a longitudinal model that highlights processes that can cause changes in mental health and cross sectional designs does not allow authors to see those processes change over time. Furthermore, because all the studies used a cross-sectional design, predictive validity of the minority stress model cannot be inferred. This is because when assessing for predictive validity we would be assessing for whether we could predict a change in future behaviour. Only longitudinal studies would enable this research question to be answered.

Quality appraisal

The quality criteria (Table 2.) were not fully met by the studies included within this review. The overall quality of the majority of the articles was satisfactory. To highlight, none of the articles fully met the criteria for reducing the risk of recruitment bias because authors were unable to address the genuine LGBT status of the participants because of the sampling techniques used. Also, none of the articles fully met the criteria for fully reflecting the minority stress model or for using reliable and valid measures. The authors of the studies included, did not use measures of high reliability and validity (Cronbach $\alpha=.85$). Therefore, it is difficult to determine whether the measures used in the studies measured the constructs/ processes of interest and whether it was done reliably. This is certainly a dilemma for Bruce, Ramirez-Valles & Campbell (2008) research in which no reliable and valid measures were used. Thus, caution is required when interpreting their results.

Only three studies were identified that reflected greater quality in comparison to the other articles (e.g. Lehavot & Simoni, 2011; Shilo & Savaya, 2012; Wong et al., 2013). This is because the authors recruited participants in an acceptable way in line with their study, for example attending LGBT societies or using snowballing in addition to other sampling methods. Furthermore, their method of statistical analysis (i.e. SEM) clearly tested a model. The minority stress model requires SEM because it is a multilayer model. Unlike, hierarchical regression and multiple regression, SEM also represents the relationship between the latent variable. This enables the authors to analyse the dependencies of psychological constructs without measurement errors (Nachtigall, Kroehne, Funke & Steyer, 2003). In addition, SEM leads to fit-statistics that assesses the model fit.

Predictive validity

None of the studies found satisfactory support for the minority stress model. This is because there were limitations in how authors represented the

model, with none of the studies testing all the processes. However, the model has not been disproved, mainly because it has not been fully tested.

Another limitation to report is that none of the studies used a longitudinal design or incorporated follow up data. This is particularly important because to enable predictive validity to be examined, one variable, a predictor variable, must be measured in advance of the variable to be predicted. Within cross-sectional designs, measures are administered at one time point, so temporal relationships between variables cannot be inferred. Therefore, one cannot establish how one variable will impact on another in the future.

There was empirical support for some of the processes defined within the model. For example, the main finding was that prejudice events (distal stressors) and internalised homophobia (a proximal stressor) predicted negative mental health outcomes (Brewster et al., 2013; Bockting et al., 2013; Dunn et al., 2014; Kuper & Fokkema, 2011; Logie et al., 2012; Shilo & Savaya, 2012; Szymanski, 2009; Wong et al., 2013). There was conflicting evidence on the role of coping and social support. Mainly, research showed support for social networks and peer support (coping and social support process) in moderating the negative effects on mental health (Bockting et al., 2012; Wong et al., 2013). However, in terms of coping, the majority of the studies found a lack of evidence of coping moderating mental health (Logie et al., 2012; Shilo & Savaya, 2012; Szymanski, 2009). Shilo & Savaya (2012) study reported that coping had a direct link to mental health rather than a moderating role. It is therefore too early to establish the role of coping within the model and the results should be considered with caution.

The studies did show other empirical support for the processes within the minority stress model processes. This included: a relationship between minority identity characteristics and coping (Bockting et al., 2013); minority identity and proximal minority stressors (Wong et al., 2013); minority status and distal stressors as mentioned by the minority stress model, but also a relationship between minority status and proximal stressors, which was not mentioned by the minority stress model (Lehavot & Simoni, 2011). Furthermore, some of the studies showed that there was a relationship between proximal stressors (i.e. internalised homophobia, expectations of rejection and concealment) and

negative mental health outcome (Brewster et al., 2013; Dunn et al., 2014; Van Den Bergue, et al., 2010). This is in line with the minority stress model.

Summary

To summarise, none of the studies assessed all the processes of the minority stress model. Distal and proximal stressors (such as prejudice events, internalised homophobia) were commonly researched and minority identity characteristics were neglected in all studies. Participants were mainly sampled from the United states and were recruited online using a cross-sectional designs. Due to this cross-sectional design, predictive validity could not be established within this review. The overall quality of studies were infringed by biases in recruitment, problems in the interpretation of the minority stress model (i.e. the studies did not measure all the processes outlined by Meyer's model) and problems with the reliability and validity of the measures.

Lastly, although predictive validity could not be established, the articles used in this review have shown that distal stressors (i.e. prejudice events) and proximal stressors (i.e. internalised homophobia, concealment, and expectation of rejection) are related to negative mental health outcomes. In addition, that peer support moderates the negative effects on mental health as suggested by Meyer's (2003).

Discussion

This review has been unable to establish the predictive validity of the minority stress model due to the designs of the studies used to assess the minority stress model (i.e. cross-sectional designs). Furthermore, none of the studies found satisfactory support for all of the processes within the model. Interestingly, the model was not disproved in studies that aimed to directly test it.

The most common processes assessed were the minority stressors (distal and proximal stressors) and empirical evidence from this review has shown that these stress processes are related to adverse mental health outcomes. However, causation of these relationships cannot be inferred due to the research designs of the studies.

None of the studies examined the minority identity characteristics. This may reflect the difficulties of researchers in defining this construct, due to the complexities of this construct within the model. Furthermore, there have been no measures developed within the literature to enable this construct to be assessed.

Implications for psychological theory and research

The minority stress model continues to be a dominant model for explaining the processes that increase negative mental health outcomes in LGBT individuals. Although we cannot be confident in the model, due to the satisfactory quality of studies reported within this review examining the model, research continues to use the processes outlined and even adapt the model. However, it is questionable whether to adapt the minority stress model, considering that the predictive validity needs to be established before adaptations are made.

Possible adaptations that maybe considered for the minority stress model, might be the addition of substance misuse and engaging in risky sexual behaviours as outcome variable. However, caution should be considered in these adaptations due to the uncertainty of the minority stress models predictive validity.

Furthermore, path deletions within the model should not be warranted until the model's predictive validity is established. Although, the interactions within the minority stress model are complex due to the moderating and mediating relationships of the stressors, a simplified model may neglect possible important processes (for example, coping and social support, minority identity).

Practice implications

Although the predictive validity for the model was not found within this review, there are still some practical implications for practitioners due to the empirical support for some of the processes (proximal and distal stressors leading to poor mental health outcomes). There needs to be a public health agenda such as a campaign for anti-stigma towards LGBT people, to reduce the prejudice events experienced by LGBT people, which this review has found leads to adverse mental health. In addition, practitioners should incorporate the role of stressors (distal and proximal) within formulations of LGBT individuals as additional factors contributing to mental health difficulties. Also practitioners should be aware of buffers to mental health in their intervention plans. For example, accessible LGBT support groups (a buffer to mental health outcome) to help alleviate the stressors that contribute to poor mental health.

Limitations of the review

There were limitations to the review conducted. One of the limitations to the review was the search terms used to find appropriate articles. It was difficult to operationalise the term minority stress model to encompass studies that only tested the model's hypotheses. The addition of the citation search and hand search aimed to address this difficulty.

Also, most importantly no longitudinal studies were included, to enable the main research question to be established. This limitation, also reflects the limitations of studies currently within the literature on the minority stress model,

in that their research design (i.e. mainly cross-sectional) does not enable temporal relationships to be established. Therefore cause and effect relationship cannot be inferred (i.e. do stressors cause mental health problems or do mental health problems cause someone to experience stressor?).

Furthermore, there were biases within the selection of articles. The inclusion criteria was complex. This was to encapsulate authors who had used or adapted the minority stress model, as many of the studies searched focused on minority stress and also incorporated other processes of the minority stress model but were not explicit about this. This complexity of the inclusion criteria reflected the overall quality of the literature within this area. Decisions on article inclusion were based on subjective opinions, which increased subjective biases. To reduce subjective biases, further opinions (MR) were sought for the inclusion of articles.

Another noticed limitation was the data extraction forms and quality review measures. Both these measures were developed by two of the authors (SS, MR). Although, the quality review measure was an adaptation to the CASP, it heavily focused on the minority stress model and whether all processes were assessed. It did not take into account why authors focused on specific processes, therefore studies that did not assess all the processes were rated poorly. In addition, all the quality ratings and data extractions were completed by one of the authors (SS), again increasing subjective biases.

Future research

In light of the gaps and weaknesses within the studies included within the review, further studies should focus on analysing the model in its entirety to establish its predictive validity, using statistical tests that reflect robust model testing (such as SEM). This will enable analyses of relationships between the different constructs and variables of the model, to enable conclusions to be drawn on the minority stress model processes. In addition, the use of systemic sampling methods to reduce sampling biases and a longitudinal design to enable authors to assess causation.

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2. JOURNAL PAPER

Minority stress in people who identify as transgender: testing the minority stress model⁴

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Abstract

Objectives: Transgender people are reported to experience high levels of mental health problems in comparison to the general population. The minority stress model has been proposed to explain these high prevalence rates, however it was originally developed for the lesbian, gay and bisexual (LGB) populations (Meyer, 1995, 2003). Nonetheless, researchers have applied some of the hypothesised processes of the model to transgender people. But evidence testing the minority stress model in this population is sparse. This research aimed to test the application of the minority stress model in a sample of people who identified as transgender. But additionally test the mediating and moderating roles of coping and social support.

Design: A cross-sectional online survey design was used.

Methods: A series of measures were completed by people who identified as transgender ($N = 270$).

Results: Multiple linear regression, mediations and moderations analyses were conducted. Results showed that, individually, all the stress processes (distal stress process, internalised stigma, vigilance and concealment) were significantly associated with psychological distress. However, when assessed in combination, only certain stress processes emerged as being significant. Only internalised stigma emerged as being significant in all the regression models (i.e. depression, anxiety and stress). No moderation effects were found for coping and social support. Instead, passive coping and social support were found to partially mediate the relationship between internalised stigma and psychological distress.

Conclusion: Limited support was found for the minority stress model.

Researchers may consider developing more transgender specific models that include these current findings.

Practitioner points

- It is important that clinicians who work with people who identify as transgender, are aware of the minority stress processes (i.e. distal stress, internalised stigma, and vigilance). This is because these stress process may impact on the clients engagement within therapy (i.e. those with heightened vigilance may unconsciously assess for cues to being rejected).
- Clinicians may further use the information on minority stressors, to inform psychological formulations when working with people who identify as transgender.
- A limitation to this research was that temporal relationships could not be inferred due to the use of a cross-sectional design.
- A further limitation was that this research did not use statistical analysis to enable sufficient model testing.

Introduction

The term transgender is typically used as an umbrella term to describe individuals whose gender identity, position and expression are different from their assigned gender at birth (National Centre for Transgender Equality, 2014). While definitions and labels vary across time, culture and within research; the umbrella term transgender, aims to capture different gender identities within this extremely diverse community.

Research estimates that the number of people who identify as transgender range from 300,000 to 500,000 in the UK (Reed, Rhodes, Schofield, & Wylie, 2009). Although, this figure appears to be imprecise, it should be acknowledged that it is difficult to estimate the numbers of transgender people, due to methodological, ethical and legal issues (e.g. terminology used and maintenance of privacy and confidentiality).

As a community, research has consistently shown that they experience a high prevalence of psychological distress (Bockting, Miner, Swinburne Romine, Hamilton & Coleman, 2013; McNeil, Bailey, Ellis, Morton & Regan, 2012). However, due to the criticisms of cross-sectional prevalence research (i.e. testing at a single time point), figures provided are only an approximation.

Depression is reported to be the most prevalent mental health problem experienced by transgender people, with an estimate of 48% to 62% of people reporting symptoms of depression (Budge, Adelson, & Howard, 2013; Clements-Nolle, Marx, Guzman, & Katz, 2001; McNeil et al., 2012; Nemoto, Bodeker, & Iwamoto, 2011). Similarly, high levels of anxiety and stress have also been reported within this community (Budge, Adelson, & Howard, 2013; Hepp, Kraemer, Schnyder, Miller, & Delsignore, 2005; McNeil et al., 2012; Mustanski, Garofalo, & Emerson, 2010). However, stress has received less attention in the literature. Furthermore, increased rates of suicide have also been documented (Clements-Nolle, Marx & Katz, 2006; Haas et al., 2011; Mereish, O'Cleirigh & Bradford, 2014).

Similar to lesbian, gay and bisexual (LGB) populations, these prevalence rates are higher than people who are heterosexual, or cisgender (i.e. when a persons gender identity and expression match their assigned gender at birth) (Cochran, Sullivan & Mays, 2003; King et al., 2008). Due to these similar issues, researchers tend to group LGB and transgender communities together,

when trying to understand the reasons for these increased mental health disparities. For example, the notion of minority stress, used within LGB populations (and other minority populations) to explain the higher prevalence of mental health problems, has been applied to transgender people (Brooks, 1981; Meyer, 1995, 2003, 2015).

Minority stress is a socially based stress experienced by stigmatised social groups e.g. ethnic and sexual minorities (Brooks, 1981). It creates a stressful environment for minority groups, which is believed to lead to adverse mental health outcomes (Brooks, 1981; Frost & Meyer, 2013). Consistent with this, the literature has shown that transgender people experience high rates of discrimination and stigma from society (Bradford, Reisner, Honnold, & Xavier, 2013; Kelleher, 2009; McNeil et al., 2012). Minority stress appears to be a legitimate explanation for the high levels of psychological distress in transgender populations. However, more recently, researchers have also applied the minority stress model to this population (Bockting et al., 2013; Hendricks and Testa, 2012; Meyer, 2015; Testa, Habarth, Peta, Balsam & Bockting, 2015).

The minority stress model is a conceptual framework, developed for LGB populations. It aims to explain the processes of minority stress that lead to mental health problems in LGB populations (Meyer, 1995, 2003). To summarise, the model describes four stress processes postulated to increase an individual's susceptibility to experiencing psychological distress: (a) LGB individuals experience minority stress from their environment due to their minority status in the form of prejudice events, acts of discrimination and/or stigmatization; (b) LGB individuals internalise stigmatising attitudes (coined, internalised homophobia); (c) LGB individuals become more vigilant to being rejected by others due to their minority status (also known as expectations of rejection); and (d) LGB individuals may hide their identity (known as concealment) in order to reduce their experience of discrimination and stigmatisation. The first process is conceptualised as the distal stress process (e.g. objective and external to the person) whereas the latter three are proximal in nature (e.g. subjective and based on the individual's appraisals).

The model also describes factors that ameliorate the adverse mental health and psychological outcomes. It states that positive coping styles and

sources of social support (individual and community) moderate the effects of stressors on mental health outcomes. Minority identity and minority identity characteristics (such as prominence, integration and valence) are also postulated to have effects on mental health outcomes because they can lead to the individual gaining social support (community and individual). However, prominence in LGB identity is hypothesised to lead to the individual experiencing more stress (proximal stress). This will lead to poorer mental health outcomes.

The minority stress model is the most dominant model in the literature for LGB populations. It has received considerable support in LGB populations (e.g. Dunn, Gonzalez, Costa, Nardi & Iantaffi, 2014; Frost & Meyer, 2009; Kuper & Fokkema, 2011; Newcomb & Mustanski, 2010; Van Den Bergue, Dewaele, Cox & Vincke, 2010; Wong, Schragger, Holloway, Meyer & Kipke, 2013). However, the role of coping and social support as moderators has been queried and inconclusive evidence has been found. Conversely, lesbian feminist/ sexual identity theorist state that coping and social support mediate the relationship between internalised stigma and psychological distress (Cass, 1979; Sophie, 1987; Szymanski, Kashubeck-West & Meyer, 2008; Szymanski & Owens, 2008). Evidence has supported this, albeit it is limited (Szymanski & Kashubeck-West, 2008; Szymanski & Owens, 2008).

Recently support has been found for the application of the minority stress model in people who identify as transgender (see Hendrick's & Testa, 2012), however the findings are considerably limited with research focusing on processes in isolation and failing to represent the transgender community as a whole (i.e. tend to mainly recruit transgender men and transgender women). Amalgamating these findings, research has shown evidence for distal and some proximal stress processes leading to poor mental health outcomes; and that coping and social support reducing these effect (Bockting et al, 2013; Budge, Adelson & Howard, 2013; Budge et al., 2013; Kelleher, 2009; McCarthy, Fisher, Irwin, Coleman & Pelster, 2014; Mizock & Mueser; 2014; Nemoto, Bödeker & Iwamoto, 2011; Pflum, Testa, Balsam, Godblum & Bongar, 2015; Sánchez & Vilian, 2009; Testa et al., 2015).

The closest study to testing the whole application of the minority stress model in a transgender population was Bockting et al. (2013) research. The

researchers examined the hypotheses of the minority stress model in a US sample of trans men and trans women. In line with the model, their results indicated that enacted stigma (similar to internalised stigma) and felt stigma were positively associated with psychological distress. Comparatively family support, peer support, and identity pride were all negatively associated with psychological distress. However, only peer support moderated the relationship between enacted stigma and psychological distress. Furthermore, the proximal stress process of vigilance was not included in this research.

Although there is some support for the application of the minority stress model in people who identify as transgender, research is still in its infancy. Even though research is expanding in this area, there continues to be limited evidence on: the proximal stress processes (i.e. concealment, expectations of rejection, internalised stigma), the ameliorative effects of resilience, and the effects of minority group identity and membership (Hendrick & Testa, 2012; Testa et al., 2015). This may be due to methodological issues encountered when conducting research in transgender populations. For example there are limited scales developed to enable certain processes to be assessed (e.g. internalised stigma). Also, the transgender community is a private and often hidden community (McNeil et al. 2012).

It is difficult to conclude if the minority stress model is suitable to be used in transgender populations. As currently research has not assessed all the hypothesised processes together. Furthermore, certain processes within the model have been questioned in their applicability to the transgender community. For instance, the process of concealment is thought to be more complex in transgender people than the minority stress model states (Hendrick & Testa, 2012). "For posttransition transsexuals, being open about gender history is often more revealing than simply asserting an authentic gender identity" (Hendrick & Testa, 2012, p.462).

Also, transgender people may experience double discrimination because of their gender identity and sexual orientation. As highlighted by McNeil et al. (2012), only a small percentage of the sample in their survey (20%) viewed their sexual orientation as heterosexual. Furthermore, they may also experience additional stress from waiting for appointments with the gender identity clinic; waiting times for procedures to enable them to transition (McNeil et al., 2012);

passing as their desired gender; and stresses in accessing restrooms in public (Herman, 2013). All of which are not included in the model.

In light of previous research and limitations highlighted, this study aimed to find out whether the minority stress model, including all the hypothesised paths during the stress processes, could be applied to transgender people. Fundamentally to see if the model was applicable.

This research also aimed to apply the minority stress model to different gender identities encapsulated within the transgender umbrella term, to expand the research on these identities. In addition, the role of coping and social support were explored. More specifically to find out if they played a moderating or mediating role between the stressors and mental health outcomes as the research remains to be inconclusive.

These aims lead to a series of hypotheses being tested: (1) The minority stress processes (e.g. proximal and distal stress processes) will be associated with increased levels of psychological distress; (2) Prominence in identity will moderate the relationship between the proximal stress processes and psychological distress, and thus increase psychological distress; (3) Minority identity characteristics will be positively associated with social support and coping; (4) Coping and social support will moderate the impact of the minority stressors on psychological distress, and thus ameliorate this relationship; (5) coping and social support will mediate the relationship between internalised stigma and psychological distress.

Method

Recruitment

Transgender people constitute as a hidden and private community (McNeil, et al., 2012); therefore participants were recruited from transgender forums, support groups, social media (i.e. FaceBook and Twitter) and the Sparkle event (National Transgender event). Recruitment was focused in the UK. A snowballing technique was also used to maximise recruitment.

Participants had to identify as transgender, under the transgender umbrella term. They also had to be 18 years or older to participate.

Participants

A total of 270 participants completed the study. Participants ages ranged from 18-68 ($M = 27.5$, $SD = 2.12$). The majority of participants ($n = 163$; 60.4%) identified as trans women.

Procedure

Ethical approval was obtained from the authors' host institution.

Similar to Bockting et al. (2013) study, participants were required to complete an online survey consisting of a series of different measures. All participants were informed about the research and they received a debrief after the survey. Participants were also offered the chance to be entered into a prize draw to compensate them for their participation.

Measures

Adapted Daily Heterosexist Experience Questionnaire (DHEQ). The DHEQ is a measure used to assess minority stress in LGBT populations (Balsam, Beadnell & Molina, 2013). The scale consisted of nine subscales: vigilance, harassment and discrimination; gender expression; victimisation;

vicarious trauma; isolation; HIV/AIDS; parenting; family of origin. However only four were used in this present study. The subscales of harassment and discrimination, victimisation, and vicarious trauma were used in combination to assess the distal stress processes; and vigilance was used to represent one of the proximal stress processes. Respondents were required to rate how much a problem distressed them in the past 12 months on a 6-point scale (e.g. "Being harassed in public because of your gender identity"). The scale was reported to have good internal consistency ($\alpha = .92$) and internal reliability (Balsam, Beadnell & Molina, 2013). Within this study, Cronbach alpha's were .85.

Adapted stigma consciousness questionnaire (SCS). The SCS was used to measure participants' perception of discrimination and stigma (Pinel, 1999). This scale was adapted within this research to assess the proximal stress process of internalised stigma. The adapted SCS was a 7-point likert self-report measure that required participants to rate 13 statements (e.g. 'Stereotypes about transgender people have not affected me personally'). The scale was reported to have good internal consistency ($\alpha = .81$; Pinel, 1999). Within this current research $\alpha = .83$.

Adapted concealment scale. The concealment scale assessed disclosure of sexual orientation (Plöderl et al. 2013). This scale was adapted within this research. It was used to assess participants disclosures of their transgender identity. Participants were required to respond to three questions. Questions asked them to rate how many people they had disclosed their transgender identity with (e.g. 'How many people are informed that you are trans: In your family?'). This scale showed good internal consistency in this research ($\alpha = .75$).

Minority Identity characteristics. There was no scale to assess this construct within the literature. Therefore, a scale was developed to assess this construct. Three items were developed for each of the characteristics (e.g. valence, prominence and integration). The overall scale consisted of nine items. Participants were asked to rate responses to statements on a 5-point likert scale (e.g. 'I am proud to be trans'). Although this scale was found to have acceptable internal consistency ($\alpha=.75$), the subscale of integration was found to have extremely low consistency ($\alpha=.232$), so was not included in the analysis.

Ways of Coping Scale (Revised) (WC-R). The WC-R assessed coping styles (Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986). It is a 66-item self-report scale. Respondents were required to rate how often they used a list of coping strategies, in the past week, on a 4-point scale (e.g. 'Talked to someone who could do something concrete about the problem'). The scores yielded eight coping styles (accepting responsibility, distancing, self-controlling, escape-avoidance, seeking social support, confrontive coping, planful problem-solving and positive reappraisal), which were dichotomised into passive coping styles and active coping styles (Bardwell, Ancoli-Isreal, & Dimsdale, 2001). Research has shown that this scale has good internal reliability (alpha's ranges from $\alpha = .61-.79$) (Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986). The scale yielded excellent internal reliability within this study ($\alpha = .912$).

Multidimensional Scale of Perceived Social Support (MSPSS).

MSPSS was used to assess sources of social support (Zimet, Dahlem, Zimet & Farley, 1988). It is a 12-item self-report scale, where respondents rate how they feel about statements on a 7-point scale (e.g. 'I have friends with whom I can share my joys and sorrows'). Scores yielded the sources of social support an individual had available to them (i.e. significant other, family, friends). These scores were totalled to give an overall score for each participant. The scale was reported to have good internal reliability (alphas range from $\alpha = .81 - .98$ for the subscales) and validity (Zimet, Powell, Farley, Werkman & Berkoff, 1990). This good internal reliability was also highlighted in the current study ($\alpha = .87$).

Depression Anxiety Stress Scale-21 (DASS-21). The DASS-21 is a short form of the original DASS (Lovibond & Lovibond, 1995). This scale assessed negative emotional states and derived individual severity scores for the domains of depression, anxiety and stress. It is a self-report measure that consists of 21-items. Respondents were required to rate the degree they experienced each item, over the past week, on a 4-point severity scale (e.g. 'I felt I was close to panic'). This scale was reported to have good internal consistency on each of the subscales ($\alpha=0.88$ for depression, $\alpha = 0.82$ for anxiety, $\alpha = 0.9$ for stress, and $\alpha = 0.93$ for the total scale) (Henry & Crawford, 2005) and good convergent and discriminate validity (Henry & Crawford, 2005). In this study, the Cronbach alpha's were high (DASS-21, $\alpha = .947$; Depression subscale, $\alpha = .924$; Anxiety subscale, $\alpha = .848$; Stress subscale, $\alpha = .875$).

Data Analysis

All statistical analyses were performed with IBM SPSS (version 22). Multiple linear regression analyses were conducted to assess for linear relationships among the predictor variables (namely distal stress, internalised stigma, concealment and vigilances) and explanatory variables (depression, anxiety and stress). Traditional linear regression was unable to test the effects of interactions and mediations in a complex interdependent way. Therefore, PROCESS macro (v2.15; Hayes, 2013), an additional procedure in SPSS, was used to assess for multiple moderators and mediators. The use of PROCESS served to be a considerable advantage because the data violated the normal distribution assumption. PROCESS automatically performed 1,000 bootstrap samples to account for this. Data was also mean centred. For the current research, PROCESS Model 1, Model 2 and Model 4 were used for multiple moderation and mediation analyses.

Results

Sample characteristics

The sample characteristics are displayed in Table. 3. The sample was heterogeneous in regards to gender identity and position. Almost half of the sample were undergoing gender reassignment or transition (45.9%) and a fifth of the participants were either planning to undergo gender reassignment or transition (20.7%). A large proportion of participants were White British in ethnicity (77%), although other ethnicities were captured (e.g. 0.4% Asian/Asian British Chinese). Participants' sexual orientation varied considerably. Those who identified as 'other' largely viewed their sexual orientation as pansexual.

