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Contextualizing oppositional cultures: The variable significance of gender and ethnic minority status across schools

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ABSTRACT

Different lines of research have argued that specific groups, such as boys or ethnic minorities, are more prone to develop an anti-school culture than others, leading to group differences in the social acceptance of high performers. Taking an ecological view, we ask to what extent the school context promotes or prevents the emergence of group-specific oppositional cultures. Theoretically, we argue that group-based oppositional cultures become more likely in schools with low socio-economic resources and in schools where socio-economic differences align with demographic attributes. We test our hypotheses based on data from a large-scale, four-wave network panel survey among more than 4000 students in Germany. Applying stochastic actor-oriented models for the coevolution of networks and behavior, we find that group-based oppositional cultures in which students like high performers less are very rare. However, in line with theoretical expectations, the less resourceful a school is, the more boys tend to evaluate high-performing peers less positively than girls do. Moreover, the more ethnic minority boys are socioeconomically disadvantaged in a school, the more they tend to evaluate high performers less positively than majority boys do.

1. Introduction

Sociological observers have long noted the tendency of adolescents to develop youth cultures that are at odds with the official demands and values of the school system. Being institutionally separated from their parents and legally excluded from key adult domains and rituals (Collins, 2000), youth come to build an ‘adolescent society’ (Coleman, 1961) that can substantially deviate from mainstream values and norms. In particular, adolescent status orders often reward different attributes than academic performance and may at times even imply negative sanctioning of high effort and performance in school (Coleman, 1961; Fordham and Ogbu, 1986; Portes, 1998; Bishop et al., 2004). Such informal sanctioning can take on different forms, from reduced popularity to active harassment, and it can lead to different forms of mal-adjustment, as social acceptance is a particularly great concern in early adolescence (LaFontana and Gillessen, 2010; Dijkstra et al., 2010).

The idea of oppositional status orders has been a prominent explanation for achievement gaps between demographic groups. Different lines of research have argued that specific groups are more prone to develop an anti-school culture than others, thus leading to systematic group differences in the evaluation of academic performance. In particular, largely separate literatures have tied the tendency to develop an oppositional culture to gender (‘the problem with boys’ e.g., Willis, 1981; Steinberg et al., 1997; Legewie and DiPrete, 2012) and to race or ethnic origin (‘the burden of acting white’ Fordham and Ogbu, 1986; Ogbu, 1978; Ainsworth-Darnell and Downey, 1998; Cook and Ludwig, 1997; Fryer and Torelli, 2010).

Although theoretical arguments about group-specific oppositional youth cultures have attained a strong foothold in the social sciences, empirical evidence has been mixed at best. Most prominently, the supposed tendency among black and Hispanic youth in the U.S. to resist schooling and devalue effort as ‘acting white’ stood not up in quantitative analyses of nationally representative samples (Ainsworth-Darnell and Downey, 1998; Cook and Ludwig, 1997) as well as later ethnographic work (Carter, 2005; Harris, 2006; for a recent review, see Tyson and Lewis, 2021).

While some have concluded that ‘acting white’ constitutes an urban legend, others have suggested the phenomenon might only exist in certain schools and attempted to identify the conditions for its emergence (Fryer and Torelli, 2010; Tyson et al., 2005). For example, Fryer and colleagues have argued that ‘acting white’ originates in concerns about group loyalty that become particularly significant in mixed
schools with sizable black and white student bodies (Austen-Smith and Fryer, 2005; Fryer, 2007; Fryer and Torelli, 2010). Strikingly, a similarly contextual view has been adopted with respect to the gender gap in educational achievement. Here, the original argument has been that adolescent conceptions of masculinity tend to be at odds with behaviors conducive to school success and thereby contribute to lower achievement among boys (Willis, 1981; Steinberg et al., 1997). The significance of contextual variation has been revealed by Legewie and DiPrete (2012) who showed that the gender gap in performance is particularly strong in schools that are less resourceful. They argued that achievement-oriented resourceful schools allow boys to reconcile their masculine identities with a competitive academic orientation.

Thus, largely separate strands of literature converge on a contextual view of the emergence of group-specific oppositional cultures. This resonates well with a large body of qualitative research that has documented how intersecting ethnic, gender and other identities attain relevance in particular school contexts (see Warikoo and Carter, 2009). To realize the potential of this contextual view, theoretical accounts and empirical analyses need to identify the conditions under which particular social categories tend to become the basis of oppositional status orders.

In this article, we contribute to this task by mobilizing an ecological perspective and large-scale longitudinal network analysis to identify contextual conditions that are conducive to the emergence of a gender-based or ethnicity-based oppositional youth culture. A network-analytic approach lends itself to the study of the emergence and reproduction of youth cultures, as these inherently relational processes are embedded in adolescents’ peer networks (Fryer and Torelli, 2010; Stark et al., 2017; Laninga-Wijnen et al., 2018a, 2018b). Moreover, in contrast to analyses that rely solely on subjective perceptions and attitudinal measures, a network-analytic approach considerably reduces the risk of desirability bias. From evolutionary-ecological theory (McFarland et al., 2014), we adopt the notion that characteristics of the school context affect which kinds of behavior become rewarded in social acceptance and which behaviors and ties are therefore selected, retained or dissolved among adolescents (as they vary in fitness across settings and over time). Specifically, we argue that group-based oppositional cultures become more likely in schools with low socio-economic resources and in schools where socio-economic differences align with demographic categories.

In our empirical analyses, we apply stochastic actor-oriented models for the coevolution of networks and behavior (SAOM; Snijders et al., 2001; Steglich et al., 2010) across a large number of school networks in Germany. In doing so, we investigate how the composition of schools affects whether oppositional status orders will emerge among students of a specific gender or ethnicity. SAOM allow us to specify and capture how group-based oppositional cultures might become visible in and consequential for students’ peer relations.

