THE BARRIERS THAT PEOPLE WITH LOWER SOCIAL CLASS BACKGROUND FACE IN ATTAINING PRESTIGE: THE CASE OF VOLUBILITY

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Abstract

Prestige hierarchies appear to exist universally across all human groups, contexts, and cultures, from friendship groups on the playground to boardrooms in the office. Although the demonstration of skills, abilities, and competencies are typically the fundamental drivers of relative prestige standing within a group, evidence indicates that demographic traits and characteristics—such as gender, race, ethnicity, personality traits—can also have non-negligible effects on prestige conferral independently of actual abilities. Social class—an individual's income, wealth, or material possession—is yet another demographic variable that can contribute to within-group prestige asymmetries. Here, we examine how an individual's social class is associated with the degree of *actual* (rather than *presumed*) prestige (i.e., respect and admiration) they acquire in the context of a given team or group (rather than society at large). Across two studies of 4-person zero-acquaintance groups (*N*s = 336 & 512 in Studies 1 & 2, respectively), we demonstrate that people higher in social class acquire greater prestige (even when their social class is not readily apparent), and that volubility—the amount of time that one spends speaking, which is a key behavioral cue of power and agency—acts as a mediating mechanism that accounts for the emergence of these class-based prestige disparities. Discussion focuses on the theoretical and practical implications of these class-based barriers on fairness and meritocracy in how individuals are advanced to prestige and social success.

Keywords: social class, socio-economic status, volubility, speaking time, prestige, social status, meritocracy

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The Barriers That People With Lower Social Class Background Face in Attaining Prestige: The Case of Volubility

"An empty vessel makes the most sound,

so they that have the least wit are the greatest babblers"

— Plato

Prestige hierarchies appear to exist universally across all human groups, contexts, and cultures (Brown, 1991), from friendship groups on the playground, surgical teams in an operating theatre, to boardrooms in the office. Across these hierarchical relationships defined by relative prestige, lower-ranking people willingly and preferentially defer to higher ranking others (Anderson et al., 2015; Henrich & Gil-White, 2001), out of a sense of respect and recognition granted to certain individuals who are deemed more skilled, successful, or knowledgeable (Cheng et al., 2013). But, what determines one's prestige standing within a group? The demonstration of skills, abilities, and competencies are, of course, primary drivers of relative prestige standing (Henrich & Gil-White, 2001). A substantial body of evidence indicates that the most prestigious individuals within a group are those perceived by peers as highly competent or especially capable in valued domains (Berger et al., 1972; Cheng et al., 2013; Lord et al., 1986; for a review see Anderson & Kilduff, 2009a). For example, in the context of collegiate sports teams, each teammate's peer-perceived prestige tracks not only their academic success, but also their athletic, social, intellectual, and advice-giving ability (Cheng et al. 2010). Similarly, perceived prestige in a small-scale Amazonian civilization is positively linked to domain-valued abilities, such as hunting ability, skill in food production, generosity, number of allies, and better nutritional status (Reyes-Garcia et al., 2008, 2009).

Prestige, however, is not conferred *solely* on the basis of actual competencies. Beyond the demonstration of skills and abilities, evidence indicates that demographic traits and characteristics—such as gender, age, race, and ethnicity, and personality traits (e.g., extraversion;

Anderson et al., 2001; Berger et al., 1972; Ridgeway, 2019)—can also have a non-negligible effect on within-group prestige asymmetries. One way that these characteristics may operate to influence prestige allocation is through their cultural associations with stereotypes and assumptions (whether warranted or unwarranted) about the abilities of people with different social identities (Berger ,1972; Ridgeway, 1991). That is, these traits and characteristics may be linked to differential ability or performance expectations, which then shape prestige distribution. For instance, studies show that in Western cultures, some groups (such as White or Jewish people) are collectively stereotyped as highly competent, while other groups (such as the elderly, or African Americans) are prejudicially seen as lacking competence (in the case of the elderly) or aggressive (in the case of African Americans; Cuddy et al., 2008; Karmali & Kawakami, 2023). Similarly, Coates (1972) found that White adults evaluated the personality characteristics of White children more positively than Black children, despite the absence of any true relevant behavioral or performance differences observed between the two groups of children. Importantly, regardless of whether they are warranted, these stereotypes are likely to in turn influence prestige allocation. For example, one study found that, compared to women, men are evaluated to be more intelligent, logical, and rational, and these perceptions in turn lead to higher ratings of respect and agency (Fernberger, 1948). These findings underscore how certain traits and demographic characteristics shape individuals' presumed or expected competence, and in turn influence their prestige standing.

Beyond these traits and characteristics, another demographic variable that is culturally associated with inferred skill or achievement, and thus can come to shape prestige acquisition, is social class—a person's income, wealth, or material possessions. Indeed, much evidence indicates that people higher in social class are evaluated more positively as a result of widely endorsed cultural stereotypes (held at least in many modern societies) that wealthier individuals are more intelligent and competent, than their less well-off counterparts (Cheng & Tracy, 2013; Cuddy et al., 2008; Durante & Fiske, 2017; Fiske et al., 2002). More recent cross-cultural

evidence even hints at the possibility that the high social class-competence association may be a human universal. In a study that spans 27 countries, wealthier individuals are not only stereotyped as more competent (yet lacking in warmth), but that the class-based stereotypical associations are especially strong in countries defined by higher income inequality as indicated by the Gini coefficient (Durante et al., 2017). These perceptual biases appear to emerge relatively early in development. Evidence indicates that they are also observed among young children who (like adults) not only associate wealth with competence (Sigelman, 2012), but also use wealth cues and show a preference for (that is, to indicate they "like" more) their higher-income peers (Shutts et al., 2016). Together, this work suggests that social class can have robust effects in shaping how individuals come to be perceived under the influence of cultural norms, values, and attitudes.

Beyond shaping how one is regarded by others, social class can also produce differential life and social outcomes. How does social class background shape one's experience in interpersonal interactions and create barriers or privilege? Here in the current research, we approach this question by examining intrinsic behavioral differences that may be exhibited by people from across the social class gradient, and how these different behavioral patterns of the haves and have-nots respectively create opportunities or barriers in accessing positions of status and esteem within social groups. Before presenting our account of class-based prestige outcomes, it may be fruitful to briefly consider how, aside from intrinsic behavioral differences, class-based disparities in life and social outcomes may arise.

People from Higher Social Class Backgrounds Achieve Better Life Outcomes

How exactly does social class background perpetuate future success and advantage in varied domains of life? Indeed, much research suggests that social class is a major determinant of key life outcomes, from academic achievement and career success to greater health and well-being. For example, research indicates that social class in childhood significantly influences an individual's future job choice and job attainment, whereby higher social class post-secondary

graduates are more likely to gain employment and have a higher salary compared to their similarly educated (and equally academically skilled) lower-class counterparts (Witteveen & Attewell, 2017). This early influence of social class extends to health, where lower social class individuals tend to experience poorer health outcomes, including increased susceptibility to the common cold, greater risk of serious diseases, and even morbidity (Cohen et al., 2008; Jaeggi et al., 2021; Marmot et al., 1991; Matthews & Gallo, 2011), as well as higher rates of mortality (Kopp et al., 2004). Social class is also a powerful predictor of well-being, with higher social class individuals reporting lower levels of anger and depression, and higher self-reported physical health (Cohen et al., 2006). Finally, these successful outcomes associated with increased status extend to reproductive fitness. Evidence indicates that, for instance, men with higher social class have higher marital fertility, lower offspring mortality, and tend to marry women who give birth at earlier ages (Betzig, 2012; Ross et al., 2023; von Rueden et al., 2011, 2016; Weeden et al., 2006), whereas mothers with higher social status have children with improved health in small-scale societies (Alami et al., 2020). Importantly, the magnitude of these social class effects on these important life outcomes are comparable to that of personality traits and cognitive ability on the same outcomes (Roberts et al., 2007).

Aside from contributing to success in the key life outcomes outlined above, social class is also associated with greater social success, such as increased social status. Prior work indicates that one's perceived social class invites different expectations and social responses from others (Gilmore & Harris, 2008), with people from higher social class backgrounds receiving favorable social evaluations and treatment (Freeman & Johnson, 2016; Lott & Saxon, 2002). Studies with American participants reveal a firmly held implicit greater liking of the haves, as indicated by their negative implicit views of the poor and positive implicit attitudes towards the middle-class and wealthy (Horwitz & Dovidio, 2017). In the domain of views regarding who warrants high status positions, studies show that an individual described as middle-class tends to be seen as more suitable for leadership positions than another candidate described as from a lower social

class but is otherwise comparable on all other dimensions (Lott and Saxon, 2002). Together, these diverse lines of evidence indicate that, due to a complex interplay of material and social privileges that come with power and resources, people with higher social class achieve better social outcomes.

These key differences in life and social outcomes for the haves and have-nots are likely the result of at least three distinct, non-mutually exclusive processes: differential access to privilege and resources, perceptual biases and prejudicial treatment, and class-based psychological and behavioral differences. First, material wealth buys greater access to resources, such as nutritious foods, health care and treatment, and domestic assistance. For instance, people residing in lower-class neighbourhoods often have less access to more nutritious foods (Brown & Politt, 1996). For children living in poverty, lack of access to nutritious meals can result in malnutrition, increasing their risk of serious illness or developmental delays (Brown & Politt, 1996). In general, lower social class people may experience more exposure to environmental hazards (i.e., air pollution, impoverished living conditions, and crime) that increase their risk of disease and poor health (Lovasi et al., 2009). Lack of access to health care can further exacerbate these conditions (Shi, 2001).

Second, work in psychology and sociology has long demonstrated that wealth (or lack thereof) invites perceptual biases and differential treatment from others. In a study that provides a clear demonstration of these class-based stereotypes and differential treatment, observers expect and come to see higher-class employees as more confident and dominant, and their lower-class coworkers as less trustworthy and less likely to succeed (Coté, 2011). These views jointly contribute to differential rates of advancing to positions of power and status in one's organization for individuals who have higher versus lower family social class (Ashby & Schoon, 2010). These biases and prejudices experienced at work, of course, reinforce and reflect broader patterns of privilege and power within society, which together generate a class divide in social outcomes.

Third, intrinsic *psychological and behavioral differences* between the haves and have-nots further contribute to different life and social realities. A large literature documents the diverse ways in which social class influences how people think and behave. Among the varied psychological dimensions on which the rich and poor differ, a key fundamental psychological difference on which a wide array of class-based behavioral differences are likely rooted is subjectively experienced subordinate rank as well as suppressed confidence and sense of control (Belmi et al., 2020; Kraus et al., 2009, 2011; Lachman & Weaver, 1998; Piff et al., 2018).

Although class-based life and social realities are likely defined by a combination of all of these three (and other) factors, here in the current research we focus specifically on how behavioral differences between the haves and have-nots may translate into disparate social outcomes. Whereas prior relevant research has predominantly focused on socioeconomic and group-level prestige stratification at the societal level such as inter-group asymmetries across social class strata (Sewell et al., 1957), much less is understood of how individuals' social class background shapes stratification *within* groups, such as in a local social group to which one belongs. With this in mind, in the current work we test the possibility that class-based intra-group asymmetries may emerge. In our studies, we examine contexts in which signals of wealth or income (e.g., conspicuous consumption such as fancy clothing or cars) are concealed, thereby removing the influence of perceptual biases. Such an emphasis allows us to focus specifically on the psychological and behavioral differences between lower and higher social class individuals, while minimizing the role of class-based expectations or stereotypes.

Volubility is a Behavioral Precursor to Prestige Acquisition

Although the mechanisms through which social class may shape actual prestige acquisition in social groups have yet to be fully explored, one potent behavioral cue appears to be volubility—the total amount of time that one spends speaking in a group setting (Brescoll, 2011). Much evidence indicates that holding the floor in group situations is associated with an increased ability to ascend the group's social hierarchy, an effect sometimes termed the "babble

hypothesis" of leadership (Bass, 1990; Gerpott et al., 2018; MacLaren et al., 2020; Mullen et al., 1989; Riggio et al., 2003).

Of these studies, the clearest evidence that volubility serves as an important prestige cue comes from one study that shows how, of the diverse behaviors that predict within-group prestige asymmetries, the percent of time that one spent speaking had the single largest effect on observers' ratings of competence (r = .59); in fact, the contribution of speaking time outsized other otherwise apparently important behavioral indicators, including verbal remarks that directly signal or claim expertise (e.g., being the first in the group to offer an answer, making statements regarding one's certainty) or non-verbal behaviors that more subtly cue confidence and competence (e.g., speaking in a confident and factual vocal tone, adopting an expansive posture; Anderson et al., 2012).[1] Importantly, this study utilized egalitarian groups without formal leader or follower roles, and thus others' competence was likely less readily apparent to observers. These effects of speaking time on prestige allocation notwithstanding, it bears mentioning that because the quantity of participation does not reliably track the *quality* of participation (that is, one's true expertise, knowledge, or capability; Jones & Kelly, 2007; Sorrentino & Boutillier, 1975; MacLaren et al., 2020), volubility at best serves as a noisy and imperfect marker of knowledge and competence.

Preliminary Evidence Suggests That Social Class Covaries with Volubility

If volubility determines how prestige—a coveted social outcome that confers substantial fitness-enhancing benefits, so much so that the desire for it represents a fundamental human motive (Anderson et al., 2015)—is differentially allocated to individuals, this raises a key question: how do individual differences in the tendency to dominate or share the speaking floor

[1] Converging with these studies that tallied actual speaking time behavior, research demonstrates that extraversion—a trait-like tendency towards sociability, activity, assertiveness, and positive emotionality (John & Srivastava, 1999), and (perhaps unsurprisingly) correlated with actual speaking time in social situations (MacLaren et al., 2020)—is associated with achieving higher social-rank outcomes in social situations (Anderson et al., 2001, 2020; Ensari et al., 2011; Judge et al., 2002; Landis et al., 2022; Zaccaro et al., 2018).

shape unequal social outcomes? Who gains prestige privileges from the tendency to speak more, and who faces barriers to social rank from speaking less?

We propose that social class is one such divide that, through its links with volubility, contributes to differential prestige outcomes. Several lines of work provide some preliminary evidence linking social class to volubility behavior. The first line of work comes from the literature on the psychological and behavioral effects of power (and powerlessness). Because a key defining feature of being wealthy is a subjective sense of power and control (Kraus et al., 2009, 2010, 2011; Kraus & Stephens, 2012; Lachman & Weaver, 1998; Piff et al., 2018), prior evidence showing how power increases agentic behavior can be seen as suggestive evidence linking social class to volubility. Theories of power predict (and the evidence supports) that individuals who exercise greater relative power (e.g., bosses versus subordinates, teachers versus students, higher-class versus lower-class individuals) display more traits and behaviors associated with an approach system (e.g., achieving goals, taking risks, asserting one's opinion), whereas those who are powerless are expected to display traits and behaviors characteristic of an inhibition system (e.g., disengaging from goals, shying away from risks, yielding or conforming to others' opinion; Anderson & Berdahl, 2002; Berdahl & Martorana, 2006; Cho & Keltner, 2020; Galinsky et al., 2008; Keltner et al., 2003). According to this logic, people with higher social class, who have abundant material resources and elevated social rank (Cheng & Tracy, 2013), are more likely to verbally assert their wishes, opinions, and actively influence public opinion—that is, demonstrate greater volubility—compared to their lower-class counterparts.

The second line of evidence that tentatively links social class to volubility is work from sociology that points to how family or parent socio-economic status is a mechanism that reinforces and reproduces class-based behavioral variation. This work proposes that parenting practices vary by class backgrounds, and these class-based cultural norms, beliefs, and values lead to the socialization and inter-generational transmission of different traits and behaviors for children and divergent adult outcomes (Sherman & Harris, 2012). In the domain of key values

that they seek to instill in their children, a classic study shows that whereas lower-class parents tend to emphasize obedience to rules and directives defined by others and conformity to external circumstances, higher-class parents tend to emphasize autonomy and self-direction (Pearlin & Kohn, 1966). This pattern is replicated in a more recent longitudinal investigation of parenting priorities across 90 nations, which reveals a similar pattern in which higher-class parents endorse values of independence and not endorse the importance of obedience (Park & Lau, 2016). Moreover, the same trend is also obtained at the country-level, wherein countries with greater wealth and more educated populations tend to prioritize child independence, whereas countries with less wealth and lower rates of educated populations emphasize obedience. Such emphasis means that in households with lower social class, children are socialized to abide by rules, defer to authority, and accommodate the needs of others, while simultaneously suppressing agentic behaviors that reflect independent values, such as displaying confidence, leadership, or holding the floor in group discussions (Sharps & Anderson, 2021).

