Received: 15 November 2024 | Accepted: 25 January 2025

DOI: 10.1111/hiv.13768

ORIGINAL ARTICLE

Predicting PrEP acceptability and self-efficacy among men who have sex with men in the UK: The roles of identity resilience, science mistrust, and stigma

Anthony J. Gifford[1] | **Rusi Jaspal**[2] | **Bethany A. Jones**[1] | **Daragh T. McDermott**[1]

[1]NTU Psychology, School of Social Sciences, Nottingham Trent University, Nottingham, UK

[2]Vice Chancellor's Office, University of Brighton, Brighton, UK

Correspondence
Anthony J. Gifford, NTU Psychology, School of Social Sciences, Nottingham Trent University, 50 Shakespeare Street, Nottingham, NG1 4FQ, UK.
Email: anthony.gifford@ntu.ac.uk

Abstract

Introduction: Pre-exposure prophylaxis (PrEP) is medication used to prevent the spread of HIV. Populations with increased need of HIV prevention (e.g., men who have sex with men [MSM]) are eligible for free PrEP in the UK. However, HIV surveillance reports indicate stagnated uptake of the drug, alongside increasing rates of HIV acquisition. As such, psychosocial research is needed to explore the social barriers to PrEP uptake. This study aimed to explore the role of identity resilience (i.e., ability to maintain a positive and stable sense of self) as a predictor for PrEP usage. We hypothesized that PrEP self-efficacy (i.e., belief in one's ability to take PrEP) would be positively predicted by PrEP acceptability. We also hypothesized that identity worth and identity continuity (components of identity resilience) would be associated with PrEP acceptability and PrEP self-efficacy. These would be mediated by mistrust in science, PrEP stigma, and perceived risk of HIV.

Methods: In total, 500 MSM who were assigned male at birth, were aged ≥18 years, and did not have HIV participated in an online cross-sectional, psychometric study between June and September 2023. Participants had to be based in the UK but could either be PrEP users or non-users. Structural equation modelling was used to explore a model of best fit to test the hypotheses.

Results: Participants were aged 18–73 years (mean 35.61, standard deviation [SD] 9.95), mostly (91.2%) white, educated to an undergraduate level or above (70.9%), and non-users of PrEP (58.2%). Model fit was satisfactory: $\chi^2 = 4.51$, degrees of freedom = 3, p-value = 0.209, comparative fit index 0.997, Tucker Lewis Index 0.972, root mean square of approximation 0.032, and standardized root mean square residual 0.011. Identity worth was positively associated with PrEP self-efficacy. Identity worth was indirectly associated with PrEP acceptability and PrEP self-efficacy. The positive association of identity worth and

PrEP acceptability was mediated through lower mistrust of science and lower PrEP stigma but not perceived risk of HIV.

Conclusions: Results indicate that the decision to take PrEP is associated with the constructs of identity worth (i.e., self-esteem, self-efficacy, and distinctiveness) rather than risk-based appraisals alone. The reasons for accessing and using PrEP may no longer be motivated by an inherent perceived risk of HIV acquisition. When trying to increase PrEP uptake, addressing specific parts of identity resilience may be beneficial. For example, therapeutic interventions (e.g., counselling) could include interventions to improve positive sexual identities and self-esteem.

KEYWORDS

HIV, identity, MSM, PrEP, stigma, UK

INTRODUCTION

Oral pre-exposure prophylaxis (PrEP) is highly effective at preventing HIV infection [1]. In the UK, PrEP is accessible for free at point of use at specialist sexual health services in the national health service (NHS). PrEP is recommended for men who have sex with men (MSM) and who do not have HIV but are identified as being at elevated risk of acquiring HIV [2]. Rates of HIV acquisition in the UK among MSM have decreased, although this decline is now starting to plateau [3]. Increasing PrEP uptake has been identified as a strategy to mitigate this [3]. However, reported barriers to uptake and continuation of PrEP could diminish public health benefits and result in continued HIV incidence [4–6]. Transdisciplinary approaches are now vital to address specific barriers to the use of PrEP (e.g., psychosocial), increase usage, and inform targeted interventions and policy [7].

PrEP stigma is a known barrier to the acceptability and uptake of PrEP [8] and has been found to disproportionately affect marginalized social groups such as MSM. PrEP has been associated with HIV stigma, homonegativity, the stigma of promiscuity, and the moralization of condom use [9–11]. Mistrust in science is also a common barrier to the use of pharmaceutical interventions [12] and could perpetuate misinformation about the side effects, efficacy, and social impacts of PrEP (e.g., cost to the NHS) [13]. These psychosocial factors directly affect the acceptability of PrEP, which in turn can reduce uptake, independently of subjective perceived risk of HIV [14]. Consequently, behaviour change research must consider and address psychosocial influences on PrEP acceptability to increase the efficacy of preventive interventions [15].

Although PrEP acceptability (i.e., the extent to which PrEP is acceptable to an individual) and PrEP self-efficacy (i.e., the perceived ability to take PrEP successfully) are related, they are two distinct concepts [16]. Acceptability of PrEP is associated with sociodemographic factors, perceived risk of HIV, and prior PrEP use [17–19]. Self-efficacy is associated with PrEP knowledge, confidence in its efficacy, and perceived sensitivity to medicines [6, 14]. Research shows that both these factors can influence PrEP uptake and sustained usage among MSM in England [20]. As such, we hypothesized that PrEP acceptability would be positively associated with PrEP self-efficacy (hypothesis 6 [H6]).

Identity process theory (IPT) [21] is a psychological framework for predicting reactions to psychosocial stressors (e.g., PrEP stigma). It can be useful for predicting the acceptability and assimilation of behaviour changes [22] and has been used widely in the context of sexual health [23–25]. A specific tenet of IPT is the concept of 'identity resilience' [26]. IPT posits that identity resilience is an overarching characteristic of one's identity structure, reflecting the individual's subjective belief in their ability to understand and overcome stressors [27]. Identity resilience is a sum of four psychological components, three of which (self-efficacy, self-esteem, distinctiveness) relate to an evaluation of 'identity worth'. Self-efficacy can be defined as the belief in one's ability to complete tasks or achieve goals [28]. Self-esteem is how much one values oneself (i.e., one's overall sense of self-worth) [29]. Distinctiveness is the appreciation of one's uniqueness and individuality [26]. The final component (continuity) reflects how the appraisals of one's identity persist over time, relating to 'identity continuity' [26]. In theory, people strive for stability and congruence in identity in spite of changes they experience [26]. These two facets of identity resilience vary in their significance when determining an individual's ability to overcome different challenges [30].

