

1. Introduction

Participation in highbrow culture has been a prominent construct in sociological research. Since Bourdieu's eminent work "Distinction" (1986), cultural capital has theoretically and empirically been established as a key mechanism through which social status is transmitted across generations. Highbrow cultural participation has been called "the best proxy for cultural capital" (Aschaffenburg and Maas, 1997, p. 577) and thus has been commonly used as an indicator thereof. As such, a large strand of research deals with how one's social position predicts highbrow cultural participation on the one hand, and, on the other hand, how highbrow cultural participation predicts life chances. Abundant studies established that highbrow activities foster one's educational attainment (Jæger & Breen, 2016) and increase one's chances to have a higher income later in life (Reeves & De Vries, 2019). These findings exemplify the long-standing tradition of cultural resources in social stratification research.

Cultural capital is typically described as a long-lasting disposition that materializes in tastes and behavior (embodied form), cultural possessions (objectified form), and educational credentials (institutionalized form). Some scholars also include values and attitudes in their definition. For example, Katsillis and Robinson (1990, p. 270) frame cultural capital as "competence in a society's high-status culture, its behavior, habits, and attitudes". Lamont and Lareau (1988, p. 156) conceptualize it as "institutionalized, i.e., widely shared, high status cultural signals (attitudes, preferences, formal knowledge, behaviors, goods and credentials)". Many others also understand attitudes in general as part of cultural capital (De Graaf, De Graaf, and Kraaykamp, 2000; Eitle and Eitle, 2002; Kalmijn and Kraaykamp, 1996; Lareau and Weininger, 2003). Thus, attitudes are commonly understood as part of one's cultural capital in the literature but were surprisingly seldomly addressed empirically in the past.

With highbrow cultural participation and attitudes both constituting cultural capital, the question arises how one relates to the other. Theoretically, one can expect that the art itself as well as the social selectivity of highbrow cultural events lead to the prevalence of a specific set of values and attitudes (see Vassenden and Jonvik, 2018). Through socialization processes at highbrow cultural events, attending them might reinforce this set of attitudes in the attendees. This might in particular be true for emerging adults, on whom we focus in this paper, as values are still formed and solidified in this phase of life (Ullrich et al., 2022). Recently, research linking highbrow cultural participation to values and

attitudes has picked up. For example, Campagna et al. (2020) show that cultural participation affects values regarding sustainability and political trust. Otte (2019) connects it to social cohesion including attitudes towards social groups in the form of social trust.

While research on how cultural participation affects attitudes has increased, gender role attitudes in particular remain largely overlooked. With art often challenging societal norms (Otte, 2019) and being highly gendered (Lagaert et al., 2017), it can be expected that highbrow cultural events serve as societal arenas in which gender role issues are contested and negotiated. Accordingly, Chan (2019) reports that omnivore cultural consumption is positively correlated with egalitarian gender role attitudes but does not provide a theoretical reasoning, thorough empirical investigation, and discussion of this relationship. The literature on the relationship between cultural participation and gender role attitudes is otherwise scarce. Investigating how cultural participation affects gender role attitudes is crucial because it informs policymakers about a potential mechanism to foster gender equality, which is a worldwide issue as reflected in the UN Sustainable Development Goals (UN, 2025). As such, this study focuses on the effect of highbrow cultural participation on gender role attitudes.

In addition, the question arises whether a potential effect of cultural participation on gender role attitudes differs for different populations. Attitudes on gender differ between men and women as well as individuals from higher and lower socioeconomic backgrounds (Ullrich et al., 2022). In that light, Lagaert et al. (2017) and Christin (2012) highlight that gender and socioeconomic status often moderate relationships in research on highbrow culture and multidimensional gender constructs, indicating that it is plausible to assume that they moderate potential effects of highbrow cultural participation on gender role attitudes as well.

Previous research has focused on other predictors of gender role attitudes, while leisure-time cultural participation also holds promise for explaining them. Gender role attitudes are amenable to changes, especially during youth (see Halimi et al., 2021; Ullrich et al., 2022; 2024). Employing data from the German National Educational Panel Study, we are able to investigate how gender role attitudes develop between age 19 and age 25. Thus, in this study, we examine two research questions: 1) Does highbrow cultural participation affect the development of gender role attitudes during emerging adulthood? 2) Is this effect moderated by gender or socioeconomic status?

2. Background

2.1 The Development of Gender Role Attitudes

In line with social role theory (Eagly & Wood, 2012), gender roles can be described as societal and psychological constructs regarding the division of power and work between men and women. Gender roles encompass culturally and historically shaped expectations about how men and women engage in romantic relationships, divide household responsibilities, and participate in the labor market. Traditionally, these roles were closely tied to a binary understanding of sex: men were typically viewed as primary providers, whereas women were associated with caregiving and domestic duties (e.g., Eagly & Wood, 2012). However, this traditional division is eroding, which leads to an egalitarian model where domestic and professional activities are distributed without reference to gender (e.g., Scarborough et al., 2019).

Children and adolescents are exposed to these gender roles and develop their own gender role attitudes. Previous research showed that these early gender role attitudes are especially amenable to change during youth since teenagers and emerging adults experience cognitive, social, and biological changes that may affect their attitudinal concepts (e.g., Blakemore et al., 2013). Previous research found a decline in traditional gender role attitudes among Mexican-American female adolescents between ages 13 and 20 (Updegraff et al., 2014). Comparable findings were reported for Flemish girls from Grade 7 to Grade 8, whereas boys in the same cohort displayed an increase in traditional attitudes (Halimi et al., 2021; Off et al., 2025; Ullrich et al., 2024). Conversely, other studies did not observe gender-specific differences in developmental trajectories. A longitudinal study from Germany revealed a continuous increase in egalitarian gender role attitudes for both female and male adolescents throughout adolescence. Changes are especially pronounced between age 19 and 24 (Ullrich et al., 2022). Similarly, work examining changes in traditional gender role attitudes identified decreases for both African-American adolescents aged 9 to 18 (Lam et al., 2017) and Mexican-American adolescents aged 11 to 17 (Schroeder et al., 2019).