A Reliance on Prestige Cues, Which Noisily and Imperfectly Track Expertise, Leads to the Problematic Emergence of Unfair, Non-meritocratic Inequality. The present work tests the theoretical links between social class, volubility, and prestige proposed above. Addressing this work is important for at least two reasons. First this work furthers a theoretically grounded understanding of why and how individuals with limited material resources and lower social rank come to have their disadvantaged positions within the broader society reproduced within their everyday social interactions with others. Second, more broadly, this work contributes to ongoing societal and scholarly debates about how we, as humans, fall short of creating meritocratic structures (in its true meaning, wherein people are chosen and promoted to positions of success, power, or esteem on the basis of their ability and talent) within our everyday social contexts, organizations, and society. If, as we test in the current studies, certain groups or identities are disadvantaged *even* when their identities are concealed (a point we elaborate on below), this would suggest a failure in achieving meritocratic ideals even in the

absence of culturally held prejudicial beliefs or biases. Under a meritocratic ideal, prestige, personal advancement, and power ought to be allocated based on individuals' capabilities and merits, rather than their wealth or social class. Yet, if, as our hypotheses suggest, social class contributes to disparities in prestige and social success more broadly, such findings would highlight the non-meritocratic nature of prestige hierarchies, whereby personal advancement is not in fact based on performance and achievement but rather—violating the principle of meritocracy—wealth and social class (Markovits, 2019; Sandel, 2020).

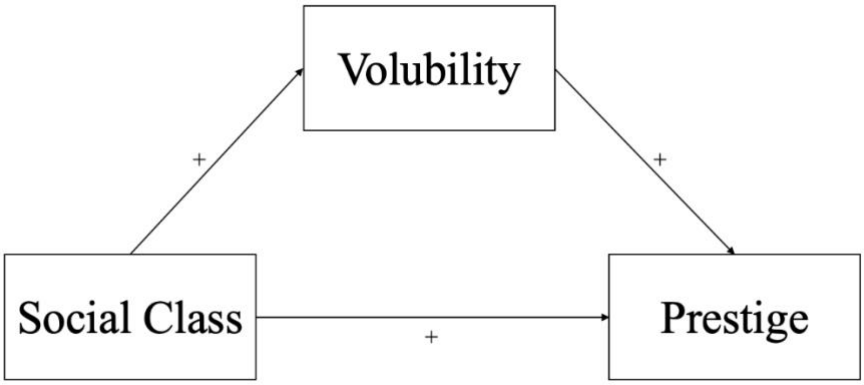
Another broad social implication of this work is that prestige hierarchies, while often assumed to be merit-based (Cheng, 2020), may not be so fair, benevolent, or meritocratic after all, if they reflect the *appearance* of skill, contribution, or effort (such as speaking time) that do little to increase collective productivity or success (Anderson & Kilduff, 2009b; Celniker et al., 2023), rather than *true* capability and achievement. Thus, exploring how observers utilize prestige cues (such as volubility), which imperfectly track true expertise, to infer relative contribution and prestige, how such prestige cues are differentially displayed by people of varied social class, and how these prestige cues and true expertise each contribute to prestige allocation are all key and fundamental questions that address the fairness and legitimacy of prestige-based hierarchies that operate under the guise of meritocracy.

Hypotheses and Overview of Current Research

In the current research, we offer and test a series of hypotheses regarding social class and the attainment of prestige across two studies of zero-acquaintance groups. Based on our exposition above, if people from a lower social class background are less voluble (Hypothesis 2), and volubility is associated with gaining prestige (Hypothesis 1), then group members with lower social class may face barriers in attaining prestige standing (Hypothesis 3), in part because of their lower volubility (Hypothesis 4). This hypothesized conceptual model is shown in Figure 1. This conceptual model applies the Brunswik's (1956) lens model of human perception, which posits that observable behavioral cues (such as an individual's volubility) serves as a lens through which observers indirectly perceive a target's inner characteristics (such as the target's social class), and in turn form a social judgment or evaluation (such as the target's degree of competence, and thus their warranted relative prestige in the local group).

Figure 1

Conceptual Model Depicting the Hypothesized Links Between Social Class Background, Volubility, and Prestige Acquisition.



We test these four inter-related hypotheses across two studies of small "minimal" zero-acquaintance groups. In Study 1, we examine these predictions in groups tasked with solving the Lost on the Moon survival exercise—a widely used task for studying group problem-solving under ambiguity over correct and incorrect opinions—in which knowledge not easily directly validated when group members express divergent opinions (Yetton & Boteler, 1982). In Study 2,

we examine the same predictions in task groups whose goal is to instead solve Raven's Advanced Progressive Matrices, a pattern recognition task in which (unlike in Study 1) proposals of correct responses that are accompaniment by clear explanations become self-evident. Thus, compared to Study 1, in Study 2 knowledge and expertise can be more easily recognized and subjectively validated. Taken together, these different task contexts across studies allow us to test the links between social class, volubility, and prestige when the ease at which individuals' true knowledge and expertise (and hence prestige) can be detected differs, along with the degree to which volubility will be relied upon as a prestige cue. That is, when expertise is difficult to infer (Study 1), group members are likely to more strongly utilize volubility as a cue to prestige, because group members cannot easily identify the most knowledgeable individuals. By contrast, when expertise can be more easily inferred (Study 2), assessments of expertise and prestige are less likely to depend on volubility, because group members can readily identify quality of ideas beyond quantity of ideas voiced.

Methodologically, across both studies we utilize online-based groups (in lieu of face-to-face groups) as they offer several key advantages. First, online groups, which render visual cues unavailable, provides a clearer test of our primary interest in intrinsic behavioral differences exhibited by people across the social class spectrum and how these differences shape prestige allocation. Many aspects of one's identities (e.g., gender, social class, ethnicity) are readily concealed under such online interactions. By contrast, face-to-face groups make available visual cues and identities, and thus the resultant social evaluations (including prestige assessments) are likely to reflect a complex combination of class-based behavioral differences (e.g., how individuals from different social class backgrounds behave), as well as cultural stereotypes and prejudices (e.g., unwarranted perceptual biases on the basis of a target's social class, over and above their expressed behavior). Consistent with this possibility that people's identities (including their social class background) may be revealed through the visual cues available in face-to-face interactions, studies indicate that observers can identify with modest degree of

accuracy an individual's social class based solely on clothing, adornment and accessories, as well as non-verbal expressions such as tone of voice, body language, and facial expressions (Kraus et al., 2010; Kraus & Keltner, 2009; Bjornsdottir & Rule, 2017). Consequently, online-based groups provide a better point of entry into questions about social outcomes that stem from intrinsic behavioral differences, relatively free of the influence from cultural stereotypes and prejudices.

Second, our investigation of volubility in online-based groups reflects the tremendous rise in proportion of social interactions in modern society that now occur through online mediums. In the modern workplace environment that our work here with decision-making groups seeks to capture, a lion's share (if not the primary method) of communication occurs in the form of emails and online text-based chats such as Slack (York, 2020; Yang et al., 2021). In a survey, 61% of workers describe email as an important tool for their work-related tasks (Purcell & Raine, 2014). While much variation exists across sectors and organizations, on average employees spend 2 hours each day on emails (Lanctot & Duxbury, 2021). Moreover, they dedicate on average 90 minutes each day at work towards active communication on Slack (Elliot, 2019). Online text-based interactions will increasingly dominate the future of work, school, and social life, and are soon expected to become the primary means of human social interactions. Importantly, much evidence on group performance and social dynamics suggests that, while there are key differences particularly related to anonymity and social identities, many similar social processes and interpersonal cues commonly operate across online-based and face-to-face groups (e.g., Bates & Gupta, 2017; Engel et al., 2015; Woolley et al., 2015). If the present investigation of online groups reveals class-based differences in volubility and that these differences in turn contribute to prestige differentiation, similar social processes are likely to also operate in face-to-face interactions in which group members' identities and cues of social class are far more salient.

Study 1

Method

Participants

A total of 336 participants[2] (198 or 59% women, M_{age} = 33.8, SD_{age} = 12.2) were recruited to complete a group interaction study from Prolific (Peer et al., 2022), an online labor market based in the United Kingdom. To meet eligibility criteria of the study, participants must reside in U.S or Canada and have identified English as a language in which they were fluent in a pre-study screening. Participants were paid £3.00 for taking part in this approximately 30-mins online group interaction study, and had the chance to earn an additional performance-dependent monetary bonus. Participants were informed that they will be randomly assigned to a group of four members to interact synchronously over a text-based chat. Groups varied in its gender composition, with a few groups being all men or all women (12% same-gender groups) and most groups consisting of a mix of both men and women (88% mixed-gender groups). Participants' ethnic backgrounds were as follows: 55% White (*n* = 185), 24% Asian (*n* = 82), 6.5% Latin or South American (*n* = 22), 5.95% Black (*n* = 20), and 8.04% other (*n* = 27). All interactants were real participants; no confederates or deception was used. All study procedures were approved by the Human Participants Review Sub-Committee, York University's Ethics Review Board.

Procedure

After providing informed consent, participants began by completing a brief demographic questionnaire that surveyed their age, ethnicity, country of residence, and gender. Following this, participants began the pre-collaboration phase of the study, during which they completed, individually in private, the Lost on the Moon exercise (Bottger, 1984) that involves rank-ordering 15 items (e.g., oxygen tanks, heating unit, signal flares) in order of importance for surviving a crash landing on the moon.

[2]An additional 26 participants were dropped as they terminated the study prematurely or were never paired into a full group of four and instead only had three teammates (N = 24) or two teammates (N = 2). This resulted in a total of 336 participants in 84 four-member groups.

Next, participants entered the group collaboration phase of the study, and were randomly assigned into a group of four members. Once all four members have been matched, they worked collectively as a group for 12 minutes on the same survival task they had just completed individually in the pre-collaboration phase. To identify each member in the group text-based chat, each person was assigned an ID as Player A, B, C, or D, and typed their opinions and ideas into the chat to establish a group-endorsed set of answers. To incentivize task engagement, participants were informed that the top-performing group among all participants (i.e., whose final submitted answers were closest to an answer key supplied by the National Aeronautics and Space Administration [NASA]) would each receive a £8 bonus prize. After completing the group task, participants privately completed a post-task questionnaire in which they rated all group members in a round-robin design. Finally, participants completed a post-task survey measuring additional demographic details, including their social class.

Measures

Peer-Rated Prestige (Outcome)

Upon completing the group task and as part of the peer-rating procedure, participants rated each of their group members using an abbreviated version of the Dominance-Prestige Peer-Rating Scale (Cheng et al., 2010; Cheng et al., 2013). To minimize the number of ratings that participants need to supply for each target, we administered a subset of 4 items to assess peer-rated prestige. These items include “this player was considered an expert on some matters by others”, “this player’s unique talents and abilities were recognized by others”, “I could envision others seeking this player’s advice on a variety of matters”, and “members of the group respected and admired this player”. Items were rated on a scale that ranged from 1 (“Not at all”) to 7 (“Very Much”). We analyzed these ratings using the Social Relations Model approach (Kenny & La Voie, 1984). This approach separates peer-ratings into perceiver, target, and relationship effects. We extracted the target effects, which are the average of all group members’ ratings of a given target on a given dimension with perceiver and relationship effects removed. With the use

of target effects, we can also consider target variance, the degree of variation in ratings of a particular individual provided by peers, which serves as an indicator of consensus among perceivers in their evaluations of the target (i.e., a measure of interrater reliability; Bonito & Kenny, 2010). A higher target variance suggests that a particular target was rated with a high degree of agreement among group members (Bonito & Kenny, 2010). The amount of target variance in the ratings across the four Prestige items, although statistically significant ($p < .05$), ranged from 2.8% to 9.4%, suggesting a lower degree of consensus. Target scores for the four Prestige items were combined to form an overall Prestige composite for each individual ($\alpha = .81$; relative target variance = .82).

Social Class (Predictor)

Social class can be conceptualized as a combination of one's objective resources (i.e., income) and subjective perception of those resources in relation to others (Belmi & Laurin, 2016; Kraus & Mendes, 2014). As such, we measured social class both subjectively and objectively and used these two variables to create a social class composite.

Objective Social Class Sub-Index. Participants reported their annual household income ranging from 1 ("Less than $10,000 USD") to 14 ("Greater than $200,000 USD") increasing by $10,000 increments over 14 brackets (mode = 6 "$50,000 to $60,000 USD").

Subjective Social Class Sub-Index. We used the widely used "ladder" MacArthur Scale of Socioeconomic Status (Adler et al., 2000) question to measure subjective social class. Participants were shown a drawing of a 10-rung ladder, wherein the top rung represents "the people who are the best off, who have the most money, education, and the best jobs" whereas those who occupy the bottom rung are "the people who are the worst off, those who have the least money, least education, and worst jobs or no job". Participants were asked to place themselves on the ladder "relative to other members of society" (1 = lowest, 10 = highest).

Social Class Composite (Used in Analyses Below). We first standardized objective social class and subjective social class, respectively, to mean of 0 and standard deviation of 1,

and then aggregated across these two indices—which, similar to other work (e.g., Kraus et al., 2009 (r = .39); Kraus & Keltner, 2013 (r =.36)) correlate at r = .49 ($p < .05$)—to create a composite measure of social class ($\alpha = .65$). Results based on the objective and subjective social class sub-indices are used as robustness checks and reported in the Supplemental Materials.

Volubility (Mediator)

Using participants' text-based chat logs from the group collaboration, we assessed each person's volubility, broadly defined here as contributing more to the online group chat (equivalent to speaking more in any group interaction that involves verbal or audio communication).[3] In the present text-mediated group interaction, we measured volubility in three ways: word count, character count, and phrase count.[4] These three indices of volubility were, as would be expected, highly correlated (rs ranged from 0.80 to 1). We used word count as our primary operationalization of volubility, while the two latter measures were used to assess the robustness of our primary results and reported in the Supplemental Materials.

Word Count. As the most straightforward and intuitive index of volubility, the total number of words that each participant typed into the group chat was tallied to index word count.

Character Count. Beyond the number of words entered, volubility can be alternatively indexed by considering the degree to which the words used are less or more concise. As such, we tallied the total number of characters (i.e., letters, numbers) each participant typed.

[3] Similar to our approach here, prior research on volubility has used different indicators of speaking time. For example, researchers investigating mother-child interactions use utterances (i.e., phrases) per hour to measure volubility (Vanormelingen & Gilliis, 2016). Additionally, meta-analyses on individual differences in language use reveal that many published studies operationalize volubility in diverse ways, including number of words or utterances, rate or time sampling, words per turn, duration of talking (in seconds or minutes), total turns, and total statements or speech acts (Leaper & Ayres, 2007).

[4] In addition to these three indices of volubility, we also included a related variable of speaking order for exploratory purposes. It captures who "spoke" first—which while likely associated with volubility (people who speak more are also somewhat more likely to speak first)—is nevertheless conceptually distinct.

Phrase Count. In any interaction, individuals vary in the number of remarks made. Although the number of phrases "spoken" overall may be correlated with a higher word or character count, some individuals may nevertheless make a large number of very brief remarks (high phrase count but moderate word or character count), while others may make very few but lengthy remarks (low phrase count but high word or character count). To disentangle between frequency of remarks from their concision, we tallied the total number of utterances, statements, or speech acts made. Each time a participant contributed a remark of any length to the group via chat it was counted as one phrase.

