Linking political and feminist ideology with openness towards non-binary gender: The development and initial validation of a scale to measure subjective Openness towards Non-Binary Gender (ONBG)

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Abstract

We present a preliminary validation of a newly built questionnaire aimed at evaluating people's openness towards the notion of non-binary gender. To explore the validity of our questionnaire, we ran a principal component analysis to evaluate the existence of three overarching dimensions (*Gender Categories, Gender Fluidity, and Gender Definitions)* that were at the very foundation of our questionnaire. We also explored the link between our questionnaire and measures of one's political orientation and feminist identification. In all, our questionnaire was found to have an acceptable level of reliability, and as such, constitutes an important tool for better understanding people's attitudes towards non-binary gender.

Keywords: gender identity; gender fluidity; gender binary

Introduction

There are two dominating views in the conceptualisation of a person's gender. The traditional and historically more accepted view is that there are two mutually exclusive genders: female and male. In contrast to this binary and monolithic view is a more open and flexible representation, which regards gender as being defined by one's self-identification with multiple possible gender identities (Matsuno, 2017; Richards, Boutman, Barker, 2017). While a significant number of people identify themselves in line with the latter flexible conceptualisation today, the conflicting views held by those inclined to recognise only traditional binary categories have resulted in hostility between the two opposing positions (Fausto-Sterling, 2000). The consequences of this conflict are not trivial, since the dominance imposed by binary advocates on non-binary individuals has been found to result in marginalisation, harassment, violence, and even the potential risk of mental disorder (Harrison et al., 2012; Matsuno, 2019). Harrison et al. (2012), for example, found that 40% of the people who defined themselves in non-binary terms reported suicide attempts at some point in their lives (as a comparison, the rate for suicide attempts over the lifespan for the US population is around 1.6%). Reducing this tension is therefore of paramount importance, and identifying the constructs relevant for an individual's acceptance of the gender identities of others could provide clarification as to the nature of the intervention required to promote openness towards non-binary gender.

This article reports on the development, and preliminary validation of, the *Openness towards Non-Binary Gender scale* (ONBG), a new self-report measurement tool aimed at identifying one's subjective openness to accept a flexible and non-binary representation of the gender identities of others. In other words, the questionnaire would determine where respondents stand on a scale ranging from a binary, monolithic

representation to a non-binary, fluid representation of gender. Development and validation of the scale were based on three theoretically identified dimensions relevant to the representation of gender identities (that is, categories, fluidity, and definition). Additionally, as openness to accept other non-binary gender identities has recently been associated with an individual's held ideologies (see Hoyt & Parry, 2018), we also examined the differential relationships that gender identity representation has with other features such as an individual's political orientation and self-identification as a feminist.

Views on Gender Representation and a Shift Towards Inclusivity

The question of how one's gender is determined represents a cornerstone in the discussions linked to gender identity. Rooted in essentialist beliefs, the binary vision considers that a single gender is assigned to every individual corresponding to their sexual anatomy at birth and that this sex assignment remains constant with an individual's gender identity throughout one's life (Richards et al., 2016). This belief refers to people with cis-gender identities who experience congruence between their sex assigned at birth and their gender self-identification (Joel et al., 2014). In contrast to essentialist beliefs, constructionists characterise gender as a product of social construction shaped by social norms (for example, Lloyd & Galupo, 2019) and defined by one's self-identification (Fontanella, Maretti, & Sarra, 2014). This means that gender is conceptualised on a continuum that ranges between femininity and masculinity and that one can identify with a gender that does not necessarily correspond to the sex one was assigned at birth (Lloyd & Galupo, 2019). Moreover, this self-identified gender may change across the lifespan or even at different moments in time, reflecting the open choice and fluidity of gender, in a non-binary manner (Diamond & Butterworth, 2008). While the list is not exhaustive (see Chetkovich, 2019; Galupo et al., 2017; Hegarty et al., 2018; Richards et al., 2016), individuals who identify as non-binary include those

with varying gender (gender fluid), those with several genders at once (omnigender), those with any gender (agender, neutrois), or those who reject gender as a dichotomous categorisation (genderfuck, genderqueer), illustrating the existing diversity of gender identities.

The ONBG scale

This divide in opinion between binary and non-binary advocates brings to the forefront three theoretical aspects that we focus on in our ONBG scale. As can be seen from the definitions presented in the previous section, conceptualisations of one's gender identity can take multiple forms. However, the traditional binary view that gender is dichotomous and corresponds to sex has been increasingly criticised for its lack of inclusivity and recognition of diverse identities. For instance, in a study conducted in the Netherlands, Kuyper and Wijsen (2014) investigated the proportion of people who identify with, or more strongly with, the gender that they were not assigned at birth. Among 8,000 participants, the study found that 4.6% of the persons assigned male at birth and 3.2% of the persons assigned female at birth defined themselves as both male and female. Moreover, 1.1% of people assigned male at birth and 0.8% of people assigned female at birth identified more strongly with the 'other' gender. Similar findings have also been reported by Joel et al. (2014), in their study conducted in Israel, who found that there was an even higher percentage of individuals whose self-identity lay outside this dichotomy. In fact, Joel et al.'s (2014) results were much higher than those of Kuyper and Wijsen, who only took into account people who strongly identified with the other gender rather than their assigned sex at birth. As a result, people identifying with both genders, but more strongly with the one corresponding to their sex, were not counted as identifying outside the binary. These results underline that gender identities do not necessarily align with the two *categories* assumed by binary