Our results show that group-based oppositional cultures in which students like high performers less are rare. However, in line with theoretical expectations, our findings reveal contextual conditions under which this phenomenon is more likely to emerge and to become tied to gender or ethnicity. The less resourceful a school is, the more boys tend to evaluate high-performing peers less positively than girls do. Moreover, the more ethnic minority boys are socioeconomically disadvantaged in a school, the more they tend to evaluate high performers less positively than majority boys do. Through these insights, our study contributes to an understanding of oppositional youth cultures that overcomes reified notions of gender and ethnic differences while seeking to identify contextual drivers that promote their emergence in particular settings.

2. Theory and previous research

We argue for a contextualized perspective on the emergence of oppositional cultures in schools. Before we develop our arguments and derive hypotheses, we have to clarify the phenomenon of interest by specifying how we understand group-based oppositional cultures.

2.1. Specifying group-based oppositional cultures

As is often the case in the social sciences, existing theories require further elaboration and specification before we can derive implications and employ advanced statistical methods to perform informative tests. Based on a network-analytic perspective, it becomes obvious that one can distinguish different understandings of group-based peer opposition to high achievement.

A first question is which types of social ties are most indicative of oppositional cultures in the school context. Previous network studies have examined differences in friendship nominations, in different forms of popularity, and in liking (Dijkstra and Gest, 2015; Flashman, 2012; Fryer and Torelli, 2010; Kretschmer et al., 2018; Laninga-Wijnen et al., 2018a, 2018b; Stark et al., 2017). For theoretical and methodological reasons, we argue that liking relations are particularly suited to measure group differences in the social acceptance of high performing students. Compared to strong ties such as friendships, liking nominations are less susceptible to bias due to unmeasured differences in meeting opportunities and they are also better at capturing informal everyday forms of peer acceptance. And while nominating someone as popular or unpopular will depend on very specific personal characteristics that evade most surveys (e.g., charisma, looks), perceiving others as likable or not is a judgment that gives rise to a more evenly distributed structure of social acceptance. Finally, compared to disliking nominations, liking ties are prevalent enough to allow application of stochastic actor-oriented models for network change and behavior (SAOM; Snijders et al., 2010).

A second important difference concerns how we conceptualize group-based oppositional cultures at the network level. Here, the concept of group-based oppositional cultures can be tied either to absolute or to relative group differences in the social acceptance of high performers (see Dijkstra and Gest, 2015; Chen et al., 2020). Absolute differences exist whenever members of one given demographic group (e.g., boys) tend to like high-performing students less than low-performing students, while members of another group (e.g., girls) tend to like the former more than the latter. In contrast, relative differences may also exist in a school where social acceptance and high performance are always positively associated – as long as this association differs between demographic groups. For example, both boys and girls might prefer high-performing students over low-performing ones but this tendency might be significantly weaker among boys. In other words, absolute group differences imply a likability penalty for high-performing students when judged by one group, whereas relative group differences imply merely a different efficiency of high performance in producing social acceptance by members of different groups (Lindenberg and Frey, 1993).

At the interactional level, different social mechanisms could produce these associations at the network level. According to a common understanding of group-based oppositional cultures, students who belong to different groups develop different normative evaluations of school performance. One example would be a school context where boys evaluate high performance as less socially desirable than girls do. This mechanism corresponds most closely to the idea of oppositional cultures and associated downward levelling pressures (see Fordham and Ogbu, 1986; Portes, 1998). We therefore adopt this understanding in our empirical

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1 These two understandings are not meant to be exhaustive. While we focus on the sending of liking ties by members of different demographic groups (“ego effects”), other conceptualizations could emphasize the demographic attributes of those who receive the nominations (“alter effects”) or think of oppositional cultures as a purely ingroup phenomenon (ego and alter effects within the same group). Moreover, one could also focus on rejection (disliking) or popularity and unpopularity, as well as social influence processes (Laninga-Wijnen et al., 2018a, 2018b).
arguably a more promising, largely exogenous dimension of school or classroom ecologies. A group dominated by low performers prefers not only similarly low-performing peers but also same-group peers. For example, in a school context where boys tend to be low performers, gender homophily would also produce network structures in which boys more often hold social ties to (male) low performers.

To summarize, the concept of group-based oppositional cultures is theoretically ambiguous, as it can be tied to different structural observations (such as absolute and relative group differences in the social acceptance of high performers) and to different social mechanisms producing these structures. Any attempt to identify one of these mechanisms empirically needs to take into account the potentially confounding nature of the other mechanisms.

2.2. Previous social network studies on group-based oppositional cultures

Previous social network studies that are relevant to our research question broadly fall into one of three categories. First, there are studies that examined average tendencies in selection and influence processes related to academic achievement – with mixed results concerning performance-related homophily in the school context (see Laninga-Wijnen et al., 2018b). Moreover, longitudinal network studies have also probed gender and ethnic differences in these processes. Based on a sample of more than 1000 students (aged 13) from 12 grade-level networks in German secondary schools, Stark et al. (2017) found that ethnic minority students tended to select friends irrespective of the latter’s academic achievement, while majority students preferred friends with higher grades. Using the same data set, Kretschmer et al. (2018) found achievement homophily only among girls, but not among boys. However, their data do not include the more achievement-oriented upper secondary schools. Most importantly, these studies do not examine variation across school contexts and Stark et al. (2017, p. 494) themselves conclude that “more research is needed to examine under which conditions oppositional culture theory holds”.