Analytical Approach

Means, standard deviations, and correlations of the key variables are displayed in Table 1. The data were analyzed using simple and multiple linear regression models. In these analyses, as our primary interest involves the effects of individuals' relative social class within their group, we group mean-centered social class (i.e., individuals' social class composite score minus the group's mean social class composite score). In our results throughout, we focus on standardized beta coefficients (β) unless noted otherwise. Because individuals were nested within teams, in all models reported below we used clustered robust standard errors, clustering on group, to adjust for potential within-team statistical dependence that may arise from individuals being nested within teams (Cameron & Miller, 2015; McNeish et al., 2017).[5]

The data were analyzed using R version 4.1.1. Data cleaning procedures (e.g., compiling items into a composite measure) were done using the *dplyr* package (Wickham et al., 2019). Means and standard deviations were calculated using the *psych* package (Revelle, 2023). Target

[5] Clustered standard errors and multilevel modeling are two of the most common approaches for handling the problem of non-independence of observations observed in clustered data, for which standard estimate methods in regression models that fail to account for clustering lead to biased estimates of standard errors and overly small *p*-values. Compared to multilevel models, the clustered standard errors approach—which more straightforwardly applies the needed adjustment to (otherwise biased) standard errors in clustered data—requires fewer assumptions and is less prone to convergence issues, and is thus often recommended as the more practical analytic solution (Gelman, 2006; Huang, 2016; Primo et al., 2007).

effects as derived from the Social Relations Model were calculated using the *TripleR* package (Schönbrodt et al., 2012, 2022). We used the *sandwich* (Zeileis et al, 2020) and *lmtest* (Zeileis & Hothorn, 2002) packages to estimate models with clustered robust standard errors.

Table 1

Study 1: Means, Standard Deviations, and Correlations of Study Variables From Total Sample (N = 336)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
Gender (1 = Women, 0 = Men)	---	---										
2. Ethnicity (1 = White, 0 = non-White)	---	---	---									
3. Age	33.8	12.2	---	---								
4. Subjective Social Class	5.6	1.7	-.00 [-.11, .10]	-.01 [-.11, .10]	-.02 [-.13, .08]							
5. Objective Social Class	6.9	3.8	-.08 [-.18, .03]	.03 [-.08, .13]	.17** [.06, .27]	.49** [.40, .57]						
6. Social Class Composite	0.0	0.9	-.05 [-.15, .06]	.01 [-.10, .12]	.08 [-.02, .19]	.86** [.83, .89]	.86** [.83, .89]					
7. Word Count	103.1	68.1	-.12* [-.23, -.01]	-.03 [-.14, .08]	-.13* [-.23, -.02]	.12* [.01, .23]	.11 [-.00, .21]	.13* [.03, .24]				
8. Character Count	516.1	340.1	-.12* [-.22, -.01]	-.03 [-.14, .08]	-.13* [-.23, -.02]	.13* [.03, .24]	.11* [.00, .21]	.14* [.03, .24]	1.00** [.99, 1.00]			
9. Phrase Count	18.7	10.5	-.11* [-.21, -.00]	-.05 [-.16, .05]	-.13* [-.24, -.03]	.14** [.03, .24]	.11* [.00, .22]	.15** [.04, .25]	.81** [.77, .85]	.80** [.76, .84]		
10. "Speak" Order (1 = First, 0 = non-First)	---	---	-.07 [-.17, .04]	-.06 [-.16, .05]	-.14* [-.24, -.03]	.03 [-.08, .13]	-.02 [-.13, .09]	.00 [-.10, .11]	.24** [.14, .34]	.24** [.14, .34]	.22** [.11, .32]	
11. Peer-Rated Prestige (target effects)	3.6	0.8	-.01 [-.12, .10]	-.01 [-.12, .10]	-.07 [-.17, .04]	.12* [.01, .22]	.09 [-.02, .19]	.12* [.01, .22]	.37** [.27, .46]	.37** [.27, .46]	.37** [.27, .46]	.13* [.02, .23]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Results

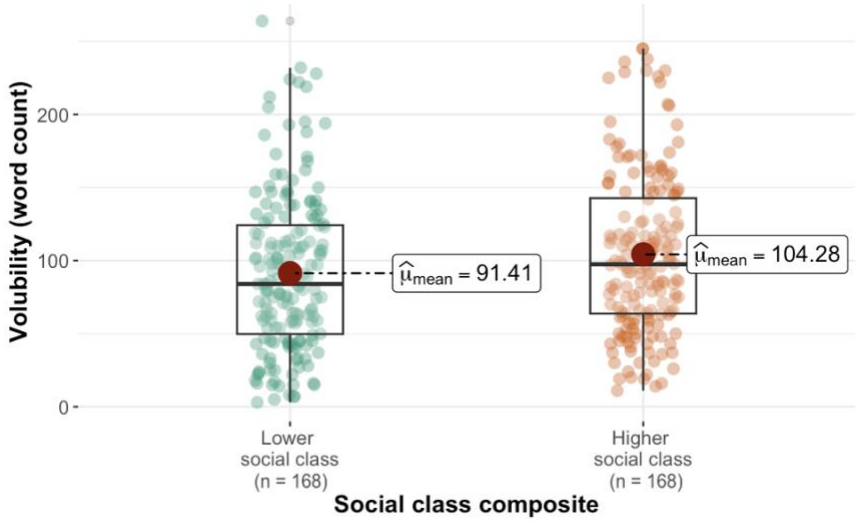
Means, standard deviations, and correlations of the key variables are displayed in Table 1.

Are People From a Higher Social Class Background (Predictor) More Voluble (Mediator)?

Preliminary examination reveals a trend consistent with the predicted positive association between social class and volubility. As shown in Figure 2, individuals from a higher social class background "spoke" (i.e., typed) more words in the group exercise (M = 104 words, SD = 54.4) than those from a lower social class background (M = 91 words, SD = 53.7; t = -2.23, p = .026, d = .24). The higher social class individuals in the figure are those whose social class composite score exceeds the median, and the lower social class individuals refer to those whose social class composite score lie below the median.

Figure 2

Study 1: Descriptively, Group Members from a Lower Social Class Background Are, On Average, Less Voluble Than Group Members from a Higher Social Class Background



Note. The boxplot contains a red dot representing the mean, a thick horizontal line representing the median, whiskers representing the 95% confidence interval, and the value displayed represents the mean value across the two social class groups. 'Lower social class' individuals are those whose social class score (aggregate of subjective and objective social class indices) falls below the median. 'Higher social class' individuals are those whose social class score exceeds the median.

To test this formally by treating social class as a continuous variable, we estimated a model by regressing volubility on social class. Consistent with Hypothesis 2, the regression coefficient on social class is positive and significant (β = .10, 95% *CI* [-.00, .21], *SE* = .05, *p* = .018; see Table 2 Model 1), indicating that people higher in social class tend to "speak" more compared to their lower social class counterparts. This effect is robust to controls for participant observable characteristics (Table 2 Model 2). In an alternate analysis when—rather than use raw word count as above—volubility is operationalized as the proportion of "speaking" time within the group (i.e., individual's word count divided by the group's total word count across all members), we arrive at similar conclusions (Table S1): being from a lower social class background predicts decreased volubility proportional to the group's collective discussion.

Table 2

Study 1: Regression Results Indicating That Volubility (Dependent Variable) is Higher Among Individuals from a Higher Social Class Background

	Model 1: Volubility (Word Count) (Dependent Variable)				**Model 2: Volubility (Word Count) (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Social Class Composite	**.10**	**.05**	**-.00 – .21**	**.018**	**.12**	**.05**	**.01 – .22**	**.031**
Age					**-.16**	**.06**	**-.27 – -.05**	**.005**
Gender (1 = Women, 0 = Men)					**-.14**	**.11**	**.09 – .53**	**.014**
Ethnicity (1 = White, 0 = non-White					.02	.06	-.09 – .13	.660
Observations	336				336			
R^2 / R^2 adjusted	.01 /.01				.05 / .04			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SE*s and are clustered at the group level (336 individuals nested in 84 groups). The outcome in all models is volubility, defined as the number of words "spoken" (i.e., typed) in the text-based group discussion. The social class composite variable has been group mean-centered. Bold indicates statistical significance at the 5% level.

Is Volubility (Mediator) Associated with Gaining Prestige (Outcome)?

Consistent with prior research on the "babble" effect (MacLaren et al., 2020), regression analyses show that, consistent with Hypothesis 1, volubility was associated with prestige, such that people who "spoke" more were rated as higher in prestige than their less voluble group members ($\beta = .37$, 95% *CI* [.27, .47], $SE = .07$, $p < .001$; Table 3 Model 1). These results are robust to the inclusion of participant demographic control variables (Table 3 Model 2). Notably, volubility alone explained approximately 13% of the variance in prestige ratings, suggesting a strong association between volubility and prestige (Table 3 Models 1-2).

Table 3

Study 1: Regression Results Indicating That Prestige (Dependent Variable) is Higher Among More Voluble Individuals

	Model 1: Peer-Rated Prestige (Dependent Variable)				**Model 2: Peer-Rated Prestige (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Volubility (Word Count)	**.37**	**.07**	**.27 – .47**	**<.001**	**.36**	**.07**	**.26 – .47**	**<.001**
Age					-.01	.06	-.12 – .09	.830
Gender (1 = Women, 0 = Men)					-.03	.11	-.07 – .14	.670
Ethnicity (1 = Women, 0 = Men)					.00	.05	-.10 – .11	.987
Observations	336				336			
R^2 / R^2 adjusted	.14 / .13				.14 / .13			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SE*s and are clustered at the group level (336 individuals nested in 84 groups). The outcome in all models is peer-rated prestige. Bold indicates statistical significance at the 5% level.

Do People From a Higher Social Class Background (Predictor) Gain Higher Prestige (Outcome)?

Consistent with Hypothesis 3, we found that people higher in social class achieve higher prestige than their lower social class group members (β = .16, 95% *CI* .05, .28], *SE* = .06, *p* = .006; Table 4 Model 1). Thus, conversely, individuals from lower social class experienced greater difficulty in acquiring prestige. Importantly, this association held even after controlling for participant demographic characteristics (Table 4 Model 2).

Table 4

Study 1: Regression Results Indicating That Prestige (Dependent Variable) is Higher Among People from a Higher Social Class Background

	Model 1: Peer-Rated Prestige (Dependent Variable)				**Model 2: Peer-Rated Prestige (Dependent Variable)**			
Predictors	*Estimates*	*std. Error*	*CI (95%)*	*p-value*	*Estimates*	*std. Error*	*CI (95%)*	*p-value*
Social Class Composite	**.16**	**.06**	**.05 – .28**	**.006**	**.17**	**.06**	**.06 – .29**	**.004**
Age					-.01	.00	-.01 – .00	.136
Gender (1 = Women, 0 = Men)					-.02	.09	-.19 – .15	.830
Ethnicity (1 = White, 0 = non-White)					.01	.09	-.18 – .19	.918
Observations	336				336			
R^2 / R^2 adjusted	.02 / .02				.03 / .02			

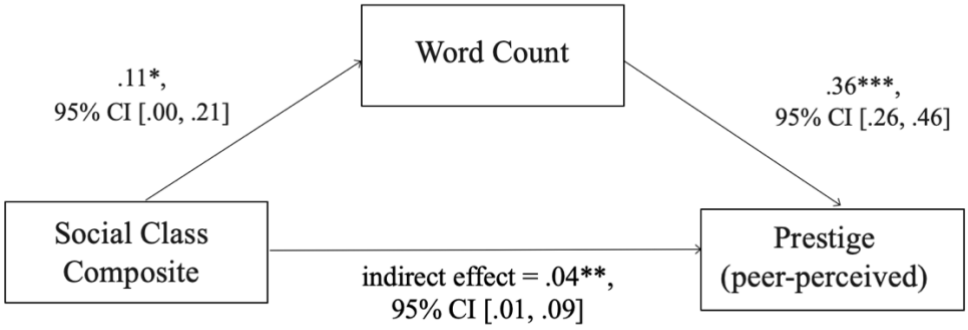
Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SE*s and are clustered at the group level (336 individuals nested in 84 groups). The outcome in all models is peer-rated prestige. The social class composite variable has been group mean-centered. Bold indicates statistical significance at the 5% level.

Do People From a Higher Social Class Background (Predictor) Achieve Higher Prestige (Outcome), In Part Due To Their Greater Volubility (Mediator)?

The findings above thus far establish links between social class, volubility, and prestige acquisition, but does volubility indeed explain why prestige disparities may exist across the social class gradient? To examine this, we conducted a mediation analysis using 1,000 bootstrapped samples. Consistent with Hypothesis 4, volubility (as indexed by word count in the text-based group discussion) significantly mediated the effect of social class on peer-perceived prestige (indirect effect = .04, bias-corrected bootstrapped 95% *CI* [.01, .09]). This suggests that volubility partially explains the greater difficulty faced by people from lower social class in acquiring prestige (Figure 3).

Figure 3.

Study 1: Volubility (Operationalized as Word Count) Significantly Mediated the Effect of Social Class on Peer-Perceived Prestige.



Note. Standardized parameter estimates are shown. Volubility is operationalized as word count in the text-based group discussion. * p <0.05. ** p < 0.01. *** p < 0.001.

Robustness Checks

To complement our results above, we examined additional analyses to assess whether our results are robust to alternative operationalizations. These analyses show that all results reported above are robust to alternate operationalizations of volubility (in place of the word count index above) and social class (in place of the overall social class composite above).

First, consistent with results reported above, we find support for Hypothesis 2 using these available alternate operationalizations. Higher social class significantly predicts a higher number of both characters typed (character count; see Table S2 Model 1, Figure S1 Panel A) and phrases entered (phrase count; see Table S2 Model 2, Figure S1 Panel B). Moreover, when we break down the overall social class composite measure into two distinct (but related) components, we find that both the subindices of subjective social class component (see Table S3 Model 1) and objective social class component (see Table S3 Model 2) positively predicts word count.

Second, consistent with Hypothesis 1, both character count (see Table S4 Model 1) and phrase count (see Table S4 Model 2) are positively associated with acquiring higher prestige. Third, also consistent with Hypothesis 3, both subjective social class (see Table S5 Model 1) and objective social class are positively associated with higher prestige (see Table S5 Model 2). Fourth, consistent with Hypothesis 4, additional bootstrap tests of mediation when we substitute word count with character count (see Figure S2 Panel A) or phrase count (see Figure S2 Panel B), have non-zero indirect effects and are found to mediate the effect of social class composite on prestige acquisition. Similarly, when replacing our social class composite variable with subjective social class (see Figure S3 Panel A) or objective social class (see Figure S3 Panel B), the observed indirect effects remained significant and similar in magnitude. Overall, these robustness checks provide converging results as our primary operationalizations of volubility and social class, and highlight the robustness of the links between social class, volubility, and prestige acquisition.

Discussion

In Study 1, we sought to investigate the effect of social class on prestige acquisition, and the potential mediating role of volubility, within zero-acquaintance task groups. While existing evidence has more broadly demonstrated the link between volubility and interpersonal success such as leadership and other prestige-related outcomes (e.g., Bass, 1990; MacLaren et al., 2020; Mast, 2001, 2002; Meeker, 2020; Mullen et al., 1989), to our knowledge the current research

presents the first direct and systematic test of how group members' social class background contributes to disparities in volubility and prestige acquisition.

Supporting our hypotheses, we found that people higher in social class "spoke" more in the group discussion compared to their lower social class counterparts (Hypothesis 2). Moreover, people who "spoke" more were accorded greater prestige in the group (Hypothesis 1). Those from a higher social class acquired greater prestige than those from a lower social class background (Hypothesis 3). Finally, applying the Brunswik's (1956) lens model, we found that these barriers to gaining prestige faced by individuals from a lower social class background stems in part from class-based behavioral differences; higher social class participants achieved higher prestige standing in part because they were more voluble than their lower-social class group members (Hypothesis 4). The robustness of these results after controlling for participant demographic characteristics (including gender, ethnicity, and age), along with the converging pattern observed across a host of operationalizations of social class (objective, subjective, and composite) and volubility (word, character, and phrase count), highlights the robustness of these findings.

More broadly, results from this first study suggest that—contrary to commonly held assumption that prestige hierarchies fairly and benevolently track the relative skills, abilities, and merit of its members—the distribution of prestige within a social group may in fact reflect factors that are at best imperfectly correlated with the ability to make valuable contributions, including (as we demonstrate here) inter-individual differences in the tendency to hold the floor in group discussions.

Study 2

In order to establish the robustness and generalizability of our results and ensure that they are not limited to the idiosyncrasies of the specific group task used in Study 1 (Cesario, 2014; Klein et al., 2014), in Study 2 we extend our investigation to a new task domain.