advocates, a notion that is central to our scale. For non-binary individuals, gender is neither bipolar nor is it defined by a fixed number of categories. Instead, and as highlighted as one of the principal aspects in Monro's (2005) Pluralist Theory of Gender, non-binary individuals conceive of one's gender identity as a spectrum rather than fixed binary categories. Conceptualising gender in such a way allows for a multitude of possible identities to be accommodated, yet at the same time, does not restrict the individual to identifying as either woman or man (Monro, 2005).

Another central aspect of Monro's (2005) theory that is critical to non-binary individuals and adapted in our scale is the notion of *fluidity*. This notion assumes that an individual is open to moving freely across different gender identities, an aspect that is in direct contrast with the binary view that considers gender as remaining constant throughout one's life. Indeed, in a qualitative study assessing the descriptions elicited from non-binary individuals, Galupo, Pulice-Farrow, and Ramirez (2017) showed that gender fluidity constituted one of the central themes in gender non-binary conceptualisations.

The idea that gender identities can be fluid challenges the fundamental binary notion that gender is determined on the basis of primary sex characteristics. In this respect, it also questions the way in which gender identities are *defined,* the third dimension of our scale. In fact, we would argue that, from the binary point of view, gender is considered as being relevant in the understanding of a person (that is, having one, and only one gender, is an obligation). This is problematic for some people, known as intersex, who are born with variations of sex characteristics (such as, chromosomes, gonads, genitalia) which do not correspond to the 'typical' binary female or male conceptualisation. Since the 1950s, they were hidden and operated on at birth to correct their sex and to match either gender category (Hegarty et al., 2018). The existence of

intersex people shows that sex cannot be understood as dichotomous. The same is true for non-binary individuals whose gender identities are shaped and constantly impacted by bodily, social, and subjective changes (Monro, 2005).

In sum, our scale is based on three central dimensions that will be described in further detail in the *Materials and Methods* section: gender categories, gender fluidity, and gender definitions.

Previous Measures of Openness towards Non-Binary Gender

To the best of our knowledge, attitudes towards non-binary gender have been mostly measured through self-report questionnaires, such as Hill and Willoughby's (2005) Genderism and Transphobia Scale or Nagoshi et al.'s (2008) Transphobia Scale. Whereas the former scale measures transphobia and properties such as genderism (that is, negative evaluations), transphobia (emotional disgust), and gender-bashing (such as, harassment), the latter measures prejudice against transgender individuals, emphasising discomfort felt due to individuals not conforming to the norm. Similarly, Tee & Hegarty (2006) developed the Beliefs about Gender Scale that examines beliefs concerning whether sex membership is derived from primary sex characteristics. More recently, Billard (2018) further developed the Attitudes Toward Transgender Men and Women scale that examines attitudes regarding the identity of transgender individuals.

Despite the availability of such scales examining subjective beliefs about gender non-conforming identities, to our knowledge, no questionnaire has specifically targeted assessing one's openness to, and flexibility in, accepting the diverse representations of others' gender identities. As openness (from the Five-factor Model) has been established as a correlate of sexual prejudice (see, Cullen, Wright, & Alessandri, 2013; Miller, Wagner, & Hunt, 2012), measuring one's flexibility in how one views others'

gender identities may reveal a means to combat the prevailing discrimination exercised by binary advocates.

Next, and in an attempt to validate our scale, we address two possible correlates of openness towards non-binary gender: one's political orientation and one's self-identification as a feminist.

Political Orientation as a Correlate of Openness towards Non-Binary Gender

The prevailing belief that non-binary people lie outside the standard has oftentimes led to their marginalisation in most societies. In other words, cis-genderism is implicitly considered to be the social norm (Hegarty & Pratto, 2004), and individuals who display other gender identities are consequently subjected to manifestations of stigma and stereotypes (Herek, 2007). Importantly, these types of prejudice do not emerge simply at the individual level but can arise as a result of institutional ideologies such as political views.

On the left of the political pole, progressive liberalism seeks change by advocating equality and solidarity (Jost et al., 2009). This flexibility is commonly associated with support for individual freedom to freely express one's gender identities. In comparison, the conservative right seeks to maintain traditions, order, and security, as well as accept inequalities (Jost et al., 2009). In this way, the conservative right anticipates strict standards regarding an individual's personal and social life, with the expectation that gender roles, marital regulations, and sexual behaviour will conform with norms or religious beliefs (see Tee & Hegarty, 2006; Wilkinson, 2004).

