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Where Do Cultural Tastes Come From? Genes, Environments, or Experiences

Mads Meier Jæger, Stine Møllegaard

University of Copenhagen

Abstract: Theories in sociology argue that family background and individual experiences shape cultural tastes and participation. Yet, we do not know the relative importance of each explanation or the extent to which family background operates via shared genes or shared environments. In this article, we use new data on same-sex monozygotic and dizygotic twins from Denmark to estimate the total impact of family background (genetic and environmental) and individual experiences on highbrow and lowbrow tastes and participation and on omnivorousness in music and reading. We find that family background explains more than half of the total variance in cultural tastes and participation and in omnivorousness. Moreover, family background operates mainly via shared genes, with shared environments shaping cultural tastes to some extent, but not cultural participation. Our findings support theories claiming that family background is instrumental in shaping cultural tastes and participation but highlight the relevance of distinguishing genetic and environmental aspects of family background.

Keywords: cultural tastes; cultural omnivorousness; family background; twins; genes; environments

CULTURAL tastes and participation play an important role in sociological thought. In classic sociology, cultural tastes (what people like) and participation (what they do) have been theorized as means for the *nouveau riche* to broadcast their social superiority (Veblen 1934), as signals of sociability worth imitating (Tarde 1962), and as distinctive elements of the status order (Weber 1978). In contemporary sociology, cultural tastes and participation, for example, with regard to activities, music, and literature, have been argued to be instrumental in defining personal identity (Featherstone 1991), symbolic meaning (Bryson 1996), and group boundaries (Lamont and Molnár 2002). Tastes and participation also help define the social space (Bourdieu 1984), how non-monetary assets convert into monetary assets (Reeves and de Vries 2019), and why inequality persists over generations (Jæger and Breen 2016).

Despite a longstanding interest in cultural tastes and participation, we still know only a little about their origin. One possible explanation is that, rather than being theorized as individual traits, sociologists often theorize cultural tastes and participation as socially structured and serving social purposes (Bourdieu 1984; Lizardo and Skiles 2012). In line with this thinking, empirical research has focused on identifying characteristics along which cultural tastes and participation differ, for example, socioeconomic (e.g., education, income, and class) and demographic (e.g., gender, age, and ethnicity; Jæger and Breen 2016; Johnston, Baumann and Oleschuk 2019; Katz-Gerro 2017), and on the social purposes they serve, for example, in creating group boundaries (Childress et al. 2021; Friedman and Reeves 2020; Lamont and Molnár 2002). Although providing important insights, this research does not

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address the fundamental question of where cultural tastes and participation come from.

In this article, we provide new evidence on the origin of individual differences in cultural tastes and participation. Theoretically, we draw on the Bourdieusian concept of cultural disposition to conceptualize cultural tastes and participation (Daenekindt 2017; Lizardo and Skiles 2012, 2016). Empirically, we analyze new data on same-sex monozygotic and dizygotic twins that we collected in Denmark. The data include information on twins' taste for, and participation in, a wide range of cultural activities (e.g., opera, museum, rock concert, and amusement parks), as well as information on which types of music and literature they prefer. The data enable us to distinguish highbrow versus lowbrow culture (e.g., opera vs. cattle show), cultural tastes versus participation (what people like vs. what they do), and level of omnivorousness in music and reading (Katz-Gerro 2017; Lahire 2008; Lizardo and Skiles 2015; Peterson and Kern 1996). We use a genetically informed design to decompose the variance in eight indicators of cultural tastes, participation, and omnivorousness in music and reading into variance components attributable to, respectively, shared genes, shared environments, and individual experiences. We ask three research questions.

First, *what is the total impact of family background on cultural tastes and participation?* In sociology, the family in which children grow up is assumed to play a key role in shaping cultural tastes and participation (Bourdieu 1977, 1984). In support of this assumption, empirical research documents positive correlations between parents' and children's cultural tastes and participation (Kraaykamp and van Eijck 2010; Nagel 2010; Notten, Kraaykamp, and Konig 2012; ter Bogt et al. 2011; van Hek and Kraaykamp 2015; Yaish and Katz-Gerro 2012). However, existing research does not estimate the *total* impact of family background, that is, the share of the total variance in cultural tastes and participation that is attributable to family background. Some research uses data on siblings to infer about the total impact of family background. However, this research either does not report the total share of the variance in cultural tastes and participation that is attributable to family background (van Eijck 1997; Willekens and Lievens 2014) or focuses on a narrow set of cultural activities with limited generalizability (Jæger and Katz-Gerro 2015). In this article, we estimate the total impact of family background on cultural tastes, participation, and omnivorousness in music and reading, thereby providing a richer analysis than existing research.

Second, *how does family background shape cultural tastes and participation?* Theories in sociology focus mainly on the family environment (Bourdieu 1977, 1984). Yet, research outside sociology suggests that genes parents pass on to their children account for a nontrivial share of individual differences in traits that resemble or reflect cultural tastes, for example, attitudes toward music and arts (Betsworth et al. 1994; Martin et al. 1986), food preferences (Breen, Plomin, and Wardle 2006), and visual aesthetic appraisals (Bignardi et al. 2020). Consequently, it is plausible that cultural tastes and participation are heritable, that is, attributable to genetic factors, to some extent (Chabris et al. 2015; Turkheimer 2000). To our knowledge, no existing research in sociology distinguishes genetic and environmental variation in cultural tastes and participation. This limitation means that the usual interpretation

that the family environment, rather than genes, is the mechanism through which family background shapes cultural tastes and participation remains untested. To do this, we distinguish genetic and environmental aspects of family background and estimate their individual and joint impact on cultural tastes and participation.