Trying to explain these developmental trajectories, studies have looked at different predictors. Research found that parents' gender role attitudes (Halimi et al., 2021; Schroeder et al., 2019) and a socioeconomically privileged background (Halimi et al., 2021; Schroeder et al., 2019; Ullrich et al., 2022) are associated with adolescents' gender role

attitudes. Furthermore, immigrant background has also been shown to be crucial for the development of gender role attitudes. In a comparison across European countries, Pessin and Arpino (2018) find that especially first-generation immigrants' gender role attitudes are determined by their country of origin. For four European countries, McManus et al. (2024) show that immigrant children have more traditional gender role attitudes than native children.

Research shows that gender role attitudes become particularly salient during adolescence and emerging adulthood, when individuals actively reflect on and negotiate their own gendered identities. Gender development is perceived as an interaction between the individual and their socialization environment (Blakemore et al., 2013; Eccles, 1987; Hill & Lynch, 1983). However, participation in highbrow cultural activities as an important socialization environment for cultural values has not been researched so far. The findings of Lagaert et al. (2017), which demonstrate that students draw on their cultural interests to regulate their gender identities, suggest a meaningful link between gender role attitudes and highbrow cultural participation.

2.2 Highbrow Cultural Participation

Highbrow cultural participation has been of great interest in sociology of education as well as cultural sociology. Privileged parents are assumed to foster their children's highbrow cultural participation to increase their cultural capital (Bourdieu, 1986; Van Hek & Kraaykamp, 2015). In turn, cultural capital is expected to improve their educational outcomes and ultimately lead to a higher social status (Bourdieu & Passeron, 1990). Besides this classic reproduction hypothesis, it can also be a vehicle for social mobility of the disadvantaged (DiMaggio, 1982). Research shows that cultural participation is overall rather stable throughout adolescence and early adulthood (Georg, 2004; Georg, 2016) although older cohorts are more inclined to attend highbrow cultural events than younger ones (Purhonen et al., 2011).

Binary gender has been identified as one major determinant of cultural participation: Typically, it is found that women attend highbrow cultural activities more often than men (Christin, 2012; Dumais, 2002; Falk & Katz-Gerro, 2015; Katz-Gerro & Meier Jæger, 2015; Lizardo, 2006). Such gender differences already manifest during childhood and adolescence with girls participating in arts education more frequently than boys (Belet et al., 2023; Lagaert et al., 2017). Furthermore, socioeconomic status (SES) has been shown

to predict cultural participation, with a high SES being associated with higher participation rates in highbrow activities (Burkhard et al., 2024; van Hek & Kraaykamp, 2013).

Longitudinal analyses confirm that the development of cultural participation between 14 and 24 years of age is determined by parental variables to a large extent (Nagel, 2009).

Regarding the cultural participation of immigrants, Giovanis and Akdede (2023) find that especially first-generation immigrants participate less in cultural activities. In sum, being female, having a high SES, and being a non-immigrant all foster one's participation in highbrow culture.

2.3 Highbrow Cultural Participation and Gender Role Attitudes

The literature suggests a bidirectional causal relationship between highbrow cultural participation and gender role attitudes: On the one hand, gender role attitudes are one reason why there are gender differences in cultural participation. Cultural activities are socially marked as either masculine or feminine (Lagaert et al., 2017). Men who have egalitarian attitudes are more likely to pursue “feminine” activities such as attending highbrow cultural events (Lagaert & Roose, 2018). Thus, gender role attitudes can affect one's cultural participation.

On the other hand, highbrow cultural activities can also influence gender role attitudes. This is for two reasons: First, art itself can contest social norms. All art – be it performing, visual, literary, or other – relates to social realities through imagination and play (Otte, 2019). Creating a piece of art, the producer gives material form to their perceived reality (van Maanen, 2009). Depending on this perceived reality as well as the beholder's interpretation of it, art can confirm or challenge existing social values and norms (Knight, 2006; Otte, 2019). For example, a song could challenge societal norms by explicitly describing negative experiences of the lyrical narrator when being subject to traditional gender roles. Instead of challenging them, it could also confirm them. This often happens implicitly, by gender stereotypes being perpetuated without actively reflecting on them (Betti et al., 2023). Through cultural participation, individuals are confronted with the gender role imaginations materialized in the art, which can trigger them to reflect on their own gender role attitudes. In highbrow art, egalitarian gender roles are more likely represented than traditional gender roles because highbrow culture is associated with egalitarian values (Vassenden and Jonvik, 2018). Thus, the art that individuals interact with through highbrow cultural participation may contribute to them developing more egalitarian gender role attitudes.

Second, the composition of people participating in highbrow culture suggests that egalitarian gender role attitudes are predominant at such events. A higher socioeconomic status, being female and non-immigrant all foster participation in highbrow culture (van Hek & Kraaykamp, 2013; Christin, 2012; Giovanis & Akdede, 2023). The same three characteristics are also crucial predictors of egalitarian gender role attitudes (Halimi et al., 2021; Ullrich et al., 2022; McManus et al., 2024). It follows that people with egalitarian gender role attitudes are more prevalent at highbrow cultural events than people with traditional attitudes. This means that by attending highbrow cultural events, individuals are exposed to an environment where egalitarian gender role attitudes are predominant. Through peer and institutional socialization (Potts, 2015) egalitarian gender role attitudes are then reinforced in the participants. Individuals are then socialized in this context through social interactions, which will often challenge traditional gender role attitudes and present alternative role models. By initiating new social ties and strengthening existing ones through cultural participation, they can get access to a privileged network (see Meuleman & Jæger, 2023). Thus, the social composition at highbrow cultural events can be expected to foster the development of egalitarian gender role attitudes.