Some studies have shown a correlation between sexual stigma and right-wing ideology (see Hoyt & Parry, 2018; Nagoshi, et al., 2008; van der Toorn, Jost, Packer, Noorbaloochi, & Van Bavel, 2017; Worthen, 2016) and others have further substantiated that the more right-wing and conservative the political orientation of an

individual is, the more they will be prejudicial against non-binary individuals (see Hodson & Busseri, 2012; Keiller, 2010). For instance, Norton and Herek (2013) showed that negative attitudes toward transgender individuals (that is, transnegativity) correlate with both political conservatism and binary gender representation among heterosexual individuals. In fact, others have shown that the link between transnegativity and political conservatism to be mediated by binary gender representation (Prusaczyk & Hodson, 2019). Similarly, Adams et al. (2016) showed that the link between transphobia and right-wing authoritarianism was mediated by discomfort with violations of gender identity norms.

Jost and colleagues suggested that typical right-wing and conservative traits such as intolerance to uncertainty and ambiguity, dogmatism, and also the need for order, structure, and cognitive closure, could explain their adherence to the concept of gender binary (Jost et al., 2003a, 2003b; Jost, 2017). In the present study, we were mainly interested in participants' self-evaluation of their political orientation, on a left to right continuous scale.

Feminist identification as a Correlate of Openness towards Non-Binary Gender

Although historically, feminist movements emerged as a way to resist assumptions about ontological and social subordination when conceptualising gender as binary (Linstead and Pullen, 2006), at the core of its struggles, feminist ideology embraces views of attaining recognition, liberty, and equal rights to those of men (Henley Meng, O'Brien, McCarthy, & Sockloskie, 1998). While not all streams of feminism agree on specific gender issues (Rampton, 2015), the predominant stream of feminist thought, known as liberal feminism, embraces equal rights among the genders and has become increasingly inclusive (Brassel & Anderson, 2020). Movements linked to liberal feminism show growing awareness of how injustices based on one's gender

can become related to injustices based on one's gender identification and sexuality, claiming, among others, that 'inclusive' feminism should mobilise to defend the rights and access to rights of gender minorities. For those holding traditionalist views, feminists who seek to emancipate individuals from conventional gender roles are considered to challenge traditional ideologies (Kováts, 2018).

Indeed, recent research has suggested an association between feminist beliefs to that of more positive and liberal beliefs for individuals with non-traditional binary gender identities (such as Brassel & Anderson, 2020; Norton & Herek, 2013; Ojerholm & Rothblum, 1999; Platt,& Szoka, 2019; Worthen, 2012). For example, Ojerholm and Rothblum (1999) showed that positive attitudes towards feminism and its movement were correlated with positive attitudes towards sexual minorities. More relevant to our study is the finding reported by Worthen (2012), which demonstrates a positive relationship between one's feminist-identification with that of supportive attitudes towards gender and sexual minorities. This relation is assumed to occur given that self-identifying as a feminist is considered to reflect an individual's liberal ideology in accepting different perspectives and behaviours of others (Worthen, 2012). Based on this premise, our study also examined the relationship between feminist identification and one's openness to other gender identities.

Study Aims and Hypotheses

The current study aimed to develop and validate a questionnaire that assesses the openness and flexibility one has in accepting others' gender identities. As mentioned earlier, the questionnaire was based on three dimensions: gender categories, gender fluidity, and gender definitions. Although on a practical level, these dimensions are interrelated with one another (for example, the assumption of binary gender categories may well overlap with gender fluidity) and are not mutually exclusive, we theoretically

distinguished them to reflect individual items. Thus, we expected to identify these three separate dimensions employing Principal Component Analysis (PCA) on the questionnaire items.

Additionally, given the known associations as highlighted by past research, we also assessed whether one's political orientation and one's identification as a feminist would explain this potential flexibility towards gender representation. As past studies have shown an association between one's self-reported political conservatism with held binary gender views (see Hoyt & Parry, 2018; Norton and Herek, 2013; Prusaczyk & Hodson, 2019), we expected a correlation between support for binary gender representation and right-wing political orientation (and inversely, support for a non-binary gender representation linked to a left-wing political orientation). As for one's identification as a feminist, in line with previous work showing a connection between feminist identification and held positive attitudes toward sexual and gender minorities, we expected that the more strongly one identifies as a feminist, the more open and flexible an individual's views on non-binary gender were expected to be (and inversely, a weaker feminist identification should lead to a more binary gender representation).

Materials and Methods

Sample and Procedure

The sample consisted of 312 participants aged between 18 and 58 years ($M =$ 23.87, $SD = 6.38$). The majority of participants (81%, n = 253) identified as female, 16% (n = 50) as male, and 3% (n = 9) used other identities such as non-binary, agender, or genderfluid. Seven individuals did not indicate their gender identity. French was, for most participants (79%), their principal language, with a minority indicating Italian (12%), German (5%), or another language.