Third, *how important are individual experiences in shaping cultural tastes and participation?* Theories in sociology argue that individuals use cultural tastes and participation to construct their personal identify (Featherstone 1991; Giddens 1991) and furthermore that macro-social factors, for example, the economy, mass media, and political institutions, shape cultural tastes and participation (Fishman and Lizardo 2013; Peterson and Kern 1996; Petev 2013). Common to these theories is the idea that individual experiences, that is, unique environments that make siblings different, play a key role. As existing research is uninformative about the overall importance of these individual experiences, we add to research by estimating their total impact on cultural tastes and participation.

Because the twin design we use in this article is not widely used in sociology, we should clarify our ambition and the strengths and limitations of this design. Our principal ambition is to *describe* the overall impact of family background (i.e., shared genes and shared environments) and individual experiences on cultural tastes and participation. This type of descriptive analysis is important because it has not been done before and because it helps distinguish different, and sometimes competing, theoretical explanations of individual differences in cultural tastes and participation. Our research design does not allow us to *explain* how cultural tastes and participation operate, including the role they play in creating personal identity, group boundaries, and inequality. Moreover, our research design does not assume biological determinism or that the results we present generalize beyond our specific case. Research shows that the impact of genes and environments varies across contexts and over time (e.g., Baier and Lang 2019; Branigan, McCallum, and Freese 2013; Engzell and Tropf 2019). Finally, although our design enables us to quantify the overall impact of shared genes, it says nothing about which specific (combinations of) genes shape cultural tastes and participation. Identifying the genetic architecture of complex traits such as cultural tastes and participation requires individual genetic data, which we do not have (Conley and Fletcher 2017; Freese 2018).

We present four findings. First, family background accounts for a large share of the total variance in eight indicators of cultural tastes and participation, ranging from 43 percent (omnivorousness in reading) to 71 percent (taste for highbrow culture). Second, family background operates mainly via shared genes, with shared environments accounting for only a minor share of the total variance. This finding challenges the usual interpretation that family background operates via the family environment. Yet, our results are consistent across a wide range of outcomes (e.g., highbrow and lowbrow cultural tastes and participation; omnivorousness in music and reading) and consistent with findings from research outside sociology (Polderman et al. 2015: Table 1). Third, even though shared environments are not very important in absolute terms, in relative terms they account for a larger share of the variance in cultural tastes than of the variance in cultural participation. We speculate that this difference is due to tastes being more "environmentally

malleable" than the inclination to act on these tastes. Finally, individual experiences are important too, in some cases accounting for more than half of the total variance in cultural tastes and participation. This finding supports theories emphasizing the role of personal experiences and macro-social factors.

We end the article by considering the implications of our findings for research on cultural tastes in sociology. Among other things, we consider how we might incorporate genetic factors into theories of intergenerational transmission, how family background acts to enhance inequality, and how our results might inform debates on cultural omnivorousness.

Theoretical Framework

This section presents our theoretical framework. We use the Bourdieusian concept of *cultural disposition* to frame different theoretical accounts of cultural tastes and participation. Our framework is deliberately broad because, rather than seeking to test a specific theory, we wish to present different, and sometimes competing, explanations of why individuals come to have different cultural tastes and participation. Moreover, we draw on research outside sociology to motivate why genetic factors might shape cultural tastes and participation.

Cultural Dispositions

Lizardo and Skiles (2012) argue that cultural tastes and participation originate in *cultural dispositions*. In the Bourdieusian tradition, cultural dispositions are embodied schemata of thoughts, feelings, and modes of appreciation that drive individuals' aesthetic judgments, tastes, and behaviors (Bourdieu 1984; Daenekindt 2017). Dispositions are individual because they arise from personal experiences (Lizardo and Strand 2010; Martin 2000), yet social because they are affected by family background and macro-social factors (e.g., educational systems, mass media, and economic conditions; Bourdieu 1990; Lahire 2003).

Cultural dispositions have five key properties (Lizardo and Skiles 2012), which are useful for theorizing how family background and individual experiences might shape cultural tastes and participation. First, cultural dispositions are habitual in the sense of being tied to routine practices. Second, they are rooted in a set of abilities generated by a specific acculturation history. Third, they are based on early acquisition of practical schemes of perception, appreciation, and action. Fourth, as practical schemes they can be transposed across domains and, within a particular domain, can be transposed across subgenres (such as highbrow and lowbrow culture). Fifth, as a disposition they take the form of a skill subject to predictable dynamics of accumulation and expertise. Building on these properties, we now present theoretical accounts in sociology that emphasize each property in different ways. We also rely on these properties to motivate why genetic factors might shape cultural tastes and participation.

Family Background

Bourdieu (1977, 1984) argued that children's cultural dispositions depend on the material and cultural resources of their family of origin. In his account, cultural dispositions are schemes of aesthetic perception and appreciation (cf. properties one and three), which parents transmit to children via prolonged exposure in the family environment (cf. property two). Consequently, in this account the family *environment* shapes children's tastes and participation, for example, their taste for highbrow or lowbrow culture (Jæger and Breen 2016; Kraaykamp and van Eijck 2010; ter Bogt et al. 2011) or, as has been argued in research that builds on Bourdieu, the extent to which they adopt omnivorous tastes (Chan and Turner 2017; Coulangeon 2015; Daenekindt and Roose 2014). Bourdieu's account also contends that cultural tastes and participation affect inequality because they can be accumulated and converted into other assets, for example, economic and social capital (cf. properties four and five; Bourdieu 1986; Katz-Gerro 2017). We return to this point in the final discussion.