Identity resilience has been used in models predicting health behaviours (e.g., vaccine uptake) [31]. Indeed,

higher levels of identity resilience have been shown to enhance adaptive coping strategies with various stressors to improve health outcomes [32]. Analogous research has found that self-esteem is a predictor of willingness to engage in COVID-19-prevention behaviours [33]. Furthermore, intentions to get vaccinated against human papillomavirus was mediated by self-efficacy [34]. In this study, we examined how the two aspects of identity resilience (namely, worth and continuity) differentially relate to PrEP acceptability and PrEP self-efficacy. We reasoned that identity worth would be positively associated with PrEP acceptability and PrEP self-efficacy (see hypothesis 1 [H1]). Since PrEP acceptability is affected by temporal fluctuations in behaviour and perceived risk of HIV [35], we hypothesized that identity continuity would be positively associated with PrEP acceptability and self-efficacy but negatively associated with perceived risk of HIV (see hypothesis 2 [H2]).

Research shows relationships between psychosocial stressors (e.g., perceived risk of HIV, PrEP stigma, mistrust of science) and PrEP acceptability and self-efficacy. Interestingly, self-perceived risk of HIV was not a strong predictor of PrEP willingness [36]. Although this appears to be counterintuitive, it may be the result of psychological avoidance of HIV-related cognitions (i.e., HIV anxiety) and apprehension of both HIV and PrEP stigma [14]. PrEP stigma is considered conceptually different from HIV stigma, but it is associated with the stigmatization of sex and sexual practises (e.g., condomless anal sex) [9, 37, 38]. PrEP stigma impedes access to PrEP [8] and can undermine both the acceptability and the uptake of PrEP [4]. Finally, mistrust in science is an additional factor to consider. PrEP use is influenced by the perception of and trust in its medical efficacy (i.e., the science behind PrEP) and in the provider of the medication (i.e., the healthcare professional) [12, 39–41]. Thus, it was reasonable to hypothesize that perceived risk of HIV, levels of associated PrEP stigma, and mistrust in science would be negatively associated with PrEP acceptability and self-efficacy (see hypotheses 3 [H3], 4 [H4], and 5 [H5]).

The concept of identity is rarely considered and examined in health behaviour research. To date, no research has yet examined identity resilience in the context of PrEP usage in the UK. Therefore, this study contributes to widening our understanding of increasing PrEP uptake and reducing HIV transmission among populations at risk of HIV acquisition (i.e., MSM) from a novel identity-based perspective. As with Breakwell et al. [31], we used the two aspects of identity resilience (worth and continuity). These psychological components are important predictors in the context of vaccine hesitancy and uptake. Similarly, this theoretical model proposes that they will differentially account for variation in the acceptability and perceived self-efficacy of PrEP for the prevention of HIV. It also models the indirect effects of these through the psychosocial stressors associated with PrEP (stigma and mistrust of science) and the perceived risk of HIV.

Specifically, we hypothesized that:

1. identity worth is positively associated with PrEP acceptability and PrEP self-efficacy but negatively associated with mistrust in science, PrEP stigma, and perceived risk of HIV
2. identity continuity is positively associated with perceived risk of HIV, PrEP acceptability, and PrEP stigma
3. perceived risk of HIV is negatively associated with PrEP acceptability and PrEP self-efficacy
4. PrEP stigma is negatively associated with PrEP acceptability and PrEP self-efficacy
5. mistrust of science is negatively associated with PrEP acceptability and PrEP self-efficacy
6. PrEP acceptability is positively associated with PrEP self-efficacy.

METHODS

UK-based MSM were recruited using convenience sampling methods, via social media, to participate in a cross-sectional, online study between June and September 2023. Participants who were aged >18 years, assigned male at birth, and eligible to take PrEP were asked to participate in a 15-minute, self-report survey hosted on the online platform Gorilla.

Favourable ethical opinion was granted by the Schools of Business, Law, and Social Sciences Research Ethics Committee of Nottingham Trent University. Participants provided informed consent before commencing the study, and they could stop or withdraw at any point during the study and up to 4 weeks after completion. Because of pharmacokinetic differences in PrEP usage across gendered physiology, data were only collected from individuals who were assigned male at birth [42]. We had a two-pronged rationale for this: first, evidence on drug–drug interactions between PrEP and gender-affirming treatments, which may affect perceptions of PrEP use, is limited [42]; second, there is a need to distinguish between cisgender and transgender populations, ensuring that the unique barriers to PrEP access faced by transgender individuals are not conflated with those experienced by cisgender individuals [43].

MEASURES

Demographics

Participants were asked their age, sexuality (gay, bisexual, other), ethnicity (white, mixed, Asian/British Asian, Black, other), highest level of education, urban/rural status (e.g., city centre; suburb), and PrEP usage.

Identity resilience

We used the Identity Resilience Index [27] to calculate the sub-scales of identity worth and identity continuity. A total of 12 items measured on a 5-point scale (1 = strongly disagree to 5 = strongly agree) related to identity worth. Example items include 'On the whole, I am satisfied with myself' (self-esteem) and 'I can always manage to solve difficult problems if I try hard enough' (self-efficacy). Four items measured on the same 5-point scale related to identity continuity. An example item is 'There is continuity between my past and present' (continuity). Higher scores indicate a higher level of each psychological construct. This scale had excellent internal reliability in related research ($\alpha = 0.83$) [31] and has been validated in diverse and cross-cultural populations [44, 45].

(Mis)Trust in science

We used a shortened version of the Trust in Science and Scientists Inventory [27, 46]. This scale uses 12 items measured on a 5-point scale (1 = strongly disagree to 5 = strongly agree). An example item is 'We cannot trust science because it moves too slowly'. The higher the mean score, the greater levels of science mistrust. This scale had excellent internal reliability in analogous research ($\alpha = 0.93$) [31].

PrEP stigma

We used Walsh's [47] PrEP Stigma sub-scale. This is a 5-item measure scored on a 5-point scale (1 = strongly disagree to 5 = strongly agree). An example item is 'People who take PrEP are promiscuous.' A greater score indicates greater levels of stigma towards PrEP. This scale had excellent internal reliability in related research ($\alpha = 0.83$) [47].

