Working Together Benefits People from Working-Class Contexts, but Not People from

Middle-Class Contexts

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Abstract

Previous research has documented that people from working-class contexts have fewer skills linked to academic success than their middle-class counterparts (e.g., lower intelligence, worse problem-solving skills). Challenging this idea, we propose that one reason why people from working-class contexts underperform is because U.S. measures of achievement tend to assess people individually. We theorize that working together on measures of achievement will create a cultural match with the interdependent selves common among people from working-class contexts, therefore improving their sense of fit and performance. We further theorize that effective group processes will serve as a mechanism that helps to explain when and why working together affords these benefits. Four studies utilizing diverse methods support our theorizing. Using archival data on college student grades, Study 1 finds that groups with a higher (vs. lower) proportion of students from working-class contexts perform better. Utilizing a nationally representative sample of collegiate student-athletes, Study 2 suggests that the benefits of working together for people from working-class contexts are moderated by whether groups engage in effective group processes. Studies 3-4 demonstrate that working together (vs. individually) causally improves the fit and performance of people from working-class contexts, but not people from middle-class contexts. Study 4 also identifies effective group processes as a mediator: people from working-class (vs. middle-class) contexts more often engage in effective group processes, which improves their performance. Our findings suggest that assessing achievement as people work together is one effective way to more fully realize the potential of people from working-class contexts.

Keywords: social class, achievement, effective group processes, culture, inequality

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Class Contexts

Research on social class inequality has documented social class differences in skills that

are linked to academic success in the U.S. (Cammarota, 2011; Cooper & Denner, 1998; Goudeau

& Croizet, 2017; Plaut & Markus, 2005). For example, research has provided evidence that

people from working-class compared to middle-class contexts have lower intelligence, worse

problem-solving skills, and impaired reasoning ability (Carter, 2003; Croizet & Claire, 1998;

Fiske & Markus, 2012; Fryberg, Troop-Gordon et al., 2013b; Hall, Zhao, & Shafir, 2014)[1]. This

research has typically assessed people's achievement by requiring them to *work individually*: to

complete an individual task on one's own or achieve an individual goal (see Mackintosh, 2011;

Plaut & Markus, 2005 for related arguments). This research often assumes that assessing people

as they work individually is the best and "right" way to measure people's achievement (e.g.,

academic coursework or problem-solving tasks; Gutierrez, 2008; Plaut & Markus, 2005).

Here, for the first time, we propose that assessing people's achievement as they work

individually does not represent a neutral, class-general strategy. To be effective when working

individually requires behaviors such as working on one's own, being self-directed, and

displaying autonomy (Credé & Kuncel, 2008; Duckworth, Grant, Loew, Oettingen, &

Gollwitzer, 2011; Pintrich & DeGroot, 1990). These are the types of behaviors that are

associated with independent models of self—i.e., understanding the self as separate from others

and social contexts (Fryberg, Troop-Gordon et al., 2013b; Fryberg & Markus, 2007; Goudeau &

Croizet, 2017; Greenfield, 1997). Importantly, independent models of self are less common in

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[1] We use the term *working-class contexts* to refer to contexts where people do not have four-year college degrees. In contrast, we use the term *middle-class contexts* to refer to contexts where people have at least a four-year college degree.

working-class contexts, compared to middle-class contexts. Interdependent models of self are

instead more common—i.e., understanding the self as connected to others and social contexts

(Markus & Conner, 2013; Markus & Kitayama, 2010; Stephens, Markus, & Phillips, 2014;

Stephens, Markus, & Townsend, 2007). Assessing achievement individually, therefore, is

misaligned with the interdependent models of self common in working-class contexts.

Alternatively, achievement can also be assessed as people work together to achieve a

collective outcome. By the term *working together*, we mean coordinating with other people to

complete a collective task or achieve a shared goal. Importantly, effectively working together

requires behaviors such as synchronizing individual activities, integrating each other's inputs,

and agreeing upon joint strategies (Hildreth & Anderson, 2016; McGrath, 1984; Straus, 1999).

According to this definition, people could work together to identify a collective solution on a

problem-solving task, or pass the ball back and forth between players to score points in a

basketball game.[2] These are the types of behaviors that are associated with interdependent

models of self (e.g., Brienza & Grossman, 2017; Bjornsdottir & Rule, 2017; Dietze & Knowles

2016; Kraus & Keltner, 2009). Assessing achievement as people work together, therefore, is well

aligned with the interdependent models common in working-class contexts.

In this research, we start from the idea that people from working-class contexts do not

lack the skills required to perform well on measures of achievement—metrics that institutions

use to assess people's performance (e.g., course assignments and exams, sports performance, or a

problem-solving task). Instead, we suggest that one critical reason they do not perform up to

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[2]Across the four studies presented here, we look both at the effects of working together in dyads and in larger groups. While we recognize that there are important differences between dyadic and group-level processes (Levine & Moreland, 2012), our key theoretical prediction is that working together should benefit people from working-class contexts. This theorizing is the same regardless of whether people are working together in two-person dyads or in larger groups. One strength of the current investigation, therefore, is that we test the robustness of our hypotheses across both dyads and larger groups.

their potential on some key measures of achievement in the U.S. is because these measures tend to assess people as they work individually. If these measures instead were to assess people as they work together, we theorize that people from working-class contexts will perform better, and also feel a greater sense of ease and comfort. As in previous research, we use the term *sense of fit* to refer to this subjective experience of ease and comfort (see Stephens, Brannon, Markus, & Nelson, 2015; Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012a).

Below we outline the logic underlying our central prediction: that working together (vs. working individually) will improve the fit and performance of people from working-class contexts, but not people from middle-class contexts. We first provide an overview of research supporting the idea that institutions in Western independent cultural contexts more often assess people's achievement as they work individually, compared to institutions in interdependent contexts. To reveal cultural variation in measures of achievement, we then outline research documenting how, in interdependent (vs. independent) cultural contexts, it is relatively more common to assess the achievement of people as they work together. Second, drawing from prior research and theorizing on cultural mismatch (Stephens, Fryberg, et al., 2012a; Stephens, Townsend, & Dittmann, 2019), we describe our theory that working together (vs. individually) will improve the fit and performance of people from working-class contexts, but not people from middle-class contexts. Finally, we outline why we expect that engaging in effective group processes will serve as a behavioral mechanism that can help to explain when and why working together will benefit people from working-class contexts.

Cultural Differences in Measures of Achievement

Cultural models of self can shape the norms that guide people's behavior and the types of institutions that people build. By *cultural models of self*, we mean culture-specific

understandings of how to think, feel, and act as a person in the world (Cross & Madson, 1997;

Markus & Kitayama, 2010). Research conducted in a variety of cultural contexts has identified

two common models of self: independent and interdependent (Markus & Kitayama, 2010).

Independent models of self assume that a normatively appropriate person should take charge and

influence others and the social context, express one's own personal needs and interests, and be

different and separate from others (Stephens et al., 2007). In contrast, interdependent models of

self assume that the normatively appropriate person should adjust to others and the social

context, connect to others and be socially responsive, and be similar to others and part of a group

(Stephens et al., 2007). While these two models are widely available across contexts and not

mutually exclusive, one model tends to be more elaborated and enacted than the other.

A large body of research has documented how, in different cultural contexts, the gateway

institutions of higher education and professional workplaces tend to prioritize different cultural

models of self. These gateway institutions serve as key access points to important life outcomes

(e.g., valuable educational and job opportunities; Ridgeway & Fisk, 2012; Stephens, Markus et

al., 2014). Research has revealed that institutions in Western cultural contexts, including the

U.S., tend to prioritize independent models of self as the cultural ideal. In contrast, it is relatively

more common for institutions in East Asian and South American cultural contexts to prioritize

interdependent models of self (Fryberg, Covarrubias, & Burack, 2013a; Fryberg & Markus,

2007; Garcia & Tor, 2007; Groysberg, 2010; Lewis, 1995; Li, 2003, 2005; Markus & Conner,

2013; Perlow & Weeks, 2002; Shook, 2010; Stephens, Fryberg et al., 2012a; Stephens, Markus,

et al., 2014; Tobin, Wu, & Davidson, 1991). Importantly for the current research, these broad

cultural ideals of independence versus interdependence also tend to be reflected in the practices

that institutions rely on to assess people's achievement.

Institutions in independent (vs. interdependent) cultural contexts are more likely to assess achievement as people work individually. For example, in the case of education, studies of U.S. elementary school classrooms provide evidence that the vast majority of teachers' behaviors emphasize individual achievement and working individually (e.g., giving individual assignments or calling on individual students to answer questions; Boykin et al., 2004). Further, U.S. teachers rate students who display independent behaviors as higher achieving than those who display more interdependent behaviors (Tyler, Boykin, & Walton, 2006). Reflecting these differences in teacher expectations, U.S. kindergartners more often describe a high-achieving peer in terms of individual achievement, compared to Chinese kindergartners, who tend to focus more on social factors (Li & Wang, 2004). Similarly, in the context of professional workplaces, many U.S. organizations encourage employees to set aside collaborative, relational concerns and instead focus on individual performance and efficiency (Sanchez-Burks, 2005). Moreover, elite U.S. firms more often emphasize individual achievement and specialized expertise rather than group-level achievement (Groysberg, 2010), and use these individual-focused metrics to determine important outcomes such as hiring, rewards, and promotions (DeNisi & Pritchard, 2006; Lam & Schaubroeck, 1999; Galanter & Palay, 1991). Importantly, while assessing achievement as people work individually is sometimes necessary, it nevertheless reflects an independent cultural ideal (Fryberg, Covarrubias et al., 2013a; Fryberg & Markus, 2007).