Individual Experiences

In addition to family background, theories in sociology emphasize the role of individual experiences and macro-social factors in shaping cultural tastes and participation. Here, we focus on two explanations, the first of which argues that, because of increasing modernization and a gradual erosion of traditional status hierarchies, individuals are now free to shape their own identity (Bauman 1998; Giddens 1991). On the demand side, individuals are seen as consumers who purchase, consume, and enjoy life. On the supply side, market dynamics and mass media constantly offer new cultural products and experiences (Featherstone 1991). Thus, rather than being shaped (only) by family environments (cf. properties two and three), cultural tastes and behaviors are personal choices. The second explanation emphasizes the role of macro-social factors such as the economy, mass media, and educational systems (DiMaggio 1991; Falk and Katz-Gerro 2016). For example, Fishman and Lizardo (2013) argue that the transition from an authoritarian to a democratic regime in Portugal, which resulted in a breakdown of a hierarchical educational system, led to higher cultural tolerance, diversity, and more cultural omnivorousness. Although these accounts differ in important regards, both argue that individual differences in cultural tastes and participation originate in unique environments and experiences.

Genetic Factors

The theories we present above do not address the possibility that genetic factors shape cultural tastes and participation. This is understandable, as they emphasize family environments and individual experiences. However, genetic factors are relevant for three reasons.

First, a new sociogenomics literature shows that genetic factors shape many economic and social traits, for example, income, education, and cognitive and noncognitive skills (Braudt 2018; Conley and Fletcher 2017). Although this literature

Table 1: Summary of ACE decompositions from existing research

Study	Trait	ACE decomposition		
		A*	B	C
Martin et al. (1986)	Attitudes toward…			
	Jazz	0.45	0.02	0.53
	Computer music	0.26	0	0.74
	Conventional clothes	0.35	0	0.65
Olson et al. (2001)	Attitudes toward…			
	Reading books	0.57	0	0.43
	Doing crossword puzzles	0.45	0	0.55
	Playing chess	0.38	0	0.62
	Loud music	0.11	0.43	0.46
	Exercising	0.36	0	0.64
	Playing organized sports	0.52	0	0.48
	Doing athletic activities	0.44	0	0.56
	Clothes that draw attention	0.24	0.15	0.61
Betsworth et al. (1994)	Interest in …			
	Art	0.40	0.07	0.53
	Music/dramatics	0.37	0.15	0.49
	Writing	0.38	0.09	0.53
	Athletics	0.39	0.10	0.51
Simonsen and Sela (2011)	Preference for …			
	Jazz	0.42	0	0.58
	Opera	0.39	0	0.61
	Science fiction	0.46	0	0.54
Breen et al. (2006)	Taste for …			
	Vegetables	0.37	0.51	0.13
	Desserts	0.20	0.64	0.16
	Meat	0.78	0.12	0.10
	Fruit	0.51	0.32	0.17

Notes: A = shared genes, C = shared environments, E = individual experiences. ∗ Estimates of A sometimes refer to "broad heritability," which is a combination of additive and nonadditive genetic factors.

has not addressed cultural tastes and participation directly, it shows that genetic factors account for a nontrivial share of the variance in most human traits. In support of this idea, a recent meta-analysis of 17,000 human traits based on 2,500 twin studies found that, on average, genetic factors account for 49 percent of the total variance in these traits (Polderman et al. 2015).

Second, research outside sociology that uses twin data and the same research design as the one we use in this article finds that traits that resemble or reflect cultural tastes and participation have a genetic basis. Table 1 summarizes estimates of the relative importance of shared genes, shared environments, and individual experiences on preferences in music, art, reading, clothing, sports, and food. This research finds that shared genes (the column labeled A in Table 1) account for a nontrivial share of the total variance in traits similar to cultural tastes and participation (Turkheimer 2000). Consequently, there is indirect evidence that genetic factors matter.

Third, research shows that most of the properties of cultural dispositions we outline above have a genetic basis. For example, cultural dispositions are rooted in abilities (property two) and operate via practical schemes of perception, appreciation, and action (property three). Research shows that cognitive (e.g., IQ) and noncognitive (e.g., personality) skills have a genetic basis (Polderman et al. 2015). The same applies to sensory experiences (e.g., vision, hearing, and perception of colors and shapes), which are intrinsically linked to aesthetic appraisal and judgment. Finally, knowing *how* and not only *what* how to consume (Jarness 2015; Lahire 2008), that is, having "social situational awareness," also has a genetic basis (Ebstein et al. 2010; Polderman et al. 2015).

To summarize our theoretical framework, we use the concept of cultural disposition and theoretical accounts in sociology to argue that family background and individual experiences both shape cultural tastes and participation. Moreover, the genes parents pass on to children, along with the environments they provide, are part of the total impact of family background. Based on these arguments, we now present empirical hypotheses.