A second group of studies adopts a contextual view and asks how status norms influence peer processes and learning outcomes. Here, status norms are measured as class-level correlations between achievement and different status constructs, such as students’ popularity, unpopularity, acceptance, or rejection (Cillessen and Marks, 2011; Gorman et al., 2011). Recent work has used longitudinal network analysis to investigate how such contextual characteristics affect friendship processes related to achievement (Laninga-Wijnen et al., 2018a, 2018b). Although this line of work has produced important insights, the contextual characteristics under study such as the popularity of high- or low-achieving students are likely the endogenous result of peer processes themselves. In an ecological perspective (see McFarland et al., 2014), status norms are part of the classroom climate and may already indicate the presence of an oppositional culture in the school class. Hence, when approaching the task to explain the emergence of (group-based) oppositional cultures, the demographic composition is arguably a more promising, largely exogenous dimension of school or classroom ecologies.

Third, and most akin to our study, some scholars have attempted to identify what kind of socio-demographic composition promotes oppositional cultures in schools. Using AddHealth data, Pryer and Torelli (2010) found that high achievement reduces peer popularity among Black and Hispanic students, particularly in mixed schools. However, this finding stood not up against a more thorough social network analysis of the same data by Flashman (2012) who showed that these patterns are largely due to differential opportunities to befriend high-achieving students of the same racial group. Thus, network studies have so far not been able to identify school characteristics that are conducive to the emergence of group-based oppositional youth cultures.

2.3. Contextual determinants of group-based oppositional cultures

In this article, we seek to identify contextual conditions that are conducive to the emergence of a gender-based or ethnicity-based oppositional youth culture. Building on previous quantitative and qualitative work (Legewie and DiPrete, 2012; Tyson et al., 2005), we focus on two aspects of the school context: socio-economic resources (resourceful contexts) and the extent to which socio-economic differences align with demographic group membership (demographic faultlines). In short, we ask whether a lack of socio-economic resources in one’s school or demographic (sub-)group promotes the development of oppositional cultures along gender or ethnic lines. In theorizing how these ecological characteristics affect boys and girls and ethnic minority and majority students, we also take into account the differential susceptibility of these groups to adopt an oppositional stance towards schooling.

Previous work on gender differences has argued that boys are particularly prone to develop an anti-school culture (e.g., Willis, 1981; Steinberg et al., 1997; Legewie and DiPrete, 2012). While putting effort into schoolwork is in line with common conceptions of femininity and tends to be rewarded among female peers, young boys tend to construct masculinity in ways that reward resistance to school. This claim has mostly grown out of ethnographic studies.

Building on this idea, Legewie and DiPrete (2012) developed a contextual explanation of the gender gap in school performance. In schools with greater socio-economic resources, teachers and curricula tend to be more achievement-oriented, and parents are more likely to foster a competitive learning orientation among their children. According to Legewie and DiPrete (2012, p. 467), “(S)uch an environment promotes academic competition as an aspect of masculinity and encourages development of adaptive strategies that enable boys to maintain a show of emotional coolness toward school while being instrumentally engaged in the schooling process.”

This argument resonates well with an evolutionary-ecological perspective (McFarland et al., 2014): Schools characterized by greater socio-economic resources suppress the emergence of anti-school norms among boys because the emphasis on competition allows them to reconcile an achievement orientation with their evolving masculine identities. In schools that are less resourceful, academic performance should be less rewarded by boys. Indeed, the gender gap in performance has been shown to be greater in less resourceful schools (Legewie and DiPrete, 2012). While this constitutes important indirect evidence, we will use data on social networks to test whether academic performance is indeed less rewarded by boys in low-SES schools.

H1. In schools with fewer socio-economic resources, boys evaluate high performing peers less positively than girls do.

To generalize this argument to other demographic categories such as ethnic minority students, we would need to assume that – similar to boys – particular groups are generally at a higher risk of developing anti-school norms. Indeed, Fordham and Ogbu’s original theory assumed this to be true for involuntary minorities – such as the descendants of slaves in the U.S. – who were forced to migrate to another country or who face similar levels of structural racism. However, subsequent empirical research has not supported this claim. Black youth in the U.S. 2

2 This is a ceteris paribus argument. In particular, in some school districts, there might be policies that aim to counter-balance differences in sociodemographic compositions and resources across schools. For example, disadvantaged schools may be equipped with more favorable student-teacher ratios, additional assistance for teachers, or other learning-related resources.
do not generally resist schooling or devalue effort as ‘acting white’ (Ainsworth-Darnell and Downey, 1998; Cook and Ludwig, 1997; Tyson et al., 2005; Carter, 2005; Harris, 2006). Studies in Europe likewise found little or no support for the existence of an oppositional culture among ethnic minorities (Lorenz et al., 2021; Stark et al., 2017; Van Tubergen and Van Gaans, 2016). This is hardly surprising, given that minority students tend to hold high educational aspirations and to make more ambitious choices, even when their average school performance is lower than that of their majority group peers (Jackson, 2012; Dollmann, 2010; Kristen and Dollmann, 2010). Against this background, it seems unjustified to generalize hypothesis 1 to ethnic differences: there are no theoretical or empirical grounds to assume that particular ethnic groups tend towards anti-school norms.

Instead, we expect that normative values of academic performance will tend to be associated with ethnicity in school settings where minority students tend to have a lower socio-economic origin than their fellow students from the ethnic majority. Such demographic faultlines – the alignment of multiple demographic attributes that lead to hypothetical dividing lines – have received much attention in group diversity research and been shown to affect group processes and performance (Lau and Murnighan, 1998; Beznakova et al., 2009; Thatcher and Patel, 2012; Mäsi et al., 2012). In sociology, the same idea can be traced to the writings of Simmel (1908) and has been systematized by Blau (1977) as ‘parameter consolidation.’