Table 3. Sample characteristics

	<i>N</i>	%
Gender identity		
Trans woman	163	60.4
Trans Man	35	13
Non-binary	38	14.1
Cross-dresser	3	1.1
Bi-gender	4	1.5
No gender identity	1	.4
Unsure	6	2.2
Other	20	7.4
Gender reassignment or transition relevant to them		
No	17	6.3
Yes, planning to undergo gender reassignment or transition	56	20.7
Yes, currently undergoing gender reassignment or transition	124	45.9
Yes, completed gender reassignment or transition	49	18.1
Unsure	14	5.2
Other	10	3.7
Ethnic background		
White English/ British	209	77.4
White Welsh	10	3.7
White Scottish	16	5.9

(Continued)

Table 3. Sample characteristics

	<i>N</i>	%
Ethnic background		
White Northern Irish	7	2.6
White Irish	6	2.2
Mixed British/ English White and Black African	1	.4
Mixed British/ English White and Asian	3	1.1
Asian/ Asian British Chinese	2	.7
Other	16	5.9
Sexual orientation		
Bisexual	64	23.8
Heterosexual	35	13
Lesbian	45	16.7
Gay	6	2.2
Asexual	20	7.4
Not sure	26	9.7
Don't define	13	4.8
Other	56	20.8
Do not want to disclose	4	1.5
	\bar{X} (SD)	Range
Age	27.5 (2.12)	18-68

'The minority stress processes (e.g. proximal and distal stress processes) will be associated with increased levels of psychological distress'.

Zero-order correlations are displayed in Table 4. Three separate multiple linear regression analyses were performed to account for the different psychological distress outcomes (i.e. depression, anxiety and stress). Bonferroni correction was applied to the alpha criterion in light of multiple testing. The alpha criterion was adjusted to .017. Results are presented in Table 5.

As shown in Table 4 . The minority stressors were significantly positively related to psychological distress (as measured by the subscales of depression, anxiety and stress). When the minority stressors were presented in combination (i.e. taking into account the shared variances of the other stressors) only certain variables emerged as being significant. 25% of the variance of depression was accounted for by the stress process but only internalised stigma emerged as being a significant independent predictor for depression, $F(4, 265) = 21.68$, $p < .001$. Whereas distal stress, internalised stigma ($p = .016$) and vigilance emerged as having a significant combined relationship with anxiety, $F(4, 265) = 27.01$, $p < .001$. For stress, 26% of the variance was accounted for by the stress processes but only internalised stigma and vigilance emerged as having a significant combined relationship with this outcome, $F(4, 265) = 23.10$, $p < .001$.

Table 4. Zero-order correlation matrix of the linear relationships between variables

	\bar{x}	<i>SD</i>	<i>Distal</i>	<i>Vig</i>	<i>IS</i>	<i>Con</i>	<i>Dep</i>	<i>Anx</i>	<i>Stress</i>	<i>Prom</i>	<i>Val</i>	<i>ACT</i>	<i>PASS</i>	<i>SS</i>
Distal	31.34	15.43	1	.16**	.42***	-.081	.27***	.40***	.24***	.10	-.05	.24***	.39***	-.03
Vig	9.90	6.94		1	.43***	.63***	.34***	.42***	.41***	.06	-.20***	-.03	.38***	-.21***
IS	44.63	13.53			1	.19**	.46***	.40***	.44***	-.03	-.28***	-.04	.28***	-.29***
Con	7.63	3.78				1	.21***	.22***	.25***	-.04	-.17**	-.03	.26***	-.12**
Dep	17.62	12.27					1	.70***	.74***	-.05	-.28***	-.08	.45***	-.41***
Anx	12.04	10.04						1	.74***	-.001	-.23***	.05	.52***	-.30***
Stress	18.68	10.51							1	-.04	-.24***	.01	.51***	-.37***
Prom	5.01	2.69								1	.50***	.16**	.03	.08
Val	8.93	2.75									1	.14*	-.13*	.19**
ACT	23.21	13.00										1	.43***	.30***
PASS	28.27	12.62											1	-.14*
SS	4.59	1.20												1

Note. *** $p < .001$, ** $p < .01$, * $p < .05$; Vig= Vigilance; IS= Internalised stigma; Con= Concealment; Dep= Depression; Anx= Anxiety; Prom= Prominence; Val= Valence; ACT= Active coping; PASS= Passive coping; SS= Social support

Table 5. Linear regression analyse. The relationship between minority stress and psychological distress

Criterion	Predictors	Unstandardised Beta	Standardised Beta	T	R ²	df
Dep					.25	4, 265
	Distal	.09	.12	1.93		
	Proximal Vig	.23	.13	1.74		
	Proximal IS	.31	.34	5.23***		
Anx	Proximal Con	.24	.07	1.03		
	Distal	.18	.27	4.65***	.29	4, 265
	Proximal Vig	.41	.29	3.88***		
	Proximal IS	.113	.15	2.43*		
Stress	Proximal Con	.09	.03	.48		
	Distal	.05	.08	1.33	.26	4, 265
	Proximal Vig	.38	.25	3.37***		
	Proximal IS	.22	.05	4.47***		
	Proximal Con	.11	.04	.56	.	

Note. ***p<.001, **p<.01, *p<.05; Dep= Depression, Anx= Anxiety; Vig= Vigilance, IS= Internalised stigma, Con= Concealment

'Prominence in identity will moderate the relationship between the proximal stress processes and psychological distress'

In Table 4. prominence is shown to have no statically significant linear relationships with the proximal stressors (namely internalised stigma, vigilance and concealment) or psychological distress outcomes. Therefore, it was highly unlikely that prominence would perform as a moderator. Thus, this hypothesis was not supported.

'Minority identity characteristics will be positively associated with social support and coping'

The substantive claim of this hypothesis was not testable. As previously mentioned, integration of identity was not included in the analysis. Prominence was also excluded from the analysis on the variables of passive coping and social support, due to there being no significant linear relationships between these variables (see Table 4.).

Three linear regression analyses models were conducted on valence incorporating the explanatory variables of active coping, passive coping and stress. The model with active coping also incorporated prominence. The alpha criterion was adjusted to 0.013 (i.e. $0.05 / 4$).

Only a significant result was found between valence and social support, $F(1,268) = 10.53$, $p = 0.001$. Valence was found to be significantly positively related to social support and accounted for 4% of its variance.

'Coping and social support will moderate the impact of the minority stressors on psychological distress'

Multiple moderation regression analyses were performed using PROCESS Model 1 and Model 2. The alpha criterion was adjusted to .002 to account for multiple testing ($0.05 / 24$). No significant moderation effects were found. Therefore, the above hypothesis was not supported by this research.

'Coping and social support will mediate the relationship between internalised stigma and psychological distress'

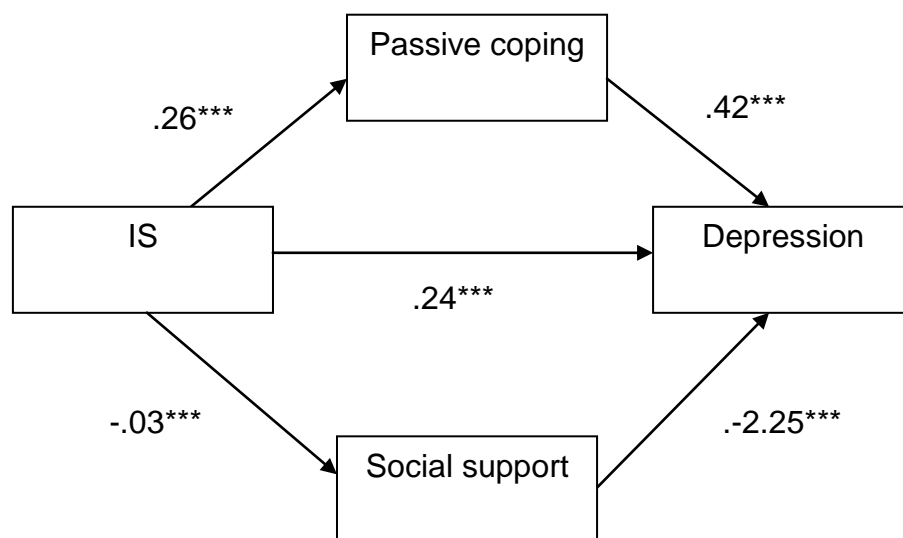
PROCESS Model 4 was used for multiple mediation analyses. To assess for significance and account for multiple testing, the alpha criterion was adjusted to .017 ($0.05 / 3$). Results are displayed in Figure's 3, 4 and 5. As highlighted in the corresponding figures, passive coping was found to partially mediate the relationships between internalised stigma and depression ($Z=3.85$, $p<.001$), anxiety ($Z = 4.11$, $p<.001$), and stress ($Z=3.33$, $p<.001$). Internalised stigma was

found to be positively associated with psychological distress directly and indirectly through passive coping.

Social support was also found to partially mediate the relationship between internalised stigma and depression ($Z=3.74, p <.001$), anxiety ($Z=2.85, p <.01$) and stress ($Z=3.33, p <.001$). However, no significant mediation relationships were found for active coping.

Figure 3.

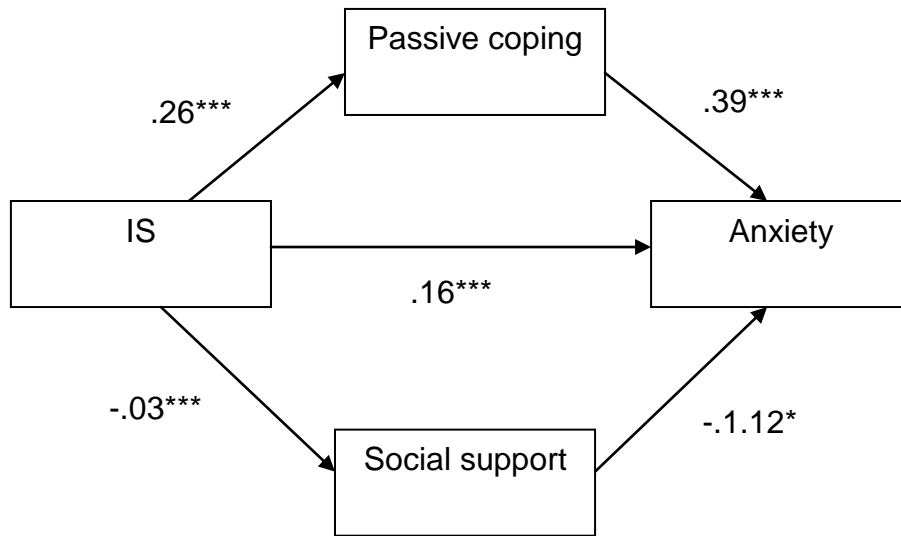
Mediation relationships on internalised stigma and depression.



Note: All coefficients are unstandardised values $^{***}p <.001$; IS= Internalised stigma

Figure 4.

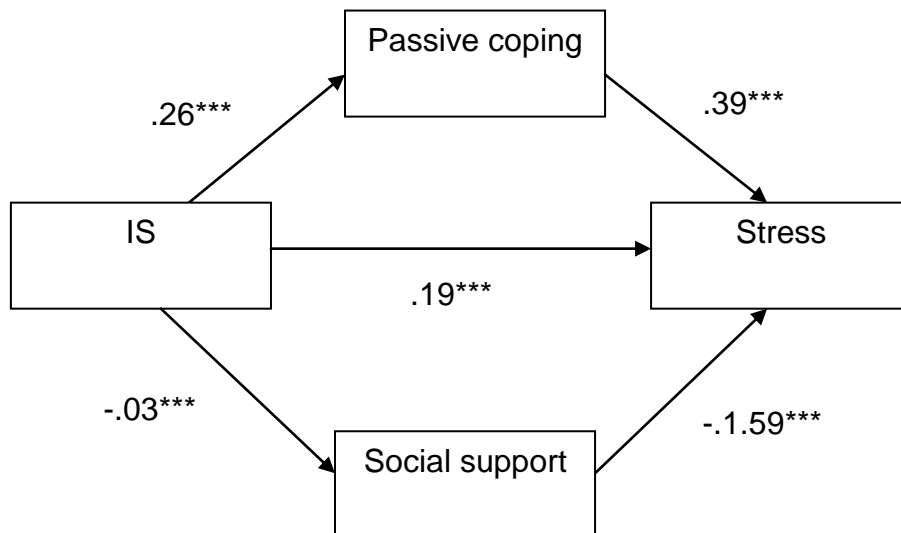
Mediation relationships on internalised stigma (IS) and anxiety



Note: All coefficients are unstandardised values. $^{***}p < .001$, $^*p < .05$; IS= Internalised stigma

Figure 5.

Mediation relationships on internalised stigma (IS) and stress.



Note: All coefficients are unstandardised values. $^{***}p < .001$; IS= Internalised stigma

Discussion

This research aimed to find out if the minority stress model could be applied to a heterogeneous sample of people who identified as transgender, under the transgender umbrella term. This is the first study to do this in a heterogeneous sample of different transgender identities. Also, it is the first to assess for different types of psychological distress as an outcome. However, this study found limited evidence for the hypothesised paths and processes suggested by the minority stress model, in this sample. Consistent with the model and research, support was found for minority stressors (distal, internalised stigma, vigilance and concealment) in being significantly associated with psychological distress (Bockting et al, 2013; Kelleher, 2009; McCarthy et al. 2014; Meyer, 2003). However, this was not found when tested in combination. For depression, only internalised stigma emerged as being significant; for anxiety, only the distal stress and two proximal stress processes (internalised stigma and vigilance) emerged as being significant; and for stress, only vigilance and internalised stigma significantly emerged. Concealment, on the other hand, did not emerge as a significant predictor in combination with other stress processes. The lack of support for this proximal stressor, might be because it is more related to the LGB population. As, Hendricks and Testa (2012) have pointed out, for transgender people being open and being out about one's identity is more revealing and may vary along the transition process. Furthermore, concealment may be affected by a person's ability to pass as their desired identity.

Internalised stigma was the only minority stress process, in isolation and in combination with the other stressors, to be found to be associated with all the psychologically distress outcomes measured. This was in line with previous research, where they have shown the effects of internalised stigma on depression (Bockting et al., 2013, Kelleher, 2009; and McCarty et al., 2014). However, this study has shown the damaging effects this process, in isolation and combination with other minority stressors can have on anxiety and stress as well. Currently, this unique outcome has not been documented before in the literature.

The application of minority identity characteristics was questionable, in this sample of people who identified as transgender. Prominence in identity was

found not to moderate the relationship between proximal stressors (i.e. internalised stigma, concealment and vigilance) and psychological distress. The possible reason for the limited support in this study may be because it was not applicable to this population. For example, minority identity characteristics are related to the "coming out" process in LGB populations. For transgender people, the coming out process is postulated to be different (Hendricks & Testa, 2012; Zimman, 2009). For example, Zimman (2009) has highlighted that there are two different ways in which a person comes out as transgender: before, and after a change in gender role.

Furthermore, an effect may not have been found because this research used a heterogeneous sample of transgender identities, with varying positions on the transition process. This may have made it difficult to sufficiently assess this variable. Thus it may be useful for future research to use a homogenous sample of transgender identities to assess this outcome. In addition, the prominence measure was developed in this study and may have lacked validity. Future validity tests are warranted on this measure.

Valence in identity (defined as being able to positively evaluate your identity) was positively associated with social support, albeit it accounted for a small percent of its variance. Valence in identity is similar to pride in one's identity. Consistent with this, research has shown that pride has an ameliorative effect on psychological distress (Bockting et al., 2013; Testa et al., 2015) (See extended discussion).

Conversely, no support was found for the moderating role of coping and social support, as proposed by the minority stress model. Instead, they were found to have a mediating role on the relationship between internalised stigma and psychological distress. This finding was in line with the hypotheses of lesbian feminist/ sexual identity theorist. Where coping and social support have been found to mediate the relationship between internalised stigma and psychological distress (Szymanski & Kashubeck-West, 2008; Szymanski & Owens, 2008). This study found that internalised stigma had a direct effect on psychological distress (i.e. anxiety, depression and stress) and an indirect effect through passive coping. This finding is similar to Szymanski and Owen (2008) study. Where in a sample of sexual minority women, avoidant coping was found

to partially mediate the relationships between internalised stigma and psychological distress.

Social support was also found to partially mediate the relationship between internalised stigma and psychological distress. This means that those who internalise negative views from society about their transgender identity may find it difficult to access social support because they have a negative view on being transgender. They may also use passive coping techniques (e.g. accept responsibility, distance themselves, use self-controlling methods, and escape or avoid difficulties) when they experience difficulties due to having a negative view on their identity. These responses will in turn increase their psychological distress. Thus highlighting the damaging effects internalised stigma can have on access to social support as well as coping styles. However, given the limits of a cross-sectional design, these temporal relationships can only tentatively be hypothesised. It cannot be inferred how these mediation relationships developed. Therefore future research would need to explore these temporal relationships using a longitudinal design.

Limitations

In appreciating the limitations of a cross-sectional design, this research did not use statistical analyses that enabled theory and model testing, e.g. structural equation modelling. This has been a problem with previous research. Although the hypothesised relationships were tested, a more direct test of the minority stress model is warranted in a sample of people who identify as transgender; whilst considering the possible mediator and moderator roles of coping and social support.

In addition, community support was not included in this study. This is also considered to be important for increasing a person's resilience (Meyer, 2015). Future research may therefore incorporate this variable and its possible moderation and mediation role between the stress processes and psychological distress.

There were also limitations on the measures used. Many had to be adapted in order to be used in the research. This echoes the literature on the limited scales available for use in transgender populations. More recently, Testa

et al., (2015) developed a minority stress and resilience measure for this population. But since its development it is awaiting to be used in studies to test the application of the minority stress model.

Finally, there were limitations to the sample. Not only was it a small sample, the sample mainly consisted of trans women and thus was not entirely heterogeneous. This may or may not have served as an advantage to this research. But future research should assess the varying impacts the stress processes may have on different transgender gender identities. (See extended discussion).

Clinical implications

In light of these findings, it would be beneficial for clinicians working with people who identify as transgender to be aware of the minority stress processes discussed in this research. This is because they may impact on a person's engagement in therapy (i.e. those with heightened vigilance may unconsciously assess for cues that they are being rejected due to their transgender status). Clinicians may further use the information on minority stressors, to inform formulations and psychoeducation when working with people who identify as transgender. It may also be useful for clinicians, when working with people with heightened internalised stigma, to use individual therapy in combination with the individual attending social support groups to enhance their well-being (see extended discussion).

Conclusions

In this recent study, support was revealed for some of the hypothesised processes in the minority stress model, on a heterogeneous sample of people who identified as transgender. All the minority stressors were associated with psychological distress in isolation. When considered in combination only certain stress processes emerged significantly, dependent on the distress outcome being measured. Internalised stigma was paramount in being associated with psychological distress.

Conversely, no evidence was found for the moderating role of coping and social support. Instead, passive coping and social support were found to

mediate the relationship between internalised stigma and psychological distress.

Recommendations for future research

Recommendations have been made throughout this paper. However, researchers may consider developing more transgender specific models that extends these findings. Researchers should also incorporate difficulties and stresses apparent to this population into models (i.e. waiting times for gender identity clinics, stresses in using restrooms in public).

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3. EXTENDED PAPER

Extended Introduction

Overview of the current literature

The literature has consistently shown that people who identify as transgender are more likely to experience mental health difficulties (e.g. anxiety and depression) than those who are cisgender (defined as a person whose gender identity and expression match the gender they were assigned with at birth). One possible, and most widely cited, explanation for this is that people who identify as transgender experience minority stress. Minority stress is an additive stress reported to be experienced by stigmatised social group. It is a socially based stressor that can create an adverse social environment for minority groups, which can lead to poor mental health outcomes.

Minority stress has been conceptualised into a model, known as the minority stress model (Meyer, 1995, 2003). Although, originally developed for sexual minorities (i.e. people who identify as lesbian, gay and bisexual; LGB), this model has been applied to people who identify as transgender. Consequently, it is the most prominent model discussed in the literature to account for the disparities in the prevalence rates of mental health problems between transgender people and cisgender people. However, there is limited evidence of the use of this model in this population. Thus rendering the question: does this model apply to people who identify as transgender?

Transgender definition

The word *transgender* is a term used to describe an individual whose gender identity, position and expression are different from their assigned gender at birth (GLAAD, nd; National Centre for Transgender equality, 2014). More recently the term gender non-conforming has also been used in synonymous. Gender identity refers to a person's internal, personal sense of being a man, or a woman or someone outside these gender binary's (GLAAD, nd; National Centre for Transgender equality, 2014). The word *trans* is sometimes used as shorthand for *transgender* (GLAAD, nd; National Centre for Transgender equality, 2014).

The term transgender or gender-non conforming can be conceptualised as an umbrella term, incorporating many different gender identities. Included within this term are: cross-dressers who may occasionally wear stereotypical clothes of the opposite gender but have no desire to live full-time as the opposite gender; non-binary transgender people; and transsexuals (often viewed as a more medical term) who seek to transition or have transitioned from their assigned gender at birth to the opposite gender (GLAAD, nd) (please see Appendix B for glossary of terms). However, using the term transgender as an umbrella term can be seen as adhering to societal rules. This is because it groups people together and strips away peoples self-identities (Allen, 2011).

Some transgender people may experience gender dysphoria. Formally known as gender identity disorder in the ICD-10 (ICD-10; World Health Organisation, 1992). Gender dysphoria is experienced when there is a marked incongruence between an individual's assigned gender at birth and their gender expression and identity, which causes discomfort for the individual (5th ed.; *DSM-5*; American Psychiatric Association, 2013). To be formally diagnosed, this incongruence and discomfort must continue for at least six months and cause clinically significant distress and/ or impairment in occupational, social or other areas of functioning in a person's life. Included within the diagnosis is: a strong dislike of one's own current sexual anatomy; a strong preference to be the alternative gender; and a strong desire for the primary and /or secondary sex characteristics that match ones experienced and expressed gender. The gender dysphoria diagnosis enables people to seek medical interventions. However, this diagnosis has not been welcomed by many transgender people and researchers. They state that the diagnosis pathologise gender variances as a mental disorder. It also reinforces the binary model of gender rather than incorporating other gender identities (e.g. people who describe themselves as non-binary) (British Psychological Society [BPS], 2012; Newman, 2002). In addition, it could lead to the stigmatisation of people with gender dysphoria (Newman, 2002).

Estimates of people who identify as transgender in the United Kingdom

There are no official estimates for the number of people who identify as transgender in the UK (Equality and human rights commission, 2016). The Census conducted in England/ Wales and Scotland in 2010 did not ask people if they identified as transgender or trans. Researchers who estimated the number of people who identified as transgender in the UK reported that there was "a large reservoir of transgender people who experience some degree of gender variance" (Reed, Rhodes, Schofield, & Wylie, 2009, p. 4).

It is difficult to ascertain and estimate how many people identify as transgender in the UK, due to them being a hidden population. When people reveal they are transgender or their gender variance becomes publically visible, it increases their vulnerability to discrimination, bullying and hate crime (Reed, Rhodes, Schofield, & Wylie, 2009). Furthermore, ethical and methodological issues, and sensitivities make it difficult to collect public data on transgender people. For example, currently there is no agreement on questions on trans status. When conducting research into transgender people, researchers use a range of different terms, which can be problematic as they do not always include all transgender identities under the transgender umbrella term. Also, collecting data on people who identify as transgender may cause them to be easily identified by others, in places or organisations where they have a small number of transgender people. Lastly, privacy, confidentiality and anonymity are key issues in research into transgender people. The Equal opportunities Commission (2007) reported that some transgender people view their trans status as a very private matter. Therefore, they may not disclose this information, unless there is an element of trust. It has been reported that transgender people distrust any data held about them by any government body, therefore the likely outcome of the government asking them such private questions may result in untruthful responses (Office for National Statistics, 2009).

Prevalence of mental health problems in people who identify as transgender

Aside from the significant distress experienced by individuals diagnosed with gender dysphoria, within the transgender community there is reported to be a high prevalence of mental health difficulties. Depression is reported to be the most prevalent problem in transgender people (Bockting, Miner, Swinburne Romine, Hamilton & Coleman, 2013; McNeil, Bailey, Ellis, Morton & Regan, 2012). In the literature, rates of depression for transgender people range from 48% to 62% (Budge, Adelson, & Howard, 2013; Clements-Nolle, Marx, Guzman, & Katz, 2001; Nemoto, Bodeker, & Iwamoto, 2011). McNeil et al. (2012) showed that an alarming 88% of the respondents reported that they were either currently experiencing depression (i.e. diagnosed and undiagnosed) or previously experienced depression in the past, in their trans mental health study in the UK and Ireland. These rates of depression appeared to be higher in transgender women (assigned with being male at birth but view their gender identity as female), than transgender men (assigned as being female at birth but view their gender identity as male) (Budge, Adelson, & Howard, 2013; Clements-Noelle et al., 2001). However, little is known about other gender identities under the transgender umbrella.

McNeil et al. (2012) found that stress was the next prevalent issue (80%) followed by anxiety. The rates of anxiety for transgender individuals were reported to range from 26% to 47.5% (Budge, Adelson, & Howard, 2013; Hepp, Kraemer, Schnyder, Miller, & Delsignore, 2005; Mustanski, Garofalo, & Emerson, 2010). Interestingly, McNeil et al. (2012) found that 75% of their participants experienced high levels of anxiety in their survey. These large ranges in prevalence rates reflect the diverse methodological procedures used in prevalence research, which makes it difficult to know the exact rates of anxiety. For example, researchers use different outcome measures to capture the rates of anxiety (e.g. diagnostic tools or symptom measures).

Lastly, suicidality and self-harm are also important problems within the transgender community (Clements-Nolle, Marx & Katz, 2006; Haas et al., 2011; Mereish, O'Cleirigh & Bradford, 2014). Research has shown an estimate of 48%

of transgender people attempt suicide in a lifetime (McNeil et al., 2012). Suicide attempts are reported to be higher among transgender men (46%) and transgender women (42%) than other gender identities under the transgender umbrella term e.g. cross-dressers (21%) (Haas, Rodgers, & Herman, 2014). The National Transgender Discrimination survey found that 41% of respondents who identified as transgender reported attempting suicide compared to 1.6% of the general population (Grant et al., 2010). This result is extremely concerning and further highlights the increased mental health problems and difficulties transgender people experience compared to cisgender people. The authors also found that unemployment, low income, and sexual and physical assault increased the risk factors significantly.