Hypotheses

We hypothesize that family background and individual experiences account for some of the individual differences in cultural tastes and participation we observe in our data. It is not clear from theory or existing empirical research if one theoretical explanation is more important than the other, or if it matters more for a particular dimension of culture (highbrow, lowbrow, omnivorousness, etc.). Consequently, we simply hypothesize that family background (*H1*) and individual experiences (*H2*) both account for some of the variation in cultural tastes, participation, and omnivorousness we observe in our data. Drawing on research outside sociology, we also hypothesize that the total impact of family background is the combination of two components: shared genes and shared environments (*H3*). Again, it is not clear from theory or existing research if, in relative terms, shared genes or shared environments are more important in explaining individual differences in cultural tastes and participation. However, research outside sociology suggests that shared genes have a nontrivial impact on traits that resemble cultural tastes and participation, so we expect this to be the case in our data too.

We need to consider context when developing empirical hypotheses. In the introduction, we cite evidence that the relative importance of genetic factors varies across contexts. In the egalitarian Danish context, characterized by high income redistribution and a generous welfare state system (Esping-Andersen 2015), we expect genetic factors to play a particularly large role (Engzell and Tropf 2019; Isungset et al. 2021). The reason is that whereas egalitarian contexts such as Denmark have the same level of genetic variation as less egalitarian contexts (such as the United States), they have less variation in family environments because of higher redistribution and a generous welfare state. Less variation in family environments means that, in relative terms, these environments are less important than genetic variation in explaining individual differences in cultural tastes and

participation. We keep this point in mind when interpreting our results and return to it in the final discussion.

Data

We analyze survey data that we collected in Denmark in 2019. The survey sampled all same-sex twins in Denmark born in the years 1985 to 2000 who completed elementary school in the years 2002 to 2012 (and their closest older and younger non-twin siblings). We sampled these birth cohorts because they are the oldest for whom we can merge rich data from administrative registers, including data on academic performance. We identify twins, siblings, and their parents via the comprehensive administrative registers that exist in Denmark. Of a total population of 6,799 nondeceased twins born in the years 1985 to 2000 (and their non-twin siblings), 2,760 participated in the survey (i.e., the response rate was 41 percent; mean age is 25). In this article, we rely exclusively on data on same-sex twins. The zygosity of the twins was determined through four survey questions, asking (1) how alike the twins look ("two peas in a pod"), (2) whether the twins have the same eye and hair color, (3) whether the twins were mistaken for one another by teachers and classmates, and (4) by friends and family members, respectively. Research shows that this approach to determining zygosity has an estimated reliability of 96 percent (Christiansen et al. 2003). In total, we have information on 1,266 complete twin pairs, of which 466 are classified as monozygotic (MZ), 734 as dizygotic (DZ), and 66 have unknown zygosity (we exclude twins with unknown zygosity). This is our analytical sample.

Dependent Variables

In the survey, we asked twins about their interest in, and the frequency with which they attend 12 cultural activities: (1) watching a movie at the cinema, (2) opera, (3) musical, (4) flea market/cattle show, (5) ballet or dance show, (6) play, (7) classical concert, (8) rock/pop concert, (9) stand-up comedy, (10) techno/rap/dance/hip-hop concert, (11) art museum, and (12) amusement park. With regard to *cultural tastes*, we asked, "On a scale from 1 to 5, how interested would you say you are in the following activity . . . " with response categories (1) "Not very interested" to (5) "Very interested." With regard to *cultural participation*, we asked: "How often have you attended the following activity within the last 12 months . . . " with response categories: (1) "Has not attended," (2) "1–2 times," (3) "3–5 times," (4) "6 times or more," and "Don't know." We use polychoric correlations between respondents' answers on the 12 indicators and principal component analysis (PCA) to identify latent variables that capture underlying dimensions of cultural tastes and participation. The PCA identifies three latent variables for cultural tastes and three latent variables for cultural participation capturing (1) highbrow, (2) lowbrow, and (3) popular tastes and participation (we provide detailed information in Online Supplement 1). The *highbrow dimension* loads on expressing a stronger taste for or more often participating in, for example, opera and classical concerts, whereas the *lowbrow dimension* loads on, for example, amusement parks and flea markets.

The *popular dimension* loads on expressing a taste for or participating in rock/pop concerts and stand-up comedy shows, that is, performing arts. These dimensions are similar to ones reported in existing research (Alderson, Junisbai, and Heacock 2007; Chan and Turner 2017; Kraaykamp and van Eijck 2010; van Eijck 2001). In the empirical analyses, we use standardized predicted scores for each latent variable as dependent variables (i.e., six dependent variables in total).

In addition to highbrow, lowbrow, and popular tastes and participation, we also construct two indicators of cultural omnivorousness. Specifically, we construct indicators that capture cultural omnivorousness in volume, that is, the propensity to "do and like more activities and things than others" (Warde, Wright, and Gayo-Cal 2007:145; see also de Vries and Reeves 2021). First, we construct an indicator of *omnivorousness in music*. In the survey, we asked respondents which musical genres they listen to and provided the following options: (1) classical music, (2) opera, (3) rock/pop, (4) heavy metal/punk/hard rock, (5) indie pop/rock, (6) electronic music (dance/house/techno), (7) country/singer-songwriter, (8) hip-hop/rap, (9) Schlager, (10) jazz/blues, (11) R&B/soul, (12) folk music, and (13) world music. The response categories are (0) No and (1) Yes. Following existing research (e.g., Peterson and Simkus 1992; van Eijck 2001), we construct an additive scale that counts the total number of musical genres listened to (Cronbach's alpha = 0.623).[1] Second, we construct an indicator of *omnivorousness in reading*. In the survey, we asked respondents how often they read materials belonging to the following genres: (1) detective and mystery, (2) novels/short stories, (3) poetry and plays, (4) comic books, (5) children's books/youth literature, (6) nonfiction, (7) biographies, and (8) newspapers. The response categories were (1) "No, I don't read this type of literature," (2) "Yes, rarely," (3) "Yes, every month," (4) "Yes, every week," and (5) "Yes, almost daily." As above, we construct an additive scale that counts the total number of genres read (Cronbach's alpha = 0.682). Table 2 shows descriptive statistics for all the variables we use in the analysis (and Online Supplement 2 summarizes correlations between the eight dependent variables).