An alignment of socio-economic and ethnic differences provides a fertile ground for the development of anti-school norms. As performance varies by social origin, an alignment of socio-economic status and ethnic origin indirectly produces a correlation of performance with ethnicity. Striving for a positive self-image, students seek to highlight those social domains where they excel (e.g., sports, music taste, or clothing) and devalue those domains where they underperform (Akerlof and Kranton, 2002). Consequently, students from a disadvantaged group will tend to evaluate high-performing peers less positively than their fellow students do. Establishing an alternative status order that negatively sanctions high achievement helps low-performing students to deal with the constant devaluation by teachers. It is further motivated by the zero sum nature of the competition for good grades caused by grading on a curve (Bishop et al., 2004, p. 242). If in place, such a status order should tend to be relatively stable as low- to moderate-performing students receive behavioral confirmation and would risk getting sanctioned when increasing effort and performance. These arguments lead to our second hypothesis:

H2. In schools where ethnic minority (majority) students tend to come from socio-economically less resourceful families than majority (minority) students, they evaluate high performing peers less positively than majority (minority) students do.

Tentative support for this hypothesis comes from the qualitative study by Tyson et al. (2005) who suggest that a “burden” of high-achievement becomes racialized when “socio-economic status differences between blacks and whites are stark and perceived as corresponding to patterns of placement and achievement” (p. 601). However, as stressed in the review by Warikoo and Carter (2009, p. 385), there is a need to investigate the generalizability of such findings in more wide-scale studies – a task that we address in the following analyses.

In principle, our second hypothesis should generalize to other demographic groups. We will therefore also investigate whether an alignment of socio-economic differences and gender in the school setting is associated with gender-based oppositional youth cultures:

H3. In schools where boys (girls) tend to come from socio-economically less resourceful families than students of the opposite sex, boys (girls) evaluate high performing peers less positively than girls (boys) do.

Indeed, the classic study by Willis (1981) focused on the development of anti-school attitudes and behavior among working-class white boys. At the same time, the strength of such a faultline might be less relevant for gender differences: As argued in our derivation of Hypothesis 1, we expect that boys are generally at a higher risk of developing anti-school norms and that resourceful and achievement-oriented schools might be able to counteract this tendency. These influences might well override the impact of faultlines on gender-based oppositional cultures.

Ethnicity-based oppositional cultures, however, might be a gendered phenomenon. For the reasons discussed above, girls might be almost immune to develop an oppositional culture as part of their peer relations. The greater predisposition for deviant attitudes and behaviors among boys has also been repeatedly observed in research on juvenile crime and delinquency (Jungler-Tas et al., 2004; Steffensmeier and Allan, 1996). In fact, studies have shown that prevalence and incidences of rule breakings are greatest among ethnic minority boys (Kroneberg, 2018). Hence, this demographic subgroup might be particularly vulnerable to develop an oppositional culture – if the school environment is conducive to its emergence. In our analyses, we will therefore examine the relevance of faultlines between ethnic and socio-economic differences separately for boys and girls. In doing so, we will test the following variant of our second hypothesis:

H4. In schools where minority (majority) boys tend to come from socio-economically less resourceful families than male majority (minority) students, they evaluate high performing peers less positively than majority (minority) boys do.

3 Our theoretical argument implies a similar tendency among majority group students should they attend schools where minority students stem from more privileged families. While such schools exist in Europe, they are less frequent in the German secondary school system.

4 An additional reason for doing so is that cross gender liking relations are not only less prevalent in adolescence but also driven by different considerations than within gender liking relations.

5 For nine schools in the final analysis sample, data collection started only in 2015, yielding two instead of four consecutive waves of longitudinal data. This shorter period nevertheless provided sufficient information for the estimations – allowing us to rely on identical model setups across all schools (with an adjusted number of the so-called rate parameters modeling the rate of change across the specific waves).
Differences in our contextual variables of interest between included and excluded schools were statistically insignificant (results not shown here; available upon request). Models converged successfully in 40 of these schools, resulting in an analysis sample of $N = 4293$ students.

### 3.1. Liking networks

To construct the grade-level networks for all time points we use students’ responses to the question “Which students do you like most in your grade?” Here they could nominate up to ten of their peers, resulting in directed network data indicating social acceptance. The Jaccard index reaches values between 0.2 and 0.4 across all school grades in the analysis sample, and it remains stable across waves (see Table A1 in the Online Supplement). This pattern indicates a balanced mixture of stable and changing ties that allows us to apply the method of stochastic actor-oriented models for network change and behavior (Ripley et al., 2020, see below).

### 3.2. Grades

To assess students’ school performance, we rely on the grade point average across the subjects Math and English, rounded to the nearest integer on a scale ranging between 1 (worst) and 6 (best). The average grade over time of students in the analysis sample is 4.05 with a standard deviation of 0.73. Only 0.8% of all students provided no information on their grades.

### 3.3. Demographics

The demographic categories of interest are defined according to students’ reports on their gender as well as their own and their parents’ country of birth. We define a student as having an ethnic minority background if he/she or at least one of his/her parents was born in a country other than Germany. Of all students in the analysis sample, 49.3% reported to be boys (no missing information) and 46.5% reported to have an ethnic minority background (0.5% missing information). We measure the socio-economic status of the students based on their parents’ level of education: students with at least one parent with an upper secondary education are defined as having a high educational background (low otherwise).

### 3.4. Contextual characteristics

As a first contextual variable, we measure the socio-economic resourcefulness of a given school grade by the fraction of parents with an upper secondary education. On average, the fraction equals 0.41 with a standard deviation of 0.14 across all school grades in the analysis sample. Second, we want to capture the extent to which socio-economic resources align with or crosscut demographic categories in a school grade, that is, the extent to which resources are unequally distributed among boys and girls or ethnic minority and majority students. In doing so, we rely on the measure of factional faultline strength between two given groups $A$ and $B$ (Li and Hambrick, 2005; for an overview on faultline measures see Meyer and Glenz, 2013), formally

$$d = \frac{X_A - X_B}{\sigma + 1},$$

with $X_A$ and $X_B$ denoting the mean and standard deviation of an attribute $X$ of group $Z$. In the present case, $X_A$ equals the fraction of parents in group $Z$ with an upper secondary education. Groups are defined according to students’ gender ($A$: boys; $B$: girls) or their ethnic origin ($A$: ethnic minority, $B$: ethnic majority), yielding two measures of faultline strength: $d_{\text{gender}}$ and $d_{\text{ethnicity}}$. While negative values indicate that boys (ethnic minority students) tend to be in a disadvantaged position in a given school grade with respect to their parents’ educational level, positive values indicate that girls (majority students) are in a disadvantaged position; values close to zero indicate that differences in parental education are largely absent between groups. Empirically, $d_{\text{gender}}$ ranges between the values of $-0.20$ and $0.24$ and $d_{\text{ethnicity}}$ ranges between the values of $-0.31$ and $0.24$. While their means are close to zero ($d_{\text{gender}} = 0.07$, $d_{\text{ethnicity}} = -0.06$), faultline strengths vary substantially across all school grades in the analysis sample (standard deviations equaling 0.125 and 0.118 respectively).