Participants were recruited at the University of Fribourg (Switzerland) and through social media (such as Facebook, Whatsapp). There were no specific inclusion or exclusion criteria for the study, except for understanding French fluently. Psychology undergraduate students at the University of Fribourg received credits for participation. Four hundred and ninety participants began the questionnaires, but 178 participants who did not fully complete the questionnaires were excluded from the analyses.

In order to facilitate data collection for a maximum of participants, data were collected online with a computer or other electronic devices. Participants were asked to activate a link which guided them to the questionnaire hosted on Qualtrics© (Qualtrics LLC, Provo: Utah, USA). Participants provided informed consent prior to filling out the questionnaire. The study was conducted in accordance with the Declaration of Helsinki, and the ethics protocol was approved by the Department of Psychology. The first part of the study was based on a collection of gender statements (that is ONBG). The second part consisted of questions about the participant's political orientation, their feminist identity, as well as demographic measures. Participants, on average, took 15 minutes to complete the entire study.

Measures

Openness towards Non-Binary Gender scale

The ONBG scale aimed to measure one's openness to viewing gender in a fluid or non-binary manner. As described earlier, there are two different approaches to conceptualising gender (Lloyd & Galupo, 2019). In essentialism, sex and gender are predetermined by biology and fixed to two categories along a binary concept of gender. In the view of social constructionism, however, gender is a product of social construction shaped by the experience of social norms and expectations about behaviours and attitudes. Gender is therefore seen as fluid and continuous. These two

contradicting concepts of gender were used as two opposing poles to organise our questionnaire.

We developed items to assess gender representations across three dimensions which all correspond to these opposing poles of gender conceptualisations. The first dimension is called *categories* and consists of items reflecting the potential number of gender categories ranging from a binary conceptualisation of gender to a continuous conceptualisation of gender. A sample item (see the Appendix at

https://osf.io/cd5bz/?view_only=fac9ddd69c5d4176ad2a16304221b19f for all original items in French and their respective English translations) for the *categories* dimension is *Il existe un grand nombre de catégories de genre* [There are a large number of gender categories]. The second dimension, *fluidity*, consisted of items reflecting one's representation of gender ranging from fixed gender categories to a fluid conceptualisation of gender (which may change over time). A sample item for the *fluidity* dimension is *Le genre d'une personne peut changer au cours de sa vie* [The gender of a person can change through the course of their lifetime]. The third and final dimension, *definition*, consisted of items reflecting the predetermination of gender ranging from biological predetermination to aspects of 'feeling gender'. A sample item for the *definition* dimension is *Le genre n'est pas obligatoirement défini par les organes sexuels* [Gender is not obligatorily defined by sexual organs]. To ensure that each item was correctly understood, we always paired it with another item addressing the same aspect. In total, we created 18 items to assess openness to non-binary gender: eight items for *categories*, four items for *fluidity*, and six items for *definitions*. The number of items for each dimension was determined by the number of notions we deemed necessary to cover most aspects of the gender concept.

Participants rated each item on a 7-point Likert scale ranging from 1 'completely disagree [*pas du tout d'accord*]' to 7 'completely agree [*tout à fait d'accord*]'. Higher levels represent a more fluid and continuous conceptualisation of gender. Note that this was inverted for three items to ensure that participants' attention was kept constant. The 18 items were presented in a random order to avoid order effects.

Political Orientation

Participants were also asked to evaluate their political orientation with the question *Politiquement, vous vous situez plutôt?* [Where do you place yourself politically?] on a 7-point scale ranging from 1= *extrême gauche* [far left] to 7=*extrême droite* [far right] with 4=*centre* [centre]. The mean value of political orientation for the current sample was $M = 2.99$ ($SD = 1.29$).

Feminist Identification

Participants' identification as a feminist was assessed with one item *Vous considérez vous comme féministe?* [Do you consider yourself to be feminist?]. Participants answered on a 7-point Likert scale ranging from 1= *pas du tout* [does not correspond at all] to 7= *tout à fait* [corresponds exactly]. The mean value of the degree of feminism for the current sample was $M = 5.11$ ($SD = 1.80$).

Statistical Analyses

The psychometric analyses for the ONBG scale comprised an exploratory factor analysis and measures of reliability were run with IBM SPSS©. A principal component analysis (PCA) was performed to test the factorial structure of the questionnaire. The Kaiser-Guttman criterion (eigenvalue > 1) was applied in order to determine the number of components. Although we organised the 18 items across three dimensions, we did not expect these dimensions to be independent of each other. Fixed and binary representations may well be intercorrelated as well as fluid and continuous gender

representations (as discussed by Lloyd and Galupo, 2019). As a consequence, we chose Oblimin rotation in order to allow for non-orthogonal dimensions. Reliability was determined by internal consistency (Cronbach's α).