2.4 Moderations by gender and social origin

The effect of highbrow cultural participation on gender role attitudes may systematically differ by gender. Men and women engage with highbrow cultural spaces from distinct social positions and stereotypes (Lagaert et al., 2017). Men more often have traditional gender role attitudes (Ullrich et al., 2022) and male youth generally are more susceptible to peer influence (Heyder et al., 2021; Van Houtte, 2004, 2024). This may lead to them experiencing a stronger effect from exposure to the egalitarian values embedded in highbrow cultural contexts. At the same time, women, who have more egalitarian role attitudes, might experience a strong confirmation of their views. This could lead to a Matthew effect, with those who already possess highly egalitarian views experiencing a more pronounced effect from highbrow cultural participation. Since both these perspectives appear plausible from a theoretical point of view, we will analyze in an exploratory way, whether the effect differs between men and women.

Last, the effect of highbrow cultural participation on gender role attitudes may also vary by social origin. Individuals from lower-SES families, who may have less exposure to egalitarian norms in their everyday lives, could experience a more pronounced effect. The privileged and egalitarian context of highbrow cultural events may challenge traditional

gender role attitudes more starkly for these individuals, as it contrasts with their typical social environment. In contrast, high-SES individuals, who are more likely to be embedded in privileged social networks and have greater access to highbrow cultural activities (van Hek & Kraaykamp, 2013), may already be exposed to egalitarian values through their socioeconomically more privileged environment (see Ullrich et al., 2022). For them, highbrow cultural participation might reinforce existing egalitarian attitudes. Like with women and men, both moderations appear plausible from a theoretical point of view. Thus, we will also examine moderation by social origin in an exploratory way.

3. The Present Study

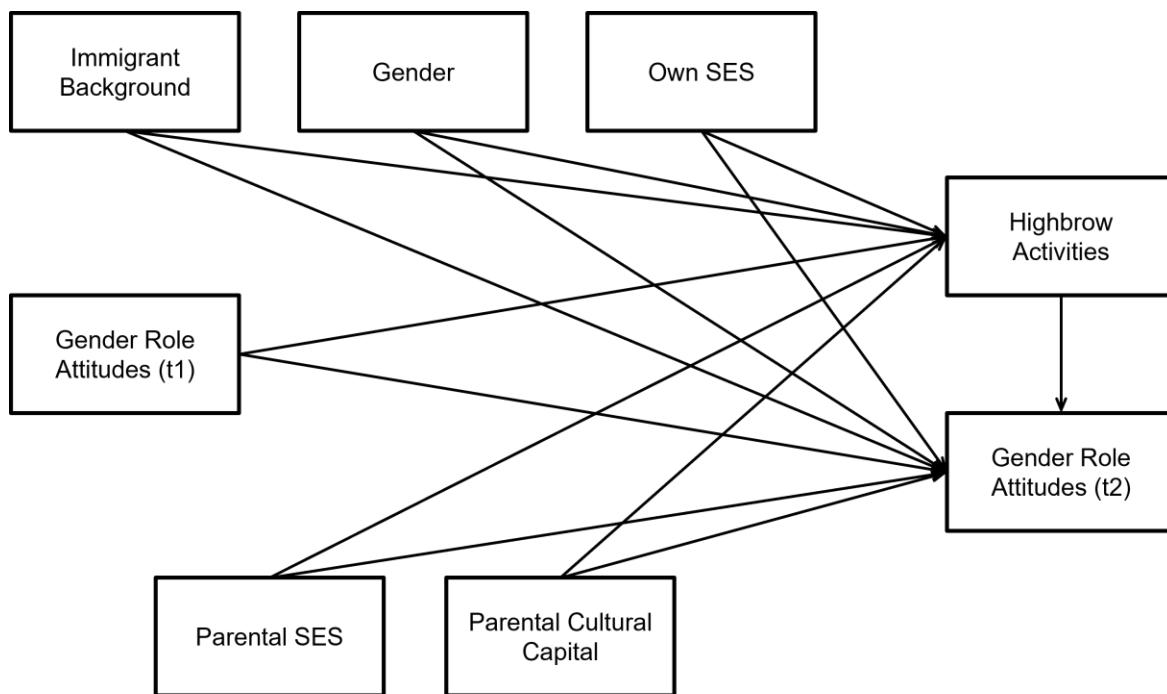
In this study, we aim to analyze the effect of highbrow cultural participation on the development of gender role attitudes in early adults. Our first goal is to examine whether highbrow cultural participation affects gender role attitudes. Specifically, we hypothesize that highbrow cultural participation has a positive effect on egalitarian gender role attitudes (Hypothesis 1). Second, we examine effect heterogeneity. Gender and SES have been prominent moderators in previous research on highbrow cultural participation and gender role attitudes. Thus, we consider them potential moderators to our analyses as well. The literature does not allow for the formulation of directed hypotheses, so we formulate more general research questions: Does gender moderate the effect of highbrow cultural participation on gender role attitudes (Research Question 1)? Does SES moderate the effect of highbrow cultural participation on gender role attitudes (Research Question 2)?

Highbrow cultural participation can be expected to influence gender role attitudes due to the exposure to the art itself as well as the social composition of the attendees. Given that gender role attitudes can also affect cultural participation (Lagaert & Roose, 2018), their relationship is likely bidirectional. This is crucial for the selection of covariates: In line with previous research, we consider social status, gender, and immigrant background to be the most important confounders for the relationship between highbrow cultural activities and gender role attitudes. In our target population of early adults, individuals' cultural participation and gender role attitudes will largely depend on their social background. To capture social background broadly, we include both socioeconomic status (SES) and cultural capital. Emerging adults increasingly develop their own social status through educational attainment and own income. Thus, we also consider their own socioeconomic status as a relevant confounder for the effect of highbrow cultural participation on gender

role attitudes. Further, as gender and immigrant background have both been shown to predict cultural participation and gender role attitudes, we also consider them to be relevant confounders. Last, a prior measurement of gender role attitudes, which we assume to affect both highbrow activities and gender role attitudes, helps to identify causality. These assumptions about causal relationships can be summarized in a Directed Acyclic Graph (DAG, see Elwert, 2013; Figure 1).