Achievement in interdependent (vs. independent) cultural contexts is more often assessed as people work together, reflecting an interdependent cultural ideal. For example, Japanese schools often assess students' achievement based on how well their small work group performs on collective assignments (Cave, 2004; Holloway, 1988). Similarly, when solving a puzzle with their children, Guatemalan Mayan mothers typically engage in collaborative problem-solving

that emphasizes working together to identify a collective solution to the problem (Chavajay & Rogoff, 2002). Furthermore, Japanese companies like Toyota encourage employees to prioritize collective performance by distributing bonuses to individuals based on team-level performance (Liker & Morgan, 2006; Allen, White, Takeda, & Helms, 2004). In sum, while institutions in independent cultural contexts often take for granted that assessing people's achievement as they work individually represents the "right" way to do so (Markus & Kitayama, 2010; Stephens, Markus, et al., 2014), in interdependent cultural contexts, it is relatively more common to assess achievement as people work together.

How Working Together (vs. Individually) Improves the Fit and Performance of People from Working-Class Contexts

Whether institutions' practices for assessing achievement will benefit people from working-class contexts depends on the cultural models of self that they bring with them to these institutions. Importantly for the current research, social class is one important source of variation in these cultural of models of self. Interdependent models are more common in working-class contexts, compared to middle-class contexts (Markus & Conner, 2013). Reflecting these interdependent models, people from working-class contexts more often display behaviors that are part of working together, such as being socially responsive (Bjornsdottir & Rule, 2017; Dietze & Knowles 2016; Kraus & Keltner, 2009), adjusting to the requirements of the situation (Stephens, Hamedani, Markus, Bergsieker, & Eloul, 2009), and integrating different perspectives in interpersonal situations (Brienza & Grossmann, 2017). Therefore, assessing achievement as people work together (vs. individually) should create a cultural match with the interdependent models of self common among people from working-class contexts. In contrast, because interdependent models are less common in middle-class contexts, people from middle-class

contexts *less* often display these behaviors that are part of working together. Therefore, assessing achievement as people work together (vs. individually) should not create a cultural match for people from middle-class contexts.[3]

Given the cultural match between working together and the interdependent models of self common among people from working-class contexts, we theorize that working together (vs. individually) will improve the fit and performance of people from working-class contexts, but not people from middle-class contexts. Previous studies on cultural mismatch support our theorizing (Stephens, Fryberg, et al., 2012a; Stephens, Townsend, Markus, & Phillips, 2012b). These previous studies suggest that a cultural match (vs. mismatch) can have positive consequences for the performance and experience of people from working-class contexts. Specifically, creating a cultural match by framing the college culture as interdependent (e.g., be part of a community) led students from working-class contexts to perform significantly better on an individual academic task and have more positive experiences with the task, than creating a cultural mismatch by framing the college culture as independent (e.g., pave your own path). In contrast, students from middle-class contexts performed similarly and had comparable experiences with the task regardless of how the college culture was framed (Stephens, Fryberg et al., 2012a; Stephens, Townsend et al., 2012b).

In these previous cultural mismatch studies, although the college culture was framed as interdependent, people's achievement was still assessed as they worked individually. In the present research, we go beyond simply framing the culture as interdependent: we assess

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[3] The primary goal of this research is to show that assessing achievement as people work together (vs. individually) benefits people from working-class contexts. To show that working together benefits to people from working-class contexts in particular, and not people in general, this investigation includes people from middle-class contexts as a reference or comparison group. As such, we focus our theorizing on people from working-class contexts, not people from middle-class contexts. We return to this point in the General Discussion.

achievement as people work together. In other words, while prior research has only signaled that the cultural norm of interdependence is valued, in the current studies people actually work together, thereby putting the norm of interdependence into practice.

The Role of Effective Group Processes

We theorize that one important behavioral mechanism that explains when and why working together will benefit people from working-class contexts is *effective group processes*. Effective group processes, a term used by groups and teams scholars, refer to the types of behaviors that produce better group performance (Hackman & Katz, 2010; Hackman & Morris, 1975). These behaviors include focusing more on the task (Hildreth & Anderson, 2016; Karau & Kelly, 1992), sharing more information (Hildreth & Anderson, 2016; Stasser, 1999), and taking more turns in conversation (Engel, Woolley, Jing, Chabris, & Malone, 2014; Levinson, 2016; Davis, 1982). Importantly, the effectiveness of these types of group processes hinges on the behavior of all of the individuals who are part of the group. Stated differently, if some individuals within the group are not engaging in effective group processes, they can undermine the entire group's performance. We therefore expect that although working together will afford positive outcomes to people from working-class contexts, it will be moderated by whether they are working with others who are also engaging in effective group processes.

We propose that social class context is one key factor that will shape people's tendency to engage in effective group processes. Specifically, we propose that people from working-class contexts, who have more interdependent models of self (Bjornsdottir & Rule, 2017; Dietze & Knowles 2016; Stephens, Fryberg, et al., 2012a; Stephens et al., 2009), will more often engage in effective group processes. Building on the previous research outlined above, which has documented that people from working-class contexts display more interdependent behaviors

(e.g., Brienza & Grossmann, 2017; Kraus & Keltner, 2009), we theorize that they will also more often engage in effective group processes because many of these behaviors (e.g., turn taking, information sharing) can be characterized as interdependent. For example, to share information effectively to solve a problem, group members must first attend to each other and solicit each other's opinions. Then they must coordinate with each other to take the disparate information from each individual and integrate it into the best collective solution. We therefore expect that more often engaging in these effective group processes, in turn, will mediate the relationship between working together and benefits in terms of both fit and performance.

Measuring the Social Class of Adults and College Students

Following previous research, we use educational attainment as our measure of social class (Snibbe & Markus, 2005; Stephens et al., 2007) for several reasons. First, educational attainment (vs. occupation or income) is most closely linked with the types of cultural experiences and outcomes that are central to the research questions we examine[4]. For example, attaining a four-year college degree shapes the types of behaviors and psychological tendencies that are associated with developing independent cultural models of self (Fryberg & Markus, 2007; Greenfield, 1997; Kim, 2002; Li, 2003; Stephens, Markus et al., 2014). Second, educational attainment tends to be correlated with two other common indicators of social class – income and occupation – and as such, education can also serve as a good proxy for these other indicators (e.g., Snibbe & Markus, 2005). Third, it is more effective to use one indicator, as opposed to using a composite (Graetz, 1995; Lareau & Conley, 2008; Marks, McMillan, Jones, & Ainley, 2000). Finally, among the different levels of educational attainment, we focused

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[4]Importantly, though, we acknowledge that educational attainment is one indicator of social class. As such, we report all of our key analyses using other common indicators of social class (i.e., subjective social class and income) in the supplemental materials. These results showed generally similar patterns, but not all reached significance (e.g., in Study 2).

specifically on the distinction between having a four-year degree vs. having less than a four-year degree. Educational attainment is most predictive of the cultural outcomes we studied when operationalized as degrees earned (high school vs. college), rather than as years in school or other degrees (e.g., graduate and professional degrees; Backlund, Sorlie, & Johnson, 1999; Covarrubias & Fryberg, 2015; Covarrubias, Romero, & Trivelli, 2015; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Rivera & Tilcsik, 2016; Snibbe & Markus, 2005).

The current studies employ both college student and adult samples. In studies with college students, we utilize parental educational attainment as a proxy for students' prior social class contexts (Covarrubias, Gallimore, & Okagaki, 2018; Covarrubias, Valle, Laiduc, & Azmitia, 2018; Ostrove & Long, 2007; Stephens, Fryberg et al., 2012a; Stephens, Townsend, et al., 2012b). Following previous research, we categorize students as from *middle-class* contexts when at least one of their parents has completed a four-year college degree, and as from *working-class* contexts when neither parent has completed a four-year college degree (Stephens, Fryberg et al., 2012; Stephens, Hamedani, & Destin, 2014b; Stephens, Townsend et al., 2012b).

In studies with participants who are adults beyond college age, we assess people's social class contexts based on their own current level of personal educational attainment (Carey & Markus, 2018; Markus, Ryff, Curhan, & Palmersheim, 2004; Ryff, Singer, & Palmersheim, 2004; Snibbe & Markus, 2005; Stephens et al., 2007). We categorize adults as from *middle-class* contexts when they personally have attained at least a four-year college degree, and as from *working-class* contexts when they have completed less than a four-year college degree.