To provide a tougher and more conservative test of our hypotheses, we sought to employ a task in which expertise can be assessed directly, which should translate a reduced reliance on using volubility as a prestige cue. Consider how in the survival task used in Study 1, the correct ranking to assign to each of the 15 items for surviving a moon disaster is difficult to directly validate or verify. For instance, while it can be ascertained that, unlike the Earth, the Moon lacks an atmosphere containing oxygen and thus oxygen tanks are clearly important, for any lay person who lacks astronautical training or experience, it is difficult to firmly establish whether oxygen tanks are more or less important than the heating unit to the crew's survival. Here in Study 2, we substituted the survival task with the Raven's Advanced Progressive Matrices pattern recognition task (Raven et al., 1998). Any solution presented by an individual for the group's considerations, so long as they are accompanied by clear and explicit explanations, can be validated by group members, making it clear who possesses true knowledge and competence. Consequently, in Study 2, assessments of prestige are expected to rely *less* on prestige cues including volubility, and more on readily available observations of who possesses true knowledge. Because group members can readily identify the quality of ideas proposed by their peers beyond the quantity of ideas voiced, the use of this task leads to a tougher test of our hypothesis given an expected weakened effect of volubility on prestige. Indeed, as we confirm below (see Results), individual expertise is more easily recognized in this pattern recognition task used in Study 2 than it was in the survival task used in Study 1, thus creating a more difficult or conservative test of our hypotheses in Study 2.[6]

Method

Participants

[6] Another methodological consideration that warrants employing the Raven's Advanced Progressive Matrices task is that much evidence attests to its strong predictive validity of real-world achievement outcomes, including academic and occupational success as well as job performance and income (e.g., Raven, 2000; Salgado et al., 2003; Schmidt & Hunter, 1998). This means that, in theory, excellent knowledge on this task that is widely regarded as a relatively "culture-free" intelligence task (Carpenter et al.,, 1990), should be considered a locally valued skill among the North American participants sampled here. It should in principle lead to a stronger link between expertise and prestige compared to the Lost on the Moon survival task used in Study 1.

A total of 512 participants (256 women, M_{age} = 38.6, SD_{age} = 10.7) recruited from Prolific were randomly assigned to 1 of 128 4-person groups. As with Study 1, to be eligible for the study, participants must reside in U.S or Canada and have identified English as a language in which they were fluent in a pre-study screening. Participants were paid £3.50 for taking part in this online group interaction study, and had the chance to earn an additional performance-dependent monetary bonus. Unlike in Study 1, which had groups of variable gender composition, here in the present study we sought to increase experimental control and restrict noise arising from differing gender ratio across groups. We formed groups that had a uniform mixed-gender composition, such that each group always consisted of an equal split of 2 women and 2 men. Participants' ethnic backgrounds were as follows: 81% White (n = 416), 9.18% Black (n = 47), 2.9% mixed race (n = 15), 2.54% East Asian (n = 13), 1.95% Latin or South American (n = 10), and 2.15% other (n = 11). As with Study 1, all interactants were real participants; no confederates or deception was used. All study procedures were approved by the Human Participants Review Sub-Committee, York University's Ethics Review Board.

Procedure

The current study followed the same general procedure as Study 1 and differed only in the task administered. Specifically, in both the individual and group task, participants completed five questions from the Raven's Advanced Progressive Matrices Test—a pattern recognition task and measure of general cognitive ability (Raven et al., 1998). In the individual task, participants had three minutes to complete the questions, with no penalty for incorrect responses. Following this, similar to Study 1, participants were randomly matched to a 4-person group to collaborate via text-based chat for 12 minutes on the same questions they completed individually, which in this study involves 5 pattern recognition questions.

Measures

The key variables in this study were assessed using the same general procedure and scale instruments as in Study 1. That is, as in Study 1, peer-rated prestige (outcome) was measured

using peers' ratings following the group task and target scores on the 4 Prestige items (derived from the Social Relations Model approach; Kenny & La Voie, 1984) were aggregated to form an overall Prestige composite for each individual ($\alpha = .92$; relative target variance = .89). Social class (predictor) was again assessed using a combination of objective and subjective resources using the same instruments as in Study 1 ($r = .62$, $p < .001$), and aggregated to form a composite measure of social class ($\alpha = .65$). Finally, to quantify volubility (mediator), as in Study 1 we tallied word count, character count, and phrase count from each group's text-based chat log (*r*s ranged from .79 to .99). Again, as in Study 1, we rely on word count as our key operationalization of volubility in our analyses and use the two other indices for robustness checks.

Results

Descriptive statistics and correlations among key variables are shown in Table 5. Before presenting our primary results, it is worth examining results that address our reasoning behind task choice described above. As expected, extending the current investigation from a survival task (used previously in Study 1) to a pattern recognition task here (in Study 2) indeed presents an opportunity to test whether the same results are obtained when expertise is more easily inferred and reduces group members' reliance on volubility as a prestige cue. Descriptively, here in Study 2, the association between task performance (on the individual task) and peer-rated prestige is stronger ($r = .17$, 95% *CI* [.09, .25], $p < .001$) than in Study 1 where it was marginally significant ($r = .10$, 95% *CI* [-.01, .21], $p = .062$). Although these correlations do not differ significantly ($z = -1.01$, $p = .156$), nevertheless the stronger ability-prestige association in the current Study 2 is consistent with the notion that groups are indeed more able to accurately identify and accordingly confer prestige to its most competent members, compared to Study 1. Thus, in this task context that presents a reduced "need" on the part of group members to turn to prestige cues such as volubility (in principle weakening the link between volubility and prestige rank), these data thus provide a more rigorous test of our proposed hypotheses.

Table 5

Study 2: Means, Standard Deviations, And Correlations of Study Variables (N = 512)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Gender (1 = Women, 0 = Men)	---	---										
2. Ethnicity (1 = White, 0 = non-White)	---	---	---									
3. Age	38.6	10.7	.09* [.00, .17]	.16** [.08, .24]								
4. Subjective Social Class	4.8	1.8	-.06 [-.15, .03]	.04 [-.05, .12]	.11* [.02, .19]							
5. Objective Social Class	6.8	3.7	.02 [-.07, .11]	.08 [-.00, .17]	.17** [.08, .25]	.62** [.57, .67]						
6. Social Class Composite	-0.0	0.9	-.02 [-.11, .07]	.07 [-.02, .15]	.15** [.07, .24]	.90** [.88, .92]	.90** [.88, .92]					
7. Word Count	86.1	53.7	-.06 [-.15, .02]	.09* [.01, .18]	-.03 [-.12, .06]	.08 [-.01, .17]	.03 [-.06, .12]	.06 [-.03, .15]				
8. Character Count	394.2	254.8	-.07 [-.15, .02]	.09* [.01, .18]	-.04 [-.12, .05]	.08 [-.00, .17]	.02 [-.06, .11]	.06 [-.03, .14]	.99** [.99, 1.00]			
9. Phrase Count	14.2	6.6	-.07 [-.15, .02]	.08 [-.01, .16]	.02 [-.07, .11]	.08 [-.01, .16]	.03 [-.06, .12]	.06 [-.03, .14]	.80** [.77, .83]	.79** [.75, .82]		
10. "Speak" Order (1 = First 0 = non-First)	---	---	.03 [-.06, .12]	-.02 [-.10, .07]	.01 [-.08, .09]	.04 [-.04, .13]	.09 [-.00, .17]	.07 [-.01, .16]	-.00 [-.09, .08]	-.00 [-.09, .09]	-.01 [-.09, .08]	
11. Peer-Rated Prestige (target effects)	3.6	0.8	-.08 [-.16, .01]	.01 [-.07, .10]	.03 [-.05, .12]	.08 [-.00, .17]	-.01 [-.10, .08]	.04 [-.05, .13]	.29** [.21, .37]	.30** [.22, .38]	.25** [.17, .33]	-.00 [-.09, .09]

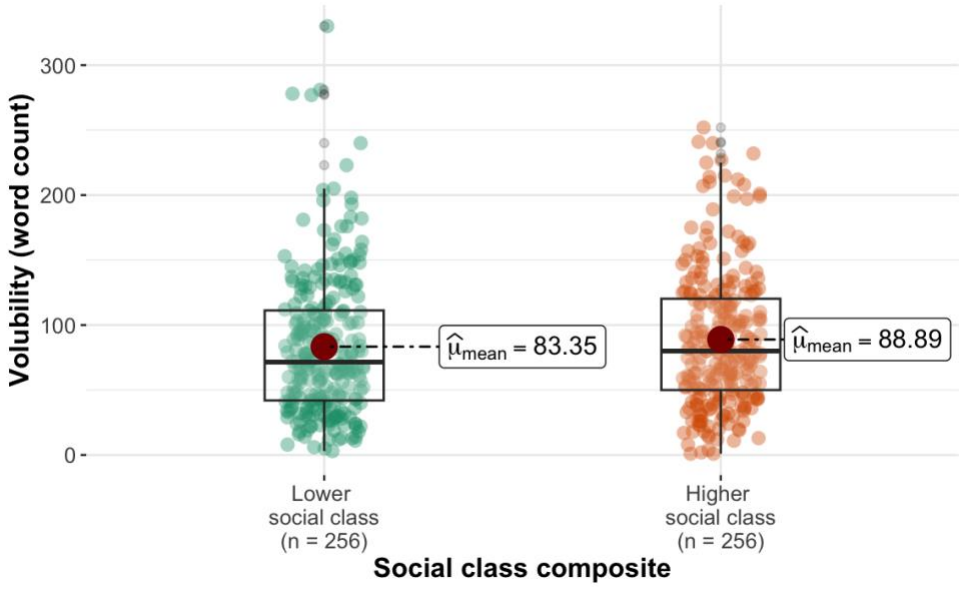
Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Are People From a Higher Social Class Background (Predictor) More Voluble (Mediator)?

Similar to Study 1, preliminary examination supports the hypothesized positive association between social class and volubility. Figure 4 shows that, descriptively, individuals from a higher social class background "spoke" (i.e., typed) more words in the group exercise (M = 88 words, SD = 52.8) than those from a lower social class background (M = 83 words, SD = 54.5), a pattern that is similar to Study 1. However, in contrast to Study 1, while the trend is in the predicted direction, it but did not reach conventional levels of statistical significance (t = -1.17, p = .24, d = .10).

Figure 4

Study 2: Descriptively, Groups Members from a Lower Social Class Background Are, On Average, Less Voluble Than Group Members from a Higher Social Class Background.



Note. In the boxplot contains a red dot representing the mean, a thick horizontal line representing the median, whiskers representing the 95% confidence interval, and the value displayed represents the mean value across the two social class groups. 'Lower social class' individuals are those whose social class score (aggregate of subjective and objective social class indices) falls below the median. 'Higher social class' individuals are those whose social class score exceeds the median.

To formally test this by treating social class as a continuous variable, we estimated a model by regressing volubility on social class. Consistent with Hypothesis 2 and Study 1 results, the regression coefficient on social class was positive and significant (β = .09, 95% *CI* [.01, .18], *SE* = .04, *p* = .034; see Table 6 Model 1), indicating that people higher in social class "spoke" more words compared to their lower social class group members. This effect remains robust after accounting for participant observable characteristics (Table 6 Model 2). Moreover, as in Study 1, when we perform an alternate analysis in which volubility is instead operationalized as the proportion of "speaking" time within the group (i.e., individual's word count divided by the group's total word count across all members), we obtain the same conclusions as the results above based on raw word count (Table S6): individuals from a lower social class background tend to have lower volubility proportional to the group's collective discussion.

Table 6

Study 2: Regression Results Indicating That Volubility (Dependent Variable) is Higher Among Individuals from a Higher Social Class Background

	Model 1: Volubility (Word Count) (Dependent Variable)				**Model 2: Volubility (Word Count) (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Social Class Composite	**.09**	**.04**	**.01 – .18**	**.034**	**.09**	**.04**	**.01 – .18**	**.035**
Age					-.05	.04	-.14 – .04	.241
Gender (1 = Women, 0 = Men)					-.06	.04	-.15 – .03	.170
Ethnicity (1 = White, 0 = non-White)					**.10**	**.04**	**.01 – .19**	**.023**
Observations	512				512			
R^2 / R^2 adjusted	.01 / .01				.02 / .02			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SE*s and are clustered at the group level (512 individuals nested in 128 groups). The outcome in all models is volubility, defined as the number of words "spoken" (i.e., typed) in the text-based group discussion. The social class composite variable has been group mean-centered. Bold indicates statistical significance at the 5% level.

Is Volubility (Mediator) Associated with Gaining Prestige (Outcome)?

Consistent with Hypothesis 1 and replicating Study 1 results, volubility was positively associated with prestige, such that participants who "spoke" more were rated as higher in prestige than their less voluble group members ($\beta = .29$, 95% *CI* [.21, .37], $SE = .04$, $p < .001$; Table 7 Model 1). This finding is again robust to the inclusion of controls (Table 7 Model 2). Volubility alone explained approximately 9% of the variance in prestige ratings, suggesting a rather sizable effect of volubility on prestige (Table 7 Models 1-2). Also, note that consistent with our logic above that this pattern recognition task used here in Study 2 likely allows group members to reduce their reliance on prestige cues, we indeed observe a slightly weaker effect of volubility on prestige than was found in Study 1, where volubility explained 13% of the variance in prestige ratings.

Table 7

Study 2: Regression Results Indicating That Prestige (Dependent Variable) is Higher Among More Voluble Individuals

	Model 1: Peer-Rated Prestige (Dependent Variable)				**Model 2: Peer-Rated Prestige (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Volubility (Word Count)	**.29**	**.04**	**.21 – .37**	**<.001**	**.29**	**.05**	**.21 – .37**	**<.001**
Age					.05	.04	-.03 – .14	.225
Gender (1 = Women, 0 = Men)					-.06	.09	-.15 – .02	.150
Ethnicity (1 = Women, 0 = Men)					-.02	.04	-.11 – .06	.631
Observations	512				512			
R^2 / R^2 adjusted	.09 / .08				.09 / .08			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SE*s and are clustered at the group level (512 individuals nested in 128 groups). The outcome in all models is peer-rated prestige. Bold indicates statistical significance at the 5% level.

Do People From a Higher Social Class Background (Predictor) Gain Higher Prestige (Outcome)?

Diverging from Hypothesis 3 and Study 1 results, we find no detectible association between social class and prestige standing, although descriptively the trend is in the hypothesized direction (β = .04, 95% CI [-.05, .12], *SE* = .04, *p* = .393; Table 8 Models 1-2).

Table 8

Study 2: Regression Results Indicating That Prestige (Dependent Variable) is not Detectibly Higher Among Individuals from a Higher Social Class Background

	Model 1: Peer-Rated Prestige (Dependent Variable)				**Model 2: Peer-Rated Prestige (Dependent Variable)**			
Predictors	*Estimates*	*std. Error*	*CI (95%)*	*p-value*	*Estimates*	*std. Error*	*CI (95%)*	*p-value*
Social Class Composite	.04	.04	-.05 – .12	.393	.03	.04	-.06 – .12	.486
Age					.04	.05	-.05 – .12	.427
Gender (1 = Women, 0 = Men)					-.08	.04	-.17 – .01	.075
Ethnicity (1 = White, 0 = non-White					.02	.11	-.20 – .25	.843
Observations	512				512			
R^2 / R^2 adjusted	.00 / -.00				.01 / .00			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SE*s and are clustered at the group level (512 individuals nested in 128 groups). The outcome in all models is peer-rated prestige. The social class composite variable has been group mean-centered.

Do People From a Higher Social Class Background (Predictor) Achieve Higher Prestige (Outcome), In Part Due To Their Greater Volubility (Mediator)?