Figure 1

Overview of Theoretical Assumptions About Causal Relationships (DAG)



Note: For better clarity, we did not include paths from individual and parental covariates on the gender role attitudes at t1. We still assume that they affect the prior measure of gender role attitudes.

4. Methods

4.1 Data

We conduct secondary analyses using data from Starting Cohort 4 (SC4) of the German National Educational Panel Study, version 15.0.0 (NEPS, 2025). NEPS captures a wide range of psychological and sociological constructs (see Blossfeld & Roßbach, 2019),

making it one of the most comprehensive sources on educational processes in Germany. The sample was initially drawn from German schools in the 2010/11 academic year (grade 9, wave 1) and includes all types of secondary schools as well as special needs schools. In total, more than 14,000 students participated, along with their parents, teachers, and school principals. Data collection continues through individual tracking, as the target persons have now left the secondary school system.

Through their panel design, the data have advantageous properties. Including prior measurements of the outcome can help strengthen causal identification (Steiner et al., 2010). Also, measurements from different waves can be used as auxiliary variables during imputation. We provide an overview of the time-points used in Figure 2. Given our target age of early adulthood, our analysis sample was reduced to individuals who participated between waves 8 (avg. age: 19) and 13 (avg. age: 25). Specifically, we excluded all cases where the measurement of gender role attitudes was missing at both available time points. This led to a final sample size of 9,846 respondents. The univariate distributions of key variables can be found in Table 1; we also provide information on correlations in the appendix (Figure A1).

4.2 Variables

Outcome

Gender role attitudes were measured by four items: 1) “Men and women should have the same responsibilities in household”, 2) “Men are better suited for certain professions than women.”, 3) “Women are just as good at using technical devices as men.” and 4) “The man’s job is to earn money, the woman’s to take care of the household and family”.

To examine whether the measurement of gender role attitudes is comparable over time and across social groups, we assessed measurement invariance (Table A1 in the appendix). Given the large sample size, we followed the recommendation to compare model fit using CFI differences with the suggested cut-off value of .01 (Putnick & Bornstein, 2016). In cross-sectional analyses, we find that measurement is comparable between women and men (i.e., full scalar measurement invariance). The same applies to comparing measurement between SES quartiles. However, comparing gender role attitude measurement across time, we find only partial metric invariance by unrestricting one parameter and allowing autocorrelations. Thus, our measurement does not strictly allow

for conclusions regarding intraindividual development. However, comparisons between gender and SES groups are possible without restrictions.

Table 1

Descriptive Statistics

Variable	Min	Max	Mean	SD	N
Gender Role Attitudes (t2)	1.0	4.00	3.30	0.51	4,510
Gender Role Attitudes (t1)	1.0	4.00	2.94	0.55	9,260
Highbrow Activities	0.0	1.00	0.75	0.43	8,248
Gender (male)	0.0	1.00	0.50	0.50	9,846
Immigrant Background	0.0	1.00	0.15	0.36	9,763
Income	0.0	72,166.67	3,536.48	3,173.80	5,901
Educational Attainment	0.0	1.00	0.60	0.49	9,692
Parents: Income	0.0	60,000.00	3,600.14	2,397.88	5,287
Parents: Occupation 1	4.3	99.00	52.85	15.87	5,774
Parents: Occupation 2	10.1	99.00	51.87	16.91	4,264
Parents: Education 1	0.0	8.00	4.69	2.05	6,342
Parents: Education 2	0.0	8.00	4.45	2.25	4,733
Parents: Museum	1.0	5.00	2.45	1.22	6,347
Parents: Concert	1.0	5.00	1.74	1.09	6,349
Parents: Theater	1.0	5.00	1.92	1.11	6,348
Parents: Number Books	1.0	6.00	4.15	1.29	6,339
Parents: Literature	0.0	1.00	0.44	0.50	9,528
Parents: Poems	0.0	1.00	0.65	0.48	9,613
Parents: Works of Art	0.0	1.00	0.65	0.48	9,600

Figure 2

Overview of time-points used for measurement

	Wave	1	2	3	4	5	6	7	8	9	10	11	12	13
	Year	10/11	11	11/12	12	12/13	13	13/14	14/15	15/16	16/17	18/19	19/20	20/21
	Grade	9	9	10	10	11	11	12	(13)	<i>Individual Tracking</i>				
Gender Role Attitudes									E					A
Highbrow Activities										A		A		
Gender (male)		E	E	E	E	E	E	E	E	E	E	E	E	E
Immigrant Background		E	E	E	E	E	E	E	E	E	E	E	E	E
Income												E	E	E
Educational Attainment		E	E	E	E	E	E	E	E	E	E	E	E	E
Parents: Household Income		E												
Parents: Occupation Mother		E				I		I						
Parents: Occupation Father		E				I		I						
Parents: Education Mother		E				I		I						
Parents: Education Father		E				I		I						
Parents: Museum		E												
Parents: Concert		E												
Parents: Theater		E												
Parents: Number Books		E												
Parents: Literature		E	E	E										
Parents: Poems		E	E	E										
Parents: Works of Art		E	E	E										

Note: A = used in analysis, E = used as covariate in entropy balancing, I = used as auxiliary variable during imputation. Highlighting in gray for better visibility. In Germany, only some federal states offer grade 13, while in others, students graduate after grade 12, which is why grade 13 is written in brackets.