Control Variables

We include control variables in a set of supplementary analyses that we present in the final discussion. We construct all control variables (except zygosity) from administrative registers rather than from survey data. For *twins*, we include variables measuring zygosity (MZ vs. DZ), academic performance (grade point average [GPA] at around age 15), a dummy for having completed upper secondary education (the academic track in Danish secondary education), disposable income in 2017, birth weight, sex, and year of birth. For *parents*, we include variables measuring mother's and father's educational attainment (dummy for having completed a college degree), disposable income in deciles, and dummies for being self-employed.

Table 2: Descriptive statistics: means and standard deviations

Variable	Mean	SD	*N*
Dependent variables			
Cultural taste			
Highbrow	0.000	1.000	1,176
Lowbrow	0.000	1.000	1,176
Popular	0.000	1.000	1,176
Cultural participation			
Highbrow	0.000	1.000	1,150
Lowbrow	0.000	1.000	1,150
Popular	0.000	1.000	1,150
Omnivorousness			
Music	0.000	1.000	1,198
Reading	0.000	1.000	1,200
Control variables			
Twins			
Zygosity (1 = MZ, 2 = DZ)	1.612	0.488	1,200
GPA	7.416	2.007	1,157
Upper secondary education	0.657	0.475	1,200
Income (1,000 Danish kroner, 2017)	127.266	92.183	1,199
Birth weight (in kilogram)	2.558	0.546	1,163
Sex (dummy for female)	0.555	0.497	1,200
Year of birth	1993.677	4.334	1,200
Parents			
Mother completed college	0.442	0.497	1,190
Father completed college	0.371	0.483	1,158
Mother's income (deciles)*	6.975	2.377	1,200
Father's income (deciles)*	6.491	2.583	1,176
Mother self-employed*	0.045	0.207	1,200
Father self-employed*	0.138	0.345	1,200

Notes: ∗ Refers to when twins were 10 to 14 years old.

Research Design

We use a genetically informed design to test *H1* through *H3*. This design, known as the ACE (or twin) model in behavioral genetics, uses twin data to estimate the extent to which variation in each of our eight dependent variables is attributable to shared genes (A), shared environments (C), and individual experiences (E; Plomin et al. 2014). The underlying idea in the ACE model is simple: MZ twins are genetically identical at birth, whereas DZ twins on average share 50 percent of their segregating genes (similar to full biological siblings). By assuming that the shared environment contributes equally to the outcome of interest, we can use MZ and DZ correlations to estimate the relative importance of the A, C, and E components for each dependent variable (Baier and Lang 2019; Branigan et al. 2013). Much like the ordinary least squares regression model in sociology, the ACE model is the workhorse model in behavioral genetics, and we describe its main assumptions in

Online Supplement 3. In addition to individual experience, the E component in the ACE model captures random measurement error, and we address the potential impact of measurement error on our results in Online Supplement 4. The main conclusion is that we expect the ACE model to recover empirical estimates of the A, C, and E components reasonably well. Following convention, in ACE models in which the C component is zero we instead present results from an AE model that constrains the C component to zero (Rabe-Hesketh, Skrondal, and Gjessing 2008).

Results

We now present results from ACE models estimated for each of our eight dependent variables. We interpret the empirical results in light of *H1* through *H3*.

Total Impact of Family Background

Table 3 summarizes MZ–DZ correlations and results from ACE models for each dependent variable (and for some additional variables we discuss below). For all indicators, we find that MZ correlations are higher than DZ correlations, capturing that MZ twins are more similar than DZ twins are with regard to cultural tastes, participation, and omnivorousness in music and reading.[2]

Our first hypothesis (*H1*) is that family background explains some of the variance in cultural tastes and participation. In the ACE model, we capture the total impact of family background via the combination of A (shared genes) and C (shared environments). Table 3 shows that the total impact of family background (i.e., A + C) ranges from 0.52 (taste for popular culture) to 0.70 (taste for highbrow culture). Consequently, family background explains a large share of the total variance in cultural tastes and participation. When we compare highbrow, lowbrow, and popular culture, we find similar total impacts of family background for highbrow and lowbrow culture but somewhat smaller impacts for popular culture. As the indicators of taste for or participation in popular culture load on liking or going to rock/pop concerts, techno/rap concerts, and stand-up comedy, a possible explanation of the lower total impact of family background is that these activities represent newer, fast-paced, and less established types of culture. By contrast, highbrow and lowbrow culture are more established types of culture, which means that the taste for them is more likely to be a "known commodity" (Accominotti, Khan, and Storer 2018; Levine 1988).