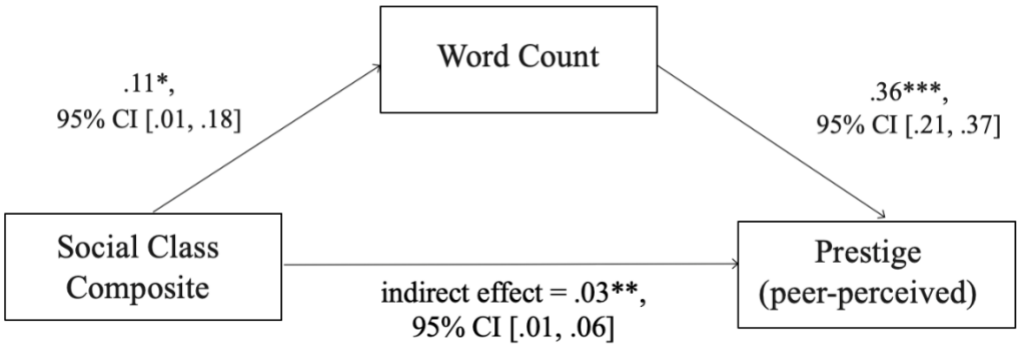
Despite lack of evidence of the presence of a total effect—that is, the effect of social class (predictor) on prestige (outcome)—prior work indicates that non-zero mediated effects may emerge (e.g., volubility may be a significant mediator) even in the absence of a total effect (e.g., no significant association between social class and prestige, contrary to Hypothesis 3; Fritz et al., 2015; Kenny & Judd, 2014; Fritz & MacKinnon, 2007; O'Rourke & MacKinnon, 2018).[7] Thus, next we conduct a mediation analysis using 1,000 bootstrapped samples to investigate whether volubility may nevertheless have a significant mediating effect in the absence of a total effect. Indeed, consistent with Hypothesis 4, volubility (as indexed by word count) significantly mediated the effect of social class on peer-perceived prestige (indirect effect = .03, bias-corrected bootstrapped 95% *CI* [.01, .06], $p = .01$). As predicted, whereas higher social class individuals "spoke" more, those from a lower social class background "spoke" fewer words, and this lower volubility leads in turn to lower prestige acquisition (Figure 5). As is indicated by prior findings that establish the presence of important mediation effects in the absence of total effect (e.g., Kenny & Judd, 2014; O'Rourke & MacKinnon, 2018; Shrout & Bolger, 2002),

[7] In some cases, mediation can be present without a detectible significant total effect. One example of such a scenario is inconsistent mediation (i.e., when the mediated effect and the direct effect exhibit opposing signs, such as a positive indirect effect accompanied by a negative direct effect; e.g., see O'Rourke & MacKinnon, 2018). For example, this inconsistent mediation pattern is frequently observed in the literature on stress and mood as mediated by coping (e.g., Folkman & Lazarus, 1988; Mosher & Prelow, 2007; Pamplin et al., 2023). Empirical work tends to find a positive effect of stress (predictor variable) on coping (mediator), and a positive effect of coping on mood (outcome variable), resulting in a positive indirect effect. Yet, the direct effect—that is, the effect of stress on mood after controlling for coping—tends to be negative. Consequently, the (negative) direct effect and (positive) indirect effect tend to "cancel" each other out, resulting in a small, not detectibly different from zero total effect—that is, the simple association between stress and mood. Another condition under which mediation can be present without a total effect is when the mediated effect and the total effect are equivalent in size, and the test of the mediated effect may be statistically significant when the test of the total effect is not. This occurs because there is more statistical power when testing the mediated effect, than when testing the total effect. This condition can occur either when sample size is small or the effect size is large, or when the sample size is large but the effect size is small (O'Rourke & Mackinnon, 2018). The latter pattern captures the situation we empirically observe in Study 2.

volubility should still be considered an important mediator despite the absence of a total effect (i.e., a null effect of social class on prestige).

Figure 5

Study 2: Volubility (Operationalized as Word Count) Significantly Mediated the Effect of Social Class on Peer-Perceived Prestige.



Note. Standardized parameter estimates are shown. Volubility is operationalized as word count in the text-based group discussion. * p <0.05. ** p < 0.01. *** p < 0.001.

Robustness Checks

To complement our results above and as in Study 1, we conducted additional analyses to assess the robustness of our results when using alternative operationalizations of our main variables, which include character count and phrase count in the text-based group discussion as alternate volubility indices, as well subjective and objective social class components as alternate subindices of the broader social class composite measure.

First, consistent with the results reported above, we find some support for Hypothesis 2 using these alternative measures of volubility. Higher social class significantly predicts a higher number of characters typed (character count; see Table S7 Model 1, Figure S3 Panel A). However, this same effect is less precisely estimated using phrases entered (phrase count) to

operationalize volubility, where this effect is marginally significant (p = .054; see Table S7 Model 2, Figure S3 Panel B). Moreover, when we break down the overall social class composite measure to assess the association between social class and volubility, we reach the same conclusions using the subjective social class component (see Table S8 Model 1), whereas the objective social class component—while trending in the predicted direction—did not reach statistical significance (see Table S8 Model 2). Thus, although Hypothesis 2 generally receives substantial support across these robustness checks, findings are somewhat more mixed here in Study 2 compared to Study 1 where it was consistent across all analytic tests and operationalizations.

Second, consistent with Hypothesis 1 and in line with our findings from Study 1, both character count (see Table S9 Model 1) and phrase count (see Table S9 Model 2) are positively associated with acquiring higher prestige. Third, in contrast to Study 1, we continue to find little support for Hypothesis 3 when assessing subindices of our composite social class variable; neither subjective social class (see Table S10 Model 1) nor objective social class (see Table S10 Model 2) significantly predicted greater prestige.

Fourth, in these robustness checks we continue to find support for Hypothesis 4. In follow up mediation analyses, when we substitute word count with character count (see Figure S5 Panel A) or phrase count (see Figure S5 Panel B), we find that both of these alternate volubility indices significantly mediate the effect of social class composite on prestige acquisition. However, more mixed support is found when we replace our composite social class variable with its two subindices. Specifically, the indirect effects are consistent and similar in magnitude (to the main results based on social class composite) using subjective social class component (see Figure S6 Panel A). However, we found no evidence that the indirect effect via

objective social class differed from zero (see Figure S6 Panel B). Despite this, however, trends remain in the hypothesized direction. In summary, these supplementary analyses provide additional support for the hypothesized links between social class, volubility, and prestige, although the robustness checks reveal somewhat more mixed results compared to Study 1.

Discussion

By extending our investigation to a novel task domain in which expertise can be more directly inferred, Study 2 provides additional support to our hypotheses and establishes the reliability and generalizability of our findings. First, individuals from higher social class "spoke" more than those from lower social class; this effect was robust to a host of control variables (e.g., gender, ethnicity, age; Hypothesis 2). Second, greater volubility subsequently predicted prestige acquisition (Hypothesis 1). Third, volubility partly explained why people from a lower social class background were less likely to be promoted to the top of the group's prestige hierarchy (Hypothesis 4). We find evidence of this indirect effect despite little evidence of a total effect of social class on prestige differentiation (contrary to Hypothesis 3, which received support in Study 1), consistent with recent work on important mediation effects in the absence of significant total effects (O'Rourke & MacKinnon, 2018). Together, these findings generally replicate those from Study 1 and suggest that volubility accounts for the disadvantage that people from lower social class face in gaining prestige.

Further Evidence for the Perspective that Class-Based Differences in Volubility Explain Advantages and Disadvantages in Prestige Acquisition

In the following section, we present further analyses conducted to (a) rule out the possibility that third variables may have confounded the proposed links between social class, volubility, and prestige differentiation, by ruling out the role of speaking order and behavioral

"leakages" of social class; and (b) explore *why* people with lower social class "speak" less, by investigating whether differences exist in ability or confidence. Where possible, we combined samples from Studies 1 and 2 to maximize statistical power and reliability of our results.

Ruling Out Confounding Factors

Is Speaking Order a Third Variable That Explains Why Volubility Promotes Prestige? No.

To begin, we first address whether the association shown above between volubility and prestige acquisition may be alternatively explained by "speaking" order—that is, the order at which group members "spoke" in the group discussion. Because "speaking" order may be correlated with volubility (as assessed by word count) in the current studies (Study 1: $r = .24$, $p < .001$; Study 2: $r = .02$, $p = .657$), the common variance shared by these two related yet distinct variables raises the possibility of omitted variable bias and threats to interpretation (Shadish et al., 2002). It is conceivable that, for instance, being the first member to initiate the group's discussion confers one greater prestige than it does to sustain a group collaboration through verbal participation. To address this, we examine the independent contribution of volubility and speaking order to prestige acquisition using the combined sample across both studies. We perused each group's text-based chat and coded for speaking order (1 as 'spoke first', and 0 as 'non-first').

Results show that the "speaking" order dummy variable significantly predicts prestige ($\beta = .06$, 95% CI [.00, .12], $SE = .03$, $p = .036$), suggesting that teammates who were the first person to "speak" up in the group discussion were indeed more likely to gain more prestige. However, the effect of volubility on prestige remains significant even after controlling for "speaking" order ($\beta = .32$, 95% *CI* [0.25, 0.38], $SE = .03$, $p < .001$), whereas "speaking" first ceases to predict prestige ($\beta = .02$, 95% *CI* [-.03, .07], $SE = .03$, $p = .337$). Moreover, the effect

of volubility on prestige did not depend on (i.e., interact with) "speaking" first (β = -.02, 95% CI [-.08, .04], *SE* = .03, *p* = .573), suggesting that group members can rise to the top in their group's prestige hierarchy so long as they were voluble but did not also have had to "speak" first. Overall, these results are consistent with our prediction that prestige allocation is more strongly shaped by volubility over the course of the entire group discussion, relative to any first impressions based on who "spoke" first in the initial minutes. In other words, our conclusion that volubility facilitates prestige acquisition is not confounded by "speaking" order.

Do Class-Based Disparities in Prestige Acquisition Stem Alternatively from Observers' Judgments of Who is Higher or Lower Social Class (And in Turn Stereotypes About the Rich or Poor)? No.

Our theoretical framework proposed here is that any class-based disparities that emerge stem partly from differences in volubility. In the contexts examined across both studies, group members are kept blind to each others' identities, including gender, age, ethnicity, and (of course, also) social class. Is it possible that, despite our experimental efforts to "conceal" people's identities, these differential class-based prestige outcomes observed in our results may nevertheless stem from a more straightforward methodological artifact—others' ability to infer or form impressions about group members' social class? Much evidence indicates that, for example, mannerisms and speech can serve as signals of social class (Kraus & Keltner, 2009). Given firmly rooted cultural stereotypes of the haves as competent and the have-nots as lacking in competence (Durante & Fiske, 2017; Fiske et al., 2002), group members who others have come to assume are higher-class may then in turn be conferred greater prestige, generating an association between an individuals' actual social class and their eventual prestige ranking. We examine this in the data from Study 1, by asking outside observers (i.e., 5 research assistants,

who were kept naïve to the current goals) to "guess" the social class of each participant after reading each group's group discussion chat logs.[8]

We found that outside observers' guesses of social class generally lacked accuracy, as the association between observer-guessed social class and participants' self-reported actual social class was weak and did not differ significantly from zero (r = .09, p = .11).[9] This suggests that the empirical association observed above between social class and prestige acquisition is unlikely attributable to inferences of group members' social class, or furthermore any stereotypes or prejudices held toward the haves and have-nots.

Why Do Lower Social Class Individuals Talk Less?

Expertise Does Not Explain Why People from a Lower Social Class Background Talk Less.

To begin to examine *why* people with lower social class "spoke" less in interactions with their working group, we first explore the role of expertise, which has long been considered a key precursor to volubility (Bass, 1990)—that is, the assumption is that those who know more will say more. If true, one potential pattern that could explain our findings is that people from a higher social class background "spoke" more during the task (and in turn gained higher prestige) because they had greater task-relevant expertise, and thus more able and willing contribute to the collective endeavor. To capture expertise, we measured each participants' actual expertise on the task across both Studies 1 and 2,[10] and combined these samples for our analyses.

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[8] Five research assistants rated their impression of each participant's social class (that is, they "guessed" social class), using the same measures of objective (i.e., household income) and subjective social class (i.e., MacArthur Scale of Socioeconomic Status; Adler et al., 2000) participants themselves completed in Study 1. We then aggregated across these two indices to create a composite measure of "guessed" social class (M = .01, SD = .96, α = .58).

[9] We also found no significant association for each of the subindices of the social class composite. Participants' self-reported (actual) subjective social class did not correlate significantly with observer-guessed subjective social class (r = .07, p = .17), nor was participants' self-reported (actual) objective social class correlated with observer-guessed objective social class (r = .06, p = .24).

[10] For Study 1, task expertise on the survival task was assessed by computing the difference between the rank order of items assigned by participants when they completed the task in private (i.e., before the group interaction) and

We found no association between social class and expertise (β = .02, 95% *CI* [-.05, .09], *SE* = .03, *p* = .518; see Table S11 Models 1 & 2), indicating that people with lower social class were not less capable in the tasks examined. Moreover, when we turn to the factors that contribute to volubility, while those with greater expertise did indeed "speak" more (Table S12 Model 2), as one would expect and consistent with prior work (Bass, 1990; Bottger, 1984), the positive effect of social class on volubility survives even after controlling for expertise (Table S12 Models 3-5). In fact, somewhat surprisingly and highlighting the potency of social class in explaining who speaks, social class has similarly sized effect in predicting volubility as task performance (Table S12 Models 1- 5). Moreover, among people with a lower social class background, even possessing substantial expertise is not sufficient to "override" the barrier to participation (that is, no social class × task performance interaction; Table S12 Models 4-5).

These findings suggest that class-based disparities in speaking reflects not only who is capable or knowledgeable but also factors *un*related to achievement such as the would-be speaker's identity, including their social class background and gender (because, similar to lower social class individuals, women also "spoke" less; Table S12 Model 5). Overall, these findings converge with prior research that, across many domains of (such as intelligence, socio-emotional skills), people across social class gradients often do not differ in intrinsic skill, ability, or motivation; but in spite of these weak or null associations between social class and ability, disparities in social or other outcomes nevertheless arise, often due to other non-ability based factors such as confidence or behavioral differences (Belmi et al., 2020; Kraus et al., 2009; Kraus & Park, 2014; Sharps & Anderson, 2021).

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expert opinion on the preferred ranking provided by NASA (*M* = -54.7, *SD* = 13.9; also see Bottger, 1984). In Study 2, we measured task expertise on the pattern recognition task by tallying the total number of correct questions they answered out of 5 total questions (*M* = 1.2, *SD* = 1.2).

Disparities in Confidence May Explain Why People from a Lower Social Class Background are Less Voluble.

If expertise cannot explain the observed gap in volubility by social class, then what does? We turn next to the role of a non-ability-based factor: confidence. Hinting at the potential role of confidence is prior studies showing that people with greater power, such as those with a higher social class, tend to express greater confidence in their ideas (Galinsky et al., 2008). We examine the role of confidence in the Study 2 sample, from whom we solicited self-reported confidence on the task.[11]

Results show that social class has a small but marginally significant effect in predicting task confidence, even after controlling for participant observable characteristics (β = .08, 95% *CI* [-.01, .16], *SE* = .04, *p* = .071; Table S13 Models 1-2). Although more evidence is needed to make firm conclusions, this suggests that lower self-confidence may be one reason why lower-class individuals suppress their voice in group discussions. When we consider other factors (beside social class) that should in principle affect how prestige is distributed within groups, we find that although task confidence, expertise (based on actual task performance), and volubility all have non-zero positive effects (Table S13 Models 6-7), it is rather alarming that when all three predictors are entered simultaneously, expertise no longer retains its significance in predicting prestige but the effects of task confidence and volubility persist (Table S13 Models 8).

Overall, these findings suggest that prestige hierarchies may not be as meritocratic and benevolent as is typically assumed (Cheng, 2020). Individuals who possess genuine above-

[11] In Study 2, after completing the pattern recognition task individually and in private, participants responded to 3 items from the Basic Psychological Needs Scale (Deci & Ryan, 2000) that assessed their confidence in the task. These items include: "I felt very competent", "I felt a sense of accomplishment", and "I felt quite capable at the task" (1 *Not at All* to 7 *Very Much*). Scores across these 3 items were combined to form an overall confidence composite for each individual (*M* = 3.3, *SD* = 1.6, α = .91).

average skills, abilities, or competence—and thus should be elevated to the top of prestige hierarchies under a meritocratic structure—may not be recognized with the prestige and esteem deserved if their abilities are not concomitantly expressed through displays of confidence and other prestige cues (including volubility; Anderson & Kilduff, 2009b; Zeng et al., 2022). As a more general point, group members' reliance on prestige cues (which can be noisy and imperfect for tracking genuine expertise)—such as who takes up the speaking floor and appears confident—to infer true relative skill, contribution, or otherwise prestige-worthy can erode both fairness and meritocracy ideals as well as collective success. Aside from this harmful violation of fairness, these findings also intimate a concern of mounting importance for the success and well-being of groups, teams, and organizations: allowing prestige to be allocated to group members based on *perceived* ability, rather than their true ability, not only generates a harmful incentive structure that rewards confidence (and its signaling) over excellence, but moreover undermines collective performance when groups fail to capitalize on the opinions, expertise, and contributions of its most talented members (Cheng et al., 2013).