Exposure

To measure highbrow cultural participation, we used information about three cultural activities. Individuals were asked “How many times have you done the following things in the last 12 months? a) visited a museum or an art exhibition, b) visited an opera, ballet or classic concert, c) been to the theater”. They answered on a scale from 1 = “never” to 5 = “more than five times”. We created a binary variable indicating whether the individuals reported to have attended at least one of the activities in waves 9 or 10.

Individual Covariates

Gender was measured on a binary scale with 1 = “male” and 0 = “female”.

Immigrant background was measured on a binary scale. We define immigrant background to correspond to at least the second immigrant generation. Thus, we consider an immigrant background to be present if the students themselves or at least one parent were born outside Germany (1 = “immigrant background”, 0 = “no immigrant background”).

The individual’s net household income was reported on a metric scale in Euros. We used the mean from waves 11-13. Note that, for the individuals who still lived with their parents at the time of measurement, this includes parental income as well. Thus, the variable is only a proxy of individual financial resources.

Individual educational attainment was measured on a binary scale as well. We created a variable on the highest educational qualification attained (1 = “at least the upper secondary degree – *Abitur* – was attained”, 0 = “*Abitur* has not been attained”). At each wave, information on the participants’ educational qualifications is gathered. In Germany, the first education degree is typically attained at the end of grade 9 (age ~15, wave 1 in our dataset). Then, further qualifications follow, typically after grades 10, 12 or 13 and later in tertiary education. We created a variable using information on the highest qualification that had been attained at each wave and selected the highest one for each person.

Parental Covariates

Mother’s and father’s educational attainment was measured similarly (wave 1). Parents reported their own qualifications, which were then transformed to the CASMIN scale (0 = “no qualification”, 8 = “university degree”). We again used both variables separately.

Parental income was measured using the net household income in Euro (metric scale) as reported by the parents when students were in grade 9 (wave 1).

Mother’s and father’s occupation were reported in verbatim answers by the parents (wave 1). Then, this information was transformed to the CAMSIS scale (metric scale ranging from 4.3 to 99.0). We did not follow the common dominance approach of selecting the highest value of both but used each variable individually to increase validity.

Parental highbrow cultural activities were measured using the same scale that was used for the individuals themselves (see above, wave 1). Here, we included the information on

parental visits to museums/arts exhibitions, classical concerts, and theaters as-is, ranging from 1 = “never” to 5 = “more than 5 times”. We used each variable separately.

We further used the number of books at home, which was reported by the parents (wave 1). The scale ranged from 1 = “0-10 books” to 6 = “more than 500 books”.

Last, we measured cultural possessions (wave 1). Students were asked “Do you have... a) classical literature, e.g. by Goethe, b) books with poetry, c) works of art?”. They answered each on a binary scale. We again included each separate variable in our analyses.

4.3 Estimation Strategy

To examine how students’ cultural participation influences gender role attitudes, we proceed through several steps aligned with our hypotheses. We apply entropy balancing (Hainmueller, 2012) to achieve covariate balance. This method, akin to other weighting or matching approaches, preprocesses observational data to mimic random assignment. The goal is to mitigate selection bias into treatment, thereby approximating an experiment. In practice, entropy balancing computes weights that equalize covariates between those who have and those who have not attended highbrow cultural events (“treated” vs. “untreated”). These weights function similarly to sampling weights and enhance causal identification in subsequent analyses. Compared to standard regression techniques, entropy balancing has an important advantage that is crucial when causal relationships are as complex as in our case: Mainly, it allows us to explicitly examine whether the groups of attendees (“treated”) and non-attendees (“untreated”) of highbrow cultural participation are comparable before estimating effects. With standard regression techniques, one assumes that the covariates are adjusted correctly during estimation without being able to examine whether that is the case. As such, entropy balancing has been shown to be particularly robust for estimating causal effects (Zhao & Percival, 2017). Thus, we use weights generated by entropy balancing to balance all covariates specified in the “variables” section before estimating effects. After weighting, we verify whether the intended covariate balance has been reached.

Then, we estimate Average Treatment Effects (ATEs) of highbrow cultural participation on gender role attitudes with linear regressions while incorporating the weights generated by entropy balancing. First, we regress gender role attitudes on highbrow cultural participation using the full sample (Hypothesis 1). Second, we split the sample by gender and repeat the analysis separately for men and women to analyze moderation by gender (Research

Question 1). Third, we split the sample into quartiles by the highest parental CAMSIS and again repeat the analysis to analyze effect heterogeneity by social origin (Research Question 2).

All data processing including the analyses were conducted in the R statistical environment (R Core Team, 2024), employing packages tidyverse (Wickham et al., 2019), psych (Revelle, 2024), and corrplot (Wei & Simko, 2024). Missing values are imputed $m = 20$ times using the mice package (Buuren, 2018; Buuren & Groothuis-Oudshoorn, 2011), applying multilevel predictive mean matching (“2l.pmm”) from miceadds (Robitzsch & Grund, 2024). For variables collected across multiple waves, information from other time points served as auxiliary variables during imputation (see Figure 2). Measurement invariance was assessed using lavaan (Rosseel, 2012). Entropy balancing is implemented with MatchThem (Pishgar et al., 2021), while covariate balance is assessed using cobalt (Greifer, 2025), and treatment effects are estimated with the survey package (Lumley, 2023). The Scientific Use Files are accessible to researchers from the NEPS research data center, and all scripts required for replication are provided under the following link:

<https://doi.org/10.5281/zenodo.18635683>. Consequently, every statistical procedure described in this article is fully reproducible.

5. Results

5.1 Descriptive Results

First, we descriptively examine changes in gender role attitudes for various subsamples between the first and the second measurement (Table 2). In the entire sample, gender role attitudes are on average .305 points more egalitarian at the second time of measurement compared to the first (on a 4-point scale). Those who participated in highbrow culture at least once show a larger increase in egalitarian attitudes than those who did not. Turning to gender differences, we find that men have a larger increase than women. Regarding differences by social origin, the development is strongest for the 25% of individuals from the most privileged families and lowest for the 25% most disadvantaged families.