These high rates of mental health problems have also been found in people who identify as lesbian, gay and bisexual (LGB). They are also at a higher risk of developing mental health problems than heterosexual people (Cochran, Sullivan & Mays, 2003; King et al., 2008). For example, Cochran et al. (2003) found that gay and bisexual men were three times more likely to meet the criteria for major depression than heterosexual men. In addition, in a systematic literature review of suicide and self-harm in LGB people, it was found that lesbian and bisexual women had approximately a 1.82 times increase risk of lifetime suicide attempts compared to heterosexual women (King et al., 2008).

Minority stress

A favoured explanation for the higher prevalence of mental health problems within LGB populations is that they are reported to experience minority stress (Brooks, 1981; Meyer, 1995, 2003). In recent years, minority stress has been documented and referenced in the transgender literature. This has helped to understand the high prevalence rates of mental health problems in transgender people compared to cisgender people. It is also acknowledged in professional practice guidelines produced by the British Psychological Society (BPS) to increase clinicians awareness of minority stress within LGBT populations (BPS, 2012).

The concept of minority stress, evolved from social psychological theories, social stress theories and sociological theories. Minority stress is a stress that is derived from a groups minority status and experienced by stigmatised social groups (Brooks, 1981). Minority stress is postulated to be socially based, chronic and has an additive effect (e.g. experienced on top of the general stress). Minority stress can be caused by low levels of support and having a low socio-economic status. However, the most well understood causes are discrimination and stigma. It is postulated that the stigma and discrimination the individual receives from society, creates a stressful social environment which is thought to lead to adverse mental and physical health outcomes (Frost & Meyer, 2013).

Consistent with this, LGBT individuals have been found to experience increased stigma and discrimination (Diaz, Ayala, Bein, Henne & Marin, 2001; Kelleher, 2009; McNeil et al., 2012). In the trans mental health survey, it was found that 81% of the respondents experienced silent harassment for being trans (e.g. being stared at/ whispered about); 19% of the respondents reported being hit or beaten up for being trans; 14% experienced some form of police harassment; and 14% reported that they were sexually assaulted for being trans (McNeil et al., 2012). It was not established if there were differences in rates of discrimination of the different gender identities under the transgender umbrella term. However, one study reported that 72% of anti-LGBT homicide victims were transgender women (GLAAD, n.d). This may explain why transgender women are considered to be more at risk of developing mental health problems, as noted earlier in the prevalence of mental health problems in people who identify as transgender (Bazargan & Galvan, 2012; Budge, Adelson & Howard, 2013).

Research has also shown high rates of reported discrimination and stigma towards transgender people in the domains of housing, employment and health care (Bradford, Reisner, Honnold, & Xavier, 2013; Grant et al., 2010; McNeil et al., 2012). The National Transgender Discrimination survey report on health and health care in the United States, found that 19% of transgender people who completed the survey were refused medical services, and an alarming 28% of the respondents experienced harassment and violence in the medical setting. Similar findings were found in the UK and Ireland based survey,

in which 9% of the respondents were refused mental health care and 12% refused general health care because of they were trans (McNeil, et al., 2012).

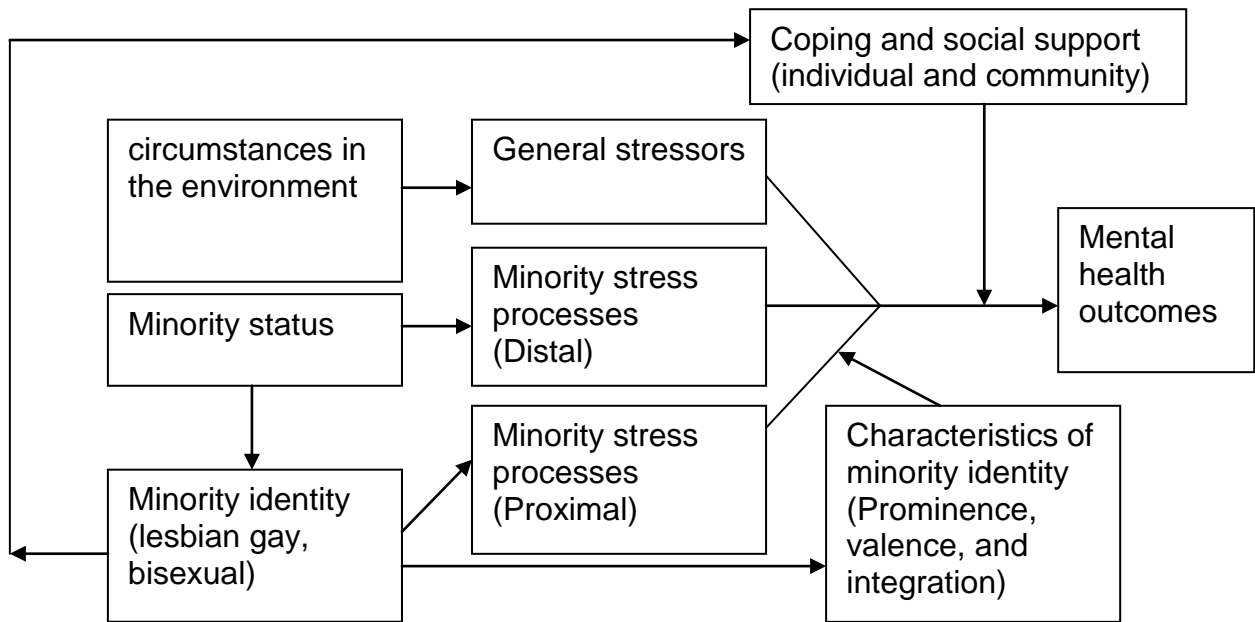
Furthermore, recent high profile cases in the media have shown this discrimination in the prison system. For example, two transgender women were found dead in male prisons (BBC, 2015). Following this, the government issued a report on Transgender equality (House of Commons women and equalities committee, 2016). Within the report it was concluded that transgender people were being let down by the NHS. It was reported that the NHS were failing their duty under the Equality Act. 2010 and failing to prevent discrimination towards transgender people. The report also urged the prison and probation services to develop new instructions on the care and management of transsexual prisoners, in light of the two deaths that occurred in the prison service. Lastly, the report stated that there was a need for cultural change, due to the high amounts of transphobia (defined as antagonistic attitudes and feelings against people who identify as transgender or transsexual) hate crimes, which have increased. For example, in England and Wales police records have shown that between 2011-2012 there were 310 hate crimes towards transgender people reported. In 2014-2015, there were 605 hate crimes reported (House of Commons women and equalities committee, 2016). Although, many transphobia related crimes are unreported this increase may also be due to more transgender people reporting these types of crimes.

Minority stress model

With further exploration of minority stress in sexual minorities, Meyer (1995) found that minority stressors (namely internalised homophobia, vigilance/ perceived discrimination) predicted psychological distress in gay men. In light of these findings and findings from research into minority stress and sexual minorities (LGB), he developed a conceptual framework/ model to explain the processes of minority stress in sexual minorities (Meyer, 1995, 2003; Figure 6.). This model incorporates a complex set of social and psychological processes that aims to explain the higher prevalence of mental health problems in LGB populations (Meyer, 1995, 2003). It is a popular model and it has been extensively cited in the literature (over 2500 papers have cited

Meyer's, 2003 paper on Google Scholar). Although, Meyer's initially developed the model for LGB populations other authors have extended the use of the model into transgender populations (Bockting et al., 2013; Hendricks & Testa, 2012; Kelleher, 2009; Meyer, 2015).

Figure 6. Meyer's minority stress model from Meyer (2003) original paper.



Note: General stressors and minority stress processes (distal and proximal) are proposed to be interdependent. Circumstances in the environment and minority status are also hypothesised to be interdependent.

The minority stress model describes the stress processes experienced by LGB populations. It includes stressors such as: the experience of prejudice events (known as distal stressors), expectations of rejection, hiding and concealing, and internalised homophobia (latter three are viewed as proximal stressors and are explained below). It also appreciates the ameliorative coping processes as well as highlighting the positive and negative effects these factors have on mental health outcomes (Meyer, 2003). Although this theory was not empirically tested at the time, support was gained through a meta-analysis of reviewed studies in the LGB populations.

Meyer's (1995, 2003) viewed minority stressors along a continuum from distal stressors, (defined as objective stressors because they are external to the person) to proximal stressors (subjective stressors which rely on the individuals perceptions and appraisals). These stressors, in addition to general stressors, are defined as being interdependent. Although it can be seen that distal stressors cause proximal stressors, the report of distal stressors depends on the individuals appraisals and whether they identify with their minority status.

The minority stress model highlights four hypothesised processes of minority stress. From distal to proximal stressors they are:

- (a) LGB individuals may experience minority stress from their environment due to their minority status in the form of prejudice events, acts of discrimination and/ or stigmatisation.
- (b) LGB individuals may internalise stigmatising attitudes (coined, internalised homophobia).
- (c) LGB individuals may become more vigilant to being rejected by others due to their minority status (e.g. expectations of rejection).
- (d) LGB individuals may hide their identity (known as concealment) in order to reduce their experience of discrimination and stigmatization.

The latter was an additional process included in Meyer's (2003) paper. These stressors are postulated to increase an individual's susceptibility to experiencing psychological distress. It has been hypothesised that internalised stigma (also known as internalised homophobia) may be the most damaging because it can have a direct negative effect on an individual's ability to cope and their resilience in light of negative events (Hendricks & Testa, 2012).

Positive coping styles and sources of social support are reported to moderate the effects of these stressors on mental health outcomes. These factors are thought to increase an individual's resilience to minority stress. It is reported that individuals who have good coping styles and sources of social support will experience these stressors to a lesser degree, thus ameliorating the effects of the stressors.

Lastly, the model incorporates the positive and negative effects minority identity has on mental health outcomes. Minority identity leads to minority identity characteristics (relates to an individual's sense of self) and is argued to

affect the operation of stressors and social support. Minority identity characteristics include: the prominence of identity (an individual's relationship with other identities such as gender, religion, ethnicity); integration of identity (relates to the individuals level of integration); and valence of identity (when individuals evaluate their identity). In terms of positive effects on mental health, it proposes that those who manage all their complex identities, rather than view their LGB identity as prominent; evaluate their identity positively and integrate all their identities; will experience less psychological distress. This is because they will have access to social support (community and individual). However, the reverse is speculated to be true for those who experience their identity as prominent, who as a consequence are hypothesised to experience more stressors.

Critique of the minority stress model

Meyer's (1995, 2003) appreciates that this model shows a highly complex process, which can also be seen through the pictorial representation (Figure 1.). However, confusing in both the pictorial and narrative representations of the model, it is not clear how minority identity characteristics relate to proximal stressors. Pictorially minority identity characteristics moderate the relationship between proximal stressors and mental health outcomes. Whereas the model states that minority stressors have a greater impact on health outcomes when the LGB identity is prominent (i.e. viewed as their only identity) than when it is secondary to the person's self-definition. Therefore, the relationship between minority identity characteristics and minority stressors is confusing to readers and is not very clear.

In addition, although the model hypothesises that coping and social support moderate the relationship between the stressors and mental health outcomes, other researchers argue that they mediate this relationship. Amongst them are lesbian feminist/ sexual identity theorist who postulate that coping and social support mediate the relationship between internalised stigma, which they termed internalised heterosexism, and psychology distress (Cass, 1979; Sophie, 1987; Szymanski, Kashubeck-West & Meyer, 2008; Szymanski & Owens, 2008). Internalised heterosexism refers to internalising negative stigma

from experiences of heterosexism. This is another term similar to internalised stigma but the term internalised heterosexism will be used to discuss this research for ease of narrative (Szymanski, 2005). These theorists are guided by the feminist theory, which like the minority stress theory, is a theory that conceptualises the impact of heterosexism (defined as a system of attitudes, beliefs and biases in favour of opposite-sex sexual identity and opposite-sex relationships) on LGB people's lives.

The feminist theory states that personal difficulties are related to the wider political, social, cultural and economic environment in which people live. Also that problems experienced by people with limited power in society are reactions to oppression (Brown, 1988, Enns, 2004). In terms of LGB people, it states that heterosexism is likely to contribute to psychosocial problems seen in this population via heterosexist experiences of rejection, harassment, prejudice, discrimination and violence. But they state that it is the internalisation of negative heterosexist messages from society that lead to psychological distress (Brown, 1988; Szymanski, 2005). It has been postulated that internalised heterosexism is also likely to limit an individual's access to social support and lead to negative avoidant coping. This consequently leads to greater psychological distress (Szymanski & Owens, 2008). Therefore unlike the minority stress model, coping and social support play a mediating role.

Research support has been gained for the role of social support and avoidant coping, in mediating the relationship between internalised heterosexism and psychological distress. However, support has been gained using a sample of lesbian and bisexual women so generalizability may be questionable to other minority groups such as transgender people. For example, Szymanski and Owens (2008) found that avoidant coping partially mediated the relationship between internalised heterosexism and psychological distress. Szymanski and Kashubeck-West (2008) found that social support fully mediated the relationship between internalised heterosexism along with self-esteem mediating this relationship as well.

Although this presents a criticism to the minority stress model, the minority stress model has gained considerable support in LGB populations. It has been reported to be suitable for explaining the increased psychological distress, suicide attempts, substance misuse and sexual health risks in sexual

minorities (e.g. Dunn, Gonzalez, Costa, Nardi & Iantaffi, 2014; Frost & Meyer, 2009; Kuper & Fokkema, 2011; Newcomb & Mustanski, 2010; Van Den Bergue, Dewaele, Cox & Vincke, 2010; Wong, Schrage, Holloway, Meyer & Kipke, 2013). It has been found that each of the minority stress processes are associated with negative mental health outcomes. For example, research has demonstrated that prejudice events and proximal stressors (e.g. internalised homophobia, expectations of rejection and concealment) lead to negative mental health outcomes (Brewster, Moradi, DeBlare & Velez, 2013; Dunn et al., 2014; Kuper & Fokkema, 2011; Logie, Newman, Chakrapani & Shunmugam, 2012; Shilo & Savaya, 2012; Szymanski, 2009; Van Den Bergue, et al., 2010; Wong et al., 2013). Also there is support that social support moderates the negative effects on mental health (Wong et al., 2013). Conversely research has shown mixed findings on the role of coping. Some studies have found no evidence of coping moderating mental health (Logie et al., 2012; Szymanski, 2009). Other researchers have shown that coping had a direct effect on mental health rather than moderating it (Shilo & Savaya, 2012). Thus bringing the argument back to whether coping plays a mediating role instead.

Furthermore, there continues to be inconsistencies within the model. For example, the association between concealment of sexual identity leading to poor mental health is reported to be unclear (Dunn et al., 2014; Legate, Ryan & Weinstein, 2012). Also, the nature of processes within the model are not clearly explained as some processes, can either be moderators or mediators, as mentioned previously. Research overlooks this important difference. Lastly, research on certain processes within the model is limited. For example, research on minority identity characteristics and its relationship with coping, social support and mental health outcomes (Stennett, Rennoldson & Das Nair, unpublished manuscript).

Comparison of the minority stress model to generic models of psychological distress. A further criticism of the minority stress model is that it struggles to offer a unique perspective on explaining psychological distress. There are other models within the literature, with an extensive evidence base,

that can explain psychological distress, such as the cognitive behavioural therapy model (CBT), psychodynamic approaches, systemic approaches and community psychology.

CBT is the most widely used theoretical framework in explaining and treating psychological distress (Beck, Rush, Shaw, & Emery, 1979; Hawton, Salkovskis, Kirk, & Clark, 1989; NICE, 2009, Wells, 1997). In explaining psychological distress, CBT states that it is the individual's appraisal of an event that affects their beliefs, behaviours and emotions. CBT acknowledges that our past experiences impact on the development of our beliefs, which can influence appraisals that we attribute to particular events or situations. Similarly, the minority stress model includes a person's past experiences and how these can impact on their mental health, but only in the context of past prejudice events and experiences of victimisation and discrimination. The minority stress model does not incorporate other past events that may be pertinent to a person experiencing psychological distress, such as childhood experiences, experiences of abuse, or experiences of trauma.

The minority stress model also fails to explain what maintains psychological distress: it focuses on the development of the stress processes that sexual minorities experience, whereas other evidence-based models of distress (e.g., from CBT, systemic, and psychodynamic approaches) are able to additionally explain the maintenance of psychological distress. For example, in CBT it is our thoughts, feelings and behaviours that maintain psychological difficulties. Within systemic approaches, it is the patterns, meanings and communications in relationships that maintain distress (e.g. Vetere & Dallos, 2003). Psychodynamic approaches acknowledge that psychological distress is maintained by hidden feelings and unresolved conflicts from early experiences in a person's life (e.g. Malan, 1979). Lastly, community psychology focuses on how individuals relate to their communities and the reciprocal effects of the communities on the individual, in maintaining difficulties (Harper & Schneider, 2003). An awareness of the factors that maintain difficulties/ distress enables professionals to treat/ help people recover from mental health problems. This relates to another criticism of the minority stress model: that the model does not clearly indicate how best to intervene or support people to manage their

stresses. Implications for intervention, in the minority stress model, are limited and somewhat vague, centring broadly on improving coping and access to social support.

However, it is important to acknowledge that the minority stress model was not developed to be a stand-alone model in explaining psychological distress. It was developed to be a framework to explain the stress processes in sexual minority people (Meyer, 1995, 2003). It is more of a middle level theory, in which it looks at processes that a group of minority people possibly experience, rather than being focused on the individual level, that generic psychological models focus on (e.g. CBT, psychodynamic, systemic). Furthermore, having models focused at the individual level can sometimes assign blame or responsibility to change on the individual. Whereas being focused at the larger societal level helps people to understand the issues within society that minorities experience. This is strength of this model.

Application of the minority stress model in transgender people

Although this model was developed for sexual minorities (Meyer, 1995, 2003), it has been cited and applied to people who identify as transgender (Bockting et al., 2013; Hendricks and Testa, 2012; Meyer, 2015; Testa, Habarth, Peta, Balsam & Bockting, 2015).

Research has tended to apply aspects of the minority stress model to transgender people. There is evidence that shows that some proximal stressors and distal stressors lead to poor mental health outcomes, substance misuse and attempted suicide in transgender people (Bockting et al, 2013; Kelleher, 2009; McCarthy, Fisher, Irwin, Coleman & Pelster, 2014; Nemoto, Bödeker & Iwamoto, 2011; Testa et al., 2015). Albeit, this research is mainly on transgender men and transgender women rather than examining all the different gender identities under the transgender umbrella. For example, Kelleher (2009) found that actual discrimination, expectations of rejection (also known as vigilance), and internalised stigma in combination were strong predictors of psychological distress in LGBT individuals. Nemoto, Bödeker & Iwamoto (2011) found that exposure to prejudice and discrimination, dissatisfaction with social

support or lack of social support, significantly correlated with depressive symptoms in transgender women. This is consistent with the minority stress model.

Research is limited on coping and social support. However, coping and social support are reported to lead to positive mental health outcomes, which is unsurprising given that generally these factors are found to reduce stress (Thoits, 1995). However research has found specific types of coping and social support that have been found to reduce mental health outcomes. Budge, Adelson and Howard (2013) found that transgender people who used more avoidant strategies reported more depressive and anxiety symptoms. In terms of its relationship with the minority stressors, Mizock and Mueser (2014) found that coping strategies were associated with lower levels of internalised stigma (internalised transphobia as well as internalised mental health stigma) and external stigma. They also examined the coping strategies transgender people used when they experienced transphobia. Not only did they identify coping strategies at the individual level (e.g. gender-normative coping, self-affirmative coping, emotional-regulation coping, and cognitive-reframe coping), they also identified coping strategies at the interpersonal level (e.g. social-relational coping, preventative-preparative coping, disengagement coping) and systemic level (e.g. political-empowerment coping, resource-access coping, and spiritual and religious coping) (see Mizock & Mueser, 2014).

Social support is also found to play an important role. Budge et al., 2013 found that social support plays an important role in transgender people's emotional experiences. More recently, Pflum, Testa, Balsam, Godblum & Bongar (2015) found that general social support and transgender community connectedness were protective factors against symptoms of depression and anxiety. However the latter, transgender connectedness, was only true for transgender females only. Whilst general social support showed significantly reduced symptoms of depression and anxiety among both transgender female and transgender males.

Conversely, there is a lack of research on minority identity characteristics and minority identity in transgender people. Similar to LGB populations as noted earlier. What has been found is that accepting one's sexual/ gender minority identity and resisting internalising societies negative stereotypes was related to

fewer depressive symptoms (McCarthy et al., 2014). Also, in a study examining collective self-esteem in male-to-female transgender people, those who were more positive about the transsexual community reported less psychological distress. In comparison, those who were more fearful about the effect of their transsexual identity conversely experienced psychological distress (Sánchez & Vilian, 2009).

As shown there is some evidence for the utility of the minority stress model in people who identify as transgender, however studies have tested the components/ processes in isolation rather than examining the model as a whole and testing its hypotheses. The only study to date that has found support for using the minority stress model in transgender people, in which multiple stressors were examined, was Bockting et al. (2013). They recruited transgender men and transgender women, in the US, in order to test the hypotheses informed by the minority stress model. For example:

- minority stressors of felt (e.g. internalised stigma), enacted stigma and concealment of transgender identity would be negatively associated with mental health
- this association would be moderated by factors of resilience (e.g. family support, peer support and identity pride).

They found support for the minority stress model in this heterogeneous sample of transgender people. Their results indicated that enacted and felt stigma was positively associated with psychological distress. Also that family support, peer support, and identity pride were all negatively associated with psychological distress. However, only peer support moderated the relationship between enacted stigma and psychological distress. Thus, highlighting the potential need to further assess if social support is instead a mediator of internalised stigma and mental health outcome, rather than a moderator due to this lack of support. Lastly concealment (measured by investment in passing) was positively associated with felt stigma and enacted stigma, which lead the authors to conclude that concealment was a direct product of the distal minority process.

Although these findings clearly support the minority stress model, the minority stress model was not directly tested in this population, which the

authors have acknowledged. Their aim was primarily to test the hypotheses from the model. In addition, they used hierarchical regression which enables relationships between variables to be specified but does not directly test whether the theoretical model fits the data like what structural equation modelling techniques would enable. Finally, the authors did not test all the processes in the model such as, vigilance. However, it is the closest research to test all the processes of the minority stress model, in this population.

More recently, further support has been gained for the use of the minority stress model in transgender populations (Hendrick's Testa, 2012; Meyer, 2015; Testa et al., 2015). For example, Hendrick's and Testa (2012) stated, in their paper, that there was support for the application of the minority stress model in people who identify as transgender. They came to this conclusion by reviewing and analysing other studies in this area. They did however, identify that "coming out" and being open about one's identity (sexual and gender identity) may increase an individual's ability to utilise the resources available within the minority community that facilitate coping and resilience but this may be different for transgender people. They stated that for people who identify as transgender, being "out" has a different meaning, particularly at different points in time.

"... transsexuals who share their authentic gender identity prior to full transition may reveal more than sharing the same identity after a transition, when their gender identity may closely match their physical appearance. For posttransition transsexuals, being open about gender history is often more revealing than simply asserting an authentic gender identity"(Hendrick & Testa, 2012, p.462).

Thus highlighting that the process of "coming out" is more complex in transgender people than sexual minorities. For sexual minorities, "coming out" would be informing others about their sexual orientation, whereas for transgender people "coming out" varies among their journey (e.g. whether they chose to have gender reassignment surgery or hormones). In addition, although a transgender person may not be "out" about their transgender status, others may visibly see they are transgender. Although this stressor has been queried, Bockting et al. (2013) demonstrated that this stressor also applied to transgender people.

Although there is support for using the minority stress model in explaining the higher prevalence's of mental health problems in people who identify as transgender, the research is still in its infancy. Research is now growing in momentum in connecting victimisation and discrimination with negative outcomes in transgender people. However there continues to be limited evidence on proximal stressors (concealment, expectations of rejection, internalised stigma), the ameliorative effects of resilience, and the effects of minority group identity and membership. This has been noted by researchers (e.g. Hendrick & Testa, 2012; Testa et al., 2015).

This lack of evidence on these stressors may be due to methodological issues encountered when conducting research in transgender populations. For example, there are limited scales developed to enable certain domains (e.g. internalised stigma) to be tested. Also, this remains to be an understudied population, mainly because recruitment is a challenge, as some individuals want to keep their histories private (McNeil et al., 2012).

However, there remains to be criticism on the utility of the model in being applied to transgender people. It appears that the most dominant model in the literature, around disparities in mental health among sexual minorities, has been applied to this population but conversely ignores other factors which are considerably important to people who identify as transgender. For example, transgender people experience stress when using public toilets. Herman (2013) found in their survey that seventy percent of transgender and gender non conforming people reported being harassed, physically assaulted or denied access to public restrooms. Passing may also be an important variable to consider. Transgender men are thought to be able to pass more as their desired gender than transgender women (Verschoor & Poortinga, 1988). This may also serve to explain why transgender women experience more discrimination than transgender men, because society may be able to notice them more.

One of the main limitations of using this model in transgender populations, as I have noted, is that it has not been explicitly tested in this population. Yes, the evidence demonstrates that in isolation, the concepts lead to poorer mental health outcomes. But evidence on certain components is considerably limited (e.g. proximal stressors, minority identity characteristics and the buffer effects of coping and social support). This has been noted by

some authors. It has been recommended that further research is needed into the application of the model, using methodologies and analysis that enable this (Bockting, 2013; Meyer, 2003).

Current research

Rationale. In light of the criticisms and gaps in the literature highlighted above, on the application of the minority stress model in people who identify as transgender, I plan to examine if this model can be applied to this population. I have been influenced by the research by Bockting et al. (2013) and Hendrick's and Testa (2012), who all state that this model can be applied to people who identify as transgender. If this is the case, this research would add to the sparse literature on supporting the use of the minority stress model on transgender people. As well as increase the literature on the role of coping, social support, proximal stress processes and minority identity characteristics on mental health outcomes, which is currently limited.

Primarily, I aim to find out if this model (including all the hypothesised paths/ relationships) is suitable to be applied to this population, in explaining mental health outcomes, in anxiety, depression and stress (due to these being the most prevalent mental health problems; McNeil et al. 2012). As mentioned previously there is contradictory evidence, albeit limited evidence, that has been found in the process of concealment in people who identify as transgender.

