Gender can be a continuous variable, not just a categorical one :

Comment on Hyde, Bigler, Joel, Tate and van Anders (2019)

Abstract

Hyde et al. (2019) opened debate on the treatment by psychologists and researchers of sex/gender as a dichotomous variable (male/female), and the utility of alternative conceptions. In doing so though, they framed the alternative to a gender-binary as treating gender as a categorical variable. Hyde et al.'s review obscures important contributions of a large number of psychological researchers who for decades have treated gender as a *continuous* variable. Their work offers an forceful contrast to the traditional gender-binary approach, and also has a direct bearing on some of the questions raised by Hyde et al. (2019), including gender differences in prevalence of depression.

Keywords: gender, sex differences, sex-role identification, gender-roles

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Hyde et al. (2019) presented a thought-provoking piece on the treatment by psychologists and researchers of sex/gender as a dichotomous variable (male/female). In reviewing the history of psychological research it did, however, eclipse the important contributions of a large number of psychological researchers who for decades have treated gender as a continuous variable rather than a categorical one. Collectively, their work paved the foundation for a body of research documenting that masculinity and femininity are not mutually exclusive traits, and that gender-role non-conformity is more normative than previously assumed.

Although the biological sex (in most cases) of a child is determined at birth, we vary quite considerably in the degree to which we develop stereotypically masculine and feminine personality traits, interests, and beliefs; a process termed *sex-role identification*¹ and sometimes *sex-role identity*. Early conceptualizations treated masculinity-femininity as bipolar opposites (to be high in masculinity implied an absence of femininity, and vice versa), and were guided by the ideology of the time. However, with the advent of statistical tools such as factor analysis, a growing body of research showed masculinity and femininity to be separate and distinct psychological constructs in their own right (Constantinople, 1973). With this came a range of new instruments for measuring masculine and feminine personality traits and identification, with the two most popular being the Bem Sex-Role Inventory (BSRI; Bem, 1981) and Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1980). These were primarily based on the endorsement of stereotypically masculine (agentic) and feminine (expressive) personality traits.

¹ Some researchers prefer the term gender-role identification, but the historical nomenclature is used herein to assist interested readers in searching the literature and because the term gender-role identification is often conflated incorrectly with gender identity disorder.

Similar instruments were also available for children, allowing researchers to track the developmental progression of sex-typed behavior and beliefs. These showed, for example, that boys and girls were more similar than different in personality traits early on, but that there was an intensification of the importance to conform to masculine and feminine roles during late adolescence. The availability of these tools sparked an explosion of research into topics such as gender identification, gender stereotyping about men and women's roles in society, and psychological androgyny (healthy integration of both masculine and feminine traits).

The explosive growth of research in this area also showed the utility of treating gender as a *continuous*, rather than categorical variable. Prevailing beliefs by researchers prior to this had partitioned men and women into two distinct camps: any crossover was pathologized as a mental health disorder². But empirical research findings using these instruments showed that in non-clinical populations there is considerable individual variability in the acquisition of sex-typed masculine and feminine traits in the general population (*i.e.* non-clinical samples). While some people are rigidly sex-typed in a manner consistent with their biological gender, still others incorporate a healthy integration of both masculine *and* feminine traits (androgyny). Androgyny affords greater cognitive and behavioral flexibility (Reilly, Neumann, & Andrews, 2016), and is also linked to better psychological health (Gibson, Baker, & Milner, 2016). There are also those men and women who self-identify more with the personality traits and roles of the other gender (approximately 12% in the original BSRI normative samples of college students, and similar results with modern samples). Such evidence challenged the previously held assertion that gender non-conformity was extremely rare and unusual, or that psychological gender need be veridical with biological sex. In doing so, it lay down the foundation for further research and its historical

² Early tests by Terman and Miles of femininity in men were misused to diagnose *sexual inversion*, which conflated possessing stereotypically feminine interests with sexual orientation.

contribution be acknowledged in such debate.

Another reason it is vital to highlight the contribution of research into sex-role identification/ gender roles in such a debate is that it offers an alternative pathway to the categorical gender divide that Hyde et al. (2019) critiqued. Treating gender as a *continuous* rather than a categorical variable also holds promise for the future of psychological research in a range of areas. For example, Hyde et al. (2019) raised the issue of gender differences in mental health outcomes and in particular, the gendered prevalence of depression (approximately 2 females for every male). Hyde et al., argued “categorical views of gender/sex have contributed to the stereotyping of depression as a female disorder”, p.188. If we want to understand the etiology and causes of this gender disparity, then treating gender as a continuous variable rather than a categorical may be a useful research practice. Quite a number of studies with large non-clinical representative samples have found that sex-role identification is quite a strong predictor of depression in adolescence and young adulthood (Barrett & White, 2002; Gibson et al., 2016), as well as a moderately strong predictor of self-esteem and self-efficacy beliefs (Hirschy & Morris, 2002). It also represents another potential screening tool, and the risk in therapy of assuming clients automatically identify with gender-roles of their biological sex. Guidelines for psychological practice with men and boys published by the APA (2018) highlight the importance of considering gender-role strain for those who do deviate from traditionally masculine gender-norms, especially when it comes to seeking help for mental health issues.

There are many alternatives to the dichotomous gender-binary critiqued in Hyde et al. (2019), and it is hoped that their review prompts reflection about psychological research practices – particularly the inclusiveness of an open-ended response to gender on surveys. The authors also touched briefly on some multidimensional measures of gender (e.g. belongingness to the category of “male” and “female”) but the psychometric properties of single item scales for measuring

gender identification are dubious, and researchers would be far better served using more detailed measures for capturing the construct of gender identification, such as the BSRI/PAQ. Wood and Eagly (2015) offer a detailed and nuanced review of a range of these and other measures, for the interested researcher. Broadening our definition of gender from a categorical to a continuous measure may be a useful research practice to consider.

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