Table 2

Mean Differences Between the two Measurements of Gender Role Attitudes for Different Groups

Group	Mean Difference	N
Whole Sample	.305	3920
No Cultural Participation	.226	725
Cultural Participation	.322	3160
Women	.245	1969
Men	.365	1951
SES Q1	.278	583
SES Q2	.331	664
SES Q3	.308	692
SES Q4	.338	770

Note: We calculated the mean difference in gender role attitudes for each group as $t_2 - t_1$. SES quartiles were defined using the highest parental ISEI.

5.2 Balance Assessment

Before estimating effects, we assessed whether the systematic differences between those who attended highbrow cultural events and those who did not were successfully eliminated. The goal of using entropy balancing was to assign each person a weight that will lead to the two groups having comparable distributions in immigrant background, gender, own SES, parental SES, parental cultural capital as well as their prior gender role attitudes. In total, weights were computed seven times, each time balancing 16 covariates. Rather than presenting balance for each covariate and each weighting process, we summarize the results using standardized mean differences (SMD) and Kolmogorov-Smirnov statistics (KSS), which measure discrepancies between treated and control groups after balancing. Ideal balance is achieved when both SMD and KSS equal zero. In practice, some authors suggest thresholds between 0.05 and 0.25, but there is no clear consensus on cut-offs

(Greifer, 2025). Our analyses (Figure 3) show that all SMDs are nearly zero (up to the 5th decimal place), and KSS values are mostly below 0.05, exceeding 0.1 only in rare cases. Overall, these results confirm that the balancing procedure was successful. This means that, after weighting, the systematic differences between highbrow cultural attendees and non-attendees are eliminated. We can now exploit the fact that they are comparable in their covariates but still differ in their cultural participation to estimate the effect that cultural participation has on gender role attitudes.

5.3 Effect Estimates and Heterogeneity

First, we estimated the ATE using the full sample (Figure 4, also see Table A2 in the appendix). We find an ATE of .0698 (SE = .0168; $p < .001$). Given the standard deviation of .5069 in gender role attitudes, it corresponds to 13.8% of a standard deviation. This means that attending highbrow cultural events at least once leads to more egalitarian gender role attitudes compared to non-attendance. A prior measure of gender role attitudes as well as all variables on social status, gender, and immigration listed above are controlled by balancing. Overall, this finding supports our first hypothesis that highbrow cultural participation fosters the development of egalitarian gender role attitudes.

Second, we analyzed whether this effect is different for men and women (Figure 4). We find that the point estimates are slightly lower for women (ATE = .0591; SE = .0234; $p < .05$) than men (ATE = .0772, SE = .0216; $p < .01$). However, the confidence intervals largely overlap, which indicates that the two estimates do not significantly differ from each other. This result was confirmed by explicitly testing the two estimates for equality ($Z = .5668$; $p > .05$). Thus, while there seems to be a tendency that the effect is stronger in men, we cannot conclude that this difference is statistically significant and thus must reject the second hypothesis.

Third, we examined whether the effect differs by parental SES quartiles (Figure 4). We find the lowest point estimate for the most disadvantaged background (quartile 1: ATE = .0530; SE = .0387; $p > .05$) and the highest point estimate for those with the most privileged background (quartile 4: ATE = .1017; SE = .0540; $p > .05$). However, the confidence intervals again largely overlap, indicating that this difference is not statistically significant, which is again confirmed by explicitly testing the two estimates for equality ($Z = .7331$; $p > .05$). We find that the differences between the groups are non-significant and thus must reject the third hypothesis.

Figure 3

Standardized Mean Differences and Kolmogorov-Smirnov Statistics from Seven Balancing Procedures

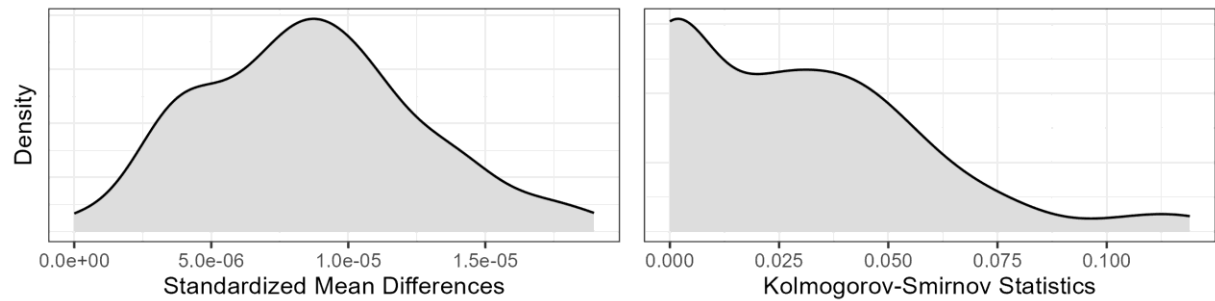
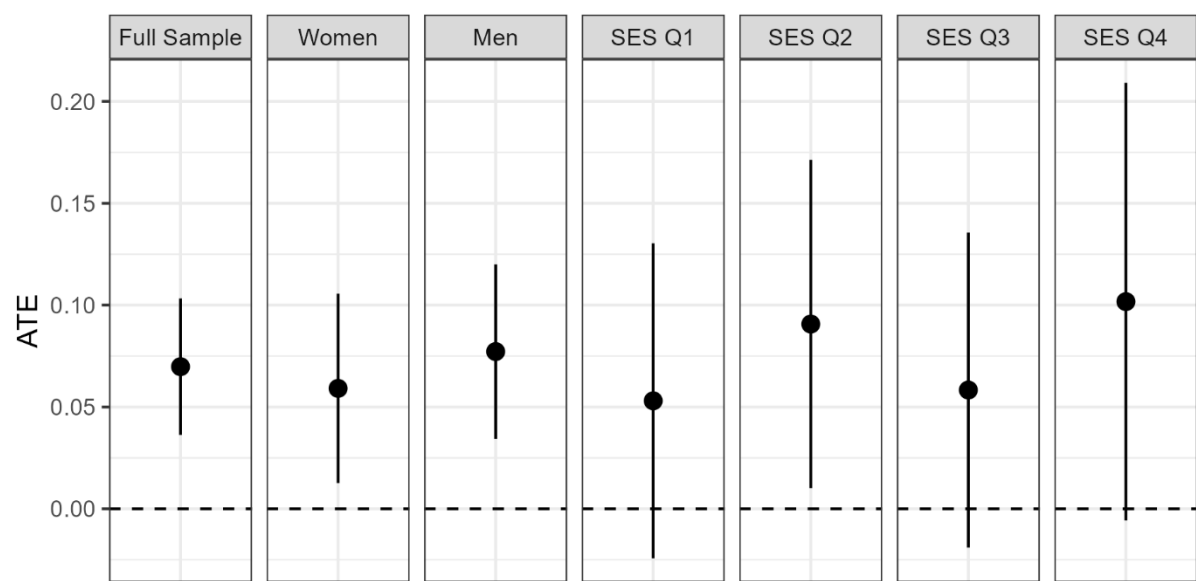