The notion of examining the minority stress model in people who identify as transgender is similar to Bockting et al. (2013) study, however I plan to include all gender identities under the transgender umbrella within the study. This will enable me to see if universally this model can be applied to different gender identities under the transgender umbrella term. Conversely, if the minority stress model cannot be applied to people who identify as transgender, I plan to develop an alternative model (derived from the data and theories).

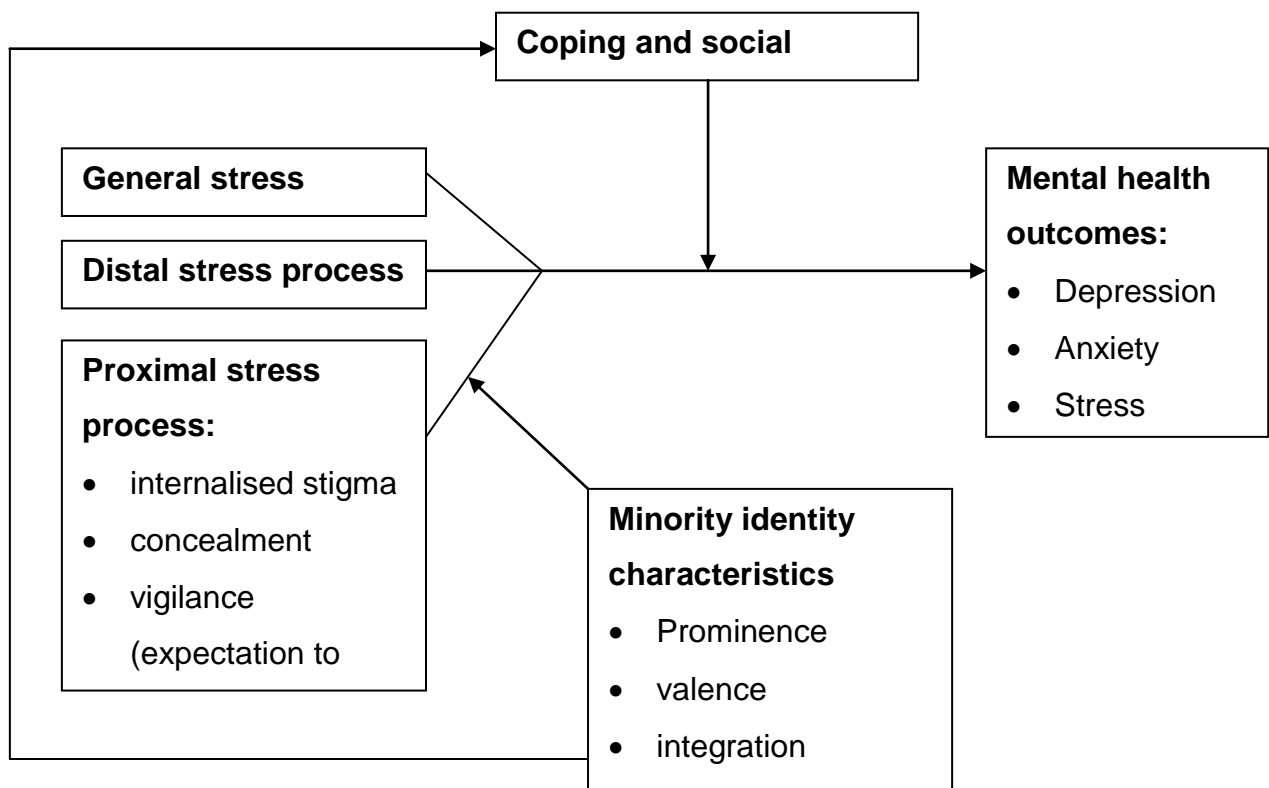
I also aim to explore the role of coping and social support on the stress processes. The minority stress model states that they moderate the relationship between stressors and mental health outcomes. It proposes that it has an ameliorative effect. Whereas lesbian feminist/ sexual identity theorist state that that they are mediators. More specifically that they mediate the role of

internalised stigma and mental health outcomes. Although tested in lesbian and bisexual women, this mediation relationship has not been tested in people who identify as transgender, and could provide an alternative explanation.

Research objectives. In light of the research aims, the research objectives are to:

- Analyse the main components and processes of the model and their hypothesised relationships as demonstrated in Figure 7.
- Test the hypotheses proposed by the minority stress model.
- Test the mediating/ moderating roles of coping and social support. Only test the mediating roles of these variables on the relationship between internalised stigma and psychological distress
- If the model cannot be applied to transgender people, to offer an alternative model derived from theory and the data.

Figure 7. Proposed stress processes in the minority stress model to be researched.



Research questions. The proposed research question is "Can models applied to LGB populations be applied to people who identify as transgender?"

but more specifically "Can the minority stress model be applied to people who identify as transgender, and explain the processes that lead to positive and negative mental health outcomes?"

This question leads to the following hypotheses:

1. Minority stressors (e.g. proximal and distal stressors) will increase levels of psychological distress.
2. Minority stress processes (proximal, distal) and general stress processes are interdependent and thus, should highly correlate with each other.
3. Prominence in identity will moderate the relationship between proximal stress processes and psychological distress, and thus increase psychological distress.
4. Minority identity characteristics will be associated with social support and coping.
5. Coping and social support will moderate the impact of the minority stressors on psychological distress, and thus ameliorate this relationship.
6. Coping and social support will mediate the relationship between internalised stigma and psychological distress.

Extended Methodology

A cross-sectional research design was used to answer the research questions and hypotheses. This is consistent with the previous research summarised in the introduction. This technique is particularly advantageous because it enables hypotheses to be proved/ or disproved and enables researchers to use multiple variables at a single time point. Conversely, it does not allow for strong conclusions about temporal relations or causation to be made like longitudinal methods.

Epistemological position

This research takes a post-positivist epistemological stance. Even though, I am interested in using scientific methods to explain casual relationships, which fits with a positive stance, I believe that the "ultimate truth" is unknowable and impossible to measure (Lincoln & Guba, 1985). This is also represented by the lack of measures in my study and the need to adapt measures to fit with the research population.

Furthermore, post-positivists maintain the position that 'cause and effect' exists together, and therefore cannot be separated (Lincoln & Guba, 1985). This is true for the methodology of this study. In using general linear modeling statistical techniques (e.g. multiple regression and structural equation modeling), I cannot state causal relationships but I can hypothesise these relationships based on the soundness of underlying theory (Weston & Gore, 2006).

Although it has been reported that post-positivist researchers reject positivistic ideas (Lincoln & Guba, 1985). Others state it incorporates ideas such as falsification and fallibilism (Hertherington, 2000). This fits with this current research because one of the aims is to test a model that currently stands 'true' in the literature, another is to provide an alternative model that fits the observed data. The alternative model, that may be developed (dependent on whether the current model suits the studies data), will not be seen as the ultimate truth in explaining the impact of prejudice events on transgender peoples' mental health, but as another testable model.

In terms of the methodology, post-positivist researchers acquire the 'truth' and knowledge via multiple methods of enquiry. They do not reject quantitative methodology, but tend to use more complex research designs to ensure that knowledge comes from many realities rather than one. In using multiple regression, PROCESS (for moderation and mediation analysis), correlations and structural equation modeling, I am using multiple predictor variables as well as two complex statistical techniques to acquire my truth and knowledge (see Data Analysis section for a more comprehensive review). Additionally, structural equation modeling never assumes we can accurately measure constructs and takes into account measurement and residual error.

Ethical approval

Ethical approval was sought to: safeguard the participants; protect their rights; protect their dignity and welfare; and maintain their safety. This was sought and approved through the medical school research and ethics committee at The University of Nottingham on the 28th May 2015. Participants were not recruited from the National Health Service (NHS), therefore no further ethical approval was warranted.

Management of undue distress. One of the possible risks of the research was that participants could have experienced undue distress. This is because they were required to complete questionnaires on their experiences of prejudice events, their experiences of discrimination and their experiences of victimisation. I managed these risks by documenting it explicitly on the information sheet, prior to them giving their consent. I also attached contact details for additional support on the information sheet and debrief form. Lastly, I explicitly informed participants of their rights to withdraw from the research, on the information sheet (see Appendix C for information sheet and Appendix D for debrief form).

Privacy and Confidentiality. Participants' data from the survey was managed in accordance with the Data Protection Act. 1998 at all stages of the research (i.e. online data collection and exportation to Excel, SPSS and AMOS). All data was anonymised and coded with a unique ID code, password

protected and stored on a password protected laptop. Only the researchers (myself, NM, RdN) had access to the data. In addition, data will be stored for 7 years in accordance to the University of Nottingham's guidance on research (University of Nottingham, 2009).

For participants, who provided their email address for the prize draw, their information was securely stored, as mentioned above, and their details were securely destroyed once the prizes were claimed.

Ethics of online research. One of the main ethical issues considered with online research is around privacy online (Berry, 2004; British Psychological Society, 2013). It has reported that the distinction between public and private space can become blurred in online research (British Psychological Society, 2013). For example, although one might use the internet on a private computer, traces of their online activity, behaviours and interactions can be easily accessed by others using the same computer and stored. This was a considerable dilemma for this research. However, this would also possibly be a dilemma for face-to face research, in which transgender peoples' identities would be revealed to the researchers.

Furthermore, in terms of privacy, the use of an online web-based survey helped to enable participants to maintain a level of anonymity, which other forms of internet surveys may not allow (e.g. email surveys) (Eysenbach & Wyatt, 2002). The use of privacy and anonymity is an important issue for transgender communities, which tends to be a private and hidden population (McNeil et al., 2012).

The validity of consent, was also another ethical issue (British Psychological Society, 2013). In online surveys, it can be difficult to ascertain whether participants have given informed consent (i.e. are fully aware of the study and have read the information sheet). The BPS (2013) have reported that it is good practice for researchers to offer a check box in response to an explicit consent statement, to overcome this issue. This was used in this research. Furthermore, I added a check box to ensure that participants had read the information sheet (e.g. "I confirm that I have read and understand the information sheet for the above study").

Lastly, the use of online surveys restricts the researchers capacity to monitor, support and even terminate the study if there are apparent adverse

effects (British Psychological Society, 2013). To manage this issue, as previously noted, the possible adverse effects of the survey were explicitly documented on the information sheet. In addition, participants had my researcher contact details and the details of my research supervisors so they could discuss any difficulties they had with the research.

Research involvement from the transgender community

Consultant. I recruited a consultant for this research from the trans community (see Appendix E for Consultant and researcher agreement). This was to help ensure that the research was sensitive to the needs of transgender people.

DB was recruited for this position. They were a member of the Service User and Carers Advisory Panel (SUCAP) on the Trent Doctorate in Clinical Psychology course and had lived experience of being transgender. I recruited them because they initially proposed the research idea of studying the impact of prejudice events and discrimination on people who identify as transgender.

I met with the research consultant twice at the beginning of the project to discuss the research idea and gather their feedback. For example, they agreed that the research would be beneficial to the transgender community. I also met with them to discuss strategies to recruit people for my steering group and they proof read my emails, to ensure that I used appropriate and sensitive language. Lastly, I kept them informed on the progress of the research.

Steering group. A steering group was also recruited for design and recruitment purposes of the research project (See Appendix F for steering group agreement). The purpose of this was to ensure the maximum recruitment of participants in completing my study, due to the population being largely private and hidden as mentioned previously (McNeil, et al., 2012). They were also recruited to ensure that the measures used (i.e. measures adapted and created) in the research were applicable to people who identified as being transgender. Their role was to provide face validity on the developed and adapted measures (e.g. minority identify characteristics), provide advice on recruitment strategies, and to give advice on the participant sheets (e.g.

information sheet and debrief). I met with them three times. They were paid for each meeting they attended (See Budget).

Three adults were recruited for the steering group. They were recruited from support groups and they all identified as being transgender. However, they all had different gender identities/ expressions under the transgender umbrella. For example, one identified as female- to -male and was receiving hormone treatment, one identified as a being a full- time transsexual and had not started hormone treatment, and one identified as being a part-time transsexual and did not want to fully transition. This served to be a strength of the research because their varying gender identities/ positions/ expressions ensured that the research was inclusive of all gender identities/ positions/ expressions within the transgender umbrella term.

Participants

Sample size. A total of 270 participants were recruited. Initially, I had planned to use structural equation modelling to analyse the results a priori. The sample size calculation I conducted for structural equation modeling, reported that I required a minimum number of 235 participants to give 80% power to detect an effect size (Cohen, 1988, 1992) of at least 0.2 (small to medium) to a 0.05 alpha level. The effect size used was based on previous literature in sexual minority women, where researchers assessed similar pathways to the minority stress model. The smallest pathway in their model had an effect size of 0.2 (Lehavot & Simoni, 2011). Given the complexity of my a priori proposed model, and the number of latent variables, the desired sample size was 716 participants (Westland, 2010).

Consequently, within my research I used multiple regression, PROCESS, and correlations as well as structural equation modeling, to answer my research questions and test my hypotheses (See Data Analysis section for my rationale). Consequently, I required more participants for using multiple linear regressions. I conducted separate multiple regressions to test the different hypotheses. The largest multiple regression analysis contained four predictor variables. The sample size calculation I conducted, stated that for this number of predictor variables, I required 400 participants to give 80% power to detect an effect size

of at least 0.03 (small effect size). This effect size was based on previous research in transgender people, in which the authors tested the hypotheses of the minority stress model (Bockting et al., 2012). The smallest R^2 found in their study had an effect size of 0.03 (small effect size).

Recruitment. Emails were sent to transgender forums and all the transgender support groups on Gender Identity Research and Education Society (GIREs) website, to advertise the study (See Appendix G for email). Posters and a social media adverts were included within emails, with a link to the online research (See Appendix H for Poster; Appendix I for social media advert). I also attended Sparkle, a national transgender event, and handed out 250 leaflets, advertising the research, to those who attended.

A snowballing technique was also used to maximise recruitment, which was used in previous research in people who identified as transgender (McNeil et al., 2013; Pinto, Melendez, & Spector, 2008). At the end of the online survey, participants received a message asking them to send the link to others: "If you know other people who may want to take part in this survey please email them this link".

To compensate participants for participating in the research they had the option of leaving their email address in order to be entered into a prize draw to win Amazon e-vouchers (see Budget section). This idea was agreed by the steering group. They said that enabling people to leave their email address would be less invasive. Also, that it would enable people who identified as transgender to continue to maintain their private identities.

Non-completion rates. The Bristol Online survey platform (discussed further in Data collection section) has a respondent progress section that enables researchers to determine the number of participants that have dropped out of the research at different stages.

In total, 1342 participants discontinued the online survey at different stages. The majority of participants discontinued the survey at the informed consent stage ($n=1168$; 87%). The individuals who discontinued at this stage may not have been eligible to undertake the survey, or may simply have made an informed choice to not participate in the survey.

Overall, 174 (39%) participants who consented to do the research did not complete the survey. The Bristol Online survey (BOS) states that surveys that

experience high dropout rates tend to be have very long pages, a large number of questions, and have complex questions (BOS, nd). This may explain why my research experienced high dropout rates.

Another possible explanation for why there were non-completers may be due to issues of confidentiality and privacy regarding the participants' transgender identity. Although, every effort was made to protect this and reassure potential participants (e.g., data was anonymised, there was a section on the information sheet informing participants about privacy and confidentiality, and participants had the option to leave their email for a prize draw), the Office for National Statistics (2009) reported that in a poll, 55% of transsexuals stated that they would refuse to answer questions that may lead to their gender identity history being disclosed,

Furthermore, participants may not have completed the survey due to the assessment burden of the design. Participants were required to complete multiple questionnaires. This may have led to fatigue causing participants to discontinue participation. I informed participants that the survey would take 15-20 minutes to complete on the information sheet. This estimation was based on an initial piloting of the survey undertaken by three volunteers. Unfortunately, BOS does not supply the lengths of time it took participants to complete the survey to enable me to work out an average completion time. Although response fatigue may have contributed to survey non-completion, steps were taken to check and minimise the burdensomeness of the survey when planning the study: I consulted my steering group when designing the survey, and they advised that the number and length of questionnaires was appropriate.

There may also be other factors as to why people did not complete the survey (e.g. interruptions, restricted time, computer or network errors), however BOS does not record responses as to why people dropped out at the various stages (i.e. informed consent stage or when completing the questionnaires).

Inclusion/ exclusion Criteria. The inclusion criteria were that people had to identify as being transgender under the transgender umbrella term. The rationale for this was because I did not want to recruit people with gender dysphoria, who may not be in the process of identifying as transgender. Also recruiting all different gender identities under the transgender umbrella term aimed to address the gaps in research on these different gender identities, as

previously noted. As well as maximise recruitment. In addition, participants had to be aged 18 years and older. This was because I felt it would be difficult to accurately monitor if adult consent had been agreed for individuals aged 16 or 17 years old who may lack capacity, which is a requirement of the Mental Capacity Act 2005. Both criteria had to be agreed before participants could commence the research.

However, due to the weakness of online research, it was difficult to assess if all participants met the criteria above. People could have falsified the information. Therefore, I ensured that I sent the advertising emails, for this research, to transgender support groups and forums designed for adults.

Measures

Eight measures were administered to the participants to assess the variables within the minority stress model. They were the: Perceived Stress Scale (PSS; Cohen, Karmarck & Mermelstein, 1983); adapted Daily Heterosexist Experience Questionnaire subscales (DHEQ; Balsam, Beadnell & Molina, 2013); adapted Stigma Consciousness Questionnaire (SCS; Pinel, 1999); adapted Concealment scale (Plöderl, Sellmeier, Fartacek, Pichler, Fartacek & Kralovec, 2013); I developed a scale for minority identity characteristics; Depression Anxiety Stress Scale-21 (DASS-21); Ways of Coping scale (Revised) (WC-R; Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986); and the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet & Farley, 1988). Permission was sought from the authors to use and adapt their scales. All the measures were self-reports, which is consistent with previous cross-sectional studies examining the minority stress model.

Perceived stress scale (PSS). The PSS was used to assess for general stressors. The scale assesses the degree to which individuals appraise situations in their life as stressful (e.g. "In the last month, how often have you felt that things were going your way"). It is a 14-item self-report measure and respondents rate the statements on a 5-point scale. For example, high scores mean an individual appraises situations as stressful. This measure was initially selected because it was reported to correlate with life event scores (Cohen,

Karmarck & Mermelstein, 1983). This scale is also based on an individual's appraisal of events as being stressful events. The scale has been found to have good reliability, internal consistency (ranged from $\alpha = 0.84-0.86$) and adequate validity (Cohen, Karmarck & Mermelstein, 1983). In this study, it was shown to have high reliability ($\alpha = .907$). However, the scale was subsequently removed from the analysis. This was because, in discussions with NM, this measure did not appear to be measuring the general stress processes as stated by the minority stress model, such as employment, relationships, finance etc. but rather the participant's perception of their current stress level. Instead, it was performing similarly to the outcome measure of stress on the DASS. Thus was removed.

Adapted Daily Heterosexist Experience Questionnaire (DHEQ). The DHEQ was the closest and only universal measure that measured minority stress in LGBT populations. Even though it was a measure designed to be used in LGBT populations, some of the items were adapted by the steering group (e.g. adapted the language) so it was more assessable and inclusive to transgender people (See Appendix J adapted DHEQ). In this scale, respondents are required to rate how much a problem distressed them in the past 12 months on a 6-point scale (e.g. "Being harassed in public because of your gender identity"). The scale consists of 9 subscales (vigilance, harassment and discrimination, gender expression, victimization, vicarious trauma, isolation, HIV/AIDS, parenting, family of origin). Only four were used in my study, because the other subscales did not relate to the minority stress model.

Harassment, discrimination, victimisation and vicarious trauma were used in my study to represent distal stress. The subscale, vigilance was used to represent the proximal stress.

Balsam, Beadnell and Molina (2013) reported good overall internal consistency on the DHEQ ($\alpha = .92$) and good internal reliability on each of the subscales (Cronbach's alpha's ranging from $\alpha = .76-.87$). In addition, the authors reported acceptable validity. Within this research, the internal consistencies for the subscales were in line with the authors Cronbach's alpha's ($\alpha = .85$).

Adapted stigma consciousness questionnaire (SCS). The proximal stress process of internalised stigma was assessed by the SCS. Originally the Internalised Homonegativity scale (Ross & Rosser, 1996) was going to be used

and adapted. However, internalised homophobia is not applicable to the transgender community. More recently though, Bockting (2015) reported that contrary to my original argument, internalised transphobia is analogous to internalised homophobia. But, there is little empirical evidence on internalised transphobia (Bockting, 2015) nor are there any measures. I took the stance of measuring internalised stigma, a term I have used throughout this paper, using a widely known scale that has been used in many groups (SCS). For example, it has been used in women, gay and lesbian populations (Pinel, 1999). In addition, it has been used in studies with transgender people (e.g. Bockting et al., 2013; Kelleher, 2009). Also the SCS ($\alpha=.81$) has better internal consistency than the Internalised Homonegativity scale ($\alpha=.70$). The SCS was adapted and three items were added to ensure it was applicable to transgender people (See Appendix K for adapted SCS). Within this study the SCS had good internal consistency ($\alpha=.83$).

Adapted concealment scale. Concealment was assessed using the disclosure of sexual orientation scale because there was no measure in the literature for transgender people readily available (Plöderl, Sellmeier, Fartacek, Pichler, Fartacek & Kralovec, 2013). The authors developed this scale for their research to compare suicide models with the minority stress model in sexual minorities. Thus, highlighting the lack of measures overall on concealment in the literature. Although it was not designed to be used in transgender people, it was used and adapted in this study (See Appendix L for adapted concealment measure). The internal consistency for this adapted scale in this research was acceptable ($\alpha=.747$).

Conversely, high scores on this scale meant that individuals were less likely to conceal their transgender identity, whereas low scores meant they would hide their identity from others. Therefore, to aid with analysis and interpretations of the results, scores were reversed so higher concealment scores meant that individuals were more likely to conceal their identity.

Minority Identity characteristics. Within the literature on transgender and sexual minorities, there were no scales that assessed minority identity characteristics, which encompassed the factors of prominence, valence and integration, as proposed by the minority stress model. Therefore a scale was developed (See Appendix M for minority identity characteristics).

Scale research. I researched scales in the sexual minorities' literature that could be potentially used. I also expanded this search into the ethnic minorities literature. I found two scales that could have been used: the Lesbian Gay and Bisexual scale (LGBIS; Mohr & Kendra, 2012); and the Multigroup ethnic identity measure (MEIM; Phinney, 1992). The LGBIS consisted of a number of subscales. At face value, the subscales of: identity superiority; identity centrality; acceptance concerns; and identity affirmation, appeared to relate more to prominence of identity and integration. Unfortunately there was no subscale that related to valence. On the other hand, the MEIM focused more on valence and integration of identity (e.g. affirmation and belonging and ethnic self-identification). It was decided (myself and MR) that we would develop a scale, using these scales for assistance.

Scale development. My supervisor (MR) and I developed five items for each of the minority identity characteristics as defined by Meyer (2003), guided by the by the MEIM and LGBIS. The aim was to have three items for each of the characteristics, thus having a scale of 9 items, on a 5 point likert scale (strongly agree to strongly disagree). These items were presented to the steering group. Some items were reworded to ensure they were sensitive and captured the experiences of transgender people. The steering group selected their top three statements that they believed fit with their experiences and also mapped on to the definitions of those characteristics. The top three statements for each were selected and presented as the final questionnaire. Discussions were held with the steering group on the questionnaire and face validity was sought (See Appendix O for final minority identity characteristics questionnaire). The final scale was found to have acceptable internal consistency ($\alpha=.75$). The subscale valence also had acceptable internal consistency ($\alpha=.78$). On the other hand, the subscale prominence just met the recommended level of internal consistency for a self-report ($\alpha=.639$) (Nunnally & Bernstein, 1994). Whereas the internal consistency for the subscale integration was poor ($\alpha=.232$). This was concerning and would present a considerable problem in the analysis. Therefore this variable was not included in the analysis.

Ways of Coping scale (Revised) (WC-R). The WC-R assesses an individual's coping style. It was used in this study because it had previously been used in research in transgender people (Budge, Adelson & Howard,

2013). It is a 66-item self-report scale and respondents rate how often they use a list of coping strategies, on a 4-point scale, in the past week. The scores yield eight coping styles (accepting responsibility, distancing, self-controlling, escape-avoidance, seeking social support, confrontive coping, planful problem-solving and positive reappraisal). The first four strategies are viewed as negative (passive) coping styles and the latter four strategies are positive (active) coping styles. For example, active coping is more effective in reducing the impacts of depression in those dealing with perceived racial discrimination (Noh & Kaspar, 2003). Whereas passive coping is related to adverse mental health outcomes in those with chronic medical conditions (Bardwell, Ancoli-Isreal, & Dimsdale 2001; Snow-Turek, Norris, & Tan 1996). Participants scores were therefore dichotomised into passive and active coping. Both these types of coping was used because the model does not stipulate the types of coping that moderate the effects of mental health.

This scale has good internal reliability (alpha's ranges from $\alpha=.61-.79$)(Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986). Surprisingly, within this study it yielded excellent internal reliability ($\alpha=.912$), also when dichotomised into active ($\alpha=.90$) and passive coping ($\alpha=.867$).

Multidimensional Scale of Perceived Social Support (MSPSS).

MSPSS assesses an individual's sources of social support. It is a 12-item self-report scale, where respondents rate how they feel about statements on a 7-point scale. Scores yield the sources of social support an individual has available to them. This scale was used because it has previously been used in research on transgender people assessing coping and social support (Budge, Adelson & Howard, 2013). Also unlike other scales assessing social support, it views social support across three different domains (significant others, family and friends). In addition, the scale has good internal reliability (alphas range from $\alpha=0.81-0.98$ for the subscales) and validity (Zimet, Powell, Farley, Werkman & Berkoff, 1990). This good internal reliability was highlighted in the current study ($\alpha=0.873$).

Depression Anxiety Stress Scale-21 (DASS-21). The DASS-21 is a short form of the DASS, which consists of 42 items. This scale assesses negative emotional states on three subscales (depression, anxiety and stress). The DASS-21 is a 21-item self-report scale and respondents are asked to rate

the extent to which they have experienced each item over the past week on a 4-point severity scale. Individual scores are derived for each subscale.