General Discussion

In the current research, we examined how social class is associated with disparities in volubility and prestige acquisition in zero-acquaintance groups. Utilizing Brunswik's (1956) lens model of human perception as a framework, we developed a comprehensive theoretical model that encompassed four interrelated hypotheses. These hypotheses predicted that individuals from lower social class backgrounds would exhibit less volubility (Hypothesis 2), that volubility would be associated with gaining prestige (Hypothesis 1), that social class would be positively related to prestige and thus lower social class group members would face barriers in attaining prestige (Hypothesis 3), and that these class-based prestige disparities would arise, in part, due to

higher-class individuals' greater volubility (Hypothesis 4). By using these two studies with distinct task domains that vary in the degree to which expertise can be more directly assessed, we provide converging evidence in support of this theoretical model.

In Study 1 we employed task-focused zero-acquaintance groups who collaborated over a survival task to examine the associations between social class, volubility, and prestige. The results provided robust support for all four hypotheses, demonstrating that individuals from lower social class backgrounds indeed exhibited reduced volubility, that greater volubility was linked to higher levels of prestige, and that lower social class individuals faced challenges in attaining prestige due in part to their lower volubility within the group. These findings were robust to alternative operationalizations of social class and volubility, given that all effects held when social class is alternatively operationalized using subindices of subjective and objective social class (complementing our primary results based on their composite), and when volubility is alternatively operationalized as character count or phrase count (complementing our primary results that used word count).

Study 2 extended the findings of Study 1 by testing our hypotheses in a different task of pattern recognition that allows group members to more easily assess relative expertise. Replicating Study 1 results, we again find support for Hypotheses 1 and 2, by demonstrating that volubility was positively associated with prestige and that higher-class members displayed greater volubility. However, we did not find support for Hypothesis 3, as we found no significant association between social class and prestige attainment. However, consistent with prior work showing that important indirect or mediating effects can be present even in the absence of a total effect (that is, an effect of social class on prestige; O'Rourke & Mackinnon, 2018), we nevertheless find support for the overall theoretical model proposed in Hypothesis 4, which

states that the volubility acts as a key mediator, with social class linked to greater volubility and volubility in turn linked to increased prestige. Unlike Study 1 in which results were robust across all operationalizations, the findings of Study 2 appear slightly less robust in several robustness checks, although these variations are nevertheless consistent with past work and thus not unexpected, as we note below. More specifically, the effect of social class on volubility was positive and significant when operationalized as character count but not as phrase count, and when social class was assessed subjectively but not when assessed objectively. This latter effect is consistent with prior research, which tends to also find stronger and more robust effects using subjective, rather than objective, measures of social class (Belmi & Laurin, 2016; Kraus et al., 2009; Loignon & Kodydek, 2022). Moreover, the lack of a significant association between social class and prestige persisted (that is, similar to the null association based on the social class compositely) when we instead used either subjective or objective subindices. Finally, while character count and phrase count served as significant mediators for the effect of social class composite on prestige, only the subjective social class component emerged as a significant predictor when substituted for the social class composite, although as mentioned above this is not unexpected given prior that tends to find more robust effects of subjective, than objective, social class.

Through further analyses, we were able to rule out key potential confounding variables. First, we found that "speaking" order, meaning the order in which group members first "spoke" within their group, is not a confounding factor in our results, which remained qualitatively identical after we controlled for "speaking" order. Second, it is conceivable that, despite our experimental efforts to conceal group members' identities (including their social class backgrounds), social class cues "leak" through speech and the interaction more generally,

causing social class and prestige conferral to covary due to prejudice or stereotypes that arise from guesses of other people's social class, rather than due to differences in volubility (as we hypothesize). But results demonstrate that this explanation based on guesses of social class and associated prejudice cannot explain our findings. Independent observers generally lacked the ability to accurately guess participants' social class on the basis of the group chat logs. These findings therefore indicate that the observed class-based disparities in prestige are attributable to actual behavioral differences (that is, the lower volubility of lower-class individuals) rather than to biased perceptions or stereotypes that people hold regarding social class. While class-related stereotypes or prejudice certainly pervade society (Durante & Fiske, 2017; Fiske et al., 2002), evidence indicates that they do not account for the results obtained in the present studies, which instead point to the role of intrinsic behavioral differences across class gradients.

Finally, our exploratory analyses into what explains why lower-class individuals "speak" up less yielded some interesting insights. Importantly, we rule out the possibility that lower-class individuals refrained from holding the floor because they lack expertise, as people across social class gradients do not differ in their task performance. Rather, confidence—a non-ability-based factor—appears to explain why lower-class group members "spoke" less; that is, lower-class group members may feel less confident in their ability to perform well on the task, and therefore suppress their voice in team collaborations.

Theoretical Contributions

This work contributes to the growing body of research on the emergence of class-based intra-group prestige hierarchies in several important ways. First, building on prior research, we demonstrate that, akin to contexts where visible indicators of class are made salient (e.g., Kraus & Mendes, 2014), discrepancies in class-based prestige can emerge, but go even further to show

that these unfair prestige disparities can emerge *even* when overt signals of wealth or income are concealed. We show that this problematic, non-meritocratic arrangement emerges due to behavioral differences (which are likely rooted in psychological differences) between the haves and have-nots. This is in line with existing theoretical perspectives on the influence of social class on cognition and behavior (e.g., Sharps & Anderson, 2021; Keltner et al., 2003, Kraus et al., 2009), which propose individuals from higher social class backgrounds tend to exhibit more agentic behaviors, in part, due to their experiences with greater personal and social power rooted in material resources.

Second, our findings shed light on recent scholarly debates around meritocracy and its limits, by challenging the commonly held assumption that prestige hierarchies are inherently meritocratic and benevolent (Cheng, 2020). Specifically, we identify that instead of according prestige based on others' actual skill or merit, people rely too heavily on prestige cues (such as volubility or confidence). Thus, our work highlights the limitations of many social hierarchies that are likely all too common in everyday situations and experiences—rather than resulting from meritocratic principles in the pure sense of its meaning, many hierarchies instead reflect unfair inequality. These unfair and unmeritocratic systems perpetuate social inequalities for individuals from lower social strata, many of whom possess the required skills and capabilities, but may not be recognized as deserving of advancing purely because they do not "play" the "confidence game.

Third, the current work advances scholarship on the psychology of voice within organizations, which is a growing area of research within management science and industrial-organizational psychology. One implication of our findings is that organizations need to recognize that employee voice—defined as the behavior of employees to speak up voluntarily

with opinions about work-related issues, with the intention of advancing team and workplace goals and mission (Morrison, 2014; Pfrombeck et al., 2023)—is intrinsically unevenly distributed among people, as a function of people's identities such as their social class or gender. Existing work has predominately examined the predictors of greater employee voice, including individual motivation (such as whether voice is prosocially minded or driven by self-interest; Fuller et al., 2006, Lam & Mayer, 2013; Morrison, 2014), efficacy (i.e., beliefs about whether speaking will produce constructive outcomes; Morrison et al., 2011) and one's formal rank in the workplace hierarchy (Pfrombeck et al., 2023). However, this literature on voice has yet to directly examine how an individual's social class may affect voice, as the current findings suggest. Thus, efforts to increase employee voice, which has many benefits for individual recognition as well as team and organizational effectiveness (Bracq et al., 2021; Huang et al., 2018; McClean et al., 2022; Weiss & Morrison, 2019), need to recognize the role of social class and other mechanisms related to power and privilege more broadly rooted in society. People's identity both in- and outside of the workplace will affect their (real or perceived) ability to exercise voice. Such a recognition can provide valuable insights for organizations aiming to improve their efforts to attract and retain talent and promote a more inclusive and equitable environment that encourages diverse perspectives and contributions from all employees.

Practical Implications

Our findings offer practical implications for improving the social success of individuals from lower social class backgrounds. Specifically, this work can inform interventions to reduce class-based barriers to social success, from within social groups and teams to organizations and society. The present findings demonstrate that the unfortunately widespread tendency to excessively rely on volubility as a means to assess relative merit and expertise translates into

unfair disadvantages for individuals from lower social class, women, and any other group or identity that tend to share the speaking floor, as it unfairly excludes them from attaining top leadership positions. Indeed, prior work has shown that lower-class individuals are less likely to occupy positions of leadership or authority (Barling & Weatherhead, 2016; Belmi & Laurin, 2016). In fact, a recent study found that U.S. workers from lower social class backgrounds are 32% less likely to become managers than those from higher social class backgrounds--this class-based disadvantage even surpasses that experienced by groups that are traditionally recognized as underrepresented, including women (27%) and Black people (25%; Ingram & Oh, 2022). As such, developing interventions that promote agentic behaviors—such as workshops or training on the importance of speaking up, how to appear confident and goal-directed when speaking, and more generally an increased display of verbal and nonverbal signals of confidence; Sharps & Anderson, 2021)—for individuals from lower social class and other less volubility groups can help mitigate the unfair disadvantages they face. Past research shows that interventions that apply even minimal and quite subtle alterations can effectively promote one's sense of belonging and reduce self-doubt (e.g., Walton & Cohen, 2011), characteristics that should translate into greater confidence, and in turn, volubility.

At the broader systemic level, interventions may also tackle how people make judgements about who and what is prestige-worthy when evaluating others. For example, a recent study found that the barriers faced by lower-class individuals in appearing hireable by hiring managers can be reduced by emphasizing the importance of cooperation and teamwork, over competition and aggression (Sharps & Anderson, 2021). Additionally, previous studies have indicated that individuals often strongly associate demonstrated assertiveness and confidence with perceived competence (Anderson & Kilduff, 2009b; Anderson et al., 2012), even though, as

we show here and consistent with other work (Jones & Kelly, 2007; Sorrentino & Boutillier, 1975; MacLaren et al., 2020), these behaviors may not reliably track true capability. As such, efforts to reduce humans' instinctual mental association between "confident" and "capable" should help reduce the prevalence of unmeritocratic forms of prestige hierarchies. For example, one promising future direction of our work involves training participants to focus not on the quantity of speech, but on the quality of ideas, when making social judgments about group members. Such efforts can potentially help re-allocate prestige based on true merit and expertise, rather than on the basis of superficial confidence cues including volubility.

Limitations and Future Directions

The current study is a novel examination of how "speaking" behavior is differentially correlated with individuals' social class and prestige attainment. Despite the strengths of this work, some limitations should be noted.

In our studies, we concealed participants' identities to examine how intrinsic behavioral differences may naturally emerge, thereby reducing the possibility that any disparities identified in prestige outcomes can arise from stereotypes or prejudice (about richer or poorer individuals). While this experimental design enables us to isolate these different factors that contribute to unfair inequality, it may be reasoned that in most real-world situations people's identities cannot be fully concealed. It is therefore important for future work to extend the present work by incorporating revealed identities to better mimic real-world contexts, which would also enable tests of the degree to which intrinsic behavioral differences and observers' stereotypes and prejudices (that now come into play when group members' identities are no longer kept hidden) *each* contribute to privilege and disadvantage. According to this logic, it can be surmised that revealing participants' social class identity would result in exaggerated class-based disparities.

Such prediction is also tentatively supported by prior work showing that making visible participants' wealth to others (relative to when it was kept hidden) augmented the effect that higher income inequality suppresses group coordination and engagement (Nishi et al., 2015).

Although here we began to explore how confidence may explain *why* people from lower social class are less voluble, future work should more broadly examine other contributing factors. For example, prior work indicates that within academic contexts, lower-class individuals tend to conceal their (lower-class) identities, especially when concerns of social belonging are salient, resulting in decreased academic engagement (Veldman et al., 2023). Other research in organizational contexts suggests that when people lack a strong sense of belonging, they experience lower motivation to work and persist in tasks (e.g., Good, et al, 2012; Hausmann et al., 2007; Walton & Cohen, 2007). Thus, examining lower-class individuals' (dis)comfort in authentically expressing their identities along with their (lowered) sense of belonging within teams and social groups represent promising future directions for furthering an understanding of *why* social class is correlated with volubility.

Finally, related to the discussion above of psychological factors that explain *why* lower-class individuals are less voluble, an interesting future direction involves examining the developmental or acquired basis of voluble behavior during one's upbringing. As we discussed above, research from sociology indicates that, across a variety of countries, family or parental social class is related to the emphasis and transmission of distinct values in children, with higher-class parents emphasizing the value of independence and lower-class parents emphasizing obedience (Acemoglu, 2022; Park & Lau, 2016; Pearlin & Kohn, 1966; Sherman & Harris, 2012). These parental practice patterns suggest that the lower volubility—a form of submissive behavior consistent with an emphasis on obedience—in lower-class individuals (who are also

more likely to come from lower-class family backgrounds, due to the intergenerational transmission of wealth and social class; Erikson & Goldthorpe, 2002; Swartz, 2008; Witteveen & Attewell, 2017), may have been acquired early on in childhood. Future work should therefore examine the links between parental social class and volubility in studies with children, in order to examine how early these class-based differences in volubility and other agentic behavior emerge in development.

Conclusion

Prestige hierarchies are often thought to reflect fair, benevolent, and meritocratic inequality, but, as large bodies of scientific work on stereotypes and prejudice attest to, they can reflect unfair advantage and non-meritocratic inequality. The present research shows that prestige disparities—rather than shaped solely by achievements, competence, and abilities—can be a function of wealth and breeding, rather than individual achievement. This flawed implementation of a meritocratic system can perpetuate a cycle of ongoing lower social rank among individuals from lower social classes who exhibit a greater tendency to share, rather than dominate, the conversational floor. Consequently, these individuals face barriers that hinder their upward advancement within their social groups, thereby contributing to a cycle of exclusion, whereby lower economic standing amplifies and perpetuates inequality in everyday social groups and interactions.

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Supplemental Materials

Table S1

Regression Results for the Effect of Social Class on Proportion of "Speaking" Time Within the Group (Word Count; Dependent Variable) in Study 1

	Model 1: Volubility Index: Word Count (Dependent Variable)				**Model 2: Volubility Index: Word Count (Dependent Variable)**			
Predictors	*Estimates*	*std. Error*	*CI (95%)*	*p-value*	*Estimates*	*std. Error*	*CI (95%)*	*p-value*
Social Class Composite	**.18**	**.06**	**.08 – .27**	**.002**	**.18**	**.06**	**.09 – .28**	**.002**
Age					-.01	.00	-.01 – .00	.113
Gender (1 = Women, 0 = Men)					-.12	.08	-.26 – .02	.122
Ethnicity (1 = White, 0 = non-White)					-.06	.07	-.21 – .09	.402
(phi)	**10.63**	**.88**	**9.06 – 12.19**	**<.001**	**10.85**	**.90**	**9.25 – 12.44**	**<.001**
Observations			336				336	
R^2			.04				.05	

Note: Coefficients shown are unstandardized effects (*b*). Standard errors are clustered robust *SE*s and are clustered at group level (336 individuals nested in 84 groups). The outcome in all models is volubility, defined as the proportion of "speaking" time within the group (i.e., individual's word count divided by the group's total word count across all members). The social class composite variable has been group mean-centered. Bold indicates statistical significance at the 5% level.