### 4. Analytic strategy

The analysis proceeds in three steps. In the first step, we provide a descriptive overview by reporting absolute and relative group differences in the social acceptance of high performers across all school grades and time points in the analysis sample. In the second step, we turn to the interactional level and derive estimates of group differences in the normative evaluation of school performance in each school separately. We do so by applying stochastic actor-oriented models for network change and behavior (SAOM; Snijders et al., 2010) to the longitudinal liking networks. SAOM assume that changes in ties and behavior unfold in the course of sequential decisions taken interdependently by the actors involved. Simulating these interdependent decisions in terms of sequential mini-steps, SAOM allow us to infer various relational mechanisms underlying the emergence of the observed networks and behavior (here: liking networks and grades), while taking into account the bounded set of alternatives actors face in the defined context. In a third step, we examine how these school-specific SAOM estimates vary across schools that exhibit different levels of socio-economic resources and demographic faultlines. Using multivariate meta regressions (see

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6 To assess model convergence, we followed the criterion of that the maximum convergence t-ratio should not exceed the value of 0.25 (Ripley et al., 2020). In nearly all schools, we attained values smaller than 0.20. In four schools, however, we were unsuccessful in satisfying the condition, due to small network sizes and little variation in liking nominations over time, which is why we excluded them from the analyses.

7 The network data ignores liking nominations across school grades. It seems reasonable to assume that students are much less aware of the school performance of peers in other grades than of peers in their own grade and school class (given the more frequent joint teaching and interaction with the latter). Cross-grade relations may therefore be more strongly driven by meeting opportunities outside the structured school context than by (performance-related) preferences. From this perspective, we would not expect to see any stronger evidence of group differences in the evaluation of high performers (i.e., group-specific oppositional cultures).

8 In Europe, parental education is clearly the most important aspect of students’ social origin (Meraviglia and Buis, 2015). Given its strong association with children’s school performance, our theoretical arguments imply that its contextual correlation with gender or ethnicity could give rise to group-based differences in the evaluation of high performance. Still, measuring students’ socio-economic status via parental education may mask relevant variation related to families’ economic resources. To tentatively examine the impact of economic resources, we repeated all analyses based on an alternative dichotomous measure indicating whether students reported to ‘always have enough money available to join group activities.’ These analyses suggest that differences in economic resources may be less relevant than differences in educational background for our research question.

9 We executed all analyses in R (version 4.1.0; R Core Team, 2021) and made foremost use of the packages RStan (version 1.2–12; Ripley et al., 2020) and mometa (version 0.4.11; Gasparini et al., 2012).
An, 2015), this allows us to test our hypotheses on how the school context may promote the emergence of a group-based oppositional culture. In our test of Hypothesis 4, we investigate the linking networks of boys and girls separately and compute our demographic faultline measures separately for both groups. Adopting an ecological perspective (see McFarland et al., 2014), this final step interprets variation of network dynamics across contexts as evidence for the impact of contextual characteristics. Such a contextual endogeneity of preferences does not necessarily contradict the model of choice implied by SAOMs. And although our analysis of observational data cannot formally identify context effects, it is based on theoretical arguments that lead us to examine specific contextual characteristics (see Lieberson and Horwich, 2008).

5. SAOM specification

With SAOM, we aim to infer credible estimates of (group-based) normative values of school performance, that is, group differences in the evaluation of high performing peers. Importantly, such estimates can be confounded by different forms of homophily (see above) but also by social influence in performance. Students who like each other will spend more time together, thereby affecting each other’s behavior and grades. Consequently, an observed association between liking and grades may not necessarily be indicative of differential evaluations of low- and high-performers. SAOM allow us to account for such forms of confounding by explicitly modeling the co-evolution of liking and grades. To do so, we have to specify two equations with different dependent variables guiding actors’ decisions: actors’ selection function modeling their liking dynamics and actors’ influence function modeling their grade dynamics. Estimating both functions simultaneously, we end up with estimates of (group-specific) evaluations of high-performing peers net of confounding via social influence.

5.1. Selection function

To account for a set of general relational mechanisms known to affect the emergence of positive ties among adolescents, we include the structural effects outdegree, reciprocity, geometrically weighted edgewise shared partners (GWESP), F-cycles, in- and outdegree popularity, and outdegree activity. In addition, we include a set of effects related to individual actor attributes, namely boy ego, boy alter, same gender, ethnic minority ego, ethnic minority alter, same ethnic origin, and same school class. These effects account for not only group differences in activity or popularity but also homophilous tendencies with respect to students’ gender, ethnic minority status, and the school class they attend. Finally, to specifically account for relational mechanisms tied to students’ grades, the phenomenon of main interest, we rely on a quadratic model specification and include the effects grades alter, grades squared alter, grades ego, grades ego minus alter squared. A quadratic specification provides the advantage that it flexibly models students’ tendencies towards both grade homophily and a normative value, which could lie anywhere along the range of possible grades (see Snijders and Lomi, 2019). We extend the quadratic model specification by the additional interaction effects boy ego x grades alter (model setup 1) and ethnic minority ego x grades alter (model setup 2). The two resulting model setups are able to capture group-specific shifts in the functional relation between students’ grades and their likelihood to receive liking nominations. In substantial terms, the two interaction effects thus indicate gender / ethnic differences in the normative value of school performance net of grade homophily, correlated forms of homophily (see above), and other relational mechanisms – our school-specific estimates of a group-based oppositional culture.