This scale has good internal consistency on each of the subscales ($\alpha=0.88$ for depression, $\alpha=0.82$ for anxiety, $\alpha=0.9$ for stress, and $\alpha=0.93$ for the total scale) (Henry & Crawford, 2005). It also has good convergent and discriminate validity (Henry & Crawford, 2005). This is why this measure was used.

Another reason for why I selected this scale was because the short version of the DASS yields similar scores to the full length version but takes half the time to administer (Henry & Crawford, 2005). Also, in comparison to other measures that assess both anxiety and depression, such as the Hospital Anxiety and Depression Scale (HADS) and the Brief Symptom Inventory-18 (BSI-18), the DASS-21 yields scores for stress as well. Lastly, it has higher internal consistency (Cronbach's alpha for HADS were between 0.76 and 0.80 for the subscales and for the BSI-18 they ranged from 0.74-0.84 for the subscales) (Asner-Self, Schreiber & Marotta, 2006; Mykletun, Stordal & Dahl, 2001). In this study the Cronbach alpha's were high (DASS-21, $\alpha=.947$; Depression subscale, $\alpha=0.924$; Anxiety subscale, $\alpha=.848$; Stress subscale, $\alpha=.875$).

Procedure

As previously mentioned, an online survey method was used. This was to ensure that I would recruit the desired number of participants. In addition, previous researchers in this area have used online surveys to recruit over 300 transgender participants for their research (Bocking et al., 2013; & Budge, Adelson & Howard, 2013; McNeil et al., 2013).

All participants received an information sheet and a consent form. They then had to complete a demographic sheet, which used similar questions from McNeil et al. (2012) study, to provide additional data on the research population to aid the analysis (See Appendix N for the Demographic sheet). Participants were then encouraged to complete all the measures (outlined in the measure section), which were administered in the same order for all participants (e.g. PSS; DHEQ; SCS; adapted concealment scale; minority identity characteristics;

DASS-21; MSPSS and WC-R) to ensure consistency. At the end of the survey participants had the choice to elaborate on their responses within the survey. They were then debriefed and given the chance to leave their email details for the prize draw.

Data Collection

Data was collected online via the Bristol Online Survey platform (BOS). This was because of the admirable security settings. For example, it stored data securely and had encryption settings. In addition, settings could be incorporated to ensure that participants answered all the required questions to reduce the volume of missing data.

Data collected from the questionnaires were stored on the online survey platform. They were then exported into Microsoft Excel. Unfortunately, BOS was unable to store the data from those who dropped out of the survey at the different stages. This presented an ethical dilemma because participants that had spent time completing part of the survey but subsequently dropped out, data were not saved by BOS and therefore lost and not used.

The online survey launched for six months (28th June 2015-28th December 2015) to ensure maximum participation.

Research budget

The overall research budget was £500. The total expenditure for the project was £354.16. A breakdown of the expenditure is shown below in Table 6.

Table 6. Breakdown of expenditure

Item	Description	Cost
Consultant	Payment for the consultant came from the University of Nottingham, Trent Doctorate in Clinical Psychology course budget because they were a SUCAP member.	£0
Steering group	Each participant was paid £15 per hour.	£150
Sparkle event	Petrol and parking. Leaflet printing costs.	£69.16
Participant	Ten prizes were rewarded to ten participants. The prizes were Amazon e-vouchers of the following amounts: <ul style="list-style-type: none"> • Two x £20 • Three x £15 • Five x £10 	£135

Extended Data analysis

The data gathered from the BOS online survey was transferred into Microsoft Excel. This enabled scores from each questionnaire to be calculated and scores for each participant to be generated for each construct. This data was then analysed (i.e. I tested for possible violations to the statistical tests assumptions and examined the internal reliabilities of measures) in Statistical Package for Social Sciences (SPSS version 22).

Although I was going to originally analyse the results using structural equation modelling (SEM), the PROCESS procedure (PROCESS v2.15; Hayes, 2013) in SPSS was used instead. This is a regression based analysis method. The rationale for this was because there were difficulties with the convergence of the model in the Analysis of Moment Structures programme (AMOS version 20), a software package used for SEM. There were considerable difficulties with analysing the moderating relationships. These difficulties of modelling moderating and mediating effects in structural equation modelling programmes (i.e. AMOS and Mplus) have been noted by researchers. It has been stated that such programmes require specialised programming skills and codes that are tailored to the data set, which is labour intensive and requires highly skilled statisticians (Hayes, 2012). In addition to this, they are reported to be limited in the moderation and mediation analyses they can offer (Hayes, 2012). Conversely, the PROCESS procedure is simple to use and eliminates the need for researchers to familiarise themselves with different software packages (Hayes, 2012). PROCESS encompasses a total of 76 different mediation and moderation models that can be used to analyse data, which is more than what other current programmes offer. However, the PROCESS tool could not test all the hypotheses in this research, for example, '*Minority stressors (e.g. proximal and distal stressors) will be associated with increased levels of psychological distress*'. Therefore, multiple regression analysis were also used to analyse the data.

As mentioned previously, SEM was not used in the main data analysis but was used to address one of the objectives of this research, which was to offer an alternative model.

Multiple regression and PROCESS procedure

Multiple regression is a multivariate statistical general linear modelling technique, which specifies linear relationships among variables. It is an extension of linear regression, which is a technique that enables you to see how two variables relate (predictor variable and criterion variable), e.g. enables you to predict y (*criterion variable*) from x (*predictor*). With the extension being that multiple regression enables you to find out how several predictor variables are related to the criterion variable. It enables you to assess the combined effects of the predictor variables on the criterion variable, as well as assess if each variable separately relates to the criterion variable. The rationale for using this technique was because this research was interested in relationships between variables but in terms of whether we can predict the relationship between variables, which a correlation analysis would not enable.

There are different methods for multiple regression, such as hierarchical regression, forced entry and stepwise regression. However these methods were not used. Variables were entered in the analysis depending on which hypothesis was being tested by the research. Hierarchical regression, which was used in Bockting et al. (2013) research, is when predictor variables are entered into the model in order, driven by the theory and their importance. Once known predictors are entered into the regression model researchers then proceed to add in any new predictors into the model. Conversely, in forced entry regression analysis all variables tested are entered simultaneously into the model. Whereas the stepwise method is based purely on mathematical equations by the computer programme. The order and the choice of the predictor variables are selected by the computer based on this mathematical equation rather than the researcher. This method enables the selection of predictor variables to be randomised but is not theory driven. All these methods enable model testing but do not test for moderation and mediation relationships.

PROCESS procedure. As mentioned previously, this enabled the moderation and mediation relationships to be analysed. Although this program was easy to use, it did not include any model templates that enabled me to test the whole model with all its interacting relationships, which was also a problem with the SEM programmes. However simple moderation and mediation templates were used to assess these relationships, which unfortunately increased the chances of Type 1 errors but the alpha levels were adjusted to

accommodate this. Another limitation, in comparison to SEM, is that PROCESS does not enable you to do analysis on latent variables (variables which cannot be directly measured) but only on measured variables. Therefore it does not take into account measurement error. However, error (measurement and residual) remains to be a problem of all analysis techniques.

Lastly another advantage of using PROCESS was that it uses the Sobel test to test the significance of mediation during the analysis. This test increased my confidence as a researcher that the mediation relationships found were significant.

Structural equation modelling (SEM)

SEM, also called simultaneous equation modelling, is a multivariate analysis technique. It is used for testing hypotheses about the relationships among measured variables (MV; variables directly measured) and latent variables (LV; variables which cannot be directly measured) (Hoyle, 1995).

Similar to other multivariate statistical general linear modelling techniques (such as ANOVA, multiple regression analysis), SEM is used for specifying and estimating linear relationships among variables. However, there are notable advantages of using SEM over these techniques. For example, it measures both MV and LV whereas other multivariate techniques only measure variables that can be directly observed (Byrne, 2001; Lei & Wu, 2007). It provides estimates of the error variance parameters for both errors in measures and also errors accounted for by other possible variables not measured (known as residual errors) rather than ignoring them (Byrne, 2001). It is also capable of modelling multivariate relationships by estimating direct and indirect effects of variables being examined, as well as testing whether theoretical models fit the data (Byrne, 2001). Lastly, SEM takes a confirmatory approach in which relationships amongst variables are specified a priori. The advantages of SEM are that it enables researchers to recognise the imperfect nature of their measures. It can also handle difficult data such as data that is not normally distributed and incomplete data. Unfortunately like other multivariate techniques based on general linear models, it cannot infer causality. Relationships amongst

variables are hypothesised and results can only be determined by the soundness of the underlying theory (Weston & Gore, 2006).

The use of SEM in research in psychology, and other related disciplines has increased since it was first conceived by Wright (1918) (Khine, 2013; MacCallum & Austin, 2000; Treblay and Gardner, 1996). This is not surprising given its notable advantages over other multivariate techniques. However, the recent increase is thought to be due to advances in software development, where computer programmes can now test model fit and parameter estimates simultaneously, which has increased its accessibility (Khine, 2013; MacCallum & Austin, 2000). Unfortunately, advancements are still needed in the software in order to enable complex moderation and mediation models to be tested. Hence, why this research did not use this technique to test the minority stress model.

However, like all analysis techniques, there are limitations to using SEM. One of which is the generalizability of findings. It has been proposed that researchers using SEM must recognise results are subjected to sampling or selection effects (Nesselroade, 1991). Within this research, measures were adapted (one was created), which will undoubtedly impact on the generalizability of the results. However, having an awareness of this limitation helps to prevent me from making such bold statements about the generalizability of my findings.

Confirmation bias is also a limitation of SEM. For example, if the data fits the model, researchers are less inclined to explore or test alternative models (MacCallum & Austin, 2000). This reduces the opportunity to find better models that could fit the data leading to no further, and potentially useful, knowledge from being explored.

In addition, Heywood cases (or iteration errors) like negative error variances and correlations exceeding the value of 1, during the modelling process, can cause considerable problems and dilemmas for the researcher (Nachtigall, Kroehne, Funke & Steyer, 2003). Unfortunately, this is more likely to be encountered by people new to SEM, resulting in vast time being spent in correcting and addressing these problems.

SEM terminology. SEM uses its own language. Independent variables, which are assumed to be measured without error, are called exogenous

variables. Dependent variables and mediating variables are called endogenous variables (see Hoyle, 1995; Weston & Gore, 2006). As previously mentioned, there are two types of variables that are examined in SEM, MV and LV.

Although LVs cannot be directly measured, they can be measured by MVs which represent approximate measures or indicators of the LV. LVs are also inferred by the relationship or correlations among MVs. It is recommended that three or more MVs are used to represent one LV (Bollen, 1989).

Within SEM, endogenous variables have error terms (also known as residual errors) which are LVs. These errors are incorporated within SEM to account for unaccounted variances that are not predicted by the exogenous variable (or mediating endogenous variable). MVs also have error terms associated with them to account for the errors in the measurement.

When SEM is presented pictorially, researchers represent MVs as rectangles (or square boxes) and LVs as ellipses (or circles). Single-headed arrows represent the impact of one variable on another, and double-headed arrows represent covariances.

Types of SEM. Teo, Tsai and Yang (2013) mention four types of SEM: confirmatory factor analysis (CFA); structural regression models; latent change models; and path analytic model. To summarise, CFA's are commonly used to examine the interrelationships among various constructs rather than assessing the specific direction of relationships. Structural regression models (or causal structural model, Byrne, 2001) build on CFA, but state specific relationships among constructs. They are used to test theories, in which proposed relationships between variables are specified. This type of SEM was used within this research. This was used to test and develop an alternative model in my research, in line with the research objectives. Latent change models on the other hand, are used to study change over time (i.e. longitudinal research), and path analytic models only focus on MVs. This can be seen as a weakness of path analytic models because it assumes that MVs, which each represent one construct, are accurate and free from error.

Within SEM, researchers present a structural and measurement model (Byrne, 2001; Hoyle, 1995; Teo, Tsai & Yang, 2013). The measurement model is similar to CFA model because it specifies and assesses the relationships between the MVs and LVs. Whereas structural models emphasise the

relationships between the constructs. In other words, it identifies the relationships among the LVs.

SEM procedure. Within the literature, there is considerable agreement that there are five steps involved in SEM (e.g. Hoyle, 1995; Lei & Wu, 2007; Teo, Tsai & Yang, 2013; Weston & Gore, 2006). These steps include model specification, model identification, model estimation, model evaluation and (possible) model modification. These are detailed below.

Model specification. This is when the proposed, theoretically based model, to be tested, is specified. This usually happens a priori (Teo, Tsai & Yang, 2013; Weston & Gore, 2006). This happened post hoc in this research because I was only using SEM to develop an alternative model, once I initially analysed my results via other statistical techniques.

Hypothesised relationships that exist and do not exist between variables are stated. The relationships between these variables are known as parameters (or paths). They can either be fixed, free or constrained (Hoyle, 1995; Teo, Tsai & Yang, 2013). Fixed parameters are not estimated from the observed data and are typically fixed at the value of one or zero. Whereas free parameters are observed from the data set and assumed to be non-zero. Constrained parameters, on the other hand, are parameters which are specified to be equal to a certain value or another parameter in the model (Teo, Tsai & Yang, 2013).

Within SEM, there are three types of free parameters that are required to be estimated: (a) directional effects (i.e. the relationship between the measured and latent variables and the path between the latent and other latent variables); (b) variances (i.e. error variances on observed variables or residual errors on endogenous variables and exogenous latent variables whose path loadings are fixed at 1.0); and (c) covariance's (i.e. represented by double-headed arrows and show non-directional relationships between exogenous variables) (Hoyle, 1995; Teo, Tsai & Yang, 201).

Model identification. This is a structural and mathematical requirement needed for SEM analysis to take place, which usually happens a priori (Teo, Tsai & Yang, 2013; Weston & Gore, 2006). This happened post hoc in this research because SEM was only used to develop an alternative model, which was dependant on my analysed data.

Models specified can either be just-identified, under-identified, or over-identified. To elaborate, just-identified models have one possible solution for each parameter and zero degrees of freedom so can never be rejected; under-identified models have an infinite number solution to each parameter; whereas over-identified models have more than one possible solution for each parameter and tend to have positive degrees of freedom. The latter (over-identified) is preferred because it enables statistical hypotheses to be tested such as global model fit (Loehlin, 1992).

Although a formula can be used to calculate the model identification, $[p(p+1)]/2$ where p represents the number of observed variables] (seen in Byrne, 2001; Hoyle, 1995; Teo, Tsai and Yang, 2013), statistical programmes such as AMOS calculates this for the researcher. It has been proposed that the greater the degrees of freedom, the more parsimonious the model (Weston & Gore, 2006). Ideally the model is specified and identified before the data collection.

Model estimation. This stage happens after data collection. This is when the estimates of the free parameters (and also the error associated with the estimated value) are obtained from the observed data (Hoyle, 1995; Weston & Gore, 2006). Within AMOS, standardised (standardised betas) and unstandardised (beta weights) output are generated for each of the free parameters.

Different types of methods can be used to generate estimates. However, tests of assumptions (i.e. multivariate normality) have to be conducted on the data first because some estimation tests rely on normally distributed data.

Assumptions of SEM. One of the main assumptions of SEM, discussed in the literature, is that the data must meet the assumption of multivariate and univariate normality (Byrne, 2001; Hoyle, 1995; Teo, Tsai and Yang, 2013; Weston & Gore, 2006). If violated, the accuracy of the statistical tests in SEM are said to be affected (Teo, Tsai and Yang, 2013). However, it has been reported that within practice this assumption is hardly ever met (Teo, Tsai and Yang, 2013). This can be tested by examining the skewness and kurtosis of the data and managed by deleting or transforming outliers (Weston & Gore, 2006).

Multicollinearity is another common assumption of SEM (Teo, Tsai and Yang, 2013; Weston & Gore, 2006). If violated this poses a problem for SEM

because the results of certain statistical tests maybe biased. Kline (2005) proposed that, variables that correlated with other variables higher than $r=.85$, should be excluded from the analysis.

Lastly, missing data is an assumption of SEM. However, it is reported that it only needs to be addressed if more than 10% of the data set is missing or if missing data occurs in non-random pattern (Hair, Black, Babin, Anderson & Tatham, 2006).

Method of estimation. The most widely used and robust method of estimation is the Maximum Likelihood (ML) estimation (Hox & Bechger, 1998; Teo, Tsai & Yang, 2013; Weston & Gore, 2006). It assumes that you have a reasonable sample size (e.g. $n=200$), and similar to the Generalised Least Squared (GLS) another estimation technique; it assumes that the data is normally distributed (Hoyle, 1995). An alternative estimation technique that has been suggested for non-normally distributed data is the Asymptotically Distribution Free (ADF) technique. However, it requires a large sample size (e.g. $n=500$ or more) in order to generate accurate estimates (Yuan & Bentler, 1998). On the other hand, Byrne (2001) reported that a bootstrap method could be used on non-normally distributed data. However, a limitation of this approach is that it can lead to misleading results. But setting the numbers of bootstraps to 500- 1000 (Byrne, 2001), reduces these problems.

Model evaluation. During this stage, researchers evaluate model fit by assessing: the significance and strength of estimated parameters; the variances accounted for in endogenous observed variables and latent variables; and how well the model fits the observed data (Weston & Gore, 2006).

This stage has been described as "one of the most unsettled and difficult issues connected with structural modelling" (Arbuckle, 2009, p. 583). As this is the stage where model fit is evaluated and researchers make the decision to reject or attain the hypothesised model (with the null hypothesis being that the model fits the data). This process is made considerably difficult as there are debates in the literature on which model fit statistics should be used and what statistical values constitutes to global model fit (MacCallum & Austin, 2000; Weston & Gore, 2006).

There are three different categories that determine model fit: (a) Absolute fit indices which determine how well a prior model fits the observed data; (b)

incremental fit indices which compares the chi-square value to the baseline model; and (c) parsimony fit indices which is used in saturated, complex models (Hooper, Coughlan, Mullen, 2008). Each of these categories have numerous statistical tests that could be used to assess model fit (e.g. Normed-fit index, comparative fit index etc.). More confusingly the tests can contradict each other (i.e. one accepts good model fit and one does not). In addition, each comes with limitations. For example, chi-square (χ^2) is a widely used goodness of fit test but is extremely sensitive to sample size (Hoyle, 1995; Lei & Wu, 2007).

To combat this difficulty, Hu and Bentler (1999) proposed a 2-index strategy. They proposed reporting the standardised root mean square (SRMR) along with one of the fit indices (for example, Normed-fit index, NFI; Comparative fit index, CFI; or root mean square error of approximation, RMSEA). They also recommended that the following criteria should be used as an indication of good model fit: RNI (or CFI) $\geq .95$, SRMR $\leq .08$, and RMSEA $\leq .06$. Hu and Bentler's (1999) 2-index strategy was used in this research. It is also recommended to report χ^2 and its degree of freedom (Hu and Bentler, 1999; Lei and Wu, 2007). For non-normal data, Bollen-Stine bootstrap option can be selected in AMOS, which is a modified bootstrap method for χ^2 (Byrne, 2001).

Model modification. Model modification (or re-specification) happens post hoc. It is done when researchers are interested in finding an alternative model to the original hypothesised model that has subsequently been rejected, in the evaluation stage. It is rare that the proposed model fits the data well, so modifications are needed (Weston & Gore). However, similar to the debate on post hoc comparisons in ANOVA, this is a controversial topic in SEM (Hoyle, 1995).

Modifications to the model have to be conducted carefully as it increases the chance of making Type I errors (Teo, Tsai & Yang, 2013). In addition, modifications should be supported by theory (Hox & Bechger, 1998; Teo, Tsai & Yang, 2013; Weston & Gore, 2006). This is because extensive modifications can lead to data-driven models which may not generalise across samples (Green, Thompson, & Babyak, 1998).

Model modification involves 'freeing' or 'drawing' parameters between variables. Modifications are often aided by modification indices, in conjunction with the expected parameter change statistics (Byrne, 2001; Lei & Wu, 2007). The modification index estimates the magnitude of decrease in the models chi-square statistic. A large modification index suggests that a large improvement would be made to the models chi-square. Within a structural model, the regression weights (in the modified indexes) are changed if it results in an improvement in the models chi-square (Byrne, 2001). These suggested changes lead to additional paths being drawn between the variables with large modification indexes. In addition, researchers can assess for non-significant parameters in the Maximum Likelihood estimates (Byrne, 2001). These changes result in parameters between variables being deleted.

Unfortunately, sometimes model modifications can fail to find the correct model (Spirtes, Scheines & Glymour, 1991). Due to this, some authors have recommended an alternative strategy to modifying models. This includes using multiple a-priori models and cross-validating them on different samples (Cudeck & Henley, 1991; MacCallum, Roznowski & Necowitz, 1992).

Extended Results

A power analysis was conducted, using G- Power (version 3.0.10), for a sample size of 270 and a small effect size (calculated using Cohen f^2 , and the smallest R^2 relationship, $f^2=0.09$). The power was found to be .96, thus showing that this study has a considerable amount of power in detecting a small effect size.

The alpha criterion was adjusted to account for multiple testing. The alpha level was adjusted using Bonferroni correction for each of the hypothesis tested to reduce the chance of false positives (Type I errors).

Assumptions

As discussed previously, I originally planned to use SEM to analyse the results. So the results were screened using the assumptions relevant to SEM. However, multiple regressions were predominantly used. The rationale for using this technique was discussed in the Data Analysis section. Comparatively, the assumptions were the same for each of these techniques. But within multiple regression an additional assumption had to be met. This was that the predictor variables were required to be linearly related to the criterion variable (Dancey & Reidy, 2004).

Normality tests (multivariate and univariate). A Z-test was used to test for univariate normality for each of the independent variables. A Z-value was calculated by the skewness of the data (the skew value and standard error of the skewness). A value of over 3.29 was used to reject the null hypothesis at $\alpha=.05$ and conclude that the data were non-normal (Kim, 2013).

It was observed that the following variables were not normally distributed: Distal; integration; valence; and active coping. Due to this assumption being violated on these variables, outliers were examined. Values greater than +/-3.29 standard deviations from the mean were transformed in line with 3.29 standard deviations from the mean. There were only outliers noted on the following variables: Distal ($n = 6$); Integration ($n=1$); Active coping ($n=2$), which were all transformed. Subsequently, valence was still none normally distributed. So this assumption was violated. Therefore, the application of traditional parametric analyses on this data was thus potentially inappropriate, suggesting a need to

consider alternative approaches that do not make the same distributional assumptions. One consideration was to Bootstrap the samples to ensure the data were adjusted in light of this violation. Fortunately, in also using PROCESS to analyse my data, the software automatically makes adjustments in light of potential violations. For example, 1000 bootstraps are automatically performed and the data was mean centred.

Outliers. Multivariate outliers were also examined. I used Mahalanobis D^2 in SPSS to examine these. It identified one case (Client ID- 74) that contained outliers. Given the options to either recode or delete the data (Weston & Gore, 2006), the scores in this case was subsequently recoded in line of three standard deviations of the mean.

Multicollinearity. Bivariate correlations were conducted in SPSS on all the independent variables (including moderators/ mediator variables) within the model. The value of $r=0.85$ was used because research has suggested that values over $r=0.85$ signal problems (Kline, 2005). The assumption of multicollinearity was met. None of the independent variables were highly correlated with each other.

Missing data. No data was missing from the data set. This was because I controlled for this on the BOS online survey. Participants were reminded to complete all responses on the measures. They were unable to move onto the next measure until all responses were completed.

Linear relationship between the predictor variable and criterion variable. This assumption was met by the majority of variables. When this assumption was violated, variables were not included in the analysis.

Hypothesis one - 'Minority stressors (e.g. proximal and distal stress processes) will increase levels of distress'.

Separate linear regression models were constructed for each of the three mental health outcome variables (distress, anxiety, and stress). In each model, the dependent variables were regressed onto the four variables representing minority stressors (one distal variable and three variables gauging proximal stress: vigilance, internalised stigma, and concealment). In all models, the four explanatory ('predictor') variables were entered together in a single-step. 1000

bootstrap samples were performed on the data. The alpha criterion was adjusted to .017 given that three linear regression analysis were performed (i.e. $0.05/3$).

Depression. In combination, the distal and (three) proximal stress variables accounted for 25% of the variance in depression. Of these predictor variables (which together account for a quarter of the variance in depression) internalised stigma emerged as having a significant independent relationship with depression. The other individual predictors may still be adding to the overall model but have not emerged as significant after taking into account shared variances with each other. IS had a moderate relationship of .31 with the outcome, but the variables as a whole had a strong relationship with the outcome variables of around ($R=.46$).

Anxiety. In combination, the distal and (three) proximal stress variables accounted for 29% of the variance in anxiety. Of these predictor variables (which together account for a quarter of the variance in anxiety), distal stressor, internalised stigma ($p=.016$) and vigilance emerged as having a significant combined relationship with anxiety. Concealment may still be adding to the overall model but did not emerge as significant, after taking into account shared variances with the other variables.

Distal stressor, internalised stigma and vigilance all showed positive relationships with anxiety (i.e. those reporting greater vigilance, internalised stigma, or distal stressor tended to report higher levels of anxiety). The standardised regression coefficients showed that vigilance was the strongest predictor in comparison to the other variables.

Stress. 26% of the variance of stress was accounted for by the predictor variables in combination (distal stressor and the three proximal stressors). However of these predictor variables (which together account for a quarter of the variance in stress); internalised stigma and vigilance emerged as having a significant combined relationship with stress. Distal stress and concealment may still be adding to the overall model but did not emerge as significant, after taking into account shared variances with the other variables.

Internalised stigma and vigilance showed positive relationships with stress (i.e. those reporting greater vigilance and internalised stigma tended to report higher levels of stress). The standardised regression coefficients showed

that vigilance was the strongest predictor in comparison to internalised stigma (see Table 5 in journal paper).

Hypothesis two - 'Minority stress processes (proximal, distal) and general stress processes are interdependent and thus should highly correlate with each other'.

The substantive claim in this hypothesis was not testable due to the questionable capture of 'general stressors' in the design. The PSS (used to measure perceived stress) was excluded from the analysis. The rationale for this is stated in the methodology section. To summarise, the critique of this measure was that perceived stress was inadvertently likely to be a product of minority stress as well as an indicator/product of general stressors, thus leading to artificial inflation of the apparent association between minority versus general variables.