The Current Research

The current research tests our proposed theory that assessing achievement as people work together (vs. individually) will improve the fit and performance of people from working-class

contexts, but not people from middle-class contexts. When focusing on fit, we look primarily at individual outcomes because we seek to illuminate how working together shapes the individual psychological experiences of people from different social class contexts. When focusing on performance, we look mostly at collective outcomes because our definition of working together focuses on collective performance and achievement.

We test this theory in a series of four studies utilizing diverse methods, including both archival data and in-person and online experiments that measure actual performance. Extending social-psychological theory on cultural mismatch across these studies, we investigate two key hypotheses:

1. Working together (vs. individually) will improve the fit and performance of people from working-class contexts, but not people from middle-class contexts.

2. Engaging in effective group processes will serve as a behavioral mechanism that helps to explain when and why working together will afford benefits (i.e., fit and performance) to people from working-class contexts. Specifically:

a. The benefits of working together for people from working-class contexts will be moderated by whether they are working with a high proportion of other people from working-class contexts (i.e., who are more likely to engage in effective group processes).

b. The increased tendency for people from working-class contexts to engage in effective group processes when working together will mediate the relationship between working together and benefits in terms of fit and performance.

To provide initial evidence consistent with Hypothesis 1, we first examine the relationship between working individually vs. together and an important academic outcome: students' grades in a college course. To do so, we compare students' performance on individual

assignments to their performance on collective assignments. Next, in Study 2 we extend our findings to a new domain, and test Hypothesis 2a: that the benefits of working together (i.e., increased sense of fit) for people from working-class contexts will be moderated by whether they are in groups with a high proportion of other people from working-class contexts (i.e., who are more likely to engage in effective group processes). To do so, we utilize data from a nationally representative sample of collegiate student-athletes who were surveyed about their college sports team experiences. In two experiments (one online and one in the lab), we next examine whether working together (vs. individually) causally improves the fit and performance of people from working-class contexts, but not people from middle-class contexts. In Study 3, we assign online participants to work either individually or together in social-class-matched dyads on the same achievement task. We then assess their individual subjective experience while completing the task (e.g., sense of fit with the task), and their dyadic performance on the task. Using similar methods and the same achievement task as Study 3, Study 4 seeks to replicate and extend Study 3's results to people interacting in-person in the lab. In Study 4, we also code dyads' actual behaviors as they interact to complete the achievement task. Coding these behaviors enables us to directly test Hypothesis 2b: that engaging in effective group processes will mediate the relationship between working together and benefits (i.e., improved fit and performance).

Study 1: Archival Analysis of College Student Course Grades

Study 1 provides an initial test of Hypothesis 1: that assessing achievement as people *work together* (vs. *individually*) will improve the performance of people from working-class contexts. We did so in a preregistered archival analysis of the academic performance of college students who completed assignments when they were *working individually* and *together*. By comparing the performance of people from different social class contexts across these two

different ways of assessing achievement, we sought to provide the first evidence that the way

achievement is measured is one key factor associated with how well people from working-class

contexts perform.

Method

   Participants. We obtained access to three semesters of course grades from an

introductory undergraduate organizational behavior class from a selective West Coast university.

The course grades were linked to demographic information that was collected in a separate

prescreen survey to be eligible for studies. We had access to their grades on all assignments in

the course, as well as key demographic variables (e.g., gender, racial-ethnic minority status, year

in school, etc.). The total sample consisted of 1,832 students. Of these participants, 1,577

provided the necessary information (i.e., their parents' levels of education) to determine their

social class background. Using parental educational attainment as a proxy for social class, we

categorized 17% of these students as from working-class contexts (i.e., neither parent had

attained a 4-year degree) and 83% from middle-class contexts (i.e., at least one parent had

attained a 4-year degree). About half of students identified as female (46%) and students also

varied in their year in school (41% first years, 25% sophomores, 25% juniors, and 9% seniors).

We did not have access to students' specific racial identification, but did have access to a binary

White/non-White variable (48% White).

   As a part of this course, students were assigned to work together as groups of 6-8

students. This yielded data from 296 groups. We excluded data from groups in which at least one

member did not report the necessary information to determine their social class background ($N =$

170 groups). This is because, in these cases, a portion of the group's social class composition

was unknown. As such, for group-level analyses, our final usable sample size was $N = 126$

groups.[5] A post-hoc sensitivity analysis indicated that the remaining sample size for individual

analyses ($N = 1,577$) provided us with 80% power to detect a small effect of $d = 0.15$. The

remaining sample size for group analyses ($N = 126$) provided us with 80% power to detect a

medium effect of $d = 0.50$.

Procedure. We preregistered our data analysis plan on OSF

(https://osf.io/k7ubq/?view_only=01a6e75220554c928d8266220e0e3d97).

Measures.

Individual performance. We computed a score that represents students' performance on

the course assignments on which they *worked individually* (65% of the overall course grade, $M =$

82%, $SD = 3$%). To ensure that this score captured the actual course value of each individual

assignment, we weighted the scores according to weights in the syllabus. The individual

components of the grade comprised class participation, homework assignments, and midterm and

final exams.

Group performance. We computed a score that represents students' performance on the

course assignments that they completed while *working together* (35% of the overall course

grade, $M = 89$%, $SD = 3$%). To ensure that this score captured the actual course value of each

group assignment, we weighted the scores according to weights outlined in the syllabus. The

working together components of the grade comprised group homework assignments, a final

group project, and peer evaluations. Peer evaluations consisted of ratings of a student by their

other group members on 20 different dimensions that assessed their contributions to group

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[5] We also conducted a separate analysis where we imputed missing data for those groups where only one member did not report the information necessary to determine their social class background ($N = 75$ groups). Following recommendations for handling missing categorical data (e.g., Cheema, 2014), we used mode substitution to impute the unknown background information with the modal social class background: middle-class. Results using imputed data are equivalent (see supplemental material).

assignments, including how engaged they were in completing group assignments and the extent
to which they were effective group members (e.g., quality of contribution, degree of effort, and
cooperation; see supplemental material for full list of dimensions).

Importantly, the group assignments (i.e., group homework assignments, final group
project, and peer evaluations) and individual assignments were similar in content and therefore
likely required similar skills to be completed. For example, the group homework assignments
were brief essays, which were exactly the same as the individual homework assignments, except
that they were completed in groups. Similarly, the group final project was a written report, and
there was also a written essay component in the individual exams.

Social class composition of group. We created a group-level variable (i.e., Level 2) that
enabled us to test the effect of a group's social class composition on group performance. This
variable represented the percentage of students from working-class contexts in a given group (M
$= 20\%$ students from working-class contexts, $SD = 16\%$). The range was 0-4 students from
working-class contexts. Specifically, 27% of groups had zero students from working-class
contexts; 33% had one student from working-class contexts; 29% had two students from
working-class contexts; 8% had three students from working-class contexts; and 3% had four
students from working-class contexts.

Analyses and Results

We tested Hypothesis 1 that working together (vs. individually) will lead people from
working-class contexts to perform better via three analyses.[6]

Individual performance. First, we analyzed students' performance on the individual
portion of the course grade. To do so, we regressed students' individual course performance on

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[6] Though we do not include covariates in the results presented here, results are equivalent when controlling for
gender and race (see supplemental material).

social class. This analysis enabled us to test whether students from working-class (vs. middle-class) contexts perform less well on individual measures of achievement, replicating previous research (Pascarella et al., 2004). In support of this previous research, social class was significantly negatively associated with performance on individual assignments, $b = -0.10$, $t(1,575) = -3.20$, $p < .001$, $sr = -.09$. Students from working-class contexts ($M = 79.7\%$) performed significantly worse than students from middle-class contexts ($M = 81.6\%$) on assignments where they *worked individually* (see Table 1, left panel). This is consistent with our theorizing that people from working-class (vs. middle-class) contexts perform less well when achievement is assessed as people work individually.

Table 1. *Effect of individual social class on individual performance and group social class composition on group performance in Study 1.*

Individual Performance	ß	t	p	sr	Group Performance	ß	t	p	sr
Social Class	-.10***	-3.20	<.001	-.09	Social Class Composition	.19*	2.20	.03	.19

Group performance. Second, we conducted a separate analysis of aggregate group level data because the group component of the final grade was at the level of the group and reflected group-level performance. We regressed group course performance on social class composition of the group (grand-mean centered). This analysis provided an initial test of whether working together is associated with improved performance for groups with more people from working-class contexts than those with fewer. In support of this theorizing, social class composition of the group was significantly positively associated with performance on group assignments, $b = 0.04$, $t(125) = 2.20$, $p = .03$, $sr = .19$. Consistent with the idea that *working together* affords benefits to groups of students from working-class contexts, we found that a higher proportion of working-class students *working together* in a group was associated with significantly better performance

on group assignments (see Table 1, right panel). To further illuminate the relationship between social class composition and group performance, we examined the effect of social class composition on groups with low and high proportions of students from working-class contexts (i.e., ± 1 *SD*). Groups with a low proportion of students from working-class contexts (-1 *SD*, i.e., 0% students from working-class contexts) correspond to an 87.8% group performance score. In contrast, groups with a high proportion of students from working-class contexts (+1 *SD*, i.e., 33% students from working-class contexts) correspond to an 89.1% group performance score.