Results

Validation of the ONBG

Table 1 shows the means, *SD*, skewness, and kurtosis for each item. None of the items were normally distributed (Kolmogorov-Smirnov ranging from .12 to .28, $p <$ .001). Means were lowest for inversed items such as Categories_1.1 ($M = 2.46$, $SD =$ 1.94) and Definition_3.1 ($M = 3.29$, $SD = 1.88$). For other items, the lowest mean was observed for the item Categories_2.1 ($M = 3.70$, $SD = 2.04$) and the highest mean for Definition_1.2 ($M = 5.61$, $SD = 1.90$). We checked for correlations between the items; due to non-normal distributions we used Spearman Rho. The strongest correlations were found between pairs: for the group *fluidity* Fluidity_1.1 and 1.2 (inversed) $r = -.66$, Fluidity_2.1 and 2.2 $r = .70$ (both $p < .01$); for the group *defintion* Definition_1.1 and 1.2 $r = .77$, Definition_3.1 (inversed) and 3.2 $r = -.48$ (both $p < .01$); with the exception of the pair Definition_2.1 and 2.2. The item Definition_2.2 showed the strongest correlation with Definition_1.2 ($r = .53$, $p < .01$), while the correlation between the pair Definition_2.1 and Definition_2.2 was $r = .36$ ($p < .01$). For the last group of items, *categories*, again, the strongest correlations were between pairs: Categories_1.1 (inversed) and 1.2 $r = -.73$, Categories_3.1 and 3.2 $r = -.68$, Categories_4.1 and 4.2 $r =$ .62 (all $p < .01$); with the exception of the pair Categories_2.1 and 2.2. Item Categories_2.2 showed the strongest correlation with the item Categories_1.1 (inversed) ($r = -.65$, $p < .01$), while the correlation between the pair Categories_2.1 and Categories_2.2 was $r = .38$ ($p < .01$). Overall, correlations between 18 items ranged from .30 to .73 in size.

Principal Component Analysis (PCA) with Oblimin rotation offered a four-factor solution (eigenvalues 7.70, 1.39, 1.26, and 1.06). The four components explained 63.35% of the variance. The item loadings after rotation are illustrated in Table 2 with Cronbach's alpha for each subscale. The first component explained 42.78% of the total variance and consisted of all the items representing *fluidity* and one pair of items of the group *category* (Fluidity_2.2, Fluidity_1.1, Fluidity_2.1, Fluidity_1.2, Categories_3.1, and Categories_3.2) with factor loadings ranging from .88 to .44. We named this first component 'Gender Fluidity'. The second component explained 7.71% of the total variance and consisted of two items from the group *definition* (Definition_2.1 and Definition_2.2) with a factor loading of .78 and .42 respectively. We named this second component 'Definition by Feelings'. The third component explained 6.99% of the total variance and consisted of one pair of items from each group *category* and *definition* (Definition_3.1, Definition_3.2, Categories_4.1, and Categories_4.2) with factor loadings ranging from .87 to .42. We named this third component 'Gender Relevance'. The fourth component explained 5.87% of the total variance and consisted of six items from the groups, *category* and *definition* (Categories_2.1, Categories_1.2, Categories_1.1, Definition_1.2, Categories_2.2, and Definition_1.1), with factor loadings ranging from -.85 to -.53). We named this fourth component 'Gender Categories'. Internal consistency was satisfying for component 1, 3, and 4 with a range of Cronbach's α from .71 to .87. Internal consistency for component 2 with only two items was rather low (α = .57).

Correlations between ONBG and Political Orientation and Feminist Identification

We also tested whether the individual components of our scale, as well as the score of the ONBG scale, were associated with other variables (see Table 3). Political orientation was negatively associated with all components of the ONBG scale, as well

as its total score (factor 1: $r = -.23$, $p < .001$; factor 2: $r = -.26$, $p < .001$; factor 3: $r = -.34$, $p < .001$; factor 4: $r = -.35$, $p < .001$). There was also a moderate negative correlation with the total score of the OBNG scale, $r = -.35$, $p < .001$. Thus, participants who placed themselves more on the right spectrum of political orientation reported less flexible and fluid representations of gender. Correlations were about the same size for participants' feminist identification (factor 1: $r = .31$, $p < .001$; factor 2: $r = .36$, $p < .001$; factor 3: $r = .30$, $p < .001$; factor 4: $r = .41$, $p < .001$; $r = .41$, $p < .001$ for the total score of the OBNG scale). Thus, the more participants identified as feminists, the more flexible and fluid their reported representations of gender.

The two measures of political orientation and feminist identification were negatively correlated $r = -.42$ ($p < .001$). And correlations between subscales of the new gender measure ranged between .40 and .65 ($p < .001$).

All data and analyses scripts are available at

https://osf.io/cd5bz/?view_only=fac9ddd69c5d4176ad2a16304221b19f.