In terms of the stressors (distal and three proximal stressors), results are displayed in Table. 4. Significant correlations were found between the predictor variables (distal and three proximal stressors) but this was not true for the correlation between the distal stressor and the proximal stressor of concealment.

These correlations varied from moderate to strong relationships, with only concealment and vigilance showing a strong correlation ($r=.63$, $p<.001$). All significant correlations demonstrated a positive relationship (i.e. when one variable increases the other variable increases as well).

Hypothesis three: 'prominence in identity will moderate the relationship between the proximal stress process and psychological distress, and thus increase psychological distress'.

I planned to do a moderation regression analysis using the PROCESS plugin tool in SPSS. However, the variable prominence showed no statistically

significant linear relationships between any of the distress outcome variables (depression, anxiety, and stress) nor to the proximal outcome variables (internalised stigma, vigilance and concealment). Considering there were no relationships between these variables, it would be highly unlikely that prominence would perform as a moderator, in changing the strength and direction of these variables (predictor and explanatory variable) when it does not relate to them.

Hypothesis four: 'minority identity characteristics will be associated with social support and coping'

I planned to test this hypothesis using multiple linear regression. However, the substantive claim in this hypothesis was not testable. As previously mentioned, integration of identity was not included in the analysis due to poor reliability.

Three linear regression analysis were conducted on the predictor variable on the three different explanatory variables (active coping, passive coping and stress). Passive coping was included in the analysis because the minority stress model does not explicitly differentiate between the two different coping styles. Also, one can assume that if the above hypothesis is true, there should to be an inverse relationship between minority identity characteristics or valence, in this case, and passive coping. The alpha criterion was adjusted to 0.017 (i.e. $0.05/3$). 1000 bootstrap samples were performed on the data.

Only a significant relationship was found between valence and social support at the adjusted alpha criterion ($F(1,268)=10.53$, $p=0.001$). Valence accounted for 4% of the variance of social support. Valence had a regression coefficient of .09, thus for every one unit increase in valence, social support increases by .09. Even though the relationship between valence and passive coping ($F(1,268)=4.68$, $p=.03$); and valence and active coping ($F(1,268)=5.12$, $p=.002$) were possibly significant at an alpha criterion of .05, there was a good chance that they were false positives.

Hypothesis five: 'Coping and social support will moderate the impact of stressors on distress. It will ameliorate the impact of stressors on distress'.

Multiple moderation regression analyses were conducted using the PROCESS plugin tool in SPSS. The analysis was performed on the distal and proximal stressors (internalised stigma, vigilance and concealment) and the different outcomes variables in turn (depression, anxiety and stress). Model 1 and Model 2 (multiple moderations) in the PROCESS tool, were used to test the moderating effects of social support and coping (passive and active coping). The two variables of coping were entered into Model 2 rather than conducting separate moderations (i.e. Model 1). This was to reduce loss due to Bonferroni corrections. The alpha criterion was adjusted to .002 to account for multiple testing ($0.05/24$). The results are shown in Table 7, Table 8 and Table 9. No significant moderation effects were found. The above hypothesis was therefore not supported.

Table 7. Moderation effects of the predictor and moderation variables on depression.

PROCESS model	Criterion	Predictors	Mod.	Beta	Se	t	LLCI	ULCI
Model 2	Dep	Distal		.13	.05	2.64*	.03	.23
			ACT	-.002	.004	-.58	-.01	.01
			PASS	.004	.003	-1.13	-.01	.003
Model 1	Dep	Distal		.21	.05	4.51***	.12	.30
			SS	.03	.03	.93	-.03	.10
Model 2	Dep	IS		.29	.05	5.85***	.19	.38
			ACT	-.001	.003	-.35	-.01	.01
			PASS	.01	.003	1.87	-.00	.01
Model 1	Dep	IS		.34	.05	6.52***	.23	.44
			SS	-.01	.03	-.25	-.08	.06
Model 2	Dep	Vig		.22	.10	.03*	.03	.04
			ACT	-.001	.01	-.23	-.01	.01
			PASS	.01	.01	.95	-.01	.02
Model 1	Dep	Vig		.47	.09	5.00***	.29	.66
			SS	-.02	.06	-.29	-.13	.10
Model 2	Dep	Con		.13	.18	.69	-.23	.49
			ACT	-.03	.01	-1.78	-.06	.002
			PASS	.01	.02	.48	-.02	.04
Model 1	Dep	Con		.46	.18	2.63*	.12	.83
			SS	.02	.13	.17	-.23	.27

*** $p < .001$, ** $p < .01$, * $p < .05$

Note: Dep= Depression, Vig= Vigilance, IS= Internalised stigma, Con= Concealment, Mod= moderation

Table 8. Moderation effects of the predictor and moderation variables on anxiety.

PROCESS model	Criterion	Predictors	Mod.	Beta	se	t	LLCI	ULCI
Model 2	Anx	Distal		.15	.04	4.24***	.08	.23
			ACT	-.003	.003	-.97	-.01	.003
			PASS	.001	.002	.41	-.004	.01
Model 1	Anx	Distal		.024	.04	6.44***	.17	.31
			SS	.03	.03	1.00	-.03	.08
Model 2	Anx	IS		.18	.04	4.21***	.10	.27
			ACT	.001	.002	.36	-.004	.01
			PASS	.01	.003	1.79	-.001	.01
Model 1	Anx	IS		.25	.05	5.42***	.16	.34
			SS	.01	.04	.14	-.07	.08
Model 2	Anx	Vig		.23	.08	3.55***	.13	.46
			ACT	.01	.01	1.11	-.004	.02
			PASS	.01	.01	1.36	-.004	.02
Model 1	Anx	Vig		.53	.08	6.34***	.37	.70
			SS					
Model 2	Anx	Con		.17	.15	1.14	-.12	.47
			ACT	.01	.01	1.10	-.01	.04
			PASS	.01	.01	.35	-.02	.03
Model 1	Anx	Con		.47	.16	2.94**	.16	.79
			SS	.05	.13	.42	-.20	.31

*** $p < .001$, ** $p < .01$, * $p < .05$

Note: Anx= Anxiety, Vig= Vigilance, IS= Internalised stigma, Con= Concealment, Mod= moderation

Table 9. Moderation effects of the predictor and moderation variables on stress.

PROCESS model	Criterion	Predictors	Mod.	Beta	Se	t	LLCI	ULCI
Model 2	Stress	Distal		.05	.04	1.33	-.03	.13
			ACT	.001	.004	.48	-.01	.01
			PASS	-.01	.003	-1.50	-.01	.001
Model 1	Stress	Distal		.15	.04	3.71***	.07	.23
			SS	.05	.03	1.48	-.02	.11
Model 2	Stress	IS		.21	.04	4.80***	.13	.30
			ACT	.003	.002	1.15	-.002	.01
			PASS	.003	.003	.98	-.003	.01
Model 1	Stress	IS		.28	.04	6.31***	.19	.36
		IS	SS	.02	.03	.66	-.04	.09
Model 2	Stress	Vig		.32	.09	3.62***	.15	.50
			ACT	.01	.01	1.53	-.002	.02
			PASS	-.002	.01	-.29	-.02	.01
Model 1	Stress	Vig		.54	.08	6.69***	.38	.70
			SS	.06	.06	.98	-.06	.17
Model 2	Stress	Con		.26	.16	1.61	-.06	.57
			ACT	.003	.01	2.6	-.02	.03
			PASS	.001	.02	.05	-.03	.03
Model 1	Stress	Con		.54	.16	3.45***	.23	.85
			SS	.05	.11	.40	-.18	.27

*** $p < .001$, ** $p < .01$, * $p < .05$

Note: Vig= Vigilance, IS= Internalised stigma, Con= Concealment, Mod= moderation

Hypothesis six: ' coping and social support will mediate the relationship between internalised stigma and distress'.

Mediation regression analyses were performed using the PROCESS plugin tool in SPSS. Model 4 was used for each of the mediation tests. In total three mediation analysis were conducted on the data. The alpha criterion was adjusted to .017 (0.05/3) for multiple testing.

Passive coping. Passive coping was found to partially mediate the relationships between internalised stigma and the outcome variables. The Sobel test was performed and showed that these mediating relationships were significant. The mediating relationship between internalised stigma and depression was, $Z=3.85$, $p<.001$, $\kappa^2=.11$; the mediating relationship between internalised stigma and anxiety was, $Z=4.11$, $p<.001$; and the mediating relationship between internalised stigma and stress was, $Z=3.33$, $p<.001$, $\kappa^2=.08$.

Active coping. No significant mediating effect was found for active coping. No significant relationships were found between internalised stigma (predictor variable) and active coping (mediator), $F(1, 268)=.50$, $p=ns$, $R^2=.00$. Therefore, there could be no mediation/ indirect effect. This is because in order to assess for a mediating relationship, the relationship between the predictor variable and the mediating variable must be significant and this was not the case.

Social support. Social support was found to partially mediate the relationships between internalised stigma and the outcome variables. The Sobel test was performed and showed that these mediating relationships were significant. The mediating relationship between internalised stigma and depression was, $Z=3.74$, $p=.001$, $\kappa^2=.10$; the mediating relationship between internalised stigma and anxiety was, $Z=2.85$, $p=.004$; and the mediating relationship between internalised stigma and stress was, $Z=3.33$, $p<.001$, $\kappa^2=.08$. Please refer to Journal paper for figures on mediation analyses (i.e. Figures 3, 4, 5).

Synthesis of the results

To summarise:

- In combination, the distal and (three) proximal stressors variables accounted for 25% of the variance in depression. However, only internalised stigma (proximal stressor) emerged as having a significant independent relationship with depression.
- In combination, the distal and (three) proximal stress variables accounted for 29% of the variance in anxiety. However, only the distal stressor, internalised stigma and vigilance (latter two are proximal stressors) emerged as having a significant combined relationship with anxiety.
- 26% of the variance of stress was accounted for by the predictor variables in combination (distal stressor and the three proximal stressors). However, only internalised stigma and vigilance (both proximal stressors) emerged as having a significant combined relationship with stress.
- The substantive claim of the second hypothesis (e.g. "minority stress processes and general stress processes are interdependent") was not testable due to the questionable capture of 'general stressors' in the design. What was found was that there were significant correlations between the distal and three proximal stressors, with the exception of the distal stressor and concealment (proximal stressor). Concealment and vigilance showed a strong correlation ($r=.63$, $p<.001$).
- No linear relationships were found between prominence and the minority stressors. Therefore, moderation regression analysis could not be conducted. One can conclude, that due to the non-significant linear relationships between prominence and minority stressors, there will be a non-significant moderation relationship. Therefore, the hypothesis: "prominence in identity will increase the effect of stressors (proximal stressors) and lead to an increase in distress", was not supported.
- Valence was found to be related to social support and accounted for 4% of the variance of social support.

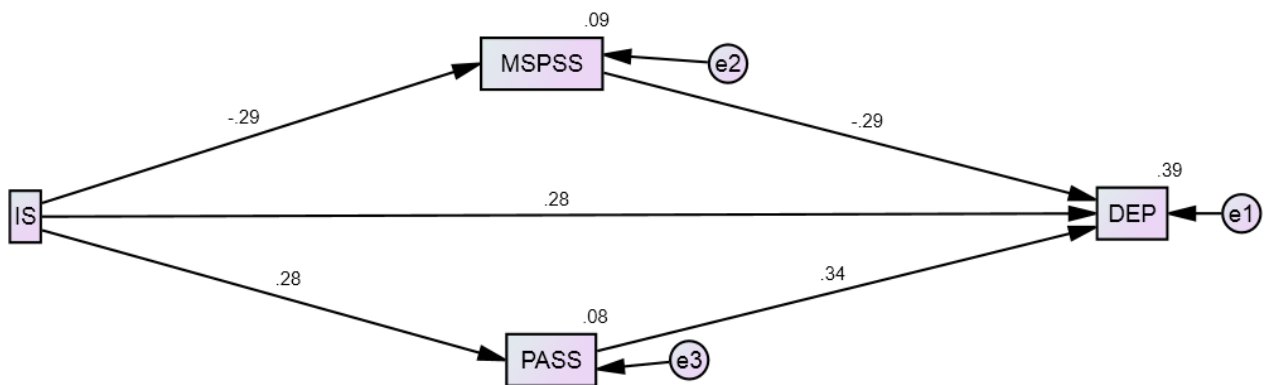
- No moderation effects were found of coping and social support on the stressors (distal and proximal) and distress outcome measures.
- Lastly, passive coping and social support were found to mediate the relationships between internalised stigma and the distress outcomes (depression, anxiety and stress).

Proposed model based on the theory and the data

Following the synthesis, structural equation models were developed for each of the distress outcomes in order to develop alternative models. These alternative models were derived from the data (e.g. only incorporating significant results) and the literature.

Depression. A path analysis model was developed between internalised stigma, incorporating the mediating relationships of passive coping and social support (see Figure 8.). The model demonstrated good fit (CFI=.99, SRMR=.02, RMSEA=.02, Bollen-Stine bootstrap $p=ns$). To echo previous results, social support and passive coping mediated the relationship between internalised stigma and depression.

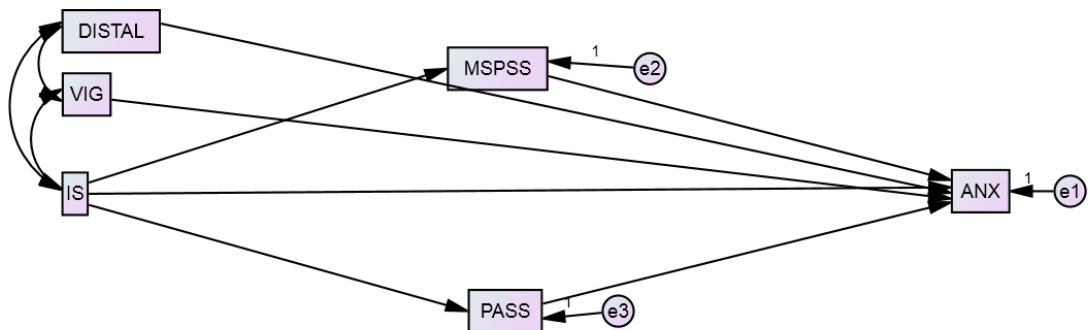
Figure 8. Path analysis model with depression as the outcome variable.



Note: All coefficients are standardised and are significant at $p<.001$. IS= internalised stigma; PASS= passive coping; MSPSS= Multidimensional Scale of Perceived Social Support; DEP= Depression

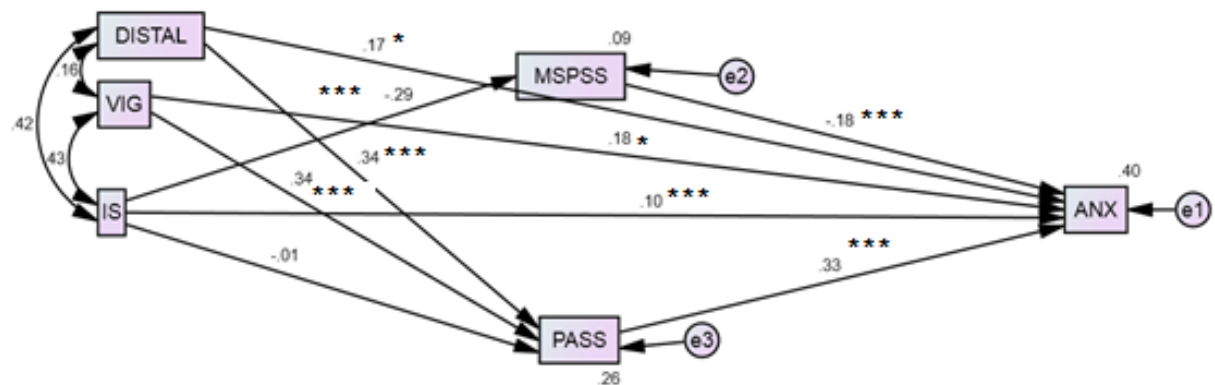
Anxiety. A path analysis model was developed incorporating the variables: internalised stigma, distal stress, vigilance, passive coping and social support (see Figure 9.). Originally only internalised stigma was mediated by passive coping and social support. However this model showed poor fit (CFI=.82, SRMR=.09, RMSEA=.21, Bollen-Stine bootstrap $p=.002$). Modification indices were consulted. It suggested adding a path from vigilance to passive coping and distal to passive coping, to give an expected parameter change statistics of .482 and .224, respectively, on the chi-square statistic. These changes improved model fit but not on the RMSEA (CFI=.99, SRMR=.03, RMSEA=.07, Bollen-stine bootstrap $p=.112$). The maximum likelihood estimates were examined and a non-significant relationship was found on the path from internalised stigma to passive coping ($p=.8$) and internalised stigma to anxiety ($p=.08$). These paths were not deleted due to the theory and my data showing that these relationships exist. The resulting model is displayed in Figure 10.

Figure 9. Path analysis model with anxiety as the outcome variable.



Note: All paths are significant at IS= internalised stigma; VIG= Vigilance; PASS= passive coping; MSPSS= Multidimensional Scale of Perceived Social Support; DEP= Depression

Figure 10. Modified path analysis model with anxiety as the outcome variable.



Note: All coefficients are standardised. *** $p < .001$, ** $p < .01$, * $p < .05$

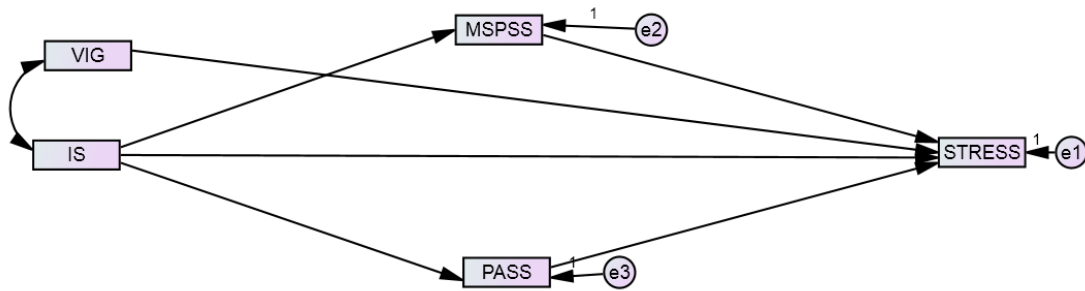
IS= internalised stigma; VIG= Vigilance; PASS= passive coping; MSPSS= Multidimensional Scale of Perceived Social Support; ANX= Anxiety.

This proposed alternative model shows that internalised stigma, distal stress and vigilance are directly related to anxiety (i.e. increase anxiety) in a sample of people who identify as transgender. However only distal and vigilance emerged as have a significant indirect effect on anxiety through passive coping.

Internalised stigma had an inverse relationship with social support. Social support mediates the relationship between internalised stigma and anxiety. This is a hypothesised model and would need further testing to see if it can be used to explain the high prevalence of anxiety in people who identify as transgender.

Stress. A path analysis model was developed incorporating the variables: internalised stigma, vigilance, passive coping and social support (Figure 11.). Originally only internalised stigma was mediated by passive coping and social support. However this model showed a poor fit (CFI=.90, SRMR=.08, RMSEA=.18, Bollen-stine bootstrap $p = .002$). Modification indices were consulted. It was suggested that the addition of a path from vigilance to passive coping would cause a parameter change of .482 on the chi-square statistic. This path was added in the resulting model and showed a good model fit (see Figure 12; CFI=.99, SRMR=.03, RMSEA=.04, Bollen-stine bootstrap $p = .25$).

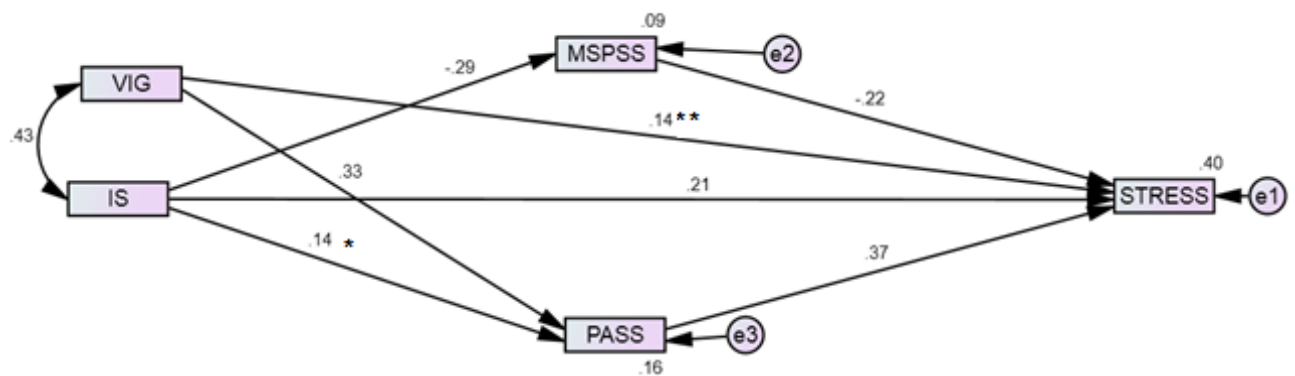
Figure 11. Path analysis model with stress as the outcome variable.



Note: IS= internalised stigma; VIG= Vigilance; PASS= passive coping; MSPSS= Multidimensional Scale of Perceived Social Support

Figure 12.

Modified path analysis model with stress as the outcome variable.



Note: coefficients are standardised and are significant at $p < .001$ with the exception of $**p < .01$, $*p < 0.5$. IS= internalised stigma; VIG= Vigilance; PASS= passive coping; MSPSS= Multidimensional Scale of Perceived Social Support

This proposed alternative model showed that internalised stigma and vigilance were directly related to stress, in a sample of people who identify as transgender. They were also indirectly related to stress through passive coping. Only social support acted as a partial mediator for internalised stigma. This is a hypothesised model and would need further testing to see if it can be used to explain the high prevalence of anxiety in people who identify as transgender.

Extended Discussion

The first aim of this research was to examine if the minority stress model could be applied to a heterogeneous sample of people who identified as transgender, under the transgender umbrella term. Although support was not found for all the hypothesised processes and paths within the minority stress model, support was found for the minority stressors (distal, internalised stigma, vigilance and concealment) being significantly related to psychological distress. The minority stress model hypothesises that these stressors increase an individual's susceptibility to experiencing psychological distress. This was true for the stressors when measured in isolation for each of the distress variables (i.e. anxiety, stress and depression). However, when measured in combination (i.e. all the minority stressors; distal, internalised stigma, vigilance and concealment) the strength of the stressors relationships with the distress variables, reduced and many were no longer significant. This was true for concealment.

Concealment did not emerge as a significant predictor in combination with other stressors on the outcomes of anxiety, depression and stress. Concealment is an under researched stressor within the literature. This maybe because it is related more to the LGB population. As, Hendricks and Testa (2012) stated, for transgender people being open and being out about one's identity is more revealing and may vary along the transition process. In addition, concealment may be affected by how well a transgender person "passes" as their desired identity. For transgender people, concealing their transgender identity may enable them to cope with stigma, dependent on this ability to pass.

When all the minority stressors were assessed in combination only internalised stigma was found to be significantly associated with depression. Therefore, the internalisation of negative societal attitudes alone and in combination of other stressors was significantly associated with the individual experiencing increased levels of depression. With regards to anxiety, when all the minority stressors were assessed in combination, only the distal stress process and two proximal stress processes (internalised stigma and vigilance) were found to be significantly associated with increased anxiety. Thus highlighting that receiving discrimination from society, and internalising and

being vigilant to this discrimination (due to their minority status) increases the individuals level of anxiety. Whereas for stress, only vigilance and internalised stigma were found to be significantly related to stress in combination with the other stressors.

Strong support was found for the more under researched process of internalised stigma (a more proximal stressor). Internalised stigma was the only minority stress process, in isolation and in combination with the other stressors, to be found to be associated with all the psychologically distress outcomes measured. Internalised stigma was found to significantly increase scores of depression, anxiety and stress. Therefore, in line with the minority stress model, internalised stigma can have damaging effects on a person's overall psychological and mental well-being. This finding is in line with previous research.

These findings (i.e. minority stressors being associated with psychological distress) were in line with the previous research (Bockting et al., 2013, Kelleher, 2009, McCarthy et al., 2014). However, in comparison to the previous research, this study goes beyond showing the effects of internalised stigma on one outcome (e.g. depression or one outcome on psychological distress), to show the different types of psychological distress an individual may experience (i.e. anxiety, stress and depression). It also shows how different stressors in isolation and in combination are associated with different mental health outcomes. However, we can only tentatively infer directionally based on the minority stress model because we do not have sufficient information in this study to assess whether the minority stress processes lead to psychological distress. This would require a longitudinal design to explore temporal relations.

In addition, this study also assesses all the stress processes within the model that previous research has not done in a sample of people who identify as transgender. Thus providing further evidence on the potential impacts of these processes on an individual's mental and psychological well-being.

Unfortunately, this project was unable to explore the substantive claims of the minority stress model in stating that the minority stressors and general stressors are interdependent. As previously mentioned, this was due to the measurement error in using the PSS to measure general stress. What was found was that in terms of the minority stressors, no significant relationships

were found between the proximal stress process of concealment and the distal stress process. This was contradictory to the minority stress model and previous research. For example, Bockting et al. (2013) stated that concealment was a direct product of the distal minority process. This was not the case in the study. As mentioned previously, the notion of concealment is questionable within transgender populations. The way I measured concealment (i.e. assessing whether they hide their identity from people) was different to how it was assessed in Bockting et al. (2013). They measured it by assessing their investment in passing. This may have given rise to the differences in these results.

The application of minority identity characteristics was questionable, in this sample of people who identified as transgender. Prominence in identity was found not to moderate the relationship between proximal stressors (i.e. internalised stigma, concealment and vigilance) and psychological distress. But valence was found to be related to social support. The possible reason for the limited support on prominence in this study may be that it was not applicable to this population. For example, minority identity characteristics are reported to be related to the "coming out" process in LGB populations. For transgender people, the coming out process was postulated to be different (Hendricks & Testa, 2012; Zimman, 2009). For example, Zimman (2009) highlighted that there were two different ways in which a person comes out as transgender: *before*, and *after* a change in gender role. In addition, the prominence measure was developed in this study and may lack validity. Future validity tests are warranted on this measure.