Perceived risk of HIV

We measured HIV-specific risk perception using the Perceived Risk of HIV scale [48]. This 8-item scale measures HIV-risk-specific dimensions such as likelihood estimates of infection, intuitive judgements, and salience of risk. Items are measured on a variety of Likert scales, for example 'what is your gut feeling about how likely you are to get infected with HIV?' (1 = extremely unlikely to 5 = extremely likely). Higher scores indicated a higher perceived risk of contracting HIV. Napper et al. [48] found this scale to have excellent internal reliability ($\alpha = 0.88$).

PrEP acceptability

We measured the acceptability of PrEP using the Attitudes towards PrEP scale [49]. This 14-item measure is scored on a 5-point scale (1 = strongly disagree to 5 = strongly agree). An example item is 'the NHS should fund PrEP'. A higher score indicates higher PrEP acceptability. Jaspal et al. [49] validated this scale, and it had good internal reliability in related research ($\alpha = 0.72$) [50].

PrEP self-efficacy

We used the Perceptions of PrEP self-efficacy behaviour scale [47]. This 8-item tool is measured on a 4-point scale (1 = very hard to do to 4 = very easy to do). An example item is 'how difficult would it be for you to visit a doctor who can provide PrEP?' A higher score indicates higher PrEP self-efficacy. This scale had excellent internal reliability in related research ($\alpha = 0.87$) [47].

DATA ANALYSIS

Sample characteristics and descriptive statistics were analyzed using SPSS 26. These included mean, standard deviation (SD), and internal validity for each variable. Bivariate correlations were also analyzed. The structural equation modelling was conducted using the R package 'lavaan'.

RESULTS

Overall, $N = 500$ participants aged between 18 and 73 years (mean 35.61, SD 9.95) were enrolled in the study. Most participants (73.2%) were gay and had no history of PrEP use (58.2%). The general sociodemographic characteristics are presented in (Table 1).

Descriptive statistics and bivariate correlation coefficients for the constructs in the theoretical model are presented in Table 2 and Table 3, respectively.

TABLE 1 Sample characteristics of UK men who have sex with men ($N = 500$).

Characteristic	Number	Percentage
Sexuality		
Gay	366	73.2
Bisexual	125	25
Other	9	1.8
Ethnicity		
White	456	91.2
Mixed	13	2.6
British Asian/Asian	17	3.4
Black	7	1.4
Other	7	1.4
Highest level of education		
O level/GCSE	27	5.4
A level	87	17.4
Undergraduate	196	39.2
Postgraduate	134	26.8
PhD/Prof Doc	56	11.2
Current PrEP usage		
PrEP user	209	41.8
Non-PrEP user	291	58.2

Note: Education categories are based on the national system in the UK and are defined as follows: O level/GCSE = secondary (high school) education completion; A level: further education (typically for 2 years after secondary); undergraduate = bachelor's degree; postgraduate degree = master's degree; PhD/Prof Doc = Doctorate.
Abbreviations: GCSE = general certificate of secondary education; PrEP = pre-exposure prophylaxis.

TABLE 2 Descriptive statistics for all the constructs.

Variable ($N = 500$)	Mean	SD	Cronbach's α (95% confidence boundaries)
Identity worth	3.60	0.58	0.84 (0.82–0.86)
Identity continuity	3.22	0.80	0.85 (0.82–0.87)
Mistrust in science	1.92	0.55	0.89 (0.88–0.91)
PrEP stigma	2.17	0.86	0.77 (0.73–0.80)
PRHS	2.81	0.67	0.80 (0.78–0.83)
PrEP acceptability	3.79	0.46	0.80 (0.77–0.82)
PrEP self-efficacy	3.02	0.54	0.78 (0.75–0.81)

Abbreviations: PrEP, pre-exposure prophylaxis; PRHS, Perceived Risk of HIV Scale; SD, standard deviation.

All latent variables had consistently robust internal reliability ($\alpha > 0.70$). Identity worth was positively correlated with PrEP acceptability and PrEP self-efficacy and negatively correlated with (mis)trust in science, PrEP stigma, and perceived risk of HIV. Identity continuity was negatively correlated with perceived risk of HIV and positively correlated with PrEP self-efficacy. However, it is noteworthy that perceived risk of HIV was not significantly correlated with any other variable.

The hypothesized mediated relationships between the constructs were explored through structural equation modelling. The overall fit for the model was acceptable ($\chi^2 = 4.51$, degrees of freedom = 3, p-value = 0.209, comparative fit index = 0.997, Tucker Lewis Index = 0.972, root mean square of approximation = 0.032, standardized root mean square residual = 0.011). The fit indexes (namely, root mean square of approximation and comparative fit index) show a goodness of fit as defined in other applied research [51]. A non-significant chi-squared also shows good fit for this model, and the degrees of freedom are considered acceptable when considering the model has a sample size >200 [52]. Alternate indicators of a significant model (namely, Tucker Lewis Index and standardized root mean square residual) also indicate a goodness of fit as described in similar research [16].

The standardized parameter estimates (with standard errors in parentheses) for the pattern of direct effects (significance measured at $\alpha < 0.05$ level) are presented in Figure 1. Observed control variables (age, education, and PrEP use) were included in the model to account for potential confounding influences. These control variables were not the focus of our study but were necessary to clarify the relationships between the primary constructs. Significant relationships are indicated using a solid arrow. It is important to note that the magnitude of the relationships between the control variables and predictor variables are relatively small ($\beta < 0.1$) [53].

The parameter estimates and confidence intervals for the indirect effects are presented in Table 4.

Identity worth was positively associated with PrEP self-efficacy, and the positive relationship between identity worth and PrEP acceptability is mediated by lower mistrust of science and PrEP stigma. Identity continuity provides no predictive power among this sample of participants, nor does perceived risk of HIV.

DISCUSSION

This study aimed to explore the role of identity resilience in predicting the acceptability and self-efficacy of PrEP usage among UK-based MSM. We hypothesized that (H1) identity worth would be positively linked to PrEP acceptability/self-efficacy but negatively linked to mistrust in science, stigma, and perceived HIV risk; (H2) identity continuity would be positively linked to perceived HIV risk, PrEP acceptability, and stigma;

TABLE 3 Bivariate correlation matrix.