Repeated measures. Finally, we conducted a repeated measures analysis to better compare the effect of individuals' social class across individual *versus* group performance for those individuals in groups where the entire social class composition of the group was known. Specifically, we standardized both individual and group course performance, and entered them as our two dependent measures. We entered individual social class as our predictor of the two different types of course performance. We specifically look at contrasts within social class group (i.e., working-class vs. middle-class) by assignment type (individual vs. group) to determine whether working together (vs. individually) benefits people from working-class contexts, but not people from middle-class contexts.

Providing more direct support of Hypothesis 1, individual vs. group performance differed significantly by individual social class, $F(1, 805) = 4.52$, $p = .03$, $\eta^2 = .01$ (see Figure 1). We specifically examined how students' social class related to their performance when they were working individually vs. in groups. Students from middle-class contexts did not perform significantly differently on group vs. individual assignments ($M_{diff} = -0.04$), $F(1, 805) = 0.73$, $p = .39$, $\eta^2 = .001$. However, consistent with Hypothesis 1, students from working-class contexts performed significantly better on group vs. individual assignments ($M_{diff} = 0.18$), $F(1, 805) =$

3.79, $p = .05$, $\eta^2 = .005$. This pattern of results provides further evidence that people from

working-class contexts benefit from working together (vs. individually), but that people from

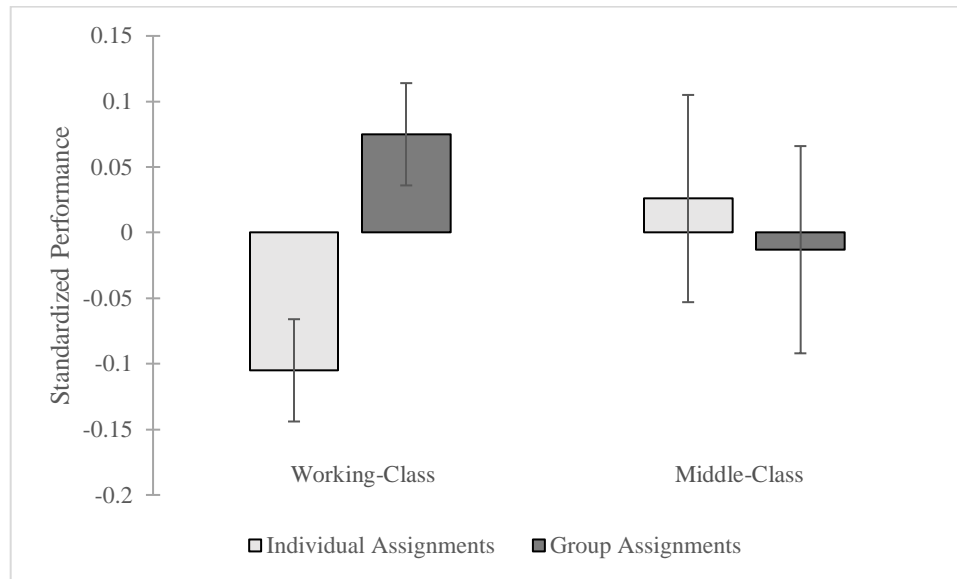middle-class contexts do not.[7]

Figure 1. *Standardized performance in Study 1 by assignment type (individual vs. group) for middle- vs. working-class students in groups with different social class compositions (Error bars represent ± 1 SE).*

Discussion

Focusing on course grades, a real-world outcome with important downstream

consequences, Study 1 provided initial evidence consistent with our first hypothesis.

Specifically, we found that students from working-class contexts receive lower grades when their

achievement is assessed according to a common U.S. practice: as they *work individually*. In

contrast, when instead assessing groups of people's achievement as they *work together*, we

found that groups with more students from working-class contexts earn higher grades on group

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[7] We also conducted an additional repeated measures analysis comparing standardized individual to group performance that incorporated both individual social class and group social class composition to determine whether there were differential effects by the combination of these two factors. These results indicate that there was a linear positive effect of social class composition (see supplemental material).

assignments than those with fewer. When directly comparing group to individual performance, we find that working together (vs. individually) is associated with improved performance for students from working-class contexts, but not students from middle-class contexts. Furthermore, these findings support our claim that people from working-class contexts do not simply lack the skills required to perform well on measures of achievement. Indeed, if students from working-class contexts were simply less skilled than their advantaged counterparts from middle-class contexts, one would expect groups with more students from working-class contexts to perform worse than those with fewer.

Together these results provide initial evidence that the way achievement is assessed may contribute to social class differences in performance. However, there is an alternative explanation in this study that we sought to rule out in Study 2. It could have been the case that having a greater number of people from working-class contexts in a group was associated with improved group performance because groups with more students from working-class contexts had greater social class diversity than those with fewer.

Study 1 also had a limitation that Study 2 enables us to address. While we assumed that groups were required to *work together* on the group assignments, we were not able to distinguish between whether these groups actually worked together according to our definition, or if they divided up parts of the task and worked on it separately. With the data in Study 2—an archival study with a nationwide sample of college sports teams—we were able to address this limitation and the alternative explanation.

Study 2: Archival Analysis of College Student-Athletes

In Study 2 we had three primary goals. First, we sought to rule out the alternative explanation and limitation described above. Second, we sought to extend our prior findings to a

new domain: sports teams. Specifically, we utilized survey data from a nationwide representative sample of U.S. collegiate student-athletes who participated in a survey about their athletic experiences. Third, we conducted a first test of Hypothesis 2a about our hypothesized behavioral mechanism – effective group processes – using moderation (cf. Spencer, Zanna, & Fong, 2005). To do so, we looked at two factors that we theorize will shape the degree to which working together will afford benefits to people from working-class contexts: (a) whether effective group processes are required to perform well when working together, and (b) the proportion of people who are likely engaging in effective group processes when working together. We reason that working together should be most likely to afford benefits to people from working-class contexts when people are (a) working together in groups that require effective group processes to perform well, and (b) in groups with a high proportion of people from working-class contexts (i.e., who are more likely to engage in these effective group processes).

These sports data were particularly well-suited to test the role of effective group processes via moderation because all people were part of a team, but the teams varied both in (a) whether they require people to *work individually* or *together*, and (b) their social class composition. For example, in the case of *working individually* teams (e.g., golf, swimming, or cross-country running), individual athletes act on their own to play the sport effectively. On the other hand, in the case of *working together* teams (e.g., basketball, soccer, and football), athletes must coordinate with others to play the sport effectively. By examining the conditions under which working together provides benefits to people from working-class contexts, we are able to provide evidence of our behavioral mechanism (i.e., effective group processes) via moderation.

Finally, in this study, we focused on athletes' experience with the team, rather than their performance, because we did not have access to performance variables. However, our theory would predict similar effects for performance.

Method

Participants. We obtained access to the 2005-2006 Growth, Opportunity, Aspirations and Learning of Students in College (GOALS) survey, the most recent survey data available. The GOALS survey assessed a variety of topics related to the student-athlete experience, including attitudinal measures about their college sports experiences. We had access to survey responses regarding their experience participating in the sport, as well as key individual and sport-level demographic variables (e.g., gender, racial-ethnic minority status, year in school, sport, NCAA Division, etc.). This survey included data from 19,786 NCAA student-athletes. Of these participants, 17,317 provided the information needed to determine their social class background (i.e., parental educational attainment). Of these participants, 17,008 provided responses to our key dependent measure, subjective experience. Using parental educational attainment as a proxy for social class, we categorized 38% of these students as from working-class contexts (i.e., neither parent had attained a 4 year degree) and 62% from middle-class contexts (i.e., at least one parent had attained a 4 year degree). Nearly half of the sample (43%) identified as female, and students also varied in their year in school (32% first years, 26% sophomores, 25% juniors, and 16% seniors). We also had access to a binary White/non-White variable (24% non-White). A post-hoc sensitivity analysis indicated that the remaining sample size ($N = 17,008$) provided us with 99% power to detect a small effect of $d = 0.10$.

Procedure. The sampling plan for the GOALS study was designed so that a representative sample of the NCAA member institutions that sponsor a given sport would be

asked to survey their student-athletes in that sport. Of the 1,026 member institutions that were

asked to participate in the survey, responses were collected from 620 institutions (60% response

rate). More information on the specific sampling plan can be found on the study's homepage at:

http://www.icpsr.umich.edu/icpsrweb/NCAA/studies/35031.

Measures. See supplemental materials for full list of items to which we had access for

this and subsequent studies.