Valence in identity (defined as being able to positively evaluate your identity) was positively associated social support, albeit it accounted for a small percent of its variance. Valence in identity is similar to pride in one's identity. Consistent with previous research, this was shown to have an ameliorative effect on psychological distress (Bockting et al., 2013; Testa et al., 2015). Testa et al. (2015) have reported that community connection and pride buffer the effects of the minority stress processes. Although community connection was not examined within this study, the study has shown that social support and positive valence (or identity pride) are related. However, one cannot infer the directionality of this relationship. But as proposed by the minority stress model,

minority identity characteristics, such as valence, lead to social support and coping (community and individually).

Conversely, no relationship was found between valence and coping styles (coping at the individual level). This maybe because I did not examine community level support and coping, which the minority stress model also states, is a buffer. In Meyer's (2015) review on resilience and minority stress; community support was considered as being important at increasing a person's resilience. This was because communities were reported to be a good resource for helping people to cope with stress. Maybe if community support and community coping were examined then , I might have found a positive relationship between these variables and valence in identity.

In relation to my second aim (i.e. exploring the roles of coping), no evidence was found for the moderating roles of coping and social support, as proposed by the minority stress model.

Moderators are expected to change the strength or direction of the relationship between variables (Wu & Zumbo, 2008). In regards to the minority stress model, the model stated that the moderators of coping and social support ameliorated the relationship between minority stress processes and psychological distress. However, in this study, coping and social support did not moderate the relationship between the minority stress processes and psychological distress. Instead, they were found to have a mediating role between internalised stigma and psychological distress.

A mediator is an additional variable that explains the causal relationship between two variables. Mediators explain "why" and "how" a cause and effect relationship happens (Baron & Kenny, 1986; Wu & Zumbo, 2008). Passive coping and social support were found to mediate the relationship between internalised stigma and psychological distress – whereby internalised stigma was found to indirectly relate to psychological distress (through passive coping and social support) in addition to a direct association. This finding was in line with the hypotheses of lesbian feminist/ sexual identity theorists, who postulate that coping and social support act as mediators (Cass, 1979; Sophie, 1987; Szymanski, Kashubeck-West & Meyer, 2008; Szymanski & Owens, 2008).

These mediators may help to explain why internalised stigma was related to increased psychological distress. In this study, those who reported high

levels of internalised stigma, were more likely to use a passive coping style, which was related to increased psychological distress. The use of a passive coping style may therefore further explain why internalised stigma is related to psychological distress: in that those who experience internalised stigma may manage the distress they experience through the use of passive coping techniques, and it is the experience/ use of both these variables that are related to increased psychological distress. However, because passive coping only partially mediated this relationship, limited conclusions can be made about the relationship between internalised stigma and psychological distress, and how and why they are related. Instead, I am able to consider this as a possible explanation. Furthermore, my hesitation on forming a conclusion around the role of the mediator is limited by the design of the study, in which causal relationships cannot be inferred.

However, notwithstanding these interpretive challenges, the mediational finding is in line with previous research. Szymanski and Owen (2008) found that avoidant coping partially mediated the relationships between internalised stigma and psychological distress in a sample of sexual minority women. Avoidant coping was also found to be a mediator in Budge, Adelson and Howard's (2013) research. However, it was found to mediate the relationship between transition status and the outcomes of anxiety and depression.

The mediating role of social support was more complex. Social support was found to inversely relate to psychological distress. For, example, increased access to sources of social support was associated with lower levels of psychological distress. However, internalised stigma was found to be related to reduced access to sources of social support, and it was this reduced access to sources of social support that was related to increased psychological distress. Therefore, internalised stigma influenced ratings of psychological distress through the amount of access an individual had to sources of social support. Similar to passive coping, social support partially mediated this relationship.

These findings were partly consistent with those of Szymanski and Kashubeck-West (2008), who reported that social support fully mediated the relationship between internalised stigma and psychological distress in a sample of sexual minority women.

A possible explanation that could be considered for why and how internalised stigma was related to increased psychological distress; is that internalised stigma impacts on peoples access to sources of social support. Furthermore, internalised stigma may increase peoples use of passive coping, which is related to adverse mental health outcomes (Bardwell, Ancoli-Isreal, & Dimsdale, 2001; Snow-Turek, Norris, & Tan, 1996). These factors are then related to increased psychological distress. For example, those who internalise negative views from society about their transgender identity may find it difficult to access social support because they have a negative view on being transgender. They may also use passive coping techniques (e.g. accept responsibility, distance themselves, use self-controlling methods, and escape or avoid difficulties) when they experience difficulties due to having a negative view on their identity. These responses will in turn increase their psychological distress. However, one can argue that, given the limits of a cross-sectional design, it is difficult to know whether the mediators developed following experiences of minority stress or preceded them. This would only be able to be assessed using a longitudinal design.

In previous literature into the minority stress model, regardless of the population examined, there appears to be inconsistencies in the role of coping and social support in ameliorating psychological distress. There is limited support for coping and social support moderating the negative effects on mental health (Wong et al., 2013). Whereas others have found no evidence of coping, moderating mental health (Logie et al., 2012; Shilo & Savaya, 2012; Szymanski, 2009). Therefore due to these findings in my research and findings from other studies, maybe there is a reasonable course to claim that these factors have a mediating role.

Development of an alternative model

The final aim of the research was to develop an alternative model. This was achieved but would require further testing. What was noticed was that each model on the distress outcomes (i.e. anxiety, depression and stress) incorporated different minority stress processes that were found to be related to each of the different distress outcomes. For example, in the model of

depression, only internalised stigma was significantly related to depression (albeit causality cannot be inferred). Also, this relationship was mediated by social support and coping (i.e. individuals who were less likely to seek social support and more likely to use passive coping were more likely to experience depression). In addition, the models developed showed that there were mediating effects of passive coping on the distal stress process and vigilance (proximal stress process). For example, in the model for anxiety; the distal stress process, internalised stigma and vigilance were found to have a negative effect on anxiety. This effect on anxiety was partially mediated by passive coping and social support. Whereby, experiences of distal stress and vigilance indirectly influenced levels of anxiety through passive coping. i.e. high levels of distal stress and vigilance increase an individual's usage of passive coping techniques; and the use of passive coping techniques, high levels of distal stress and vigilance, are related to increased anxiety. On the other hand, internalised stigma indirectly influenced levels of anxiety through sources of social support. Whereby, internalised stigma was found to impact on an individual's access to sources of social support, which was related to increased levels of anxiety. These partial mediation effects of passive coping and social support on the variables of distal stress and vigilance found, were not initially examined in this research. They were found following model modifications in SEM. Consequently, these models will need further testing.

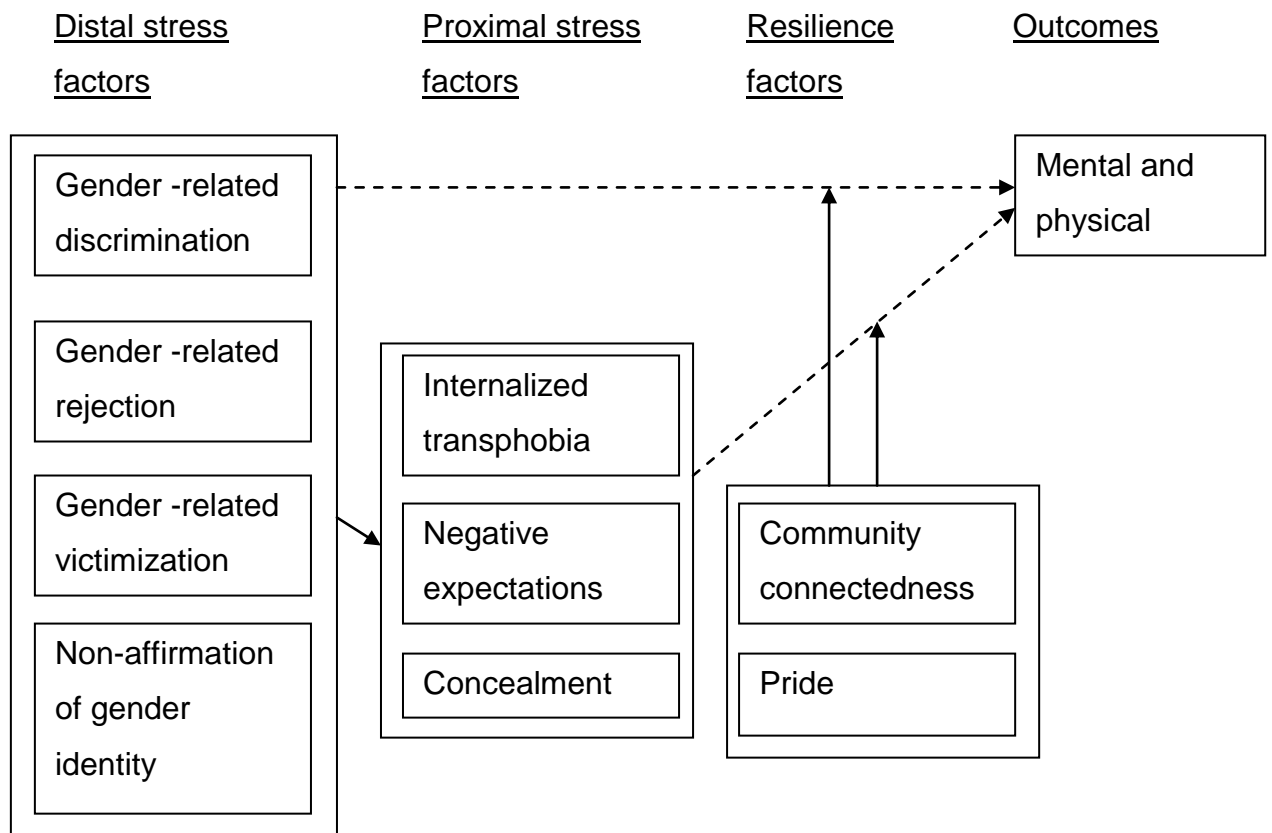
However in comparing them to the minority stress model, my models do not incorporate concealment. As noted above, it may be that this process was difficult to capture in people who identify as transgender. In addition, these models show that different stressors cause different effects on psychological distress. Some relate more to a person experiencing depression and others relate more to a person experiencing anxiety or stress.

Recently, the minority stress model has been expanded in transgender and gender non-conforming people (Figure 13; Testa et al., 2015). However, this model was derived from the literature and has not been empirically tested. This model incorporates the minority stress processes outlined in the minority stress model but appears to be more sensitive to transgender people's experiences. For example it incorporates non-gender affirmation of gender identity (refers to when one's internal sense of gender is not affirmed by others).

In comparison to the minority stress model, Testa et al. (2015) model shows that distal stress factors (all of which are related to gender identity) can affect the mental and physical health of people who identify as transgender. It can affect their health directly or indirectly through the proximal stress factors (in which concealment is included). They show the moderating effects of resilience factors (i.e. pride and community connectedness) ameliorate the stresses from distal and proximal factors.

My research could further expand this model by incorporating the mediating roles of passive coping and social support. These may provide additional explanations for the mental health outcomes. In addition, as my results showed that different minority stress processes were more likely to be associated with different distress outcomes, it may be that these findings will lead to researchers developing models for the different mental health outcomes. For example, a model has been developed to explain the high prevalence rates of suicide in people who identify as transgender (see Hendrick & Testa, 2012).

Figure 13. Testa et al. (2015) Minority stress model for transgender and gender non-conforming people.



What my research adds to the current evidence-base

To lead on from the previous paragraph, this research will help with the expansion of the minority stress model in people who identify as transgender. It may also help the development and use of distress specific models/formulations for this population, which is lacking in the literature. Instead, there is one dominant model, the minority stress model, which is thought to explain all different mental health and physical health outcomes.

This research also adds to the limited evidence on the impacts of internalised stigma on psychological distress. The limited evidence has been highlighted by researchers (Testa et al., 2015). What this research has shown is that internalised stigma is a strong predictor of psychological distress (in combination and in isolation of other stressors). In addition, this research has shown the detrimental effects that internalised stigma has on a person's ability

to use social support to cope. This has not been examined on this population before. This finding also adds support to Testa and Hendrick's (2012) proposition on internalised stigma. They stated/ hypothesised that internalised stigma was potentially the most damaging stressor because it could have a direct negative effect on an individual's ability to cope and thus reduce their resilience in the face of negative events (Hendricks & Testa, 2012).

Strengths and Limitations

There were many strengths and limitations that were noticed within this research at different stages. Some have been already discussed but will now be discussed in detail.

One of the initial limitations were difficulties with representing the minority stress model. Although, I was able to represent the model, via testing the hypotheses, during the early stages of the research the model went through numerous transformations, due to misspecifications (e.g. incorrect paths drawn between variables, difficulties understanding how certain variables fit with the model). As mentioned previously in the background section, the model presents a set of highly complex and diverse processes. Due to this, some of the relationships between variables within the model were confusing because they were not clearly specified (e.g. minority identity characteristics). This made model specification a very laborious task. To aid in the model specification, the literature was consulted to examine how previous studies tested the minority stress model (e.g. Wong et al., 2013; Bockting et al., 2013). This helped me to understand the relationships between the paths within the model.

In addition, my research did not incorporate community resources that one can gain to increase their resilience against minority stress, e.g. transgender community coping and transgender community social support. Even though I did measure social support, it was not explicit to the transgender community. I also focused on individual coping. Although support was gained to show individual factors of resilience, there is a body of research that shows community support is important (e.g. Meyer, 2003, 2015; Testa et al., 2015). This is because it is seen as being external from the individual and it refers to the social environment, whereas individual resilience (e.g. coping), although

useful, can be blaming to the individual. Due to the multiple variables that were tested and the complexity of the model, community support was not examined. However, future research may consider this.

Although I did not examine community support, one of the most notable strengths of this research was that I was able to examine the minority stress processes, in combination, that other researchers in this area have not done. I was able to assess under researched proximal stress processes (e.g. vigilance, concealment and internalised stigma) and assess their varying relationships with three different outcome measures for psychological distress. Whereas past research has focused on one outcome, mainly depression or anxiety. But the addition of stress as an outcome may be something for future researchers to consider.

With regards to limitations with the methodology, there were issues with some of the variables (e.g. general stress measure and integration). As mentioned previously, the measure used to assess for general stress processes, was not adequate for this study. This error in scale selection was also noted by some of the participants. At the end of the survey, some participants left comments stating that they were having stressors in other areas of their life that were currently impacting on them (e.g. work caseloads, bereavements, relationship problems). However the scale selected did not enable me to capture this data, but rather measure their stress levels.

Furthermore, integration was not measured in this study. This was not measured because the scale had extremely low reliability. I developed the scale to assess for minority identity characteristics, due to there being no current scales in the literature to assess this concept. Face validity was sort and the other subscales performed well to obtain good reliability. However, the scale was not piloted, due to the limited time I had available to me. For future studies this scale would need to be adapted and tested, to enable researchers to assess this component.

Continuing with the limitation on measures, many of the measures used in this study were adapted (e.g. SCS, DHEQ; adapted concealment scale). Consequently, this mirrors the literature, in which authors are adapting scales to be used in transgender people. Subsequently, a *gender minority scale and resilience scale* was recently developed, which demonstrates good criterion

validity, discriminate and convergent validity (Testa et al., 2015). This scale was developed for people who identify as transgender and includes the subscales: *internalised transphobia, non disclosure, gender related discrimination, gender-related rejection, gender-related victimisation* etc. However, this scale was published when I was collecting data. The scales I adapted were shown to have good reliability and face validity, which was a strength of the research in that they were able to assess constructs in which they were designed to examine. But to echo the previous point I made, they were not piloted and would need further testing.

In consideration of the sample used, the sample size was small. Although I endeavoured to use SEM, to which my sample size was sufficient (desired to be 716), I used multiple regression where post hoc sample size calculations showed I required 400 participants. This was noted in the results and considerations were made to address this.

This small size, may have also been due to the terminology used in the research, which may have unintentionally excluded people. Even though all online materials were screened by a steering group of people who identified as transgender; two potential participants informed me that they did not view themselves as transgender (e.g. "I am a woman") and thus did not complete the survey. The term transgender was used as an umbrella term to capture participants who viewed themselves as fitting within this term. If I had made this explicit to participants by presenting different gender identities on the inclusion criteria page, this may have helped address this problem.

The use of a heterogeneous sample was a considerable strength of this research. However, the sample mainly consisted of people who identified as trans women (possibly due to the criticisms noted above on the terminology I used). I aimed to use a heterogeneous to maximise recruitment and also add to the evidence-base on gender identities under the transgender umbrella term. As previous research has mainly focused on a few gender identities under the transgender umbrella term, mainly trans women and trans men. However, due to the small sample size and the large volume of participants identifying as trans women, I was unable to conduct additional analysis. This analysis, albeit it not one of the aims of the research, would have enabled me to see the differing impacts of minority stress on different gender identities. As well as a test to see

if I was too ambitious in including all the gender identities under the transgender umbrella term. Even though I found support for some of the hypothesised paths in the minority stress model in this sample, the lack of support for other relationships may possibly be due to them not applying to all gender identities under the transgender umbrella term. This would need further testing in future research using a heterogeneous sample.

One of the strengths of the methodology, was the use of an online survey. This was to help aid the recruitment, which can be difficult in transgender communities. However, unfortunately, I was unable to control for whether participants were genuine with their responses (e.g. such as the inclusion criteria) or whether people had completed the survey more than once. Although all the results were screened before analysis, there were still the chances that these problems occurred. In addition, my recruitment strategy of contacting forums and support groups may have limited the population remit (i.e. only people with computer access and access to transgender forums and groups). In addition to this, I also used a snowballing technique and attended a National transgender event to reach people who may not have been actively part of transgender groups or forums.

With regards to the cross-sectional design, the design did not enable temporal relations between the mediators to be examined. The interpretation of the mediators was guided by previous research. However, this problem has been noted in previous research. It was unknown whether the mediators developed following experiences of minority stress or preceded them. Further research would need to explore these temporal relationships using a longitudinal design.

In addition, the data analysis I used had a limitation. The minority stress model was unable to be tested using analysis that enabled theory and model testing, e.g. SEM. This has been a problem with previous research. Currently, there is software to enable this but it is complex, requires access to a multitude of codes and is recommended for highly skilled statisticians. Due to these barriers PROCESS was used and enabled the hypotheses to be tested. However, future research should focus on conducting a more direct test on the minority stress model in a sample of people who identify as transgender.

Finally, the main strength of the research as a whole was that it incorporated input from people who identified as transgender. The initial idea of studying the impact of prejudice experiences on people who identified as transgender was put forward by a SUCAP member who identified as transgender. In addition, the idea of the research was agreed by them and a Steering group of people who identified as transgender. All materials were screened by the Steering group and recruitment strategies were discussed with them. All their input enabled me to ensure the research as a whole was sensitive to the needs of people who identified as transgender.

Clinical implications

There are clinical implications for these findings at different levels (i.e. individual level and wider societal level). At the individual level, clinicians who are working with transgender people should be aware of the minority stress processes (more specifically internalised stigma) at various stages of therapy or treatments.

During the assessment stage, minority stressors may impact on their engagement. For example people who experience high levels of vigilance may be more hyper vigilant to cues of being rejected by clinicians which may make it difficult for them to engage. Whereas, those with heightened levels of internalised stigma may have reduced compassion for themselves and in the assessment stage may diminish trauma histories. They may feel that any trauma (such as discrimination, harassments or victimisation) they have received from society, due to their transgender identity, is normal in their society. By having this awareness of these stress processes, clinicians will be able to employ useful skills (e.g. active listening, formulation, empathy, psychoeducation on stress processes) to facilitate engagement. In addition, clinician's who have an awareness of the minority stress processes will be able to incorporate them in clients formulations, where applicable. This incorporation of societal factors in formulations, as well as formulations being informed by different models, is also a recommendation by the Division of Clinical Psychology (DCP, 2011).

Interventions will vary depending on the formulations. But it may be useful to focus on increasing clients self-compassion or self-esteem, specifically for those who experience high internalised stigma. This may help to reduce internalised stigma. Later work may focus on reducing the clients need to use passive coping techniques and helping them to access social support.

In addition to working individually with people who identify as transgender, work needs to be done with the wider social context. This is because working with someone individually can locate the blame in them and cause us to see them as "needing fixing". As a whole, minority stressors are socially based. Therefore, there needs to be changes in society. More recently the government has issued a report on Transgender equality (House of Commons women and equalities committee, 2016) with recommendations to reduce discrimination towards transgender people (i.e. issued recommendations to the NHS, gender identity clinics, and prison and probation services). As clinicians, we can enforce changes in our working contexts and report bad practice we see from other clinicians towards transgender people as well as educate our colleagues when they are working with people who identify as transgender.

Conclusions

In light of these findings, it can be concluded that some of the processes in the minority stress model can be applied to a sample of people who identified as transgender. The minority stress processes (distal, internalised stigma, concealment and vigilant) were associated with psychological distress in isolation. When considered in combination only certain stress processes emerged as significant in relation to the distress outcome being measured. For example, internalised stigma emerged as being significantly related to depression, in combination with the other minority stressors. Furthermore, internalised stigma, the distal stress process and vigilance emerged as being significantly related to anxiety, in combination with the other minority stressors. Lastly, internalised stigma and vigilance emerged as being significantly related to stress when assessed in combination with the other minority stressors. It

appeared that the role of internalised stigma was paramount in being associated with psychological distress than the other minority stressors

Conversely, no evidence was found for the moderating role of coping and social support as hypothesised by the minority stress model. Instead, passive coping and social support were found to mediate the relationship between internalised stigma and psychological distress. SEM also showed that passive coping mediated the relationship between distal stress and anxiety. Passive coping also mediated the relationship between vigilance and anxiety but also distal stress and anxiety. Lastly, passive coping mediated the relationship between vigilance and stress.

Future research

As mentioned previously, it would be useful for future research to assess the mediating role of coping and social support (including individual and community coping and social support) on the relationship between minority stress and psychological distress. General stress should also be included, to assess if minority stress is an additive stressor. A longitudinal design should be used to enable the temporal relationships between the variables to be assessed, which were not assessed in this research.

This current research did not assess the mediating role of social support and passive coping on the relationship between other stressors (e.g. distal and vigilance) and psychological distress. But subsequently, these mediation relationships were found using SEM. Therefore, it would be useful for future researchers to assess these relationships using SEM.

It may also be useful for future researchers to further assess if minority stressors, with the addition of transgender specific stressors as noted by Testa et al. (2015), are associated with different mental health outcomes (e.g. stress, anxiety, depression). This would help researchers to consider whether mental health specific models are required.

Lastly, it may be beneficial to assess whether there are differences in the minority stress processes between the different gender identities under the transgender umbrella term. Due to small sample sizes, I was unable to conduct this analysis.

Reflections

During this section, I will take the time to critically reflect on the research process.

Development of the research idea

The initial stages of the research were categorised by feelings of being overwhelmed and feelings of uncertainty. I was interested in the research project, of looking at the impact of prejudice on people who identified as transgender, however I wanted to use a qualitative design. The rationale for this was to deviate from my quantitative research comfort zone and experiment with a qualitative design. Conversely to contain my anxieties, a quantitative methodology was used because I was familiar with it. But also it fit with how I gathered information from clients in my practice at that point in my development. For example, prior to training, my experiences were primarily using measures (e.g. IPDE, RBANS, WAIS, WASI) to collect information from clients and drawing conclusions on the data. Therefore, primarily taking a positivist epidemiological stance.

Even though I viewed myself as a positivist in the early stages of the research, I learnt that I was post-positivist. The more I worked with clients on placement, using formulations with the addition of measures, the more I believed I fit with the post-positivist epidemiological position. I also personally believed that the "ultimate truth" was unknowable and impossible to measure. This also reflects my research, where I developed and adapted measures and used multiple methods of analysis.

I chose to examine the minority stress model in transgender people, which in retrospect was a way to further contain my anxieties. The concept of examining the minority stress model was very focused and structured, which gave containment to my work and thus my anxieties (i.e. anxieties driven by the research protocol and my lack of research experience). Initially, I found it difficult to come up with a research idea but after researching the impact of prejudice on the mental health of people who identified as transgender, I found the minority stress model.

Testing the minority stress model was also a personal desire. I am an ethnic minority in society and I was keen to learn how dominant groups in society impacted on a minority group's mental health. In reflection, I think this served as a strength to my research because being a minority, I could empathise with the notion of minority stress and it gave me passion in my research. The notion of minority stress also made sense to me as I had personal experiences of some of the stress processes (e.g. vicarious and direct discrimination).

Theoretical problems with the minority stress model

Although I chose to look at the minority stress model in transgender people, to contain the research and my anxieties, it was a considerably complex model to understand. For example, some of the moderation and mediation effects on variables were confusing. I largely relied on my research supervisors to help me to understand the model initially. However as time progressed (from first year to third year), I was able to notice that my difficulties in understanding the model were due to some of its unclearly defined paths. Therefore it was the model that had some faults.

In first year, I viewed the model as being perfect and right, and myself as being incompetent. However, as I started to become more critical in my practice in second year (aided by assignments and appraisals of my personal effectiveness), I became more critical of the model. For example, I believed that one of the variables within the model, namely minority identity characteristics, could not be applied to transgender people. This was because it was based on the "coming out" process in LGB populations. I was going to exclude this from the model, because I felt that it could not be applied to transgender people. Furthermore past research has failed to test this variable. However, when I discussed this with the Steering group, they stated that it was relevant to them. Therefore it was included in my research. Conversely, when I examined this in my research, no support was found for this variable. However, had I not included it, I would not have known it did not relate to my sample.

In second year, I also started to query what the minority stress model was adding that other theoretical models (e.g. models I was using in my

practice) did not. I really questioned whether this was worthwhile research, because I found it hard to answer this question. However, I was able to answer this question from my own personal experience. I applied the minority stress model to myself, being an ethnic minority, and I noticed at times I was hyper vigilant to discrimination. This was made apparent in May 2015 in a teaching session, when I felt that a psychologist was inappropriately talking about black people. Following discussions with another person in my cohort, who was also an ethnic minority, I learnt that this was not the case. However due to witnessing discrimination on Black people in America in media around that time, I was hyper vigilant to cues in the environment that would threaten my cultural identity.