5.2. Influence function

We model the grade dynamics parsimoniously, given that they serve as controls (see above) and are not central to our research question. In line with previous work, we include as basic controls the linear shape and quadratic shape effects (see Ripley et al., 2020). To account for the possibility that boys and girls have different tendencies toward higher grades, we include the effect from boy; to account for different tendencies of ethnic minority and majority students, we include the effect from ethnic minority. Finally, to account for social influence in grades, as students’ grades may well be affected by those of their friends, we include the average similarity effect (Lomi et al., 2011; Rambaran et al., 2017; Stark et al., 2017).

Simulations based on the chosen model setup successfully reproduce the structural features of most of the observed networks: For 80–90% of all networks (depending on the model setup) we found no statistically significant differences between the observed and simulated indegree as well as behavior distributions.

6. Results

6.1. Descriptive analysis at the network level

Fig. 1 plots the social acceptance of high performers – measured as pearson correlations between students’ liking indegrees and their grade point average – across all school grades and time points in the analysis sample. Each network is represented by two vertically connected points (triangle and circle) – capturing gender (upper panel) and ethnic differences (lower panel). The observed correlations between students’ liking indegrees and their grade point averages vary considerably across networks as well as within them between demographic groups.

11 Technically, our specification assumes that students know the English and math grades of all other students in a grade. However, for our main effects of interests, it suffices that students have a realistic sense of performance hierarchies. In everyday school life, classmates write the same exams and tests, and they usually receive their results and grade reports together. During class, they perceive the extent to which their peers (dis-)engage in class, with oral participation making up 50% or more of the overall grade. Also beyond their own school class, students can be known for their performance orientation and scholarly reputation. Hence, our GPA measure based on students’ English and math grades should be interpreted as a proxy for such more visible cues and reputations.

12 In particular, we test for the existence of an oppositional status order in the selection function only – that students with a particular demographic attribute less often like high-performing students. We do not address the subsequent question of whether and to what extent such an oppositional status order will lead students to reduce their effort and give rise to group differences in school performance. While theoretical arguments and ethnographic evidence may point towards such a coping strategy, tracing this effect on students’ grades goes beyond the scope of this article.
We begin with the gender-specific associations depicted in the upper panel of Fig. 1. We have ordered the networks in a way that makes it easy to assess the prevalence of the different forms of group-specific oppositional cultures at the network level. Recall that we speak of absolute group differences in the social acceptance of high performers whenever we observe a negative association between academic performance and social acceptance among one demographic group but not among another. On average, this is the case in the leftmost 35 networks where boys tend to evaluate high performers negatively whereas girls tend to evaluate them positively. In 64 networks on the right-hand side, we observe the opposite, such that performance comes with lower social acceptance among girls, but not among boys. However, only four of all observed negative associations are statistically different from zero at conventional levels (p < 0.05) – two associations found among boys and the other two among girls. Hence, there are hardly any schools in which gender-based oppositional cultures exist in the absolute sense of high performers facing a likability penalty. The second, weaker understanding of group-based oppositional cultures requires only relative group differences in the social acceptance of high performers. In the leftmost 82 networks, high-performing boys receive fewer liking nominations than high-performing girls. Again, however, the differences between groups are statistically significant only in 13 networks – six of them with boys at a disadvantaged position (see black circles and triangles).

The lower panel of Fig. 1 shows that ethnic differences in the social acceptance of high performers are even less visible: We observe negative associations between academic performance and social acceptance for ethnic minority students and positive associations among majority students in the leftmost 43 networks and the reverse pattern in the rightmost 32 networks. Relative group differences that involve fewer liking nominations among ethnic minority students exist in the leftmost 75 networks. However, only two of the observed negative associations are statistically significantly different from zero, and only in 11 networks.

![Gender-specific (upper panel) and ethnicity-specific (lower panel) associations between students' social acceptance (liking indegrees) and their school performance (grade point averages) across all school grades and observed time points in the analysis sample.](image-url)
are the relative group differences statistically significant.

To summarize, while this descriptive analysis reveals variation in the social acceptance of high performers, there are only few schools for which we find reliable evidence for the existence of group-based oppositional cultures. This is true for gender and even more so for ethnic origin. In the next step, we trace group-based oppositional cultures at the interactional level and use longitudinal data to examine the different network mechanisms related to the phenomenon.

6.2. SAOM meta analysis

Table 1 provides results from the model-specific meta analyses across all 40 schools. Before we turn to our main effects of interest, we describe findings with respect to general relational mechanisms that underlie liking and grade dynamics. In both model setups, the basic structural effects in the selection function confirm the existence of general relational mechanisms affecting liking, such as tendencies towards reciprocity, transitivity, and local hierarchy (see respective estimates \( \mu \) in M1 and M2 of outdegree, reciprocity, 3-cycles, GWESP, and activity and popularity effects). Moreover, we observe substantial indication of homophily – with respect to gender (\( \mu = 0.22 \), s.e. = 0.02), ethnic minority status (\( \mu = 0.17 \), s.e. = 0.01), and attended school class (\( \mu = 0.24 \), s.e. = 0.03). Looking at the grade dynamics (i.e., as modeled in the influence function), we observe a tendency towards a unimodal grade distribution (given that \( \hat{\mu} > 0 \) for linear shape and \( \hat{\mu} < 0 \) for quadratic shape); that is, on average, students tend towards a specific grade over time instead of dispersing randomly across the range of grades. Tendencies toward better grades are neither gender-specific (effect from boy: \( \hat{\mu} = -0.06 \), s.e. = 0.05) nor do they differ between ethnic minority and majority students (effect from ethnic minority: \( \hat{\mu} = -0.004 \), s.e. = 0.041).