Figure 4

Average Treatment Effects of Highbrow Cultural Participation on Egalitarian Gender Role Attitudes by Gender and by Parental SES Quartiles



Note: Error bars represent 95% confidence intervals. Estimates from linear regressions using entropy balancing weights. Balanced individual-level covariates were gender, immigrant background, educational attainment, household income. Parental level covariates were household income, mother’s and father’s occupation, mother’s and father’s education, parental visits to museums, classical concerts, and theaters as well as the number of books and possession of classic literature, books with poems, and works of art.

6. Discussion

To gain a better understanding of the formation of gender role attitudes in emerging adults, we investigated whether participation in highbrow cultural affects them. Our results indicate that highbrow cultural participation significantly increases egalitarian gender role attitudes. We also expected that this effect would be moderated by gender and socioeconomic status, but we found no statistically significant differences between the respective groups.

Our analyses provide evidence that highbrow activities foster the development of egalitarian gender role attitudes (Hypothesis 1). This is in line with findings from previous studies connecting cultural capital to egalitarian values in general (Vassenden & Jonvik, 2018). The effect would generally be considered rather small since it only corresponds to 13.8% of a standard deviation in gender role attitudes. This means that through highbrow cultural participation alone, only incremental changes in gender role attitudes can be expected. However, these effects may differ at earlier ages. Adolescents are generally considered even more susceptible to socialization than emerging adults (Chein et al., 2011). Thus, the effect might be stronger in adolescents. Also, we operationalized highbrow cultural participation using a binary variable. By considering qualitatively richer variables, larger effects might be found. The influence of cultural participation might also sum up across years, implying that individuals who regularly visit highbrow cultural events might develop increasingly egalitarian attitudes.

To support causal identification, we balanced a broad variety of SES variables ranging from classic measures such as parental income, occupation, and education over parental cultural resources to the respondents' own SES. Given that social origin is a strong predictor of both highbrow participation and gender role attitudes (Ullrich et al., 2022; van Hek & Kraaykamp, 2013), such a broad operationalization helps to identify the effects. The same applies to gender (Christin, 2012; Ullrich et al., 2022) and immigrant background (Giovanis & Akdede, 2023; McManus et al., 2024), which we also included during entropy balancing. Furthermore, a key element to our strategy was the inclusion of a prior measurement of our outcome variable, which further strengthens the identification of causal effects (Steiner et al., 2010). However, it is hardly possible to eliminate all sources of bias with absolute certainty (Cinelli et al., 2022; Grätz, 2022). For example, emerging adults are susceptible to peer influence. Their significant others are likely to affect both their cultural participation as well as their gender role attitudes. Since there is no

information on peers in the data, we cannot control for their influence, which means there is unmeasured confounding. Although this illustrates that we could not fully identify causality, we believe our DAG accounts for the most important confounders. Therefore, we consider it likely that our results are purged of the most spurious relationships limiting causal interpretation.

We did not find evidence that the effect of highbrow cultural participation on gender values is moderated by gender (Research Question 1) nor SES quartiles (Research Question 2). While our results indicate that the effect might be stronger in men than in women, and stronger in respondents from privileged background than in those from disadvantaged backgrounds (“Matthew effect”), these differences are not statistically significant. Thus, hypotheses two and three must be rejected. This might, again, be due to the operationalization of highbrow cultural participation: While we used a quantitative, binary indicator, future research should investigate whether moderations can be found when using qualitatively richer measurements such as cultural tastes or the extent of intellectual and emotional involvement with the arts. Such qualitative distinctions may be productive for examining moderation by gender and SES.

The findings relate to the broader literature on cultural capital. Recent research shows that cultural capital affects educational outcomes both through its skill-generating and its signaling functions (Breinholt & Jæger, 2020; Mikus et al., 2019). The former refers to direct effects that it has on achievement. The latter means that students signal “the right” cultural symbols to their teachers. This study provides an example of one such symbol: If students have egalitarian gender role attitudes, they will signal them to their teachers in everyday interactions. Teachers valuing these attitudes could be inclined to subconsciously treat them preferentially. Also, they might associate these attitudes with a higher motivation or academic ability and thus perceive the students as more gifted than they in fact are. This argumentation from the perspective of cultural capital research provides a theoretical rationale for Ehrtmann and Wolter’s (2018) findings, who report that egalitarian gender role attitudes positively affect academic achievement. This again raises the question of how egalitarian gender role attitudes relate to cultural capital: since gender role attitudes are predicted by highbrow cultural participation, they might affect educational achievement, and attitudes are even considered part of cultural capital (Lamont & Lareau, 1988) – should gender role attitudes be used as an indicator of cultural capital? The measurement of cultural capital has been heterogeneous (Vryonides, 2007), which some have attributed to Bourdieu’s writings being vague and unclear (Jæger, 2022). Our study provides a piece of

evidence which adds to the picture of egalitarian gender role attitudes functioning as cultural capital. Future research should systematically examine to what extent attitudes can be used as an indicator in composite measures of cultural capital using psychometric approaches.