Variable	1	2	3	4	5	6
1 Identity worth						
2 Identity continuity	0.22**					
3 PRHS	−0.12**	−0.11*				
4 Mistrust in science	−0.19**	−0.03	0.08			
5 PrEP stigma	−0.26**	0.06	0.02	0.23**		
6 PrEP acceptability	0.15**	0.01	−0.02	−0.46**	−0.47**	
7 PrEP self-efficacy	0.26**	0.01*	−0.04	−0.25**	−0.51**	0.37**

Abbreviations: PrEP, pre-exposure prophylaxis; PRHS, Perceived Risk of HIV Scale.
*Correlation is significant at the ($p = 0.05$) level (2-tailed).
**Correlation is significant at the ($p = 0.01$) level (2-tailed).

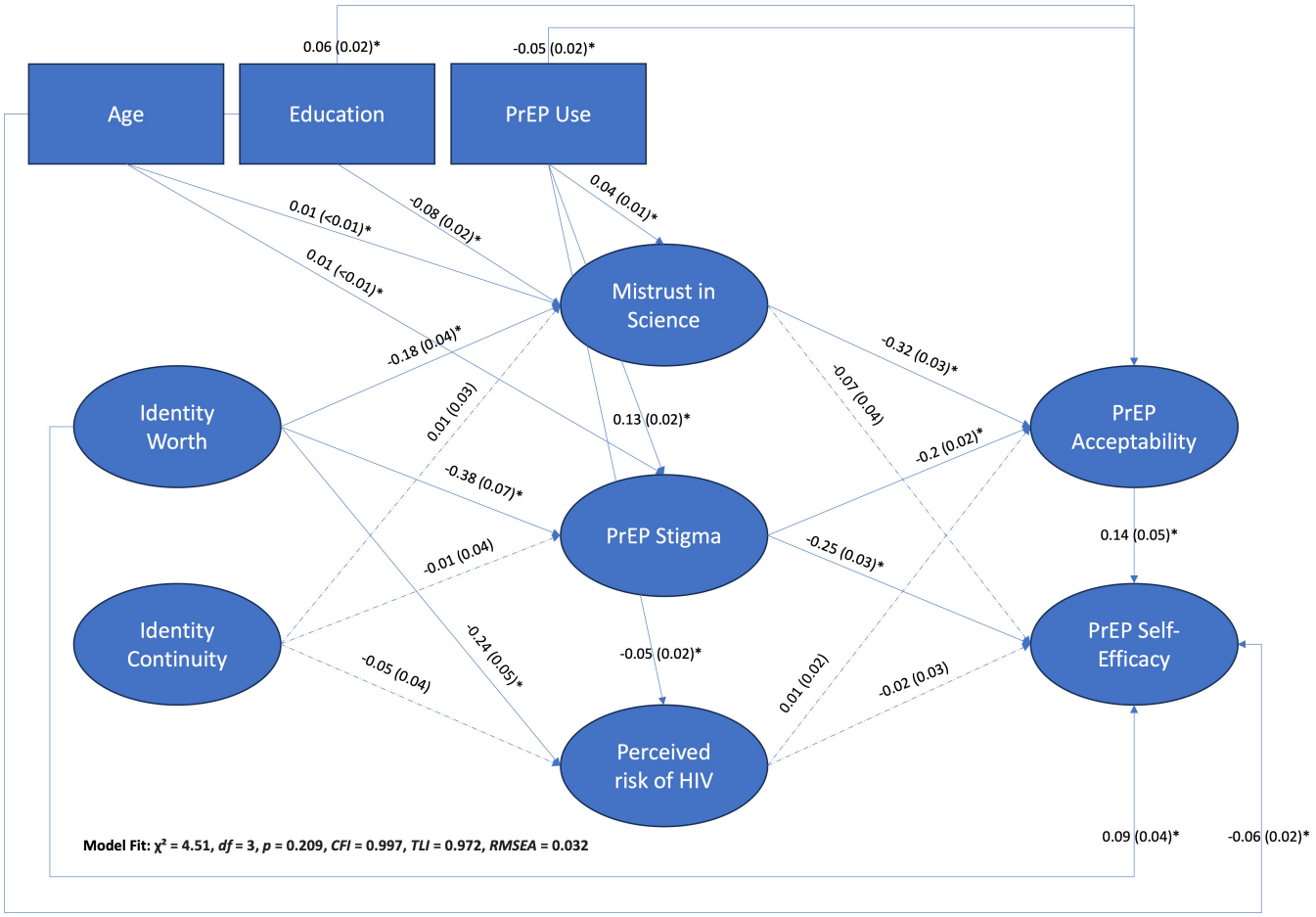

FIGURE 1 Structural equation model for pre-exposure prophylaxis (PrEP) acceptability and self-efficacy. Ellipses denote latent variables; rectangles denote control variables; dashed lines indicate non-significant paths, solid arrows indicate significant relationships. CFI, comparative fit index; df, degrees of freedom; RMSEA, root mean square of approximation; TLI, Tucker Lewis Index. * $p < 0.05$.

(H3) perceived HIV risk would be negatively linked to PrEP acceptability/self-efficacy; (H4) PrEP stigma would be negatively linked to PrEP acceptability/self-efficacy; (H5) mistrust of science would be negatively linked to PrEP acceptability/self-efficacy; and (H6) PrEP acceptability would be positively linked to PrEP self-efficacy.

The construct of 'identity worth' was negatively associated with mistrust in science, PrEP stigma, and perceived risk of HIV, supporting H1. PrEP stigma was negatively associated with PrEP acceptability and PrEP self-efficacy, supporting H4. Furthermore, as expected, PrEP acceptability was positively associated with PrEP

TABLE 4 Parameter estimates for the final model.