Discussion

Validation of the ONBG scale

Our study provides preliminary evidence for the validity of the 18-item Openness towards Non-Binary Gender scale. Results of the PCA highlighted four factors which were identified as *Gender Fluidity*, *Definition by Feelings*, *Gender Relevance*, and *Gender Categories*. Although these dimensions were distinct, they reflected related constructs, with the 18 items showing high internal consistency for the total scale.

The first component, *Gender Fluidity* consisted of all items from the initial *fluidity* dimension, addressing beliefs relating to the flexibility of gender conceptualisations, as well as a pair of items initially placed in the *categories*

dimension, addressing beliefs about the potential number of gender categories. While questions from the *fluidity* dimension all showed high factor loadings, questions from the latter *categories* dimension indicated slightly lower factor loadings. Nonetheless, as the two statements from the *categories* dimension correspond to the possibility of belonging to several gender categories at the same time, they can easily be considered as also reflecting gender fluidity. In fact, this first component alone explained almost half of the variance, which was consistent with the notion that fluidity is central in understanding the gender representation of diverse identities (Diamond & Butterworth, 2008).

The second component, *Definition by Feelings*, contained a single pair of items from the initial *definition* dimension, which addressed the beliefs regarding how gender is assigned to a person. The questions contained in this component consisted of only those addressing one's conviction and feelings, showing that the psychological aspect of determining one's gender appears to be an isolated, yet critical dimension. Defining one's gender by one's internal convictions is central to non-binary perspectives of gender, whereas binary advocates view gender as being categorically determined by primary sex characteristics. This component, therefore, corresponds to individuals' convictions to define their own gender identity. The emergence of this component is theoretically consistent with the fact that gender cannot be detached from one's identity, in that gender identity, as a felt internal experience, is fundamental to (most) people in terms of self-categorisation (Wood & Eagly, 2009) and places the individual in a certain social group and role (Stets & Burke, 2000). In this regard, this component corresponds to an individual's sense of being that may not correspond to categories defined at birth and may be dependent on one's individual experiences.

Items from the initial dimensions, *definition* and *categories*, loaded onto the third component *Gender Relevance* and reflect the relevance or importance of identifying with a specific gender. The pair of items showing the strongest factor loadings were derived from the *definition* dimension and addressed the importance of the concept of gender. The remaining pair of items associated with the *categories* dimension referred to beliefs regarding the obligation of belonging to a gender. It was also identical to one of the items in a previous study (that is 'Each person has a sex and a gender') by Pryzgoda and Chrisler (2000) investigating the link between gender identity and gender beliefs (that is, beliefs about what gender is). This component measures an essential difference between the non-binary and binary views, in which the relevance of gender to understanding a person is questioned among those holding non-binary views, yet this is not the case for those holding binary views. Essentially, binary gender categories are only relevant for individuals whose gender identities conform to the corresponding binary categories and who consider them to be normative. However, those who do not identify with either of the gender categories do not see these categories as being relevant to themselves (Dembroff, 2020). On this account, the component *Gender Relevance* reflects the importance an individual places on belonging to preconceived categories.

Finally, two pairs from the *categories* dimension and a pair from the *definition* dimension loaded onto the fourth component *Gender Categories*. Questions from the initial *categories* dimension consisted of those related to beliefs regarding existing gender categories, whereas questions from the *definition* dimension referred to beliefs about whether gender corresponds to primary sex characteristics. The belief that sex does or does not define gender categories matches the dichotomy seen between binary

and non-binary visions, and as such, this component reflects beliefs that categorically differentiate the two opposing views.

To summarise, the components emerging from the analyses differed slightly from our initial conceptualisation of the questionnaire. Specifically, the PCA yielded four components as opposed to the three we initially expected. Although we observed the expected dimensions of *fluidity*, *categories*, and *definition*, the derived components did not consist only of the items we had started with. Still, in all, the notions of *fluidity* and *categories* did emerge rather robustly in the components we subsequently named *Gender Fluidity* and *Gender Categories*. Importantly though, the psychological statements linked to convictions and feelings, initially in the *definition* dimension, emerged as an isolated component, giving rise to the *Definition by Feelings* component. The remaining items of *definition* contributed to *Gender Categories* and *Gender Relevance*, a dimension meant to capture the need for a sense of identification with preconceived binary gender categories.

Political Orientation

We also examined the relationship of gender representation with that of political orientation through correlational analyses. Consistent with our hypotheses, the results indicated that each component, as revealed by the PCA, as well as the overall score of our ONBG scale were linked to political orientation, such that stronger binary gender representations were more likely to be associated with a right-wing political orientation. These findings are congruent with past studies showing a direct link between right-wing political orientation and greater prejudicial attitudes against non-binary individuals (see Hodson & Busseri, 2012; Nagoshi et al. 2008; Norton & Herek, 2013; Prusaczyk & Hodson, 2019).

At its core, endorsement of right-wing ideology or conservatism constitutes, among others, commitment to tradition and social conventional attitudes, as well as resistance to change (Jost, 2003b). Thus, the positive correlation between right-wing political orientation and greater prejudicial attitudes against non-binary individuals observed in our data is consistent with the idea that right-wing supporters may justify their prejudicial attitudes with the belief that non-binary individuals deviate from expected traditional gender roles.