Proceeding to omnivorousness in music and reading, we find that family background (A + C) has a strong impact on both dimensions of omnivorousness, accounting for 46 (omnivorousness in reading) and 43 percent of the total variance (omnivorousness in activities). The very similar total impact of family background is interesting in light of the modest zero-order correlation between the two dimensions of omnivorousness (0.20; cf. Table A3 in the online supplement). It is also noteworthy that the total impact of family background is somewhat lower for omnivorousness than the total impact we found for highbrow and lowbrow (but not popular) cultural tastes and participation (>0.60). This difference is interesting because there is less research on the association between family background and

Table 3: Twin correlations and ACE decompositions of cultural taste, participation, and omnivorousness (with 95 percent confidence intervals)

	Twin correlations		ACE decompositions		
	rMZ	rDZ		Share	95% CI
Taste					
Highbrow	0.68	0.45	A	0.54	[0.45; 0.65]
			C	0.16	[0.06; 0.37]
			E	0.30	[0.25; 0.36]
Lowbrow	0.63	0.48	A	0.30	[0.17; 0.48]
			C	0.33	[0.21; 0.47]
			E	0.37	[0.33; 0.41]
Popular	0.55	0.36	A	0.29	[0.03; 0.83]
			C	0.23	[0.02; 0.78]
			E	0.48	[0.38; 0.57]
Participation					
Highbrow	0.62	0.39	A	0.58	[0.47; 0.70]
			C	0.08	[0.01; 0.63]
			E	0.34	[0.28; 0.40]
Lowbrow	0.64	0.27	A	0.63	[0.59; 0.67]
			C	0.00	
			E	0.37	[0.32; 0.40]
Popular	0.54	0.28	A	0.54	[0.48; 0.61]
			C	0.00	
			E	0.46	[0.40; 0.61]
Omnivorousness					
Music	0.47	0.25	A	0.46	[0.39; 0.54]
			C	0.00	
			E	0.54	[0.48; 0.59]
Reading	0.42	0.21	A	0.43	[0.37; 0.49]
			C	0.00	
			E	0.57	[0.53; 0.61]
Other outcomes*					
GPA	0.90	0.56	A	0.61	
			C	0.28	
			E	0.11	
Upper secondary education	0.65	0.33	A	0.57	
			C	0.06	
			E	0.37	
Income	0.77	0.46	A	0.55	
			C	0.20	
			E	0.25	

Notes: A = shared genes, C = shared environments, E = individual experiences. CI, confidence interval.
∗ Birth cohorts 1981 to 1994.

cultural omnivorousness (Chan and Turner 2017; Coulangeon 2015; Daenekindt and Roose 2014) than on the association with highbrow and lowbrow tastes and participation (e.g., Kraaykamp and van Eijck 2010; Willekens and Lievens 2014). Similarly with the lower total impact of family background on the taste for and

participation in popular culture, it might be that omnivorousness represents a new cultural orientation that is less established and thus more likely to be influenced by factors outside the family of origin.

In summary, our results support *H1* and theories arguing that family background shapes cultural tastes and participation. Moreover, the consistently strong impact of family background, even in light of the modest zero-order correlations between the eight dependent variables (cf. Table A3 in the online supplement), suggests that family background matters a lot across qualitatively different aspects of cultural tastes and participation. This is an important finding, which attests to the profound impact of family background.

Total Impact of Individual Experiences

Our second hypothesis (*H2*) is that individual experiences, that is, unique environments that make siblings different, explain a nontrivial share of the total variance in cultural tastes and participation. Table 2 shows that our estimates of E, which summarize the total impact of individual experiences, accounts for between 30 (taste for highbrow culture) and 48 (taste for popular culture) percent of the total variance in cultural tastes and participation. Similarly, individual experiences account for between 54 and 57 percent of the total variance in cultural omnivorousness. Consequently, the combination of the choices people make, and the macro-social factors to which they are exposed, have a nontrivial impact on cultural tastes, participation, and omnivorousness. This interpretation is consistent with theories emphasizing the role of personal choices and macro-social factors (Fishman and Lizardo 2013; Giddens 1991).

Interestingly, we find some variation in the relative importance of E across different aspects of cultural tastes and participation. In particular, E is lower for highbrow than for popular (but not lowbrow) cultural tastes and participation, suggesting that the taste for highbrow culture originates in the family to a larger extent than the taste for popular culture. A possible explanation is that highbrow culture (e.g., opera and ballet) is less prominent in public space and mass media than popular culture (e.g., rock/pop music and stand-up comedy). Consequently, differences in exposure means that it might be more difficult to develop a taste for highbrow culture outside the family of origin.

Finally, we find that E is particularly high for omnivorousness in music (0.54) and reading (0.57). A possible explanation is that the taste for diversity in musical genres and literature is driven in part by recent technological advances (for example, widely accessible, high-speed Internet and online music and book streaming services) that are less relevant for disseminating traditional highbrow and lowbrow culture (DiMaggio and Mukhtar 2004; Peterson and Kern 1996).[3]

How Does Family Background Operate?

Our third hypothesis pertains to mechanisms through which family background shapes cultural tastes and participation. We hypothesize (*H3*) that the total impact of family background is the combined impact of shared genes (A) and shared

environments (C). Moreover, we keep in mind that shared genes are likely more important in the egalitarian Danish context than elsewhere.