Team type. Participants indicated which sport they were currently playing. We coded

sports using a binary variable that specified whether the athletes had to *work individually* vs.

together in order to succeed at the sport. Specifically, sports were coded as *working individually*

if players' performance and sport outcomes were based solely on individuals' performance. In

contrast, sports were coded as *working together* if players' performance and sport outcomes were

based on their efforts to coordinate and perform collectively with other players (Gymnastics,

Golf, Swimming, Tennis, Track & Field, Wrestling). For example, cross-country running was

coded as *working individually* because each cross-country runner completes a race individually

and then team scores are determined based on the sum of individual performances. Conversely,

basketball was coded as *working together* because the players must pass the ball back and forth

to score points and have a chance to win the game. Of the 15 different sports included in the

data, 9 (60%) were coded as *working together* (Basketball, Baseball, Field Hockey, Football, Ice

Hockey, Lacrosse, Soccer, Softball, Volleyball).

Social class composition of team. We created a Level 2 variable that represented the

percentage of students from working-class contexts on a given team ($M = 40\%$ students from

working-class contexts, $SD = 20\%$, range = 0-100% students from working-class contexts).

Specifically, 28% of teams had less than 20% students from working-class contexts; 30% of

teams had 20-40% students from working-class contexts; 26% of teams had 41-60% students from working-class contexts; 9% had 61-80% students from working-class contexts; and 7% had 81-100% students from working-class contexts.

Subjective experience with team. We identified four items that could serve as a proxy for students' subjective experience with their team ($\alpha = .82$). Following prior research (Stephens, Fryberg, et al., 2012a), we included items if they captured students' subjective sense that they derived positive benefits from their team experience. Items were rated on a scale from 1 (*Very Negative*) to 6 (*Very Positive*). Two example items were: "Rate…" "The potential for achieving your athletic goals" and "The support of your college coaches in meeting your athletic goals" (see supplemental materials for full list of items).

Analyses

Given the nested structure of our data (i.e., athletes nested in teams), we conducted multilevel analyses using the MIXED command in SPSS. Study hypotheses were tested with a two-level model (ICC = .14). All analyses were conducted using maximum likelihood estimation. Individuals (Level 1) were nested within teams (Level 2). All continuous Level 2 predictors were grand-mean centered. Binary categorical predictors were contrast coded (i.e., -1 vs. 1). Specifically, we tested the effect of team type (*working individually* vs. *working together*), social class composition of the team (proportion of students from working-class contexts), and individual social class (from working-class vs. middle-class context) on individual subjective experience with the team. In our model, we included all main effects, two-way interactions, and the three-way interaction between team type, social class composition of the team, and individual social class. We then conducted simple slopes analysis to reveal when working together is most

likely to afford benefits to people from working-class contexts.

Results

There was a main effect of team type, but no other significant main effects nor two-way interactions emerged. However, in support of our predictions that both team type and social class composition of the team would moderate the effect of individual social class on subjective experience with the team, these effects were qualified by a significant three-way interaction between team type, social class composition of the team, and individual social class, $b = 0.19$, $t(17,006) = 3.37$, $p = .001$ (see Table 3).[8]

Using HLM (Preacher, Curran, & Bauer, 2019), we obtained the simple slopes of social class composition for this three-way interaction. We first looked at the simple slopes for students from working-class contexts by team type. For students from working-class contexts on *working together* teams, the simple slope of social class composition was positive and marginally significant, $b = 0.18$, $z = 1.75$, $p = .08$. In contrast, for students from working-class contexts on *working individually* teams, the simple slope of social class composition was negative and nonsignificant, $b = -0.18$, $z = 1.03$, $p = .30$. This suggests that a greater proportion of students from working-class contexts on a team is only associated with greater subjective experience for students from working-class contexts on *working together* teams (see Figure 2; left panel).

Next, we looked at the simple slopes for students from middle-class contexts by team type. For students from middle-class contexts on *working together* teams, the simple slope of social class composition was negative and nonsignificant, $b = -0.10$, $z = -1.01$, $p = .31$. In contrast, for students from middle-class contexts on *working individually* teams, the simple slope of social class composition was positive and significant, $b = 0.30$, $z = 2.14$, $p = .03$ (see Figure

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[8]Though we do not include covariates in the results presented here, results are equivalent when controlling for gender, race, and racial composition of the team (see supplemental material).

1). This suggests that having a greater proportion of students from working-class contexts on a team is only associated with greater subjective experience for students from middle-class contexts on *working individually* teams (see Figure 2; right panel).

Table 3. *Multilevel regression analysis predicting subjective experience with team in Study 2.*

Subjective Experience with Team					
Fixed Effect	B	SE B	t	p	95% CI
Social Class	0.01	0.01	0.78	.43	[-0.01, 0.03]
Sport Type	-0.08***	0.02	-4.63	< .001	[-0.12, -0.05]
Social Class × Sport Type	0.01	0.01	0.88	.38	[-0.01, 0.03]
Social Class Composition	0.05	0.07	0.72	.48	[-0.09, 0.20]
Sport Type × Social Class Composition	-0.01	0.07	-0.13	.90	[-0.16, 0.14]
Social Class × Social Class Composition	-0.05	0.06	-0.90	.37	[-0.16, 0.06]
Social Class × Sport Type × Social Class Composition	0.19**	0.06	3.37	.001	[0.08, 0.30]
Level 1 *n* = 17,008					
Level 2 *n* = 1,403					

Note: ** $p < .01$, *** $p < .001$.

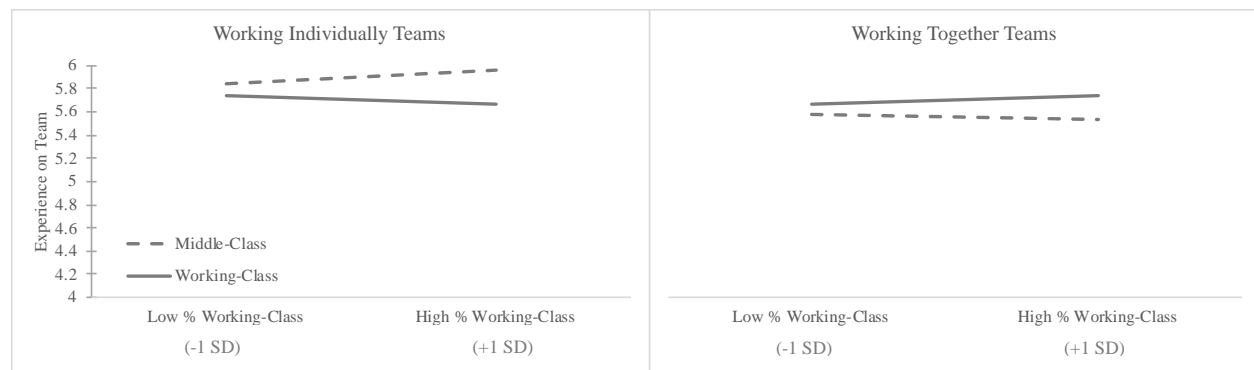| Subjective Experience with Team					
Random Effect	B	SE B	Wald Z	p	95% CI
Between Groups	0.17	0.01	15.41	<.001	[0.15, 0.19]
Residual	0.99	0.01	88.66	<.001	[0.97, 1.01]

Figure 2. *Effect of social class composition of team on subjective experience with team by social class and team type in Study 2.*

Discussion

In Study 2 we extended our prior findings to a new domain—a nationally representative sample of college student-athletes. Specifically, in this study we find that the effect of social

class composition for students from working-class contexts varies by team type: being on a team with a high proportion of other students from working-class contexts is only associated with a more positive experience for students from working-class contexts when they are on *working together* teams, not *working individually* teams.

Study 2 also helped us address an alternative explanation that was not addressed by Study 1: that the social class composition of the group (i.e., having more people from working-class contexts) was associated with benefits due to these groups having greater social class diversity. In Study 2, we are able to rule out this concern by showing that having more students from working-class contexts is not uniformly beneficial for all members of all teams, as would be predicted by the social class diversity hypothesis. Instead, for students from working-class contexts, the benefits are specific to teams where people *work together.* We also unexpectedly found that, for students from middle-class contexts, the benefits are specific to teams where people *work individually*. Although we did not predict this result, it further supports the idea that greater social class diversity does not uniformly benefit all members of all teams.

Study 2 also addressed a limitation of Study 1. We were able to provide a test of Hypothesis 2a: the role of effective group processes via moderation. We used *working together* (vs. *individually*) teams as an indicator that effective group processes are required, and social class composition as an indicator of the frequency with which groups engage in effective group processes. Utilizing these indicators, we find that, to obtain benefits from *working together*, people from working-class contexts must be on working together teams (i.e., where effective group processes are required), and must work together with a high proportion of people from working-class contexts (i.e., who we theorize more frequently engage in these effective group processes).

Despite addressing several issues, there are at least two open questions that we answer in the next two studies. First, both Studies 1-2 were correlational, and did not enable us to determine whether *working together* (vs. *individually*) causally improves the fit and performance of people from working-class contexts, but not people from middle-class contexts. To address this issue, we next conducted two experiments in which participants from different social class contexts were assigned to *work together* vs. *individually* on a problem-solving task. Second, the groups who were working together in both Studies 1-2 naturally varied in their social class composition (i.e., they were mostly mixed social class groups), so we were not able to directly compare the performance and behaviors of working-class to middle-class groups. To address this issue, in the experiments we assigned people to social-class-matched groups.