Feminist Identification

The relationship of gender representation with one's identification as a feminist was also examined. As was the case for political orientation, our analyses revealed a strong association between openness to non-binary gender representation and feminist identification. Specifically, the correlations revealed that the more participants identified themselves as feminists, the more flexible their gender representation was. In contrast, those with low self-reported feminism scores showed a greater disposition for dichotomous and fixed gender representations. These results are in line with past research suggesting that there is a direct link between gender fluid representations and one's identification as a feminist (see Brassel & Anderson, 2020; Ojerholm & Rothblum, 1999; Platt & Szoka, 2019; Worthen, 2012). Platt & Szoka (2019) suggest that because feminist beliefs are linked to notions such as egalitarianism between the sexes and challenging traditional gender roles, individuals endorsing these values may also show support for transgender and gender non-conforming individuals.

Limitations of the Study

The current study aimed to develop a new tool for measuring individuals' openness and flexibility towards a non-binary notion of gender. We found good internal consistency and no items had to be deleted. However, we wish to highlight that this

study served as an initial validation aimed at providing a basis for future research and further development of the ONBG scale. Some limitations regarding this initial validation need to be stressed.

Firstly, we acknowledge that we observed newly emerging components, namely *Definition by Feelings* and *Gender Relevance,* which were not initially anticipated. Additionally, there was quite a difference in the number of items attributed to each dimension as revealed by the PCA, which differed from the initial theoretical dimensions we began with and could prove to be problematic. In particular, the PCA revealed fewer items for the component *Definition by Feelings* which only consisted of two items; and as a consequence had a low internal consistency (Cronbach's alpha = .57). We argue that these newly derived components were not simply statistical artefacts, and have argued that they were consistent with theoretical assumptions outlined from previous research. Nonetheless, considering the limited amount of items found for *Definition by Feelings*, future studies will need to develop new items in this new component and attempt validation, which may further improve the validity of the questionnaire.

Secondly, we are not able to rule out that participants did not fully comprehend the statements we presented. The binary vision of gender is hardly ever questioned in society and some notions may have been very abstract for participants. Those who had never reflected on other ways of perceiving gender may not have grasped critical concepts such as fluidity or the continuum of gender identities. It may, therefore, be appropriate for future studies employing this questionnaire to add a comprehension scale to each item (for example to assign a rating to the clarity of each statement). With this measure, responses recorded with low comprehension of the item may be excluded from the analyses to increase data reliability. It would also facilitate the identification of

items that are not well understood by the majority of participants and hence allow items to be revised for better wording.

Finally, given that there are multiple streams of feminism, some which even advocate for the exclusion of transgender people from the feminist scene (for example, trans-exclusionary radical feminists), a single item asking for a self-assessment of feminist identification may not fully reveal the participants' held internal beliefs regarding some gender equality issues. Moreover, it may be the case that with a single item, we were not able to accurately detect feminists in our participant pool. This is because while individuals may accept and endorse feminist views, some individuals may resist openly self-identifying as a feminist (see Wittig, 1997). A more detailed and adjusted measurement of feminist identification might provide greater sensitivity for identifying feminists, and may provide better insight into the link between feminism and attitudes towards non-binary gender.

Conclusions and Future Research

In all, the current study advances our understanding of how people consider non-binary gender. Again, we would like to highlight that the questionnaire we have developed here consists of a preliminary validation, and as such, we would like this questionnaire to be completely open-access in the hope that others may want to replicate and further develop the ONBG scale. As people whose gender diverges from the norm set by society are faced with greater challenges and discrimination, it is fundamental that all fields and professions related to mental health and education train and sensitise their members to the diversity of gender identities. Based on this outlook, our questionnaire can potentially serve as a basic measurement tool for the implementation of training and raising awareness.

Disclosure statement

We report no potential competing interest.

Data availability statement

The data that support the findings of this study are openly available on OSF (Open

Science Framework at

https://osf.io/cd5bz/?view_only=fac9ddd69c5d4176ad2a16304221b19f).

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Table 1: Descriptives of each item (please refer to the Appendix at

https://osf.io/cd5bz/?view_only=fac9ddd69c5d4176ad2a16304221b19f for the item translations)