This study adds to the implications of the current literature for policy-making. In the United Nations' Sustainable Development Goals, goal five is to promote gender equality (UN, 2025). Our results imply that highbrow cultural participation contributes to fostering this goal: The more young people participate in highbrow culture, the more egalitarian a society's average gender role attitudes will become over time. Although egalitarian gender roles do not equal actual gender equality, they serve as a normative goal for societies to strive towards and can thus still contribute to gender equality. Given that we estimated an Average Treatment Effect, which refers to the effect for the entire population including those who currently do not participate in highbrow culture, our estimate extends to the full sample. Thus, our results show that policies facilitating access to highbrow culture for current non-participants would contribute to this goal. In addition, policies could target specific populations. Given that gender role attitudes are more traditional in low-SES individuals and men (Ullrich et al., 2022), both are interesting groups for policy-makers to address – especially if their goal is to foster egalitarian views in the more traditional end of the spectrum. Policies could thus aim to make highbrow culture more accessible to low-SES groups and men. The former is in line with implications derived from research on social mobility through cultural participation (DiMaggio, 1982). Here, a typical implication is to facilitate access to highbrow culture for the socially disadvantaged as well.

Limitations to the study arise from several circumstances. The sample and data are well-suited to provide a large-scale overview of the effects of highbrow cultural participation on gender role attitudes. However, the NEPS data, while comprehensive, are limited to Germany. Our findings may not generalize to other national contexts, especially where the dominant social classes have different values or cultural preferences. Also, assessing the measurement of gender role attitudes for invariance, we found unsatisfactory results. We could only confirm partial metric invariance across time. This means that the construct measured varies between the two points of measurement so that our results cannot strictly be interpreted as reflecting the intraindividual development in gender role attitudes. Moreover, we cannot provide any information about the underlying mechanisms. We theoretically assume that the art itself as well as the social composition of highbrow cultural events prompt individuals to reflect on their own gender role attitudes, but we

could not examine these mechanisms empirically. Especially considering the type of art that one is exposed to appears relevant. For example, the distinction between confirmative (aligned with social realities) and challenging (contesting social realities) art has been shown to be productive (Otte, 2019). Similarly, it remains unclear whether the effect on gender role attitudes is comparable for middlebrow and lowbrow cultural participation, or possibly contrary. Our study does not provide insights into such qualitative differences in cultural participation, which would contribute to a better understanding of the mechanisms at work.

In sum, the present study demonstrates that participation in highbrow cultural activities is not merely a reflection of social privilege, it actively cultivates egalitarian gender role attitudes among young adults. By leveraging rich longitudinal data, we provide compelling evidence that engagement with highbrow culture contributes to gender equality. These findings resonate with broader policy objectives, such as the United Nations' Sustainable Development Goals, by illustrating how cultural engagement can serve as a tangible pathway toward a more equitable society. This study underscores the transformative potential of cultural participation as a force for social progress.

6. References

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7. Appendix

7.1 Measurement Invariance

Table A1

Measurement Invariance Across Groups and Time

Group	Full / Partial	Fit Index	Configural	Weak	Strong	Δ Conf.-Weak	Δ Weak-Strong
Gender	Full	CFI	.978	.975	.976	.002 *	-.001*
		TLI	.933	.958	.972	-.025	-.014
		RMSEA	.076	.061	.05	.016	.011
		SRMR	.02	.025	.025	-.005	0
SES	Full	CFI	.986	.979	.977	.007 *	.002 *
		TLI	.958	.971	.979	-.012	-.009
		RMSEA	.06	.051	.043	.01	.008
		SRMR	.018	.03	.033	-.013	-.003
Time	Partial 3/4	CFI	.974	.972	.953	.002 *	.019
		TLI	.951	.954	.93	-.002	.024
		RMSEA	.037	.036	.045	.001	-.008
		SRMR	.024	.027	.034	-.003	-.007

* CFI $\Delta < .01$. Note: Δ -values can differ due to rounding. In the longitudinal analyses (across time), autocorrelations were allowed. “Partial 3/4” means that three out of the four item loadings in the weak invariance model were restricted; intercepts accordingly in the strong invariance model. Unrestricting more parameters did not lead to strong invariance holding across time.

7.2 Results

Table A2

Average Treatment Effect Estimates for the Full Sample and Samples Split by Gender and SES Quartiles

Sample	Estimate	SE	Stat.	df	P-Value	CI Low	CI High
Full	.0698	.0168	4.1455	82.6025	.0001	.0363	.1033
Women	.0591	.0234	2.5266	91.0677	.0132	.0126	.1056
Men	.0772	.0216	3.5688	120.2401	.0005	.0344	.1200
SES Q1	.0530	.0387	1.371	61.6492	.1753	-.0243	.1303
SES Q2	.0907	.0408	2.2221	173.4085	.0276	.0101	.1713
SES Q3	.0583	.0391	1.4923	130.8314	.1380	-.0190	.1356
SES Q4	.1017	.0540	1.883	86.1988	.0631	-.0057	.2091

Note: 95% confidence intervals. Estimates from linear regressions using entropy balancing weights. Balanced individual-level covariates were gender, immigrant background, educational attainment, household income. Parental level covariates were household income, mother's and father's occupation, mother's and father's education, parental visits to museums, classical concerts, and theaters as well as the number of books and possession of classic literature, books with poems, and works of art.

7.4 Correlations

Figure A1

Pearson Correlations