Table S2

Regression Results for the Effect of Social Class on Volubility Indices (Dependent Variable) in Study 1

	Model 1: Volubility Index: Character Count (Dependent Variable)				**Model 2: Volubility Index: Phrase Count (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Social Class Composite	**.12**	**.05**	**.02 – .23**	**.025**	**.12**	**.05**	**.01 – .22**	**.030**
Age	**-.16**	**.06**	**-.27 – -.05**	**.006**	**-.15**	**.06**	**-.27 – -.04**	**.006**
Gender (1 = Women, 0 = Men)	**-.13**	**.06**	**-.24 – -.02**	**.017**	**-.12**	**.06**	**-.23 – -.01**	**.033**
Ethnicity (1 = White, 0 = non-White)	.02	.06	-.09 – .13	.670	-.00	.06	-.11 – .11	.946
Observations	336				336			
R^2 / R^2 adjusted	.05 / .04				.05 / .04			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust SEs and are clustered at the group level (336 individuals nested in 84 groups). The outcome in all models is volubility, defined either as the number of characters (model 1) or number of phrases (model 2) typed in the text-based group discussion. The social class composite variable has been group mean-centered. Bold indicates statistical significance at the 5% level.

Table S3

Regression Results for the Effect of Social Class Indices on Volubility (Word Count; Dependent Variable) in Study 1

	Model 1: Volubility Index: Word Count (Dependent Variable)				**Model 2: Volubility Index: Word Count (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Subjective Social Class	**.09**	**.05**	**-.01 – .20**	**.043**				
Age	**-.15**	**.06**	**-.26 – -.04**	**.008**	-.09	.06	-.21 – .02	.099
Gender (1 = Women, 0 = Men)	**-.14**	**.06**	**-.25 – .03**	**.013**	**-.14**	**.06**	**-.25 – .03**	**.012**
Ethnicity (1 = White, 0 = non-White)	.02	.06	-.09 – .13	.664	.01	.06	-.10 – .12	.878
Objective Social Class					**.14**	**.05**	**.04 – .25**	**.009**
Observations	336				336			
R^2 / R^2 adjusted	.05 / .04				.03 / .01			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SE*s and are clustered at the group level (336 individuals nested in 84 groups). The outcome in all models is volubility, defined as the number of words "spoken" (i.e., typed) in the text-based group discussion. The subjective and objective social class variables have been group mean-centered. Bold indicates statistical significance at the 5% level.

Table S4

Regression Results for the Effect of Volubility Indices on Prestige Acquisition (Dependent Variable) in Study 1

	Model 1: Peer-Rated Prestige (Dependent Variable)				**Model 2: Peer-Rated Prestige (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Volubility (Character Count)	**.37**	**.05**	**.27 – .47**	**<.001**				
Age	-.02	.06	-.12 – .09	.776	-.02	.06	-.12 – .09	.810
Gender (1 = Women, 0 = Men)	-.03	.05	-.07 – .13	.566	-.03	.05	-.08 – .13	.791
Ethnicity (1 = Women, 0 = Men)	.00	.05	-.11 – .10	.969	.01	.05	-.09 – .12	.823
Volubility (Phrase Count)					**.37**	**.05**	**.27 – .46**	**<.001**
Observations	336				336			
R^2 / R^2 adjusted	.14 / .13				.14 / .13			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust SEs and are clustered at the group level (336 individuals nested in 84 groups). The outcome in all models is peer-rated prestige. Bold indicates statistical significance at the 5% level.

Table S5

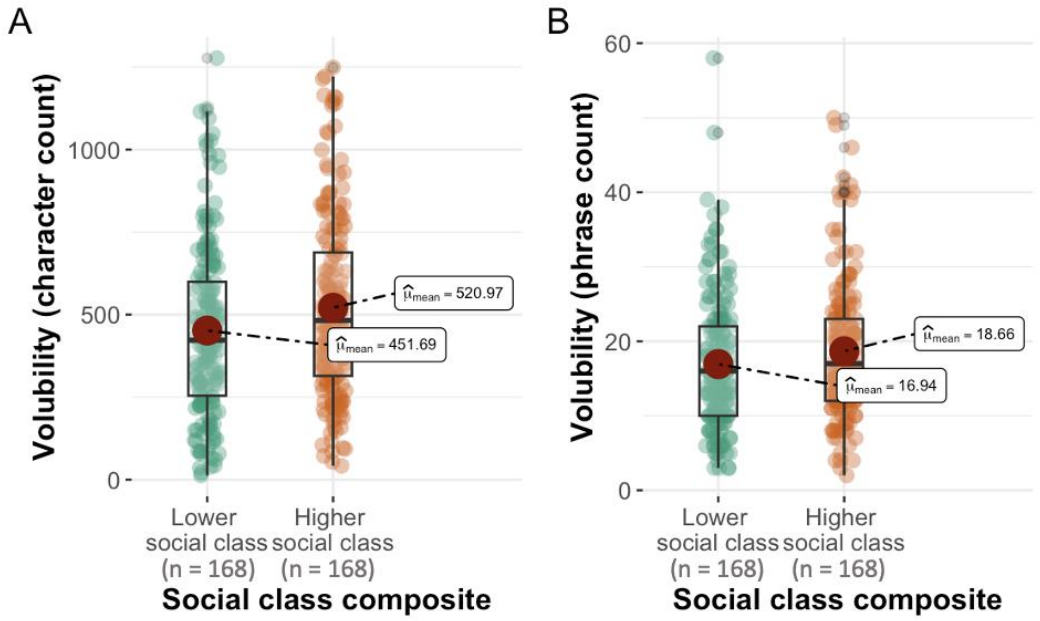
Regression Results for the Effect of Social Class Indices on Prestige Acquisition (Dependent Variable) in Study 1

	Model 1: Peer-Rated Prestige (Dependent Variable)				**Model 2: Peer-Rated Prestige (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI 995%)*	*p-value*
Subjective Social Class	**.13**	**.05**	**.02 – .24**	**.017**				
Age	-.07	.06	-.18 – .04	.220	-.09	.06	-.21 – .02	.099
Gender (1 = Women, 0 = Men)	-.01	.06	-.12 – .10	.820	-.02	.06	-.13 – .09	.775
Ethnicity (1 = White, 0 = non-White	.01	.06	-.11 – .12	.925	.01	.06	-.10 – .12	.878
Objective Social Class					**.14**	**.05**	**.04 – .25**	**.009**
Observations	336				336			
R^2 / R^2 adjusted	.02 / .01				.03 / .01			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SE*s and are clustered at the group level (336 individuals nested in 84 groups). The outcome in all models is peer-rated prestige. The subjective and objective social class variables have been group mean-centered. Bold indicates statistical significance at the 5% level.

Figure S1

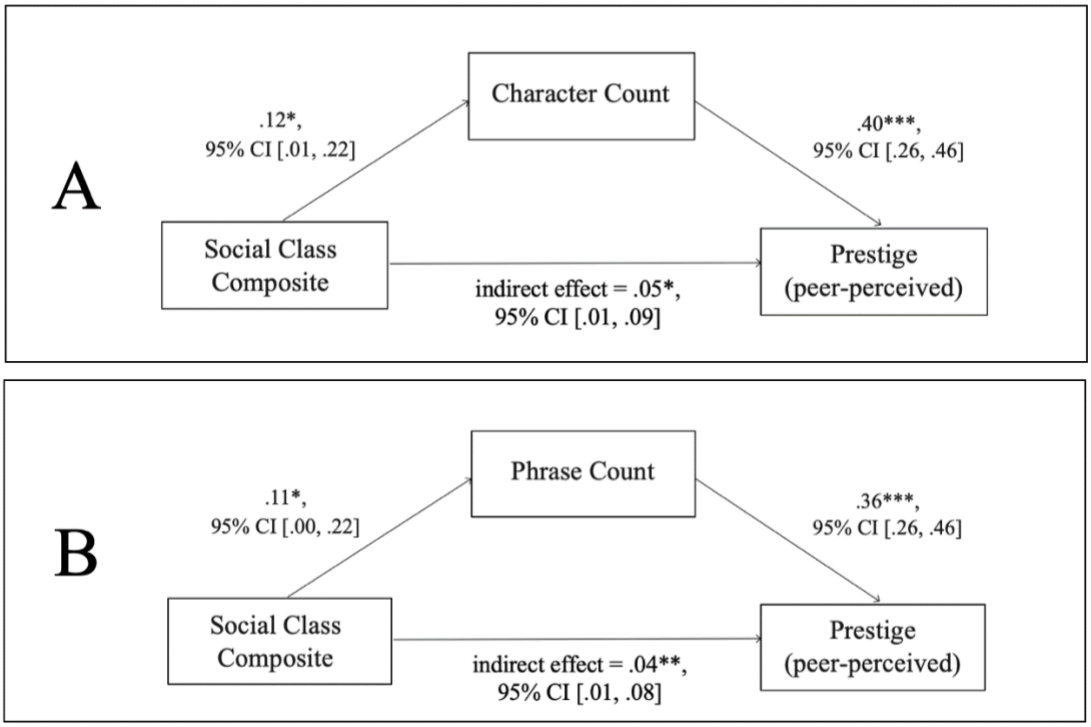
Group Members From a Lower Social Class Background Are, On Average, Less Voluble Than Group Members From a Higher Social Class Background (Volubility Indices: Character Count And Phrase Count; Study 1)



Note. The boxplot contains a red dot representing the mean, a thick horizontal line representing the median, whiskers representing the 95% confidence interval, and the value displayed represents the mean value across the two social class groups. 'Lower social class' individuals are those whose social class score (aggregate of subjective and objective social class indices) falls below the median. 'Higher social class' individuals are those whose social class score exceeds the median.

Figure S2

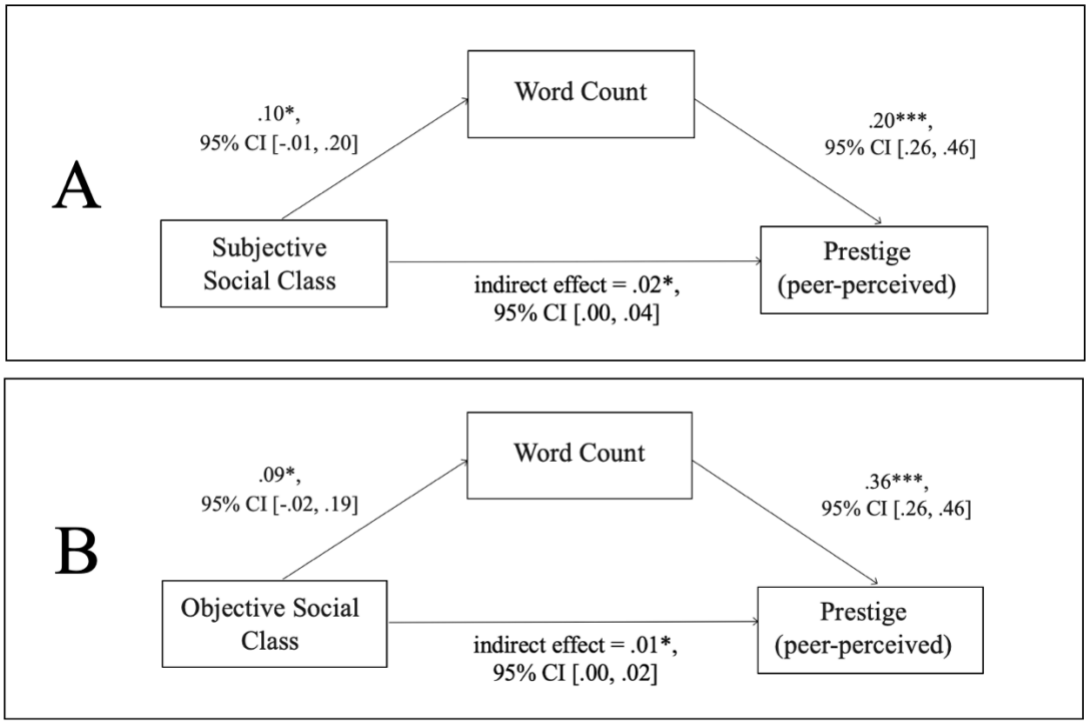
Mediation Results for the Effect of Social Class on Peer-Perceived Prestige as Mediated by Volubility (Character Count and Phrase Count) in Study 1



Note. Volubility is operationalized as character count in Panel A or as phrase count in Panel B.
* p <0.05. ** p < 0.01. *** p < 0.001

Figure S3

Mediation Results for the Effect of Subjective and Objective Social Class On Peer-Perceived Prestige s Mediated by Volubility (Word Count) in Study 1



Note. Social class is operationalized as subjective social class in Panel A or as objective social class in Panel B. * p <0.05. ** p < 0.01. *** p < 0.001.

Table S6

Regression Results for the Effect of Social Class on Proportion of "Speaking" Time Within the Group (Word Count; Dependent Variable) in Study 2

	Model 1: Volubility Index: Word Count (Dependent Variable)				**Model 2: Volubility Index: Word Count (Dependent Variable)**			
Predictors	*Estimates*	*std. Error*	*CI (95%)*	*p-value*	*Estimates*	*std. Error*	*CI (95%)*	*p-value*
Social Class Composite	**.11**	**.04**	**.03 – .19**	**.006**	**.10**	**.04**	**.03 – .18**	**.011**
Age					.002	.00	-.00 – .01	.527
Gender (1 = Women, 0 = Men)					-.10	.07	-.22 – .02	.139
Ethnicity (1 = White, 0 = non-White)					.08	.08	-.05 – .25	.196
(phi)	**10.08**	**.75**	**8.88 – 11.28**	**<.001**	**10.18**	**.75**	**8.97 – 11.39**	**<.001**
Observations	512				512			
R^2	.01				.02			

Note. Coefficients shown are unstandardized effects (*b*). Standard errors are clustered robust *SEs* and are clustered at group level (512 individuals nested in 128 groups). The outcome in all models is volubility, defined as the proportion of "speaking" time within the group (i.e., individual's word count divided by the group's total word count across all members). The social class composite variable has been group mean-centered. Bold indicates statistical significance at the 5% level.

Table S7

Regression Results for the Effect of Social Class on Volubility Indices (Dependent Variable) in Study 2

	Model 1: Volubility Index: Character Count (Dependent Variable)				**Model 2: Volubility Index: Phrase Count (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Social Class Composite	**.09**	**.04**	**.01 – .18**	**.033**	.09	.04	-.00 – .17	.054
Age	-.06	.04	-.15 – .03	.183	.00	.05	-.09 – .09	.951
Gender (1 = Women, 0 = Men)	-.06	.04	-.15 – .02	.147	-.07	.04	-.16 – .02	.120
Ethnicity (1 = White, 0 = non-White)	**.10**	**.04**	**.01 – .19**	**.025**	.08	.04	-.01 – .17	.079
Observations			512				512	
R^2 / R^2 adjusted			.03 / .02				.02 / .01	

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SEs* and are clustered at the group level (512 individuals nested in 128 groups). The outcome in all models is volubility, defined either as the number of characters (Model 1) or phrases (Model 2) typed in the text-based group discussion. The social class composite variable has been group mean-centered. Bold indicates statistical significance at the 5% level.

Table S8

Regression Results for the Effect of Social Class Indices on Volubility (Word Count; Dependent Variable) in Study 2

	Model 1: Volubility Index: Word Count (Dependent Variable)				**Model 2: Volubility Index: Word Count (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Subjective Social Class	**.10**	**.04**	**.01 – .19**	**.023**				
Age	-.05	.04	-.14 – .04	.277	-.05	.05	-.14 – .04	.259
Gender (1 = Women, 0 = Men)	-.06	.04	-.14 – .03	.202	-.06	.04	-.15 – .02	.143
Ethnicity (1 = White, 0 = non-White)	**.10**	**.04**	**.01 – .19**	**.022**	**.10**	**.04**	**.02 – .19**	**.022**
Objective Social Class					.07	.04	-.02 – .15	.133
Observations	512				512			
R^2 / R^2 adjusted	.03 / .02				.02 / .01			

Note: Coefficients shown are standardized effects (β). Standard errors are clustered robust *SEs* and are clustered at the group level (512 individuals nested in 128 groups). The outcome in all models is volubility, defined as the number of words "spoken" (i.e., typed) in the text-based group discussion. The subjective and objective social class variables have been group mean-centered. Bold indicates statistical significance at the 5% level.