Path	Estimate (SE)	95% CI	*p* value
Identity worth → Mistrust in science + PrEP stigma + PRHS → PrEP acceptability	0.13 (0.02)	(0.05–0.19)	0.001
Identity continuity → Mistrust in science + PrEP stigma + PRHS → PrEP acceptability	−0.01 (0.03)	(−0.06–0.04)	0.743
Identity worth → Mistrust in science + PrEP stigma + PRHS + PrEP acceptability → Self-efficacy	0.12 (0.04)	(0.04–0.19)	0.002
Mistrust in science → PrEP acceptability → PrEP self-efficacy	−0.12 (0.04)	(−0.019 to −0.04)	0.002
PrEP stigma → PrEP acceptability → PrEP self-efficacy	−0.28 (0.03)	(−0.33–0.23)	<0.001
PRHS → PrEP acceptability → PrEP self-efficacy	−0.03 (0.03)	(−0.09–0.04)	0.411

Abbreviations: CI, confidence interval; PrEP, pre-exposure prophylaxis; PRHS, Perceived Risk of HIV scale; SE, standard error.

self-efficacy, supporting H6. Although mistrust in science was negatively associated with PrEP acceptability, it was not significantly associated with PrEP self-efficacy, so H5 was only partially supported. Additionally, perceived risk of HIV was not associated with either PrEP acceptability or self-efficacy, and identity continuity was not significantly associated with any constructs. Therefore, H2 and H3 were not supported.

These results are consistent with those from previous research: a meta-analysis of global data also showed a relationship between PrEP acceptability and PrEP self-efficacy [54]. This allows for a more nuanced understanding of likely behaviour outcomes (i.e., taking PrEP) than does a single measure of PrEP likelihood [6, 55]. Furthermore, it sheds light on how PrEP acceptability and self-efficacy are affected by psychosocial barriers or facilitators to improve the overall PrEP cascade in the UK [5].

Higher levels of identity resilience were associated with protective health behaviours (e.g., lower PrEP stigma) [23, 56, 57]. The positive relationship between identity resilience and (domain-specific) PrEP self-efficacy is especially noteworthy. Wider research shows that perceived self-efficacy of PrEP usage is integral to the uptake and continuation of this behaviour [58, 59]. Our study suggests that identity worth, in particular, enhances PrEP self-efficacy. Interventions to bolster PrEP uptake and thus reduce HIV transmission should focus on boosting identity worth. When examined alongside acceptability of PrEP, it contributes to scholarship that articulates the growing need to address stagnating PrEP uptake [6]. More specifically, although PrEP acceptability (i.e., the willingness to take it) has increased over time, the actual uptake is starting to plateau [60].

Following Breakwell et al. [31], we examined identity resilience in terms of its two constituent parts: identity worth (formed of self-efficacy, self-esteem, and distinctiveness) and identity continuity. As with COVID-19 vaccines [31], identity worth was indirectly associated with both PrEP acceptability and PrEP self-efficacy. First, identity worth was indirectly associated with PrEP acceptability and self-efficacy through PrEP stigma and science mistrust. People with lower self-esteem have been found to be more vulnerable to feelings of shame and to have decreased confidence in their own medical literacy [9, 61–63]. This in turn may result in higher susceptibility to PrEP stigma and thus decreased acceptance of PrEP. Incidentally, low self-esteem and self-efficacy could also result in susceptibility to misinformation and conspiracy theorizing, which is also a known barrier to PrEP acceptability as a result of higher levels of medical mistrust [40]. Therefore, PrEP education and counselling could incorporate empowerment and confidence-building exercises to bolster identity worth and increase (domain-specific) PrEP self-efficacy. For example, facilitating exposure to positive social representations of identity elements (e.g., sexual identity) may in turn boost self-esteem and increase the likelihood of PrEP uptake [64]. This can also be achieved through therapeutic interventions (e.g., counselling) [65].

Unlike with H2 and H3, neither identity continuity nor perceived risk of HIV predicted PrEP acceptability or self-efficacy. Although identity continuity was a significant predictor in the context of COVID-19 vaccines, future research is warranted to explore why this is not the case for PrEP usage [21, 31]. This would contribute to explaining the weak negative correlation between identity continuity and perceived risk of HIV in this study. However, it is clear that more salient motivators for PrEP usage may be present beyond epidemiological risk factors [66, 67]. As the scale-up of PrEP progresses, perceived risk of HIV is becoming less associated with PrEP behaviours (as also found in this study). In short, the reasons for accessing and using PrEP are no longer motivated by an inherent perceived risk of HIV acquisition. Therefore, unlike other health behaviour research, efforts to improve HIV prevention should focus primarily on boosting identity worth. This could be factored into targeted

health messaging or changes to PrEP counselling as provided by healthcare providers. As MSM are not a homogenous group [23], the complex nature of how PrEP (and HIV) affect different components of identity worth (i.e., self-esteem, self-efficacy, distinctiveness) merits further exploration. This will expand theoretical insight into identity resilience and IPT more broadly.

This study had several limitations. The cross-sectional data in this study cannot unequivocally demonstrate causal relationships between identity resilience and PrEP uptake. A sequential, longitudinal design with non-PrEP users would be valuable. Participants in this study were predominantly white and highly educated, thus not entirely representative of UK-based MSM. This is indicative of the wider complexities of research in this area [68]. Stratified sampling of diverse ethnic groups would benefit subsequent work [69]. It should also incorporate qualitative patient data, such as reasons for PrEP (dis)continuation, length of time using PrEP, and number of (sexual) partners as moderating factors. As this is the first study of this kind, future research should now seek to test this model in other populations at risk of HIV acquisition to further expand this knowledge base (e.g., with transgender people, heterosexual women, people of a lower socio-economic status). Although qualitative data can go some way to representing the nuances of experience in underrepresented voices in health research, few studies have used an experimental design, which is necessary to infer causation [38]. Future research should employ mixed-methodological designs to show the efficacy of interventions for PrEP uptake and adherence and the reduction of stigma.

CONCLUSIONS

Identity worth (i.e., a component of identity resilience) is indirectly associated with higher PrEP acceptability and self-efficacy among UK MSM. This goes some way in exploring the precursors of the psychological barriers (or facilitators) to PrEP usage such as diminished self-esteem through PrEP-related stigmas. This is important for advancing scholarship in both health communication and public health that contributes to the design of specific and targeted interventions to increase PrEP uptake, especially among those at highest risk of HIV acquisition. Incorporating ways to bolster self-esteem and distinctiveness could be included in more person-centred PrEP counselling. Improving feelings of identity worth may enhance PrEP uptake in the short term while systemic barriers (e.g., lack of accessibility) can be addressed.

AUTHOR CONTRIBUTIONS

AG was responsible for gaining ethical approval, conducting the data collection and analysis, and the subsequent drafting of the manuscript. RJ, BJ, and DM were all integral to ethical approval, guided the research design, and contributed to the writing of the manuscript.