Finally, the strong and statistically significant average similarity effect points towards social influence processes: over time, students become more similar in their grades to students they like (\( \hat{\mu} = 3.8 \), s.e. = 0.49).

Our main analytic interest concerns the selection effects related to students’ grades. The quadratic model specification shows an indication of performance homophily in liking (grades diff. squared: \( \hat{\mu} = -0.03 \), s.e. = 0.01). Most central to our research question are the interactions between ego’s demographic category and alter’s grades, as they indicate whether the normative values of school performance differ between groups, above and beyond performance homophily. Model 1 shows that boys tend to evaluate peers with good grades differently than girls do, though at statistically insignificant levels (boy ego x grades alter: \( \hat{\mu} = -0.04 \), s.e. = 0.02). Fisher’s method, a statistical test without assumptions on the population of networks shows that in at least one of the school grades are high performers evaluated worse by boys than by girls at statistically significant levels (\( \mu_h < 0.025 \)). There seems to be no school grade where they are evaluated worse by girls than by boys (\( \mu_g > 0.025 \)). Turning to model 2, we observe no different evaluations of high performers by students’ ethnic minority status: On average, minority and majority students evaluate high performers equally (ethnic minority ego x grades alter: \( \hat{\mu} = -0.01 \), s.e. = 0.02). Fisher’s method further corroborates this finding (\( \mu_g > 0.025 \), \( \mu_h > 0.025 \)).

Overall, mirroring our descriptive findings at the network level, these results provide only little evidence for the existence of group-based oppositional cultures. Importantly, however, we observe substantial variation in the estimates across contexts, as the Q statistics and their respective p-values show (boy ego x grades alter: \( Q = 54.4 \), p = 0.052; ethnic minority ego x grades alter: \( Q = 57.0 \), p = 0.031).

To illustrate the substantive meaning of such variation, Fig. 2 shows how the selection effects related to students’ grades vary across two selected schools. In both schools, we observe strong levels of performance homophily: students with low grades (solid lines) are more likely to send liking nominations to low-performing peers, whereas students with high grades (dotted lines) prefer high-performing peers. The schools vary, however, with respect to gender differences: While we observe no differences between girls (black lines) and boys (gray lines) in school 5 (left panel), girls more strongly prefer high-performing peers than boys do in school 37 (right panel). In the subsequent meta regressions we systematically investigate this contextual variation in relative group differences.

6.3. SAOM meta regressions

To test our hypotheses on how group-based normative values of school performance vary with contextual characteristics, we estimated several random effects meta regressions.\(^\text{14}\) We first focus on the resourcefulness of the school context and then turn to the strength of demographic faultlines.

Fig. 3 summarizes the main results with respect to the association between the estimated group differences and the fraction of parents with an upper secondary education (resourcefulness). The left-hand panel illustrates the gender difference in the effect of alter’s grades on liking. Negative estimates – indicating that boys evaluate high performers on average less positively than girls do – tend to stem from schools where few parents have an upper secondary education. Hence, even though we observe few schools where these negative estimates are statistically different from zero (see Table 1 above), the contextual variation in these estimates is systematic, resulting in a strongly positive and statistically significant coefficient in the respective meta regression (coef. = 0.467, s.e. = 0.185). This finding supports hypothesis 1. For the sake of comparison, the right-hand panel of Fig. 1 illustrates the estimated ethnic differences in the effect of grades on liking. Here, we see no statistically significant association: the size and direction of the estimates is only weakly related to the fraction of parents with an upper secondary education in the respective schools (coef. = 0.124, s.e. = 0.320).

To test hypotheses 2 and 3, we examine the associations between the estimated group differences and the strength of demographic faultlines in the schools. As evident from the upper panels in Fig. 4, we see no systematic variation across contextual characteristics. Neither \( d_{greta} \) (upper left panel) nor \( d_{female} \) (upper right panel) is associated with the size and direction of the estimated group difference. Accordingly, the respective meta regression coefficients are small and far from statistical significance (coef. = 0.029, s.e. = 0.245; coef. = 0.263, s.e. = 0.316). Hence, in contrast to our second and third hypotheses, an alignment of socio-economic status and gender or ethnic categories is not associated with group differences in the evaluation of high performers.

In the final step, we repeat this analysis separately for boys and girls to test hypothesis 4.\(^\text{15}\) Based on the liking network among girls, we again observe no significant association between the estimated ethnic difference and the demographic faultline strength (lower left panel). For liking among boys, however, we find systematic contextual variation across schools (lower right panel). The estimated ethnic differences in the effect of grades on liking among boys are positively associated with our contextual variable of interest: In support of hypothesis 4, negative estimates – i.e., less positive evaluation of high-performers by ethnic minority boys than by majority group boys – are more likely in schools where ethnic minority boys are in a disadvantaged position (lower right panel: coef. = 0.814, s.e. = 0.288).

\(^\text{14}\) For the complete results of all meta regressions, see Tables A3 and A4 in the Online Supplement.

\(^\text{15}\) Due to their smaller sizes, some gender-specific networks provided too little variation to provide credible estimates that would satisfy the convergence criterion for SAOM (i.e., max. convergence ratios < 0.25). Hence, results with respect to liking among boys rely on data from 32 schools, those with respect to liking among girls on data from 35 schools.
To lend further credibility to these contextual findings, we performed two robustness analyses: First, to rule out the impact of outliers, we reran all meta-regressions excluding particularly high or low coefficient estimates (i.e., absolute values larger than 0.5). Second, we increased the number of school contexts by adding another 17 grade-level school networks from a comparable survey to our analysis sample. In both additional analyses, results remained substantively unchanged (as documented in part b in the Online Supplement).