Study 3: Online Experiment

By randomly assigning participants to either *work individually* or *together* on a problem-solving task, Study 3 sought to provide causal evidence to support Hypothesis 1. Furthermore, in contrast to Studies 1-2 where the social class composition of groups naturally varied, Study 3 held constant the social class composition of the groups of people who were assigned to *work together*. Creating social-class-matched groups enabled us to more directly test our hypothesis that *working together* (vs. *individually*) will improve the fit and performance of people from working-class contexts, but not middle-class people.

Method

Participants. We computed our sample size *a priori* to have 80% power to detect a small effect similar to the average of those obtained in Study 1 ($d = 0.28$). As such, we sought to obtain a sample size of approximately 400 participants. We recruited 403 U.S. adults (i.e., beyond college age) to complete an online experiment via Amazon's MTurk in exchange for $3, and

obtained complete data from 352 participants[9]. Among the remaining pool of viable participants,

we excluded 12 participants for failing attention checks embedded in the individual survey. To

minimize participant exclusions, we only excluded the individuals who failed the attention

checks in the individual survey, rather than both members of a dyad (i.e., when they *worked*

together). We also excluded 23 individuals for whom we did not have information to accurately

assign them to a social class group.

We were therefore left with a final sample of $N = 319$ ($M_{age} = 36.12$, $SD_{age} = 10.69$, 45%

female, 15% underrepresented racial minorities). For this final sample, using personal

educational attainment as a proxy for social class, we categorized 53% of these participants as

from working-class contexts (i.e., personally had attained less than a 4 year degree) and 47% as

from middle-class contexts (i.e., personally had attained at least a 4 year degree). A post-hoc

sensitivity analysis indicated that the remaining sample size provided us with 80% power to

detect a small effect of $d = 0.31$.

Procedure. Participants were randomly assigned to work on a problem-solving task in

one of two conditions: *working individually* vs. *working together*. Participants in the *working*

together condition were paired with a partner using ChatPlat software and worked together on

the task (Brooks & Schweitzer, 2011). ChatPlat is an application that allows participants to be

paired with a partner with whom they can chat via instant messages in an online chat room. This

methodology has been used in prior research that has asked people to work together (e.g., Brooks

& Schweitzer, 2011; Huang et al., 2017).

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[9] Some people assigned to the *working together* condition were not successfully matched with a partner through the ChatPlat software ($N = 51$). As was the case in previous research (Huang, Yeomans, Brooks, Minson, & Gino, 2017), this was a technical problem due to the ChatPlat software.

Upon entering the experiment, participants completed an initial questionnaire that included our measure of social class (i.e., personal educational attainment) embedded in a series of distractor demographic items (e.g., age, gender, race/ethnicity). For those assigned to the *working together* condition, participants' response to the educational attainment item was used to pair them with a social class-matched partner. If participants indicated that they had less than a 4-year college degree, they were matched with someone who also had less than a 4-year college degree; if participants had obtained at least a 4-year college degree, they were matched with someone who also had at least a 4-year college degree.

We matched partners based on social class for two reasons: first, based on our theorizing and the results of Studies 1-2, we reasoned that we were most likely to obtain performance benefits if we paired people from working-class contexts with a partner who was also likely to be skilled at *working together* (i.e., another working-class person). Second, matching people on social class was necessary to be able to isolate the effect of social class on performance when *working together*. In other words, if people were in cross-class groups, we could not determine whether the working-class or middle-class group member was responsible for the group's performance.

After being assigned to condition, participants had 12 minutes to complete a problem-solving task on their own (*working individually* condition) or with a partner (*working together* condition). Participants then completed an online survey assessing individual sense of fit with the task and subjective perceptions of their performance. Individuals in the *working together* condition also completed a partner evaluation questionnaire. All participants then answered additional demographics questions and were debriefed, paid, and thanked for their participation.

We used the Lost at Sea task (Nemiroff & Pasmore, 2001) as the problem-solving task in this study. This task asks participants to imagine that they are stranded at sea with a list of 15 items to aid them in their survival. They are asked to rank the items in order of importance for their survival. We chose the Lost at Sea task because it has been used to compare the performance of people *working individually* vs. *together* in previous research on problem-solving (e.g., Esser, 1998; Kappes, Oettingen, & Pak, 2012). It also has two additional benefits. First, when participants are *working together* on the task, the task requires that participants work together to discuss the options and choose a joint ranking. For example, ranking the mirror as the most important object means that no other item can be ranked as the most important. Since the ranking of each item depends on each of the other rankings, it is not a task that group members can divide up to work on separately. Second, the task has a clear scoring system to objectively assess task performance.

Measures.

Performance. Following the standard scoring procedure, we calculated a performance score on the Lost at Sea task by computing how much participants deviated from the correct ranking order (i.e., a deviation score). For example, the correct answer for the mirror was to rank it as most important (i.e., ranking of 1). Therefore, if participants ranked the mirror as least important (i.e., ranking of 15), they received a score of 14 on the mirror because their ranking deviated from the correct ranking by 14. The total deviations across all 15 items were summed to form the overall score. As such, lower scores represent a lower deviation from the correct ranking, and better performance.

To be able to compare task performance across the two conditions, we employed a *yoking procedure* following prior research comparing individual to group performance (Hill, 1982).

Specifically, for participants in the *working individually* condition, we yoked participants together by both (1) social class and (2) start time of the experiment to simulate the most likely pairing they would have been part of had they been randomly assigned to the *working together* condition. Then, we took the average of these two individual participants' scores to yield our yoked deviation score ($M = 65.46$, $SD = 13.39$). As such, when describing performance results below, we will refer to participants in the *working together* condition as dyads, and participants in the *working individually* condition as yoked participants.

   Subjective experience with task. We originally intended to measure two distinct constructs: individuals' sense of fit with the task, and individuals' sense of how well they performed on the task (i.e., subjective performance). Drawing on previous research (Stephens, Fryberg, et al., 2012a), the two items designed to measure sense of fit were: "How comfortable did you feel while working on the task?" and "How natural did it feel to work on the task?" (1 = *Not at all*, 7 = *Very*). We created three items meant to measure subjective performance. The items were: "How well do you think you did on the task?" (1 = *Not at all*, 7 = *Very much*); "To what extent did you feel you were able to perform up to your potential on the task?" (1 = *Not at all*, 7 = *Very much*); and "How well did you think you performed relative to other participants in the study?" (1 = *Bottom 10%*, 10 = *91-100%*). However, given that these two constructs were conceptually related (i.e., both assessed participants' experience with the task), we conducted a factor analysis to determine whether all of the items tapped into a single overarching construct of participants' subjective experience with the task. The factor analysis revealed that all five items loaded onto a single factor accounting for 67% of the total variance[10]. Due to the results of the

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[10] The two measures showed the same pattern of results when analyzed separately (see supplemental material).

factor analysis, we standardized and combined these items to form an index of subjective

experience with the task ($\alpha = .88$).

Control variables. We also included two control variables in all analyses: a two-item

measure of how seriously participants took the task (i.e., "How seriously did you take the task?"

and "How careful were you on the task?"; 1 = *Not at all*, 7 = *Very much*; $r(1, 317) = .63$, $p <$

.001) and one item assessing task familiarity ("How familiar were you with the task?"; 1 = *Not at*

all, 7 = *Very much*). We reasoned that differences in how seriously participants took the task and

participants' familiarity with the task could shape people's experiences with and performance on

the task (Goodman & Leyden, 1991).[11]

Results

Performance. We obtained a marginally significant task condition (*working together* vs.

individually) × social class (working-class vs. middle-class) interaction, $F(1, 313) = 3.69$, $p =$

.056, $\eta^2 = .012$ (see Figure 3). Decomposing the interaction, we first compared performance

within social class groups. Supporting Hypothesis 1, among participants from working-class

contexts, dyads in the *working together* task condition performed significantly better ($M = 63.94$,

$SD = 12.87$) than yoked participants in the *working individually* task condition ($M = 69.13$, $SD =$

11.71), $F(1, 313) = 7.19$, $p = .008$, $\eta^2 = .022$. In contrast, among participants from middle-class

contexts, dyads in the *working together* task condition did not differ in their performance ($M =$

63.66, $SD = 16.40$) from yoked participants in the *working individually* task condition ($M =$

63.63, $SD = 12.62$), $F(1, 313) = 0.01$, $p = .91$, $\eta^2 = 0$.

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[11] Results in this study and Study 4 are largely equivalent when controlling for gender and race (see supplemental material).