ACKNOWLEDGEMENTS

The research team acknowledges Nottingham Trent University for supporting this project and all the individuals who gave their time to participate in the study.

FUNDING INFORMATION

This research was funded by Nottingham Trent University as part of a doctoral scholarship.

CONFLICT OF INTEREST STATEMENT

There are no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

Research data are not shared.

ORCID

Anthony J. Gifford https://orcid.org/0009-0002-8337-9951
Rusi Jaspal https://orcid.org/0000-0002-8463-9519
Bethany A. Jones https://orcid.org/0000-0001-8872-5847
Daragh T. McDermott https://orcid.org/0000-0001-7005-6446

REFERENCES

1. Donnell D, Baeten JM, Bumpus NN, et al. HIV protective efficacy and correlates of Tenofovir blood concentrations in a clinical trial of PrEP for HIV prevention. *J Acquir Immune Defic Syndr 1999*. 2014;66(3):340-348. doi:10.1097/QAI.0000000000000172
2. Brady M, Rodger A, Asboe D, et al. BHIVA/BASHH guidelines on the use of HIV pre–exposure prophylaxis (PrEP) 2018. *HIV Med*. 2019;20(S2):s2-s80. doi:10.1111/hiv.12718
3. Shah A, Mackay N, Ratna N, et al. HIV testing, PrEP, new HIV diagnoses and care outcomes for people accessing HIV services: 2023 report. The Annual Official Statistics Data Release (data to end of December 2022). October 2023, UK Health Security Agency, London, 'HIV testing, PrEP, new HIV diagnoses and care outcomes for people accessing HIV services: 2023 report', GOV.UK. Accessed: Oct. 30, 2023. [Online]. Available: https://www.gov.uk/government/statistics/hiv-annual-data-tables/hiv-testing-prep-new-hiv-diagnoses-and-care-outcomes-for-people-accessing-hiv-services-2023-report
4. Keen P, Bavinton BR. Could disparities in PrEP uptake limit the public health benefit? *Lancet Public Health*. 2020;5(9):e467-e468. doi:10.1016/S2468-2667(20)30183-3
5. Coukan F, Murray KK, Papageorgiou V, et al. Barriers and facilitators to HIV pre-exposure prophylaxis (PrEP) in specialist sexual health Services in the United Kingdom: a systematic

review using the PrEP care continuum. *HIV Med*. 2023;24(8):893-913. doi:10.1111/hiv.13492
6. Madhani A, Finlay KA. Using the COM-B model to characterize the barriers and facilitators of pre-exposure prophylaxis (PrEP) uptake in men who have sex with men. *Br J Health Psychol*. 2022;27(4):1330-1353. doi:10.1111/bjhp.12605
7. Cáceres CF, O'Reilly KR, Mayer KH, Baggaley R. PrEP implementation: moving from trials to policy and practice. *J Int AIDS Soc*. 2015;18(4S3):20222. doi:10.7448/IAS.18.4.20222
8. Calabrese SK. Understanding, contextualizing, and addressing PrEP stigma to enhance PrEP implementation. *Curr HIV/AIDS Rep*. 2020;17(6):579-588. doi:10.1007/s11904-020-00533-y
9. Dubov A, Galbo P, Altice FL, Fraenkel L. Stigma and shame experiences by MSM who take PrEP for HIV prevention: a qualitative study. *Am J Mens Health*. 2018;12(6):1843-1854. doi:10.1177/1557988318797437
10. Bower KL, Lewis DC, Bermúdez JM, Singh AA. Narratives of generativity and resilience among LGBT older adults: leaving positive legacies despite social stigma and collective trauma. *J Homosex*. 2021;68(2):230-251. doi:10.1080/00918369.2019.1648082
11. Brooks RA, Nieto O, Landrian A, Fehrenbacher A, Cabral A. Experiences of pre-exposure prophylaxis (PrEP)–related stigma among black MSM PrEP users in Los Angeles. *J Urban Health*. 2020;97(5):679-691. doi:10.1007/s11524-019-00371-3
12. Flowers P, MacDonald J, McDaid L, et al. How can we enhance HIV pre exposure prophylaxis (PrEP) awareness and access?: recommendation development from process evaluation of a national PrEP programme using implementation science tools. *medRxiv*. 2022. (preprint). doi:10.1101/2022.06.09.22276189
13. Garett R, Young SD. The impact of misinformation and health literacy on HIV prevention and service usage. *J Assoc Nurses AIDS Care*. 2022;33(1):e1. doi:10.1097/JNC.0000000000000298
14. Golub SA, Fikslin RA, Goldberg MH, Peña SM, Radix A. Predictors of PrEP uptake among patients with equivalent access. *AIDS Behav*. 2019;23(7):1917-1924. doi:10.1007/s10461-018-2376-y
15. Gifford AJ, Jaspal R, Jones BA, McDermott DT. "Why are PrEP gays always like this ...": psychosocial influences on U.K.-based men who have sex with men's perceptions and use of HIV pre-exposure prophylaxis. *Psychol Sex*. 2025;1-24. doi:10.1080/19419899.2025.2452198
16. Shrestha R, Altice FL, Huedo-Medina TB, Karki P, Copenhaver M. Willingness to use pre-exposure prophylaxis (PrEP): an empirical test of the information-motivation-behavioral skills (IMB) model among high-risk drug users in treatment. *AIDS Behav*. 2017;21(5):1299-1308. doi:10.1007/s10461-016-1650-0
17. Jaspal R, Lopes B, Bayley J, Papaloukas P. A structural equation model to predict pre-exposure prophylaxis acceptability in men who have sex with men in Leicester, UK. *HIV Med*. 2019;20(1):11-18. doi:10.1111/hiv.12667
18. Sun S, Yang C, Zaller N, Zhang Z, Zhang H, Operario D. PrEP willingness and adherence self-efficacy among men who have sex with men with recent condomless anal sex in urban China. *AIDS Behav*. 2021;25(11):3482-3493. doi:10.1007/s10461-021-03274-0
19. Grov C, Whitfield THF, Rendina HJ, Ventuneac A, Parsons JT. Willingness to take PrEP and potential for risk compensation among highly sexually active gay and bisexual men. *AIDS Behav*. 2015;19(12):2234-2244. doi:10.1007/s10461-015-1030-1
20. Arnold-Forster D, Horne R, Nutland W, et al. Perceptions and practicalities influencing pre-exposure prophylaxis adherence among men who have sex with men in England. *AIDS Behav*. 2022;26(8):2768-2782. doi:10.1007/s10461-022-03624-6
21. Jaspal R, Breakwell GM. *Identity Process Theory: Identity, Social Action and Social Change*. Cambridge University Press; 2014.
22. Verfuerth C, Jones CR, Gregory-Smith D, Oates C. Understanding contextual spillover: using identity process theory as a lens for analyzing behavioral responses to a workplace dietary choice intervention. *Front Psychol*. 2019;10:345. doi:10.3389/fpsyg.2019.00345
23. Jaspal R, Lopes B, Breakwell GM. Minority stressors, protective factors and mental health outcomes in lesbian, gay and bisexual people in the UK. *Curr Psychol*. 2023;42(28):24918-24934. doi:10.1007/s12144-022-03631-9
24. Jaspal R, Daramilas C. Perceptions of pre-exposure prophylaxis (PrEP) among HIV-negative and HIV-positive men who have sex with men (MSM). *Cogent Med*. 2016;3(1):1256850. doi:10.1080/2331205X.2016.1256850
25. Jaspal R. Chemsex, identity and sexual health among gay and bisexual men. *Int J Environ Res Public Health*. 2022;19(19):12124. doi:10.3390/ijerph191912124
26. Breakwell GM. Identity resilience: its origins in identity processes and its role in coping with threat. *Contemp Soc Sci*. 2021;16(5):573-588. doi:10.1080/21582041.2021.1999488
27. Breakwell GM, Fino E, Jaspal R. The identity resilience index: development and validation in two UK samples. *Identity*. 2022;22(2):166-182. doi:10.1080/15283488.2021.1957895
28. Bandura A. Self-efficacy: the foundation of Agency1. *Control of Human Behavior, Mental Processes, and Consciousness*. Psychology Press; 2000.
29. Cast AD, Burke PJ. A theory of self-esteem. *Soc Forces*. 2002;80(3):1041-1068. doi:10.1353/sof.2002.0003
30. Lopes B, Jaspal R. Identity processes and psychological well-being upon recall of a significant "coming out" experience in lesbian, gay and bisexual people. *J Homosex*. 2024;71(1):207-231. doi:10.1080/00918369.2022.2111536
31. Breakwell GM, Jaspal R, Wright DB. Identity resilience, science mistrust, COVID-19 risk and fear predictors of vaccine positivity and vaccination likelihood: a survey of UK and Portuguese samples. *J Health Psychol*. 2023;28(8):747-759. doi:10.1177/13591053231161891
32. Jaspal R, Assi M, Maatouk I. Coping styles in heterosexual and non-heterosexual students in Lebanon: a cross-sectional study (Estilo de afrontamiento en estudiantes heterosexuales y no heterosexuales en Líbano: un estudio transversal). *Int J Soc Psychol*. 2022;37(1):33-66. doi:10.1080/02134748.2021.1993117
33. Stuppy A, Smith RW. Self-esteem influences the willingness to engage in COVID-19 prevention behavior and persuasion efficacy. *Soc Sci Med*. 2023;320:115715. doi:10.1016/j.socscimed.2023.115715
34. Stout ME, Christy SM, Winger JG, Vadaparampil ST, Mosher CE. Self-efficacy and HPV vaccine attitudes mediate the relationship between social norms and intentions to receive the HPV vaccine among college students. *J Community Health*. 2020;45(6):1187-1195. doi:10.1007/s10900-020-00837-5