Table 3 shows that, across all eight dependent variables, the A component (ranging from 0.30 to 0.63) is consistently larger than the C component (ranging from 0 to 0.33). Moreover, we find that shared environments have no discernible impact on cultural tastes and participation in four out of eight dependent variables (i.e., estimates of C are zero in the ACE models, which means that we report results from AE models). Substantively, these results suggest that shared genes, rather than shared environments, drive most of the total impact of family background on cultural tastes, participation, and omnivorousness in music and reading. At face value, these findings are difficult to reconcile with theories in sociology that emphasize the role of the family environment (Bourdieu 1977, 1990). Nonetheless, our findings align with research outside sociology on similar cultural traits, most of which also reports high estimates of A and low estimates of C (see Table 1). Finally, the fact that our findings are consistent across dependent variables capturing highbrow, lowbrow, and popular culture, cultural tastes and participation, and omnivorousness inspire confidence in their overall validity.

Our rich set of dependent variables add nuance to the general conclusion that "shared genes matter the most" (Turkheimer 2000). Notably, although the total impact of family background is almost identical when we compare different aspects of cultural tastes and participation (i.e., A + C is similar for highbrow, lowbrow, and popular taste and participation), shared environments consistently explain a larger share of the variance in cultural tastes (0.16 to 0.33) than of the variance in cultural participation (0 to 0.08). This difference suggests that shared environments more strongly affect individuals' tastes than the extent to which they act on these tastes, as captured by cultural participation. A possible explanation is that, compared with cultural tastes that children may pick up passively via the family environment, the inclination to act on these tastes requires different cultural dispositions (e.g., cognitive and noncognitive skills, schemes of perceptions, and financial resources) that have a stronger genetic basis. Stated differently, whereas cultural talk is "cheap," cultural action is "expensive."

Discussion

Our ambition in this article is to shed new light on where individual differences in cultural tastes and participation come from. Although theories in sociology emphasize the role of family background and individual experiences, empirical research provides little evidence on the overall impact of these two explanations. Moreover, the contribution of genetic factors, in addition to environmental ones, remains unknown. This situation is unfortunate, as theories of family background in sociology emphasize the family environment, but research outside sociology finds that genetic factors have a nontrivial impact on traits that resemble cultural tastes and participation.

We extend existing research by collecting new data from Denmark with rich information on same-sex twins' cultural tastes, participation, and omnivorousness in music and reading. Data on twins allow us to distinguish variation in cultural

tastes, participation, and omnivorousness that is attributable to family background (genetic and environmental) and individual experiences. First, we find that family background and individual experiences both have a large impact on cultural tastes and participation (highbrow, lowbrow, popular) and omnivorousness in music and reading. Second, shared genes drive most of the total impact of family background, with shared environments playing only a minor role (and only a role in cultural tastes, not in cultural participation). Overall, our findings support theories in sociology arguing that the family in which an individual grows up, as well as the personal experiences she has, shape cultural tastes and participation. In the remainder of the article, we reflect on our empirical findings and their implications for research on cultural tastes in sociology.

A *first takeaway* from our analyses is that although family background is important, it appears to operate only to a limited extent via the family environment. This finding challenges theories arguing that the family environment is crucial for cultural socialization (Bourdieu 1977; Guhin, Calarco, and Miller-Idriss 2021; Jæger and Breen 2016). It also challenges the usual interpretation in empirical research that intergenerational correlations in cultural tastes and participation originate in the family environment (Kraaykamp and van Eijck 2010; Nagel 2010; Notten et al. 2012; van Hek and Kraaykamp 2015; Yaish and Katz-Gerro 2012). How can we reconcile our findings with existing research? In answering this question, we can learn a lot from research that grapples with similar issues. Importantly, genetic influences always operate via environments (Conley and Fletcher 2017; Freese 2018). This means that although parents transmit genetic predispositions to children, parents' behaviors and interactions with children convert these latent predispositions into manifest dispositions. For example, how might genes shape the taste for highbrow culture such as opera and classical music? Imagine that parents have a genetic predisposition for high cognitive skills and patience, which they pass on to their children. Children who inherit this predisposition respond more favorably to parents' highbrow inputs than do children who do not possess this predisposition because acquiring highbrow culture requires cognitive skills, patience, and time (Ganzeboom 1982; Notten et al. 2015). Thus, environmental inputs nudge genetic predispositions, which in turn shape cultural dispositions and behaviors. To take another example, the omnivorous taste might depend on being extroverted and open to new experiences, both personality traits known to be highly heritable (Polderman et al. 2015; Vukasovic and Bratko 2015). In both cases, skills and environments mediate genetic factors, which manifest in positive intergenerational correlations in cultural tastes and participation. We are unable to address the mediating factors through which genetic factors operate. However, we do observe proxies for twins' cognitive skills (GPA) and resources (completed upper secondary education and income) in our data, as well as indicators of sociodemographic characteristics (sex, age, and each twin's birth weight in kilograms), which might mediate genetic predispositions. In supplementary analyses, we have included these proxies as explanatory variables of the mean of each dependent variable in the ACE models reported in Table 3. Similarly with Baier and Lang (2019), the idea is to analyze if including explanatory variables that account for some of the variance in our dependent variables changes our estimates of A, C, and

E. However, we find that including these proxies has little bearing on A, C, and E (results available upon request), which suggests that they do not mediate genetic predispositions.