### Table 1
Random effects meta analysis.

<table>
<thead>
<tr>
<th>Selection function</th>
<th>M1</th>
<th>M2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theta (s.e.)</td>
<td>Q</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td>Density</td>
<td>-1.633 *** (0.092)</td>
<td>108.393</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>1.490 *** (0.030)</td>
<td>89.308</td>
</tr>
<tr>
<td>3-cycles</td>
<td>-0.054 *** (0.010)</td>
<td>66.082</td>
</tr>
<tr>
<td>GWESP I &gt; K &gt; J (69)</td>
<td>1.436 *** (0.026)</td>
<td>79.049</td>
</tr>
<tr>
<td>Indegree popularity</td>
<td>-0.003 (0.003)</td>
<td>37.875</td>
</tr>
<tr>
<td>Outdegree popularity</td>
<td>-0.112 *** (0.006)</td>
<td>48.918</td>
</tr>
<tr>
<td>Outdegree activity</td>
<td>-0.051 *** (0.002)</td>
<td>66.082</td>
</tr>
<tr>
<td>Same school class</td>
<td>0.236 *** (0.029)</td>
<td>235.699</td>
</tr>
<tr>
<td>Boy alter</td>
<td>-0.003 (0.003)</td>
<td>48.174</td>
</tr>
<tr>
<td>Boy ego</td>
<td>-0.112 *** (0.006)</td>
<td>48.918</td>
</tr>
<tr>
<td>Boy alter</td>
<td>0.236 *** (0.018)</td>
<td>95.852</td>
</tr>
<tr>
<td>Same gender</td>
<td>0.224 *** (0.018)</td>
<td>95.852</td>
</tr>
<tr>
<td>Ethnic minority alter</td>
<td>0.030 (0.013)</td>
<td>51.758</td>
</tr>
<tr>
<td>Ethnic minority ego</td>
<td>-0.046 *** (0.017)</td>
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<tr>
<td>Same ethnic origin</td>
<td>0.167 *** (0.013)</td>
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</tr>
<tr>
<td>Grades alter</td>
<td>0.029 (0.016)</td>
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</tr>
<tr>
<td>Grades squared alter</td>
<td>0.028 (0.009)</td>
<td>35.651</td>
</tr>
<tr>
<td>Grades ego</td>
<td>-0.020 (0.014)</td>
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</tr>
<tr>
<td>Grades diff. squared</td>
<td>-0.033 *** (0.010)</td>
<td>73.866</td>
</tr>
<tr>
<td>Boy ego x grades alter</td>
<td>-0.039 (0.020)</td>
<td>54.075</td>
</tr>
<tr>
<td>Ethnic minority x grades alter</td>
<td>-0.039 (0.020)</td>
<td>54.075</td>
</tr>
</tbody>
</table>

* p < 0.05 (two-tailed tests).
** p < 0.01 (two-tailed tests).
*** p < 0.001 (two-tailed tests).

Fig. 2. Selection effects related to students’ grades in two example schools. NOTE: The plotted predictions rely on school-specific estimates from model setup 1.

7. Discussion and conclusions

In this article, we attempted to identify school characteristics that promote the emergence of a gender-based or ethnicity-based oppositional culture. The first important finding is a descriptive one: Overall, we found only little evidence for group-based oppositional cultures in the German schools under study. Nearly all observed (group-specific) negative associations between students’ social acceptance and their...
school performance were statistically insignificant – indicating that high-performing students generally face no likability penalty. More than this, there were relatively few networks where boys and girls or majority and minority students differed in their acceptance of high performers. Our longitudinal actor-oriented models confirmed this picture: There was no school in which high performers were evaluated worse by boys than by girls and we found that, on average, minority and majority students evaluated high performers equally.

Without neglecting these findings, we still found systematic variation across schools in the extent to which demographic groups tend to evaluate high performers differently. In line with two of our hypotheses, the difference between girls and boys in the normative value of school performance was larger in less resourceful schools; and the difference between male ethnic majority and minority students in the normative value of school performance was larger when socio-economic differences aligned with ethnic origin. In sum, we found evidence that the theoretically expected contextual forces are at play, but their effects seem to be too small to give rise to strong oppositional cultures in particular schools. This points to the possibility that there are other contextual characteristics, but builds on already existing, more generally available cultural repertoires tied to the involved demographic groups, such as norms of masculinity among boys.

Our findings carry three important implications. First, oppositional status orders seem to be no general characteristic of “adolescent societies” in secondary school. This null finding is all the more informative as such norms of masculinity among boys.

Second, our ecological perspective and large-scale longitudinal network analysis was motivated by a large body of qualitative research on oppositional cultures (see Warikoo and Carter, 2009; Tyson and Lewis, 2021). In turn, our contextual findings could motivate targeted ethnographic studies in schools of particular composition. This could
also help to shed light on the different mechanisms that we sketched in the derivation of our hypotheses and that we could not distinguish empirically in the context of our study and analytic strategy.

Finally, it would be fascinating to collect data on teachers’ and students’ subjective perceptions of the prevalence of anti-school attitudes in their classes. It may well be that teachers or students perceive anti-school norms to be present and tied to a specific demographic group in a school class, even when social network analysis does not lead to the same diagnosis. Recall that we did find clear indication of performance homophily: students preferred peers with similar school performance. If demographic groups differ in their performance, this tendency alone may give rise to group differences in the social acceptance of high performers (e.g., if low-performing boys prefer low performers while high-performing girls prefer high performers). Our more specific conceptualization of group-based oppositional cultures and corresponding analytic strategy focused on group differences in the liking of high performance students above and beyond performance homophily and correlated forms of homophily. In everyday life, but also in most ethnographic research, perceptions might not take these latter, more basic processes into account, leading to a lower threshold for diagnosing oppositional cultures.

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