Table S9

Regression Results for the Effect of Volubility Indices on Prestige Acquisition (Dependent Variable) in Study 2

	Model 1: Peer-Rated Prestige (Dependent Variable)				**Model 2: Peer-Rated Prestige (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Volubility (Character Count)	**.30**	**.04**	**.22 – .38**	**<.001**				
Age	.05	.04	-.03 – .14	.207	.04	.04	-.05 – .12	.403
Gender (1 = Women, 0 = Men)	-.06	.04	-.14 – .02	.158	-.06	.04	-.15 – .02	.148
Ethnicity (1 = Women, 0 = Men)	-.02	.04	-.11 – .06	.625	-.01	.04	-.10 – .08	.816
Volubility (Phrase Count)					**.25**	**.04**	**.16 – .33**	**<.001**
Observations	512				512			
R^2 / R^2 adjusted	.10 / .09				.07 / .06			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SEs* and are clustered at the group level (512 individuals nested in 128 groups). The outcome in all models is peer-rated prestige. Bold indicates statistical significance at the 5% level.

Table S10

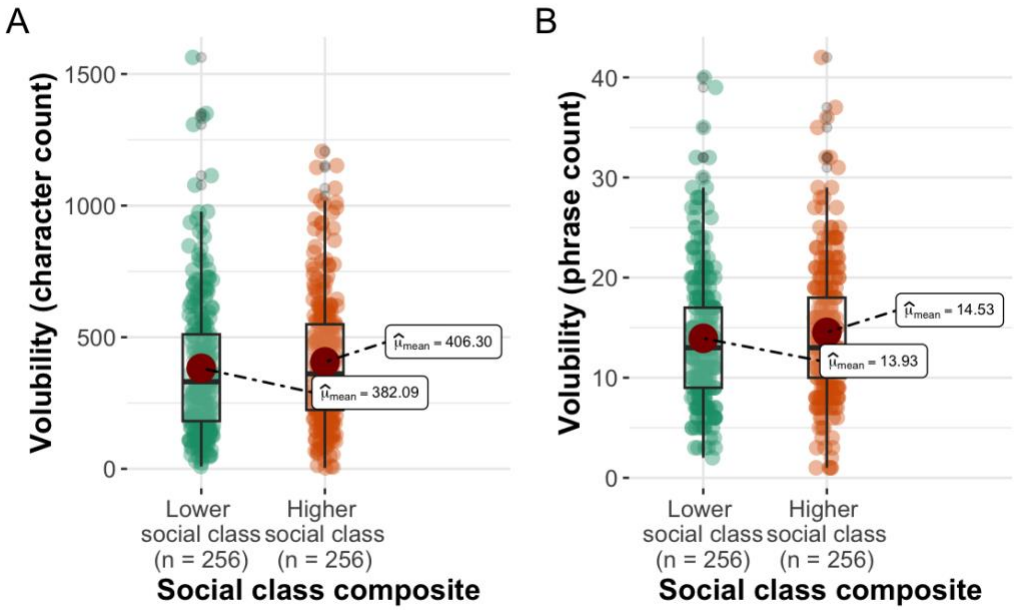
Regression Results for the Effect of Social Class Indices on Prestige Acquisition (Dependent Variable) in Study 2

	Model 1: Peer-Rated Prestige (Dependent Variable)				**Model 2: Peer-Rated Prestige (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Subjective Social Class	.05	.04	-.04 – .14	.273				
Age	.04	.05	-.05 – .12	.422	.04	.05	-.05 – .13	.393
Gender (1 = Women, 0 = Men)	-.08	.04	-.16 – .01	.086	-.08	.04	-.17 – .01	.071
Ethnicity (1 = White, 0 = non-White)	.01	.04	-.08 – .10	.849	.01	.04	-.08 – .10	.830
Objective Social Class					.01	.04	-.08 – .09	.888
Observations	512				512			
R^2 / R^2 adjusted	.01 / .00				.01 / -.00			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust SEs and are clustered at the group level (512 individuals nested in 128 groups). The outcome in all models is peer-rated prestige. The subjective and objective social class variables have been group mean-centered.

Figure S4

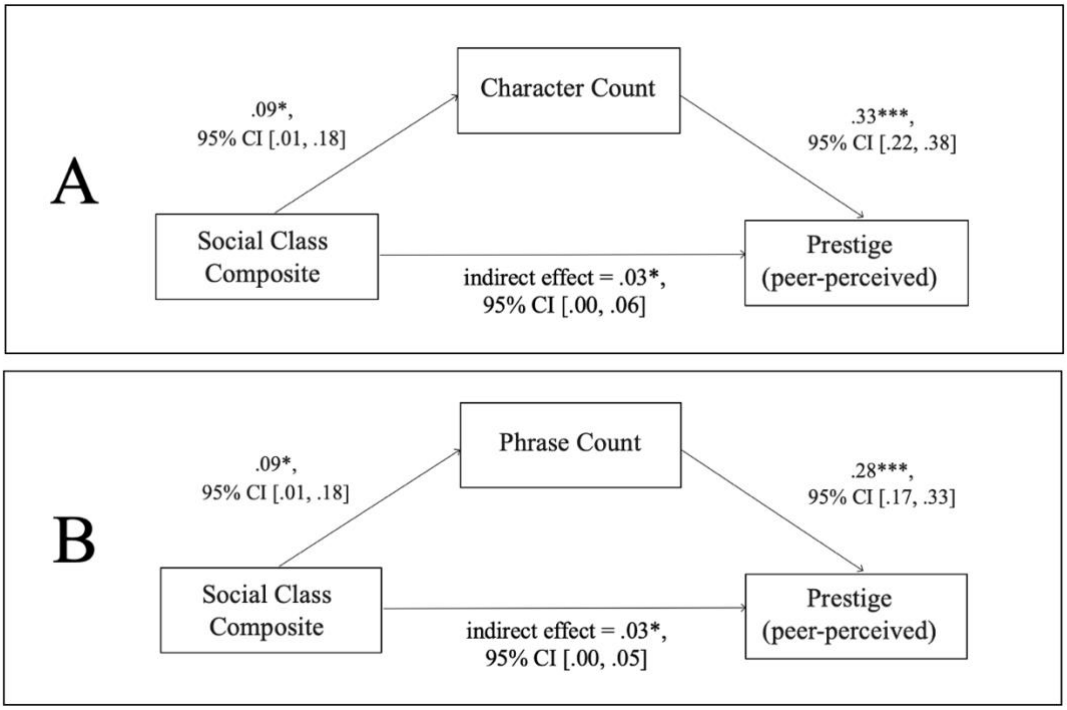
Groups Members From a Lower Social Class Background Are, On Average, Less Voluble Than Group Members From a Higher Social Class Background (Volubility Indices: Character Count & Phrase Count; Study 2)



Note. The boxplot contains a red dot representing the mean, a thick horizontal line representing the median, whiskers representing the 95% confidence interval, and the value displayed represents the mean value across the two social class groups. 'Lower social class' individuals are those whose social class score (aggregate of subjective and objective social class indices) falls below the median. 'Higher social class' individuals are those whose social class score exceeds the median.

Figure S5

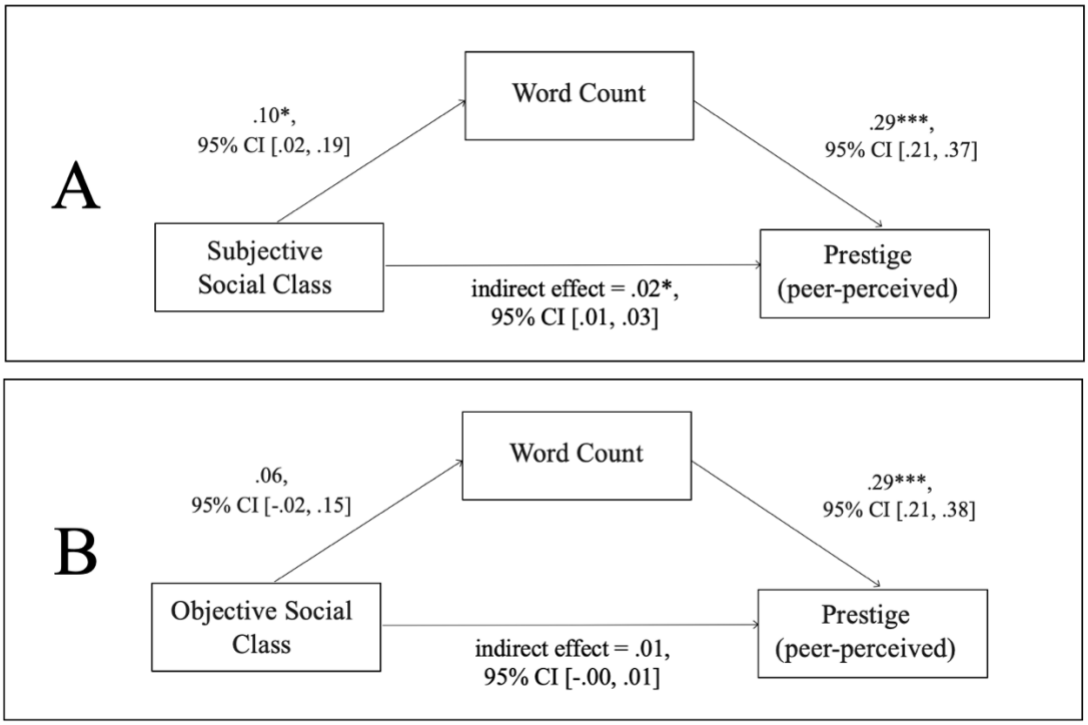
Mediation Results for the Effect of Social Class on Peer-Perceived Prestige as Mediated by Volubility (Character Count and Phrase Count) in Study 2



Note. Volubility is operationalized as character count in Panel A or as phrase count in Panel B.
* p <0.05. ** p < 0.01. *** p < 0.001

Figure S6

Mediation Results for the Effect of Subjective and Objective Social Class on Peer-Perceived Prestige as Mediated by Volubility (Word Count) in Study 2



Note. Social class is operationalized as subjective social class in Panel A or as objective social class in Panel B. * p <0.05. ** p < 0.01. *** p < 0.001.

Table S11

Regression Results for the Effect of Social Class on Task Expertise (Dependent Variable; Studies 1 & 2 Combined)

	Model 1: Task Expertise (Dependent Variable)				**Model 2: Task Expertise (Dependent Variable)**			
Predictors	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*	*std. Beta*	*std. Error*	*CI (95%)*	*p-value*
Social Class Composite	.02	.03	-.05 – .09	.518	.02	.03	-.05 – .09	.544
Age					-.01	.04	-.08 – .06	.851
Gender (1 = Women, 0 = Men)					-.03	.03	-.10 – .04	.374
Ethnicity (1 = White, 0 = non-White)					.02	.04	-.05 – .09	.665
Observations	848				848			
R^2 / R^2 adjusted	.00 / -.00				.00 / -.00			

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SEs* and are clustered at the group level (848 individuals nested in 212 groups across Studies 1 and 2). The outcome in all models is task expertise. The social class composite variable has been group mean-centered.

Table S12.

Regression Results for the Effect of Social Class and Expertise on Volubility (Word Count; Dependent Variable; Studies 1 & 2 Combined)

	Model 1: Volubility Index: Word Count (Dependent Variable)			**Model 2: Volubility Index: Word Count (Dependent Variable)**			**Model 3: Volubility Index: Word Count (Dependent Variable)**			**Model 4: Volubility Index: Word Count (Dependent Variable)**			**Model 5: Volubility Index: Word Count (Dependent Variable)**		
Predictors	*std. Beta (95% CI)*	*std. Error*	*p-value*	*std. Beta (95% CI)*	*std. Error*	*p-value*	*std. Beta (95% CI)*	*std. Error*	*p-value*	*std. Beta (95% CI)*	*std. Error*	*p-value*	*std. Beta (95% CI)*	*std. Error*	*p-value*
Social Class Composite	**.10 (.03 – .16)**	**.03**	**.005**				**.09 (.03 – .16)**	**.03**	**.006**	**.10 (.03 – .16)**	**.03**	**.005**	**.11 (.04 – .17)**	**.03**	**0.002**
Task Expertise				**.09 (.03 – .16)**	**.03**	**.007**	**.09 (.02 – .16)**	**.03**	**.008**	**.09 (.03 – .16)**	**.03**	**.007**	**.09 (.02 – .16)**	**.03**	**0.008**
Social Class Composite × Task Expertise Interaction										-.02 (-.08 – .05)	.03	.582	-.02 (-.09 – .04)	.03	0.475
Age													**-.12 (-.19 – -.05)**	**.04**	**<0.001**
Gender (1 = Women, 0 = Men)													**-.07 (-.14 – -.00)**	**.03**	**0.044**
Ethnicity (1 = White, 0 = non-White)													.02 (-.05 – .09)	.04	0.612
Observations	848			848			848			848			848		
R^2 / R^2 adjusted	.01 / .01			.01 / .01			.02 / .02			.02 / .02			.04 / .03		

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust *SEs* and are clustered at group level (828 individuals nested in 212 groups across Studies 1 and 2). The outcome in all models is volubility, defined as the number of words "spoken" (i.e., typed) in the text-based group discussion. The social class composite variable has been group mean-centered. Values in parentheses indicate the 95% confidence interval. Bold indicates statistical significance at the 5% level.

Table S13

Regression Results for the Effect of Social Class on Confidence, Volubility (Word Count), and Prestige (Dependent Variables; Study 2)

	Model 1: Confidence (Dependent Variable)			**Model 2: Confidence (Dependent Variable)**			**Model 3: Volubility Index: Word Count (Dependent Variable)**			**Model 4: Volubility Index: Word Count (Dependent Variable)**			**Model 5: Volubility Index: Word Count (Dependent Variable)**			**Model 6: Peer-Rated Prestige (Dependent Variable)**			**Model 7: Peer-Rated Prestige (Dependent Variable)**			**Model 8: Peer-Rated Prestige (Dependent Variable)**		
Predictors	*std. Beta*	*std. Error*	*p-value*	*std. Beta*	*std. Error*	*p-value*	*std. Beta*	*std. Error*	*p-value*	*std. Beta*	*std. Error*	*p-value*	*std. Beta*	*std. Error*	*p-value*	*std. Beta*	*std. Error*	*p-value*	*std. Beta*	*std. Error*	*p-value*	*std. Beta*	*std. Error*	*p-value*
Social Class Composite	0.07 (-0.02 – 0.15)	0.07	0.130	0.08 (-0.01 – 0.16)	0.04	0.071																		
Age				**-0.12 (-0.20 – -0.03)**	**0.01**	**0.009**							-0.02 (-0.11 – 0.06)	0.04	0.575							0.07 (-0.01 – 0.15)	0.04	0.106
Gender (1 = Women, 0 = Men)				**-0.18 (-0.26 – -0.09)**	**0.09**	**<0.001**							-0.04 (-0.12 – 0.05)	0.04	0.376							-0.03 (-0.12 – 0.05)	0.06	0.455
Ethnicity (1 = White, 0 = non-White)				-0.04 (-0.13 – 0.05)	0.11	0.367							**0.10 (0.02 – 0.18)**	**0.04**	**0.019**							-0.01 (-0.10 – 0.07)	0.11	0.748
Confidence							0.05 (-0.04 – 0.13)	0.04	0.300	-0.03 (-0.11 – 0.06)	0.05	0.498	-0.03 (-0.12 – 0.05)	0.04	0.463	**0.16 (0.08 – 0.25)**	**0.05**	**<0.001**	**0.13 (0.04 – 0.22)**	**0.03**	**0.004**	**0.14 (0.05 – 0.22)**	**0.05**	**0.002**
Task Expertise										**0.31 (0.23 – 0.40)**	**0.06**	**<0.001**	**0.31 (0.22 – 0.40)**	**0.05**	**<0.001**				**0.14 (0.05 – 0.23)**	**0.04**	**0.002**	0.06 (-0.03 – 0.15)	0.05	0.208
Volubility (Word Count)																						**0.27 (0.18 – 0.36)**	**0.04**	**<0.001**
Observations	512			512			512			512			512			512			512			512		
R^2 / R^2 adjusted	0.00 / 0.00			0.06 / 0.05			0.00 / 0.00			0.10 / 0.10			0.11 / 0.10			0.03 / 0.02			0.05 / 0.04			0.12 / 0.11		

Note. Coefficients shown are standardized effects (β). Standard errors are clustered robust SEs and are clustered at the group level (512 individuals nested in 128 groups). The social class composite variable has been group mean-centered. Values in parentheses indicate the 95% confidence interval. Bold indicates statistical significance at the 5% level.