A *second takeaway* from our analysis is that distinguishing genetic and environmental origins of cultural tastes and participation offers analytical advantages for research on cultural tastes in sociology. One advantage is that we get a richer vocabulary for describing mechanisms through which family background and other environments shape cultural tastes and participation. For example, without this vocabulary we would not be able to determine that, in relative terms, shared environments matter more for cultural tastes than for cultural participation. A second advantage is that being able to control directly for genetic factors makes it possible to isolate the environmental variation in cultural tastes and participation that sociologists usually care about (Schmitz and Conley 2015). For example, being able to isolate environmental variation is important for assessing if policy interventions to equalize cultural skills or learning opportunities are successful (Jæger and Karlson 2018; Kisida, Greene, and Bowen 2014; Nagel, Damen, and Haanstra 2010).

A *third takeaway* from our analysis is that by distinguishing genetic and environmental factors, we may study how gene–environment (G*x*E) interactions shape cultural tastes, participation, and inequality. This is important for several reasons. Research shows that the impact of genetic factors varies across contexts (Branigan et al. 2013; Engzell and Tropf 2019). In particular, the so-called Scarr–Rowe interaction implies that a lack of resources in families in low socioeconomic positions (SEPs) impedes the realization of children's genetic potential (Baier and Lang 2019; Turkheimer et al. 2003). This means that although children from low-SEP families are genetically predisposed to develop the same cultural tastes as children from high-SEP families, lack of resources means that they do not receive the necessary environmental nudges to realize these predispositions. This type of G*x*E interaction is relevant if, as research suggests (Bourdieu 1984; Reeves and de Vries 2019), certain cultural dispositions act as cultural capital that can be exchanged into other assets (cf. properties four and five of cultural dispositions). Consequently, G*x*E interactions help us to understand SEP gradients in cultural tastes and participation, including how policy interventions might facilitate the realization of low-SEP children's genetic potential. We have addressed this issue (to the extent possible with our data) by estimating ACE models separately in high- and low-SEP families (as defined by parents' education and income). The idea is to analyze if, in relative terms, shared genes (A) matter less for cultural tastes and participation in low-SEP families than in high-SEP families. Our results (available upon request) provide no clear evidence that shared genes matter less in low-SEP families than in high-SEP families. A possible explanation is that, in the egalitarian Danish context, low-SEP families are not materially deprived to the same extent as in less egalitarian contexts. We encourage future research to explore this idea.

A *fourth takeaway* from our analysis, made possible by the rich set of dependent variables, is that the relative importance of family background and individual experiences is different for cultural tastes and participation and differs across aspects of culture (e.g., highbrow and lowbrow culture vs. omnivorousness). For example, family background matters less, in relative terms, for cultural omnivorousness in

music and reading than for the taste for highbrow and lowbrow culture. These results speak to debates about where cultural omnivores come from (Chan and Turner 2017; Coulangeon 2015; Fishman and Lizardo 2013; Peterson 1992) by showing that, in relative terms, cultural omnivorousness depends to a larger extent on "societal factors" outside the family of origin (e.g., technology and mass media) than more traditional cultural dispositions (e.g., highbrow or lowbrow culture). Although we cannot identify what those societal factors are and how they operate, our empirical analysis help to identify a puzzle that future research might address.

A *fifth takeaway* from our analysis is that individual differences in cultural tastes and participation resemble those we find for other outcomes sociologists care about. By this, we mean that, much like education, income, and political values, cultural tastes and participation conform to Turkheimer's (2000) "three laws of behavioral genetics": (1) they are heritable, (2) the impact of shared environments is smaller than the impact of shared genes, and (3) they depend to a substantial extent on factors outside the family. Consequently, there is nothing special about cultural tastes and participation; they are sociological outcomes operating in similar ways to other sociological outcomes. We think this realization is important because research often emphasizes the ephemeral nature of cultural tastes and participation and their assumed environmental origins.

We end by highlighting that our ambition in this article is to *describe* rather than to *explain* individual differences in cultural tastes and participation. Although we find that genetic factors have a large impact on cultural tastes and participation, at least in the Danish context, we need much more research to identify the mechanisms through which genetic factors operate, as well as their implications for policies to reduce inequality. Moreover, we also need more comparative research à la Fishman and Lizardo (2013) to identify how macro-social conditions (and other components that go into E), and the individual experiences they create, shape cultural tastes and participation. We believe this is a task for which sociology is eminently suited.

Notes

1 We are aware that this approach is only one among several approaches to measuring cultural omnivorousness (de Vries and Reeves 2021; Warde et al. 2007). However, our data do not allow us to implement a more detailed approach.

2 We note that our DZ correlations for highbrow taste and participation (0.45 and 0.39) are similar to the sibling correlations for highbrow participation Katz-Gerro and Jæger (2015) report, also for Denmark (0.44 for opera, 0.35 for classical concert, and 0.26 for ballet). This is reassuring as DZ twins and full siblings share the same level of genetic relatedness and assumed family environment, which should manifest in similar correlations.

3 We note that our measures of omnivorousness only capture the overall *volume* of music and reading. Results might be different if, instead, we were able to measure omnivorousness via cultural inclusivity or boundary-crossing behavior (de Vries and Reeves 2021; Hanquinet 2017; Warde, Wright, and Gayo-Cal 2008).

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Mads Meier Jæger: Department of Sociology, University of Copenhagen.
E-mail: mmj@soc.ku.dk.

Stine Møllegaard: Department of Sociology, University of Copenhagen.
E-mail: stinem@soc.ku.dk.