Next, we compared performance across task conditions. In the *working individually* task condition, yoked participants from working-class contexts performed significantly worse (*M* = 69.13, *SD* = 11.71) than yoked participants from middle-class contexts (*M* = 63.63, *SD* = 12.62), $F(1, 313) = 9.60$, $p = .002$, $\eta^2 = .03$. In contrast, in the *working together* task condition, dyads from working-class contexts (*M* = 63.94, *SD* = 12.87) performed just as well as dyads from middle-class contexts (*M* = 63.66, *SD* = 16.40), $F(1, 313) = 0.004$, $p = .95$, $\eta^2 = 0$ (see Figure 2).
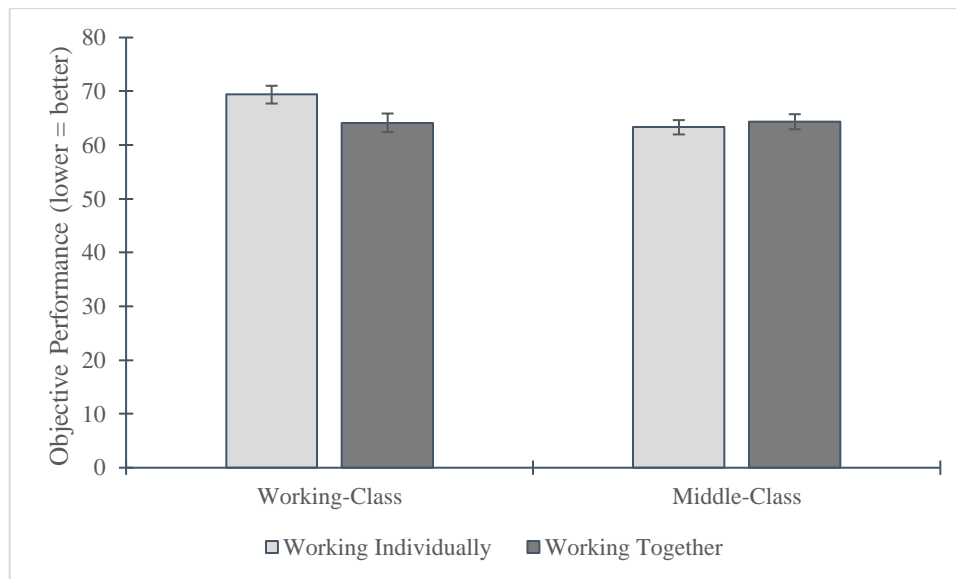

Figure 3. *Mean task performance by social class and task condition in Study 3 (Error bars represent ± 1 SE).*

Subjective experience with task. Mirroring the patterns of results for performance, we obtained a significant task condition (*working together* vs. *individually*) × social class (working-class vs. middle-class) interaction, $F(1, 313) = 7.57$, $p = .006$, $\eta^2 = .024$ (see Figure 4). We first decomposed the interaction to compare the simple effects within social class groups. Among individuals from working-class contexts, though in the predicted direction, those in the *working together* task condition did not report a significantly better experience with the task (*M* = 0.07, *SD* = 0.85) than those in the *working individually* task condition (*M* = -0.13, *SD* = 0.88), $F(1, 313) = 2.43$, $p = .12$, $\eta^2 = .008$. In contrast, among individuals from middle-class contexts, those

in the *working together* task condition reported a significantly worse experience with the task (*M* = -0.14, *SD* = 0.70) than those in the *working individually* task condition (*M* = 0.17, *SD* = 0.76), $F(1, 313) = 5.38$, $p = .02$, $\eta^2 = .017$[12].

Next, we compared subjective experience across task conditions. In the *working individually* task condition, individuals from working-class contexts reported a significantly worse experience with the task (*M* = -0.12, *SD* = 0.88) than individuals from middle-class contexts (*M* = 0.17, *SD* = 0.76), $F(1, 313) = 7.03$, $p = .008$, $\eta^2 = .022$ (see Figure 3). In contrast, in the *working together* task condition, individuals from working-class contexts (*M* = 0.07, *SD* = 0.85) had a similarly positive experience with the task as individuals from middle-class contexts (*M* = -0.14, *SD* = 0.70), $F(1, 313) = 1.91$, $p = .17$, $\eta^2 = .006$.
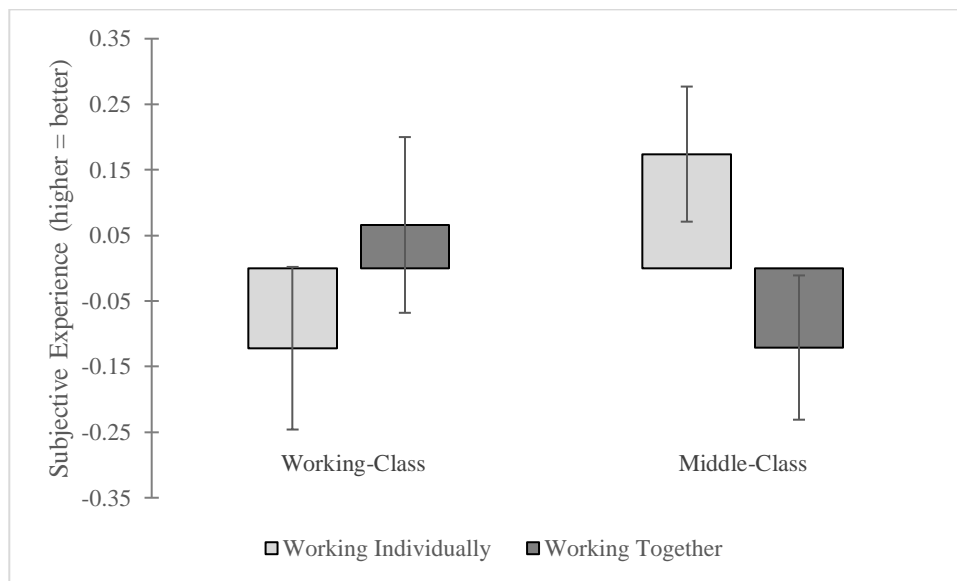

Figure 4. *Mean standardized subjective experience with task by social class and task condition in Study 3 (Error bars represent ± 1 SE).*

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[12] Importantly, people did not differ in their task engagement, $F(1, 315) = 2.01$, $p = .16$, $\eta^2 = .006$, nor in their time spent on the task, $F(1, 315) = 0.59$, $p = .44$, $\eta^2 = .002$, as a function of social class. This suggests that the social class performance differences were unlikely to be explained by simple differences in motivation. See supplemental material for details of these analyses.

Discussion

Studies 1 and 2 provided evidence consistent with our hypotheses, but did not allow us to examine causation, nor to directly compare the performance of working-class to middle-class groups. In this experiment, by assigning people to social-class-matched groups, we were able to provide causal evidence mostly in support of Hypothesis 1: that *working together* (vs. *individually)* improves the performance of people from working-class contexts, but not people from middle-class contexts. Importantly, though in the predicted direction, we did not find a significant benefit of working together on the sense of fit of people from working-class contexts. As such, in Study 4 we had two goals. First, we sought to replicate Study 3's results and determine whether we could find full support of Hypothesis 1 (i.e., benefits in terms of both fit and performance). Second, while Study 2 provided an initial test of Hypothesis 2a about the moderating role of effective group processes, we have not yet been able to test Hypothesis 2b about the mediating role of effective group processes. In Study 4, we capture our hypothesized behavioral mechanism via mediation: testing whether engaging in effective group processes will mediate the relationship between social class and benefits when *working together*.

To do so, we conducted the same experiment with a sample of current college students from different social class backgrounds interacting in-person in the lab. We then we coded videotapes of the interactions of people *working together* for a number of effective group processes (e.g., turn-taking, information sharing, etc.; Davis, 1982; Engel et al., 2014; Hackman & Katz, 2010; Hackman & Morris, 1975; Hildreth & Anderson, 2016; Karau & Kelly, 1992; Levinson, 2016; Stasser, 1999).

Study 4: Lab Experiment

Study 4 provided an opportunity to replicate and extend our results to a new sample of college students from different social class backgrounds. It also provides an opportunity to test Hypothesis 2b via mediation: that groups from working-class (vs. middle-class) contexts will more frequently engage in effective behaviors when *working together*, and that this tendency will improve their performance.

Method

Participants. We computed our sample size *a priori* with the goal of obtaining a final sample size of approximately 300 participants. We recruited 355 college students from two different elite private universities, and obtained complete data from 336 participants. We extended our recruitment to the second university because there were not enough students from working-class contexts at the first university to achieve our required sample size. We excluded attention check failures ($n = 3$). We also excluded those who were not U.S. citizens ($n = 36$) because the experiences, behaviors, and cultural models associated with social class can differ across national cultures (e.g., Lamont, 1992; Miyamoto, 2013; Park et al., 2013). Finally, unexpectedly, due to the face-to-face nature of the *working together* condition compared to the virtual interaction in Study 2, we discovered effects of race, which led us to exclude the dyads that consisted of both underrepresented racial minorities ($n = 22$)[13]. Using parental educational attainment as a proxy for social class, we categorized 53% of these students as from working-

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[13] After collecting initial data, we analyzed the data that had been collected up until a natural stopping point (i.e., the end of the academic term). We discovered a very different pattern of results for dyads comprised of both underrepresented minorities (URMs) compared to other types of dyads. We reasoned that participants in URM-URM dyads may have inferred that the study was about race, more so than other types of dyads that were not comprised of both URM members. If these participants did infer that the study was about race, this may have led to stereotype threat effects (Croizet & Claire, 1998; Steele, 1988). Several key results comparing URM-URM dyads to all other types of dyads suggest this possibility. Specifically, performance was significantly lower among URM-URM dyads ($M = 69.48$, $SE = 3.38$) than for all other types of dyads ($M = 57.31$, $SE = 1.11$), $F(1, 173) = 11.61$, $p = .001$. Members of URM-URM dyads also reported experiencing significantly more stress while completing the task ($M = 3.34$, $SE = 0.38$) than members of other types of dyads ($M = 2.53$, $SD = 0.12$). Thus, we excluded those dyads comprised of both URMs, and continued data collection only recruiting non-URM dyads.

class contexts (i.e., neither parent had attained a 4-year degree) and 47% as from middle-class

contexts (i.e., at least one parent had attained a 4-year degree). We were left with a sample of N

$= 273$ college students ($M_{age} = 20.05$, $SD_{age} = 1.89$, 64% female, 28% underrepresented

minorities). A post-hoc sensitivity analysis indicated that the remaining sample size provided us

with 80% power to detect a small effect of $d = 0.34$.