	M	*SD*	Skewness	Kurtosis
Definition_1.1 : *Les organes sexuels ne correspondent pas obligatoirement au genre*	5.56	1.92	-1.21	.21
Definition_1.2 : *Le genre n'est pas obligatoirement défini par les organes sexuels*	5.61	1.90	-1.29	.46
Definition_2.1 : *Le genre répond à une conviction profonde*	4.54	1.77	-.36	-.63
Definition_2.2 : *Chaque personne définit son genre selon son ressenti propre*	5.34	1.88	-1.03	-.04
Definition_3.1 (inv) : *Le genre est pertinent pour définir une personne*	3.29	1.88	.42	-.89
Definition_3.2 : *Le genre n'est pas une catégorisation pertinente*	4.39	1.87	-.16	-1.02
Categories_1.1 (inv) : *Le genre se limite aux deux catégories homme ou femme*	2.46	1.94	1.24	.28
Categories_1.2 : *Il y a plus de deux catégories de genre*	5.34	2.03	-.97	-.39
Categories_2.1 : *Il est impossible de lister/nommer tous les genres existants*	3.70	2.04	.23	-1.16
Categories_2.2 : *Il existe un grand nombre de catégories de genre*	4.57	2.01	-.28	-1.14
Categories_3.1 : *Il est possible de s'identifier à plusieurs catégories de genre en même temps*	4.40	1.95	-.24	-1.07
Categories_3.2 : *Appartenir à une catégorie de genre n'exclue pas nécessairement l'appartenance simultanée à une autre de celles-ci*	4.56	1.95	-.31	-1.00

Categories_4.1 : *Il est possible de ne pas s'identifier à un genre*	5.10	2.05	-.78	-.67
Categories_4.2 : *Il est possible de s'identifier à aucune des catégories de genre*	4.81	2.01	-.48	-1.01
Fluidity_1.1 : *Le genre d'une personne peut changer au cours de sa vie*	5.38	1.90	-1.04	-.05
Fluidity_1.2 (inv) : *Le genre d'une personne est figé dans le temps*	2.73	1.87	.91	-.30
Fluidity_2.1 : *Le genre d'une personne peut changer en fonction de son ressenti du moment*	3.97	2.07	.01	-1.27
Fluidity_2.2 : *Le ressenti d'une personne à un moment donné peut faire varier le genre auquel celle-ci s'identifie*	4.47	1.88	-.38	-.88

Table 2: Factor loadings after Oblimin rotation

Item	Factor loadings				
	1	2	3	4	α
Component 1 : Gender Fluidity					.86
Fluidity_2.2 : *Le ressenti d'une personne à un moment donné peut faire varier le genre auquel celle-ci s'identifie*	**.882**	.002	.019	.142	
Fluidity_1.1 : *Le genre d'une personne peut changer au cours de sa vie*	**.819**	.132	-.126	-.054	
Fluidity_2.1 : *Le genre d'une personne peut changer en fonction de son ressenti du moment*	**.783**	-.113	.098	-.022	
Fluidity_1.2 (inv) : *Le genre d'une personne est figé dans le temps*	**.781**	.142	-.110	.013	
Categories_3.1 : *Il est possible de s'identifier à plusieurs catégories de genre en même temps*	**.487**	-.285	.281	-.253	
Categories_3.2 : *Appartenir à une catégorie de genre n'exclue pas nécessairement l'appartenance simultanée à une autre de celles-ci*	**.440**	-.222	.242	-.329	
Component 2 : Definition by Feelings					.57
Definition_2.1 : *Le genre répond à une conviction profonde*	.073	**.780**	.000	-.005	
Definition_2.2 : *Chaque personne définit son genre selon son ressenti propre*	.351	**.421**	.165	-.201	
Component 3 : Gender Relevance					.71
Definition_3.1 (inv) : *Le genre est pertinent pour définir une personne*	-.135	.084	**.870**	.043	

Definition_3.2 : *Le genre n'est pas une catégorisation pertinente*	.029	-.018	**.806**	.112
Categories _4.1 : *Il est possible de ne pas s'identifier à un genre*	.229	-.156	**.426**	-.273
Categories _4.2 : *Il est possible de s'identifier à aucune des catégories de genre*	.159	-.010	**.415**	-.305
Component 4 : Gender Categories				.87
Categories _2.1 : *Il est impossible de lister/nommer tous les genres existants*	-.057	-.186	-.208	**-.845**
Categories _1.2 : *Il y a plus de deux catégories de genre*	.005	.225	.138	**-.668**
Categories _1.1 (inv) : *Le genre se limite aux deux catégories homme ou femme*	.140	.282	.138	**-.596**
Definition_1.2 : *Le genre n'est pas obligatoirement défini par les organes sexuels*	.118	.355	.163	**-.559**
Categories _2.2 : *Il existe un grand nombre de catégories de genre*	.201	.085	.201	**-.537**
Definition_1.1 : *Les organes sexuels ne correspondent pas obligatoirement au genre*	.073	.391	.126	**-.529**

Table 3: Correlations (*N* = 312)

	Gender Fluidity		Definition by Feelings		Gender Relevance		Gender Categories		GenMeasure	
Feminism	.31	***	.36	***	.30	***	.41	***	.41	***
Political orientation	-.23	***	-.26	***	-.34	***	-.35	***	-.36	***

Note. GenMeasure = Total scale with 18 gender representations (α = .92). *** $p < .001$; ** $p < .01$ *; $p < .05$; (two-tailed)