35. Underhill K, Guthrie KM, Colleran C, Calabrese SK, Operario D, Mayer KH. Temporal fluctuations in behavior, perceived HIV risk, and willingness to use pre-exposure prophylaxis (PrEP). *Arch Sex Behav*. 2018;47(7):2109-2121. doi:10.1007/s10508-017-1100-8
36. Kesler MA, Kaul R, Myers T, et al. Perceived HIV risk, actual sexual HIV risk and willingness to take pre-exposure prophylaxis among men who have sex with men in Toronto, Canada. *AIDS Care*. 2016;28(11):1378-1385. doi:10.1080/09540121.2016.1178703
37. Golub SA. PrEP stigma: implicit and explicit drivers of disparity. *Curr HIV AIDS Rep*. 2018;15(2):190-197. doi:10.1007/s11904-018-0385-0
38. Rosengren AL, Lelutiu-Weinberger C, Woodhouse EW, Sandanapitchai P, Hightow-Weidman LB. A scoping review of HIV pre-exposure prophylaxis stigma and implications for stigma-reduction interventions for men and transwomen who have sex with men. *AIDS Behav*. 2021;25(7):2054-2070. doi:10.1007/s10461-020-03135-2
39. Laborde ND, Kinley PM, Spinelli M, et al. Understanding PrEP persistence: provider and patient perspectives. *AIDS Behav*. 2020;24(9):2509-2519. doi:10.1007/s10461-020-02807-3
40. Jolley D, Jaspal R. Discrimination, HIV conspiracy theories and pre-exposure prophylaxis acceptability in gay men. *Sex Health*. 2020;17(6):525-533. doi:10.1071/SH20154
41. Berner-Rodoreda A et al. "It's hard for us men to go to the clinic. We naturally have a fear of hospitals." Men's risk perceptions, experiences and program preferences for PrEP: a mixed methods study in Eswatini. *PLoS One*. 2020;15(9):e0237427. doi:10.1371/journal.pone.0237427
42. Yager JL, Anderson PL. Pharmacology and drug interactions with HIV PrEP in transgender persons receiving gender affirming hormone therapy. *Expert Opin Drug Metab Toxicol*. 2020;16(6):463-474. doi:10.1080/17425255.2020.1752662
43. Sevelius JM, Keatley J, Calma N, Arnold E. "I am not a man": trans-specific barriers and facilitators to PrEP acceptability among transgender women. *Glob Public Health*. 2016;11(7–8):1060-1075. doi:10.1080/17441692.2016.1154085
44. Wignall L, Moseley R, McCormack M. Autistic traits of people who engage in pup play: occurrence, characteristics and social connections. *J Sex Res*. 2023;1-11. doi:10.1080/00224499.2023.2239225
45. Jaspal R, Yenihayat A. Higher identity resilience – self-efficacy is associated with sexual risk behaviours in gay men. *Sex Health*. 2024;21(6). doi:10.1071/SH24211
46. Nadelson L, Jorcyk C, Yang D, et al. I just Don't Trust them: the development and validation of an assessment instrument to measure trust in science and scientists. *Sch Sci Math*. 2014;114(2):76-86. doi:10.1111/ssm.12051
47. Walsh JL. Applying the information–motivation–behavioral skills model to understand PrEP intentions and use among men who have sex with men. *AIDS Behav*. 2019;23(7):1904-1916. doi:10.1007/s10461-018-2371-3
48. Napper LE, Fisher DG, Reynolds GL. Development of the perceived risk of HIV scale. *AIDS Behav*. 2012;16(4):1075-1083. doi:10.1007/s10461-011-0003-2
49. Jaspal R, Lopes B, Maatouk I. The attitudes toward pre-exposure prophylaxis (PrEP) scale: development and validation. *J HIV AIDS Soc Serv*. 2019;18(2):197-205. doi:10.1080/15381501.2019.1596861
50. Jaspal R, Lopes B, Maatouk I. Social identity and attitudes toward HIV pre-exposure prophylaxis: a structural equation model. *J Soc Serv Res*. 2020;46(3):331-344. doi:10.1080/01488376.2019.1566196
51. Rigdon E. CFI versus RMSEA: a comparison of two fit indexes for structural equation modeling. *Struct Equ Model Multidiscip J*. 1996;3:369-379. doi:10.1080/10705519609540052
52. Taasoobshirazi G, Wang S. The Performance of the SRMR, RMSEA, CFI, and TLI: An Examination of Sample Size, Path Size, And Degrees of Freedom.
53. Beran TN, Violato C. Structural equation modeling in medical research: a primer. *BMC Res Notes*. 2010;3(1):267. doi:10.1186/1756-0500-3-267
54. Sun Z, Gu Q, Dai Y, et al. Increasing awareness of HIV pre-exposure prophylaxis (PrEP) and willingness to use HIV PrEP among men who have sex with men: a systematic review and meta-analysis of global data. *J Int AIDS Soc*. 2022;25(3):e25883. doi:10.1002/jia2.25883
55. Frankis J, Young I, Flowers P, McDaid L. Who will use pre-exposure prophylaxis (PrEP) and why?: understanding PrEP awareness and acceptability amongst men who have sex with men in the UK – a mixed methods study. *PLoS One*. 2016;11(4):e0151385. doi:10.1371/journal.pone.0151385
56. Dulai J, Jaspal R. Social connectedness and identity resilience buffer against minority stress and enhance life satisfaction in ethnic and sexual minorities in the UK. *Trends Psychol*. 2024. doi:10.1007/s43076-024-00375-2
57. Breakwell GM, Jaspal R. Identity change, uncertainty and mistrust in relation to fear and risk of COVID-19. *J Risk Res*. 2021;24(3–4):335-351. doi:10.1080/13669877.2020.1864011
58. Golub SA, Starbuck L, Fikslin R, Gamarel KE. Psychometric evaluation and predictive validity of an adapted adherence self-efficacy scale for PrEP. *AIDS Behav*. 2023;27(1):218-230. doi:10.1007/s10461-022-03758-7
59. Glanz K, Rimer BK, Viswanath K. *Health Behavior: Theory, Research, and Practice*. John Wiley & Sons; 2015.
60. Dai M, Harrington NG. Intention to behavior: using the integrative model of behavioral prediction to understand actual control of PrEP uptake among gay men. *Arch Sex Behav*. 2021;50(4):1817-1828. doi:10.1007/s10508-020-01802-y
61. Hascher K, Jaiswal J, Lorenzo J, et al. "Why aren't you on PrEP? You're a gay man": reification of HIV "risk" influences perception and behaviour of young sexual minority men and medical providers. *Cult Health Sex*. 2023;25(1):63-77. doi:10.1080/13691058.2021.2018501
62. Young I, Flowers P, McDaid LM. Barriers to uptake and use of pre-exposure prophylaxis (PrEP) among communities most affected by HIV in the UK: findings from a qualitative study in Scotland. *BMJ Open*. 2014;4(11):e005717. doi:10.1136/bmjopen-2014-005717
63. Brooks RA, Landrian A, Nieto O, Fehrenbacher A. Experiences of anticipated and enacted pre-exposure prophylaxis (PrEP) stigma among Latino MSM in Los Angeles. *AIDS Behav*. 2019;23(7):1964-1973. doi:10.1007/s10461-019-02397-9