It was not until third year that I noticed the true complexities and lack of clarity in the model. This was noticed when I started using SEM. Within SEM, you need to be clear about the hypothesised paths within the model. This was a difficult task as some of the paths/ relationships in the model (e.g. minority identity characteristics) were difficult to understand, and were hence, one of the other reasons why I did not want to include minority identity characteristics in the analysis. I experienced numerous non convergence errors in AMOS and the model underwent numerous re-specifications.

Challenges and issues

Having a steering group was tricky but rewarding. Initially, it was tricky because when we were adapting measures, some of the members were not always in agreement. To manage this dilemma I would hold a vote in order to get a direct answer. However, when these problems arose again, when I was in second year, I managed them differently. In second year I was working in the learning disabilities service, where I regularly worked with more than one person in the room, compared to first year when I worked with people at the individual level. This helped me to increase my confidence in managing discussions in the room with more than one person. Subsequently, when disagreements arose in adapting measures, I would facilitate a discussion with the members of the Steering group. This led to more collaborative questions being developed.

Since using a steering group, I have noticed that I am more service-user focused in my clinical practice. I seek evaluation from clients and also incorporate their ideas in service developments (e.g. incorporated clients ideas when conducting a group therapy program). From my experience of using a steering group, I have learnt that they are an excellent resource because of their life experience, which they can utilise to inform their decisions. I was apprehensive about using a Steering group in my research but now having had the experience, I strongly advocate that all research should be developed with input from people with lived experience, in the area of interest.

Another challenge within my research was managing complaints. On the 7th May 2014, I received a complaint from a transgender women, after I attended a support group to discuss my research. When leaving the group I said "see you guy's"; which was a general term I used to refer to a group of people. They informed me of my comment, which helped me to be more careful with my use of language in my research and clinical practice. In reflection, although initially I thought they were being pedantic:

"...I say guy's to everyone! plus it was said around trans men and trans women so they can see it was not intentional! but I suppose this is a learning point to ensure I am more careful with the use of language around people" (diary extract, 16/05/2015).

When considering the minority stress model, I can hypothesis why this individual was hyper vigilant to my language.

I also received another complaint, which presented as an ethical dilemma. I received a complaint from a potential participant when I was in third year. They believed that my research excluded them because of their gender identity and they stated that I had breached the Equality Act. Although this was appropriately handled and the ethics committee believed I had not breeched the Equality Act, it made me re-evaluate my research. My use of language had excluded one participant and potentially maybe others.

As it can be seen, language and terminology was a great challenge in this research. With the transgender umbrella term, being changed over time, I found it difficult to know when I was using the right words or not. Furthermore,

these challenges on the terminology were also voiced by the Steering group. Where in one meeting I had to define some of the terms (i.e. gender identities) to one of the Steering group members.

In addition to these challenges, I experienced difficulties with my analysis which resulted in me changing techniques. I spent countless hours using AMOS however due to the none convergent issues I was experiencing, I had to use another method. This was disheartening because I had invested so much time in using SEM. If I had successfully used SEM in my research, my research would have been the first, in the literature, to have explicitly tested this theory. However I had to change my statistical analysis because current SEM programs were limited in moderation and mediation analysis.

Finally, I had the ethical dilemma of excluding findings from my research. Some of the measures I administered to participants did not adequately measure the constructs in the model (i.e. PSS and Integration). Ideally research should use all the findings they collect which presented as a dilemma. The constructs did not appear to contain information useful for this research, however I got participants to fill them out. The scales were subsequently not included in the analysis but data was presented on the scales reliability to add to the evidence base. I have learnt the importance of having a full understanding of theories and models before testing them. As this full understanding enables you to select the best measures to test them. This is similar to client work, where it is important to have a full and clear formulation before commencing treatment. Thus this experience has not only served to improve my research skills (i.e. developing a clear understanding prior to testing) but also my clinical practice (i.e. ensuring I have a clear and concise formulation).

How my research fits with the wider research

My research presents a challenge to the current dominate minority stress model. This is because I found limited support for this model, in a sample of people who identified as transgender. It may therefore hopefully, enable researchers to develop models with transgender populations, rather than use models from LGB populations. In addition, some transgender people may be

glad that my research challenged this dominate model. This is because when conducting the research a few transgender people informed me that they were not happy about having an LGB model imposed on them.

My development as a scientist-practitioner

With regards to developing as a scientist-practitioner, the research process itself has aided my clinical practice. Some of these have been noted above. But other skills I have gained are that I think more critically about the measurement tools I use when conducting assessments. I also consult and critically evaluate the evidence-base to aid with my clinical decisions.

I have also been able to apply the processes of the minority stress model to my clinical work. For example, I applied the concept of internalised stigma and vigilance to a clients' formulation. The client believed they were being rejected by society due to their felt stigma of mental health. I incorporated this aspect of the minority stress model into their formulation. Consequently, in line with the minority stress model, work focused on increasing their resilience (e.g. attending MIND, support groups, sharing their story and experience).

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4. APPENDICES

Appendix A: Data extraction form

Author	
Journal	
Year published	
Article title	
Location	
Aim of study <ul style="list-style-type: none"> • hypothesis 	
How minority stress model is used	
Participants <ul style="list-style-type: none"> • gender expression • sexuality • numbers • age range 	
Comparison group	
Sampling method	
Type of study <ul style="list-style-type: none"> • cross-sectional • match control • cohort 	
Factors of minority stress model assessed (IV's or DV's)	
How factors assessed (Tools)	
Other factors assessed (IV's or DV's)	
How these other factors were	204

assessed (Tools)	
Reliability of tools	
Validity of tools	
Method of administration <ul style="list-style-type: none"> • online • postal • interview 	
Handling of missing data	
Outliers or skewed data addressed or test of normally distributed data	
Method of analysis and tests	
Raw scores on each measure	
Statistical tests P-values and effect sizes	
Reviews of quality of test	
Authors conclusions	
My conclusions	

Appendix B - Glossary of terms

Term	Definition
Male-to-Female (MTF) or Trans women (preferred term)	A term used to describe a trans person who identifies as a women.
Female-to-Male (FTM) or Trans man (preferred term)	A term used to describe a trans person who identifies as a women
Cross-dresser	A term used to describe someone who may occasionally wear stereotypical clothes of the opposite gender but have no desire to live full time as the opposite gender.
Transsexual	A term used to describe someone who seeks to transition or has transitioned from their assigned gender at birth to the opposite gender and transsexuals (often viewed as a more medical term).
Gender non-conforming	A term used to describe an individual whose gender expressions are different from societies expectations for their gender.
Bi-gender	A term used to describe someone whose gender identity encompasses both genders, male and female. Some may feel that one gender identity is stronger than the other but both gender identities are there.
Two-spirit	This is a contemporary term that has been reclaimed by some in Native American LGBT communities to honour their heritage and

	provide an alternative to Western labels of gay, lesbian, bisexual or transgender. They take the view that individual spirits are a blend of female and male spirits.
Drag Queen	A term used to describe male performers who dress as women for purposes of entertaining others (for example in clubs, bars, events). It can also be a derogative manner to refer to trans women.
Drag King	A term used to describe female performers who dress as men for purposes of entertaining others (for example in clubs, bars, events). It can also be a derogative manner to refer to trans men.
Intersex	A term used to describe people who are born with a sexual anatomy and/ or chromosome pattern that does not fit with typical definitions of male or female.
Genderqueer	A term used to describe people who identify as neither being entirely male nor entirely female.

Appendix C: Information sheet



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Purpose of the online survey? There are a **high number of trans people who experience mental health difficulties**. One reason is that they **experience stress from prejudice and the discrimination** they may receive from others. This research aims to look at this **stress and the effects it has on mental health in trans people**.

Do I have to take part? No. If you decide to take part you are still free to withdraw at any time and without giving a reason. If you withdraw then the information collected so far cannot be erased and may still be used in the analysis. To take part you must identify as being **trans** and be **18 years old or older**.

What do I need to do? You will have to complete **questionnaires online** which will ask you to rate your responses on a scale. It should take **approximately 15-30 minutes to complete**. The questionnaires will ask you about your experiences of stress, prejudice, identity characteristics, social support, coping styles and mental health (**we will not diagnose you**). You will also be asked to complete a form about yourself (such as gender identity, age, ethnicity).

Prize draw: If you choose to complete the study you will be entered into a prize draw, and have the chance to win 1 of 10 prizes; **2 x £20 Amazon vouchers, 3 x £15 Amazon vouchers, and 5 x £10 Amazon vouchers.**

Advantages and disadvantages of taking part? The information we get from this study will **help explain the high numbers of mental health difficulties within the trans community.** The only risks are that this study asks you to rate your prejudice experiences. If you experience any distress or discomfort, please stop your involvement. You can contact the researchers if you would like to discuss this further and seek support (see contacts below).

Will my taking part in the study be kept private and confidential? Yes. In line with the Data Protection Act 1998, all information you provide will be kept strictly confidential. The information you provide will be both **anonymised. You will not be asked your name.** Data will be kept on a password protected database. Only members of the research team will have access to your data. All information about you will be handled in confidence. If you give your email address for the prize draw, it will be immediately destroyed after the prizes have been announced to the winners.

With many thanks

Sabrina Stennett, Mike Rennoldson, Roshan Das Nair

Contact details:

Researcher: Sabrina Stennett (Trainee Clinical Psychologist)

Email address: lwxsmst@nottingham.ac.uk;
transgenderstressresearch@nottingham.ac.uk

Research Supervisors: Mike Rennoldson; Roshan Das Nair

Address: The University of Nottingham, Division of Psychiatry and Applied Psychology, School of Medicine, YANG Fujia Building, Jubilee Campus, Wollaton Road, Nottingham, NG8 1BB

Additional support:

Mind

Mind Infoline telephone number: 0300 123 3393
Lines are open from 9am-6pm,
Monday to Friday
Website: www.mind.org.uk

Samaritans

Telephone number: 08457 90 90 90
Lines are open 24 hours a day, 365 days a year
Website: www.samaritans.org

www.TranzWiki.net

Provides a comprehensive directory of the groups campaigning for, supporting or assisting trans people and their families across the UK

www.Tcrime.net

An online system for reporting transphobic crime

Appendix D: Debrief form



Thank you for taking the time to complete this online survey. Your responses are very valuable and we appreciate the information you have supplied to us.

Your information will remain confidential. If you would like to receive a summary of the main findings of this study, please contact the researcher to request this information.

If completing the research has raised any queries or concerns, please contact the researchers below. If the research has caused you any distress details for additional support are provided below.

Further information and contact details:

Researcher: Sabrina Stennett (Trainee Clinical Psychologist)

Email address: lwasmst@nottingham.ac.uk;
transgenderstressresearch@nottingham.ac.uk

Research Supervisors: Mike Rennoldson; Roshan Das Nair

Address: The University of Nottingham, Division of Psychiatry and Applied Psychology, School of Medicine, YANG Fujia Building, Jubilee Campus, Wollaton Road, Nottingham, NG8 1BB

Additional support:

Mind

Mind Infoline telephone number: 0300
123 3393

Lines are open from 9am-6pm,
Monday to Friday

Website: www.mind.org.uk

Samaritans

Telephone number: 08457 90 90 90

Lines are open 24 hours a day, 365
days a year

Website: www.samaritans.org

www.TranzWiki.net

Provides a comprehensive directory of
the groups campaigning for,
supporting or assisting trans people
and their families across the UK

www.Tcrime.net

An online system for reporting
transphobic crime

Appendix E: Consultant and researcher agreement

During the course of the research it is the consultants responsibility to:

1. Attend a minimum of four meetings with the researcher.
2. Give two days notice if unable to attend meetings.
3. Comment on the research materials used with the research, such as information sheets, consent forms, debrief, advertisement and measures.
4. Offer advice on the research at various stages.
5. Help make sure the research is sensitive to trans people's needs.
6. If disagreements arise between the consultant and the researcher, the issue will need to be solved between them in the first instance. If not resolved the matter can be further discussed with one of the researchers supervisors.
7. If published within a journal, the consultant will be second author.

It is the responsibility of the researcher to:

1. Attend a minimum of four meetings with the consultant.
2. Give two days notice if unable to attend meetings.
3. Organise meetings and agree the dates with the consultant. If a meeting is cancelled, the researcher must inform the consultant and rearrange the meeting.
4. Listen to the consultant and take onboard the consultants advice.
5. Come prepared to the meetings and develop an agenda.
6. Send the agenda to the consultant a minimum of two days in advance of the meetings.
7. Keep a log of the discussions from the meetings and give a copy to the consultant.
8. If disagreements arise between the consultant and the researcher, the issue will need to be solved between them in the first instance. If not resolved the matter can be further discussed with one of the researchers supervisors.

Name of Consultant	Signature	Date
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Name of Researcher	Signature	Date
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Appendix F: Steering group agreement

The members of the steering group have a responsibility to:

1. Attend a minimum of two meetings with the researcher and other group members.
2. Give a minimum of two days notice if unable to attend meetings.
3. Offer advice on the research measures.
4. Help make sure the research measures are sensitive to trans people's needs.
5. Offer advice on recruitment including advertising.
6. If disagreements arise between the steering group member(s) and the researcher, the issue will need to be solved between them in the first instance. If not resolved the matter can be further discussed with one of the researchers supervisors.
7. If the research is published in a journal, the members of the steering group will be mentioned in the acknowledgments section.

It is the responsibility of the researcher to:

1. Attend a minimum of two meetings with the researcher and other group members.
2. Give a minimum of two days notice if unable to attend meetings.
3. Organise meetings and agree the dates with the steering group members. If a meeting is cancelled, the researcher must inform the steering group and rearrange the meeting.
4. Listen to the steering group and take onboard there advice.
5. Chair the meetings.
6. Come prepared to the meetings and develop an agenda.
7. Send the agenda to the steering group two days in advance of the meetings.
8. Keep a log of the discussions from the meetings and give a copy to the steering group if they request a copy.
9. If disagreements arise between the steering group member(s) and the researcher, the issue will need to be solved between them in the

first instance. If not resolved the matter can be further discussed with one of the researchers supervisors.

_____ Name of Steering group member	_____ Signature	_____ Date
---	--------------------	---------------

_____ Name of Steering group member	_____ Signature	_____ Date
---	--------------------	---------------

_____ Name of Steering group member	_____ Signature	_____ Date
---	--------------------	---------------

_____ Name of Researcher	_____ Signature	_____ Date
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Appendix G: Email

To whom this may concern

I am emailing to ask you for permission and consent to advertise my research on your website, FaceBook and twitter accounts. I am a second year trainee clinical psychologist at the University of Nottingham and my research aims to examine the impact of prejudice on the mental health of transgender people.

As you are probably aware, there are a **high number of trans people who experience mental health difficulties**. One reason is that they **experience stress from prejudice and the discrimination** they may receive from others. **This research aims to look at this stress and the effects it has on mental health in trans people.**

Origin of idea

This research idea was put forward by a bisexual transgender member of staff on the advisory panel at the University of Nottingham. They were interested in the effects of prejudice and stigma on transgender individuals. They told me an incident that had occurred in which a transgender person was attacked at a cash machine and they disclosed to me their own personal fears since that incident. I found this incident upsetting and it has prompted my interest into looking at the effects of stigma, prejudice and discrimination on mental health but also in wanting to know which factors help to reduce this.

The Research

It is an online study and people who take part will be required to fill in questionnaires online. Information will be kept confidential in line with the Data protection Act 1998. I have attached the information sheet that everyone sees before answering the questionnaires.

I require **110-352 transgender people to take part over the age of 18**. Ethical approval has been agreed. **The Ethics reference number is: DFP16042015SoMPAPsych.**

Benefits of the research to the transgender community

The benefits of this research are that the information we get from this study will **help explain the high numbers of mental health difficulties within the trans community.**

If you are unable to advertise this research I welcome your advice and knowledge on other support groups, support networks and charity organisations to which I can advertise for people for my research. **If you would like to advertise it I will send you the research link.**

I look forwards to hearing from you soon.

All the best,



PREJUDICE towards **Trans people**

what does prejudice do to the mental health of trans people?



To help us understand the stresses of prejudice on trans people and their mental health please complete this online survey.

[online survey link]

You need to be 18 and older and identify as being trans. You do not need to have a mental health problem to take part.



You also have a chance to be entered into a prize draw

Appendix I: Social media advert



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Prejudice towards trans people

To help us to **understand the impact of prejudice on the mental health** of people who are **trans** please complete **the survey below**

You also have the chance to be entered into a **prize draw**.

You need to be **18 years and older** and identify as being **trans**. You do not need to have a mental health problem to take part.

Appendix J: Adapted DHEQ

The following is a list of experiences that LGBT people sometimes have. Please read each one carefully, and then respond to the following question:

How much has this problem distressed or bothered you during the past 12 months?

- 0 = Did not happen/not applicable to me*
- 1 = It happened, and it bothered me NOT AT ALL*
- 2 = It happened, and it bothered me A LITTLE BIT*
- 3 = It happened, and it bothered me MODERATELY*
- 4 = It happened, and it bothered me QUITE A BIT*
- 5 = It happened, and it bothered me EXTREMELY*

Vigilance:

- 4. Watching what you say and do around non trans people
- 16. Pretending that you have an opposite-sex partner /pretending that you are not Trans
- 17. pretending that you are not Trans
- 18. Hiding that you are Trans in relationships
- 34. Avoiding talking about being Trans at work
- 35. Hiding part of your life from other people

Harassment and discrimination:

- 8. Being called names such as "tranny" or "queer"/
- 19. People staring at you when you are out in public because you are trans
- 29. Being verbally harassed by strangers because you are trans
- 30. Being verbally harassed by people you know because you are trans
- 31. Being treated unfairly in stores or restaurants because you are trans
- 32. People laughing at you or making jokes at your expense because you are trans

Victimization:

- 43. Being punched, hit, kicked, or beaten because you are trans
- 44. Being assaulted with a weapon because you are trans
- 45. Being raped or sexually assaulted because you are trans
- 46. Having objects thrown at you because you are trans

Vicarious trauma:

- 5. Hearing about trans people you know being treated unfairly
- 6. Hearing about trans people you don't know being treated unfairly
- 7. Hearing about trans crimes (e.g., vandalism, physical or sexual assault) that happened to trans people you don't know
- 9. Hearing other people being called names such as "tranny" or "queer"
- 10. Hearing someone make jokes about trans people
- 33. Hearing politicians say negative things about trans people

Appendix K: Adapted stigma consciousness scale

		0 (strongly disagree)	1	2	3 (neither agree nor disagree)	4	5	6 (Strongly agree)
1	Stereotypes about transgender people have not affected me personally (R)							
2	I never worry that my behaviour will be viewed as stereotypical of transgender people (R)							
3	When interacting with non transgender people who know of my gender expression, I feel like they interpret all my behaviours in terms of the fact that I am a transgender person.							
4	Most non transgender people do not judge transgender people on the basis of their gender expression (R)							
5	My being a transgender person does not influence how transgender people act with me (R)							
6	I almost never think about the fact that I am transgender when I interact with non transgender people (R)							
7	My being transgender does not influence how people act with me (R).							
8	Most heterosexuals have a lot more transphobic (prejudice thoughts against transgender people) thoughts than they actually express.							
9	I often think that non transgender people are unfairly accused of being							

	transphobic (R)							
10	Most non transgender people have a problem viewing transgender people as equals							
11	I feel guilty for being a transgender person.							
12	I feel pressure from society to conform to society norms.							
13	I believe there is nothing wrong with being transgender (R).							

Appendix L: Adapted concealment measure

How many people are informed that you are trans?

In your family:

1. nobody
2. few
3. about half
4. most
5. nearly all or all

Among your friends and acquaintances who are non trans?

1. nobody
2. few
3. about half
4. most
5. nearly all or all

In your workplace/ societies/ clubs:

1. nobody
2. few
3. about half
4. most
5. nearly all or all

Appendix M: Minority identity characteristics scale

		Strongly disagree	disagree	Neither agree nor disagree	agree	Strongly agree
1	Being trans is the most important aspect of my identity as a person					
2	Being trans fits well with other aspects of my identity					
3	I am proud to be trans					
4	It is important that people know I am trans					
5	I don't let being trans get in the way of things I want to do and achieve in life					
6	Being trans is a positive part of me					
7	Being trans is only one aspect of my identity as a person					
8	I accept myself as being trans					
9	When I meet people I make sure they know I am trans					

Appendix N: Demographic sheet

1) Do you consider yourself to be within one of the following categories? Please select one.

- Trans woman (a trans person who identifies as a woman but was not assigned as being a woman at birth)
- Trans man (a trans person who identifies as a man but was not assigned as being a man at birth)
- Woman (fully transitioned woman)
- Man (fully transitioned man)
- Cross-dresser (someone who may occasionally wear stereotypical clothes of the opposite gender but have no desire to live full time as the opposite gender)
- Bi-gender (someone whose gender identity encompasses both genders, male and female)
- Other, please state

2) Do you feel that the process of gender reassignment or transition is relevant to you?

- No, I do not plan to undergo the process of gender reassignment or transition
- Yes, I am planning to undergo (or part of) the process of gender reassignment or transition
- Yes, I am currently undergoing (or part of) the process of gender reassignment or transition
- Yes, I have completed the process of gender reassignment or transition
- Unsure
- Other, please state

3) How would you best describes your ethnicity or background?

White

- English / Welsh / Scottish / Northern Irish / British
- Irish
- Any other White background, please describe

Mixed British/English

- White and Black Caribbean
- White and Black African
- White and Asian
- Any other Mixed / Multiple ethnic background, please describe

Asian / Asian British

- Indian
- Pakistani
- Bangladeshi
- Chinese
- Any other Asian background, please describe

Black / African / Caribbean / Black British

- African
- Caribbean
- Any other Black / African / Caribbean background, please describe

Other ethnic group

- Other ethnic group, *please describe*

4) How would you describe your sexual orientation?

- Bisexual
- Heterosexual/straight
- Lesbian
- Gay
- Asexual
- Not sure
- Don't define
- Other, please state

7) How old are you?

- 18-27
- 28-37
- 38-47
- 48-57
- 58- 67
- 67 plus

5. POSTER

Why are there high levels of mental health problems in trans communities?

A test of the minority stress model

Sabrina Stennett, Michael Rennoldson, Roshan Das Nair, Nima Moghaddam and Dave Barber, Trent Doctorate in Clinical Psychology, University of Nottingham



BACKGROUND

- Transgender, is an umbrella term used to describe an individual whose gender identity and expression are different from their assigned gender at birth.
- For those who identify as transgender, research has consistently shown that they are more likely to experience mental health problems, e.g. rates of depression range from 48% to 62% (1-3).
- To help explain this high prevalence, researchers have used the minority stress model (4-7).
- However the minority stress model has not been fully tested in the transgender population.

AIM

- To test the application of the minority stress model in people who identify as transgender.

References:

(1) Budge SL, Adelson, JL, Howard, KAS. Anxiety and depression in transgender individuals: The role of transition status, loss, social support, and coping. *Journal of Consulting and Clinical Psychology*. 2013;18(3): 545-557. (2) Clements-Nolle K, Marx R, Katz M. Attempted suicide among transgender persons: The influence of gender-based discrimination and victimization. *Journal of Homosexuality*. 2006;51(3): 53-69. (3) Nemoto T, Bödeker B, Iwamoto M. 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*. 2011;101(10): 1980–1988. (4) Bockting WO, Miner MH, Swinburne Romine RE, Hamilton A, Coleman E. Stigma, mental health, and resilience in an online sample of the US transgender population. *American Journal of Public Health*. 2013;103: 943–951. (5) Hendricks M, & Testa RJ. Model for understanding risk and resiliency in transgender and gender-nonconforming individuals. *Professional Psychology: Research and Practice*. 2012;43(5): 460-467. (6) Meyer IH. Minority stress and mental health in gay men. *Journal of Health and Social Behavior*. 1995;36: 38-56. (7) Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*. 2003;129(5): 674-697.

METHOD

- A cross-sectional research design was used.
- Participants, who identified as transgender ($n=270$) completed an online survey.
- The processes measured are shown in Figure 1.

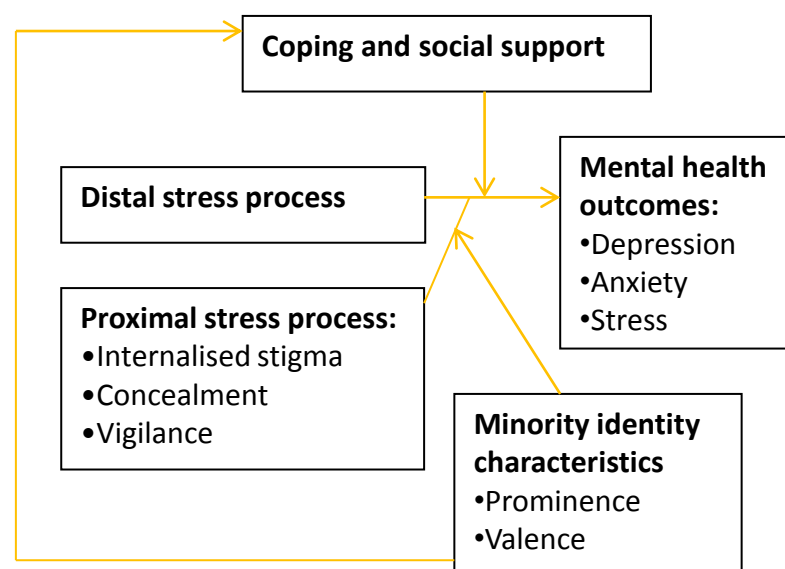


FIGURE 1. Hypothesised relationships in the minority stress model assessed in this research.

RESULTS

- All the stress processes were significantly associated to psychological distress ($p<.001$)
- When assessed in combination, certain stress processes emerged as being significant. But only internalised stigma, significantly emerged as being associated to all the mental health outcomes.
- No moderation effects were found for coping and social support. But passive coping and social support mediated the relationship between internalised stigma and mental health outcomes.
- The minority identity characteristic of valence was associated with social support

FINDINGS

- Limited support was found for the application of the minority stress model in people who identified as transgender.

IMPLICATIONS:

- Researchers need to develop a model, specific to transgender populations.
- Clinicians should be aware of the impacts of stressors on trans peoples mental health and incorporate them in formulations (I.e. Internalised stigma)