64. Jaspal R. *Enhancing Sexual Health, Self-Identity and Wellbeing among Men Who Have Sex with Men: A Guide for Practitioners*. Jessica Kingsley Publishers; 2018.
65. Weinhardt LS, Wesp LM, Xie H, et al. Pride camp: pilot study of an intervention to develop resilience and self-esteem among LGBTQ youth. *Int J Equity Health*. 2021;20(1):150. doi:10.1186/s12939-021-01488-1
66. Hill LM, Maseko B, Chagomerana M, et al. HIV risk, risk perception, and PrEP interest among adolescent girls and young women in Lilongwe, Malawi: operationalizing the PrEP cascade. *J Int AIDS Soc*. 2020;23(S3):e25502. doi:10.1002/jia2.25502
67. Xie L, Wu Y, Meng S, et al. Risk behavior not associated with self-perception of PrEP candidacy: implications for designing PrEP services. *AIDS Behav*. 2019;23(10):2784-2794. doi:10.1007/s10461-019-02587-5
68. Abrams J, Tabaac A, Jung S, Else-Quest N. Considerations for employing intersectionality in qualitative Health Research. *Soc Sci Med 1982*. 2020;258, p. 113138. doi:10.1016/j.socscimed.2020.113138
69. Rahman MM, Tabash MI, Salamzadeh A, Abduli S, Rahaman MS. Sampling techniques (probability) for quantitative social science researchers: a conceptual guidelines with examples. *SEEU Rev*. 2022;17(1):42-51. doi:10.2478/seeur-2022-0023

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Gifford AJ, Jaspal R, Jones BA, McDermott DT. Predicting PrEP acceptability and self-efficacy among men who have sex with men in the UK: The roles of identity resilience, science mistrust, and stigma. *HIV Med*. 2025;1-11. doi:10.1111/hiv.13768