Procedure. Upon arriving to the lab, participants were assigned to the *working

individually* or *working together* task condition. Similar to Study 2, participants in the *working

together* condition were paired with a social-class-matched partner. To ensure that participants

were paired with a social-class-matched partner, we used previous responses to a prescreen

survey to recruit participants to come to the lab in sessions of up to four social-class-matched

participants (i.e., all students in a given session were either students from working-class *or*

middle-class contexts). Within each session, participants were assigned to a task condition using

the following assignment strategy. When only one individual arrived for a given session, that

person was automatically assigned to the *working individually* task condition. When two

individuals arrived, they were both assigned to the *working together* task condition. When three

individuals arrived, one of the three was randomly assigned to the *working individually* and two

of the three were assigned to the *working together* task condition. When four individuals arrived,

two were randomly assigned to the *working individually condition* and two were assigned to the

working together task condition. We utilized this assignment strategy so that we could retain all

participants who showed up to the lab, given the very low number of students from working-

class contexts attending both universities.

Participants were first brought to individual rooms and given a task description form,

which described instructions for the task that they would complete. The task description form

either indicated they would perform a problem-solving task individually (*working individually* task condition) or with a partner (*working together* task condition). After reading the task description form, participants in the *working individually* task condition were given the Lost at Sea task to complete individually. In contrast, participants in the *working together* task condition were brought together with a social-class-matched partner and given the Lost at Sea task to complete together, and were video-recorded while completing the task. In both conditions, participants were given 12 minutes to complete the task, and an experimenter notified participants when there were two minutes remaining.

After completing the Lost at Sea task, all participants then completed the same survey items individually as in Study 2. Participants in the *working together* task condition also completed the partner evaluation measure as in Study 2. After completing the survey individually, participants were debriefed, paid, and thanked for their participation.

Measures. All measures were identical to that of Study 2. We followed the same yoking procedure for performance results as in Study 2 (i.e., averaged the performance of two social-class-matched individuals in the *working individually* condition). Again, when describing performance results below, we will refer to participants in the *working together* condition as dyads, and participants in the *working individually* condition as yoked participants. We also included the same control variables as in Study 2 in all of our analyses (i.e., how seriously participants took the task, and self-rated familiarity with the task).

Effective Group Processes. To explore the hypothesis that groups from working-class (vs. middle-class) contexts would more frequently engage in effective group processes, we coded the behaviors that the dyads engaged in while working together. Drawing on the literature on effective group processes, we developed a coding scheme that would capture a range of

behaviors that should produce better team performance on the Lost at Sea task (Hildreth &

Anderson, 2016; Thompson & Thompson, 2008; Engel et al., 2014). Two research assistants

unaware of the study's hypotheses were trained to code the behaviors of dyads in the *working*

together condition ($N = 69$ videos).

These coders coded for a number of behaviors that comprised effective group processes.

They coded the total number of turns taken: the sum of the number of times each dyad member

contributed to the task discussion (Engel et al., 2014). They also coded the following behaviors

on a scale from 1 = *Strongly Disagree,* 7 = *Strongly Agree* (all adapted from Hildreth &

Anderson, 2016): (1) information sharing ("The dyad shared all of their information with each

other"), (2) task focus ("Overall, how focused was the dyad on accomplishing the task, and how

much did members appear to be engaged and attentive to the task itself?"), (3) integrativeness

("Overall, how much did group members build upon each other's ideas, and how much did group

members integrate different members' ideas into a common solution?"), and (4) positive

responsiveness ("How much positive reinforcement was given from one member to another, and

how much did group members accept, affirm, and complement each other's ideas?").

They also coded the following behaviors on a scale from 1 = *Very Slightly/None at all,* 5

= *Very Much* (all adapted from Thompson & Thompson, 2003): (1) elaboration ("To what extent

do group members give additional information such as examples, rephrasing, and

implications?"), (2) opinion seeking ("To what extent do group members clarify each other's

attitudes, values, and feelings?"), and (3) coordination ("To what extent do group members pull

together each other's ideas and suggestions?"). After 20% of the videos had been rated, we

calculated the reliability of the two coders' ratings for each measure, and found that interrater

reliability was high on average (Mean r = .74). Coders then discussed and resolved any

disagreements, and then separately coded the remaining set of interactions.

Results

   Performance. Mirroring the results of Study 3, we obtained a significant task condition

(*working individually* vs. *together*) × social class (working-class vs. middle-class) interaction on

task performance, $F(1, 273) = 4.29$, $p = .039$, $\eta^2 = .015$. Decomposing the interaction, we first

compared performance within social class groups. Supporting Hypothesis 1, among participants

from working-class contexts, dyads in the *working together* task condition performed

significantly better ($M = 53.79$, $SE = 1.42$) than yoked participants in the *working individually*

task condition ($M = 65.50$, $SE = 1.48$), $F(1, 273) = 32.09$, $p < .001$, $\eta^2 = .11$. Among participants

from middle-class contexts, dyads in the *working together* condition also performed significantly

better ($M = 60.83$, $SE = 1.57$) than yoked participants in the *working individually* condition ($M =$

66.31, $SE = 1.54$). This difference was not predicted for participants from middle-class contexts.

Yet, the results were still generally consistent with our theorizing because the magnitude of this

performance difference among working-class participants was greater than the difference among

participants from middle-class contexts, $F(1, 273) = 6.15$, $p = .01$, $\eta^2 = .02$.

   Next, we compared performance across task conditions. In the *working individually* task

condition, yoked participants from working-class contexts ($M = 65.50$, $SE = 1.48$) performed just

as well as yoked participants from middle-class contexts ($M = 66.31$, $SE = 1.54$), $F(1, 273) =$

0.15, $p = .70$, $\eta^2 = .001$ (see Figure 5). Importantly, and perhaps surprisingly, in the *working*

together task condition, dyads from working-class contexts performed significantly better ($M =$

53.79, $SE = 1.42$) than dyads from middle-class contexts ($M = 60.83$, $SE = 1.57$), $F(1, 273) =$
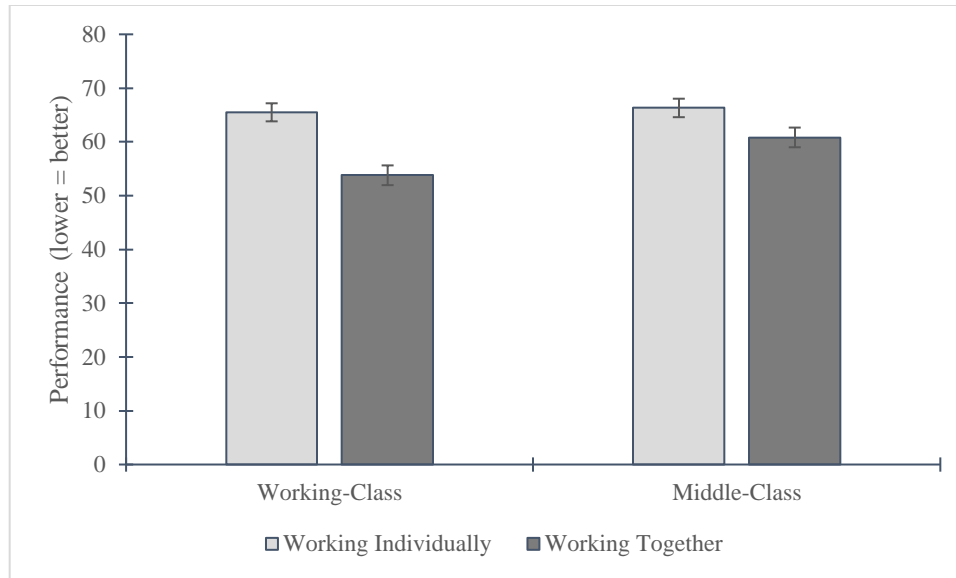
11.14, $p = .001$, $\eta^2 = .039$.

Figure 5. *Mean task performance by social class and task condition in Study 4 (Error bars represent ± 1 SE).*

Subjective experience with task. Similar to the performance results, we obtained a significant task condition (*working individually* vs. *together*) × social class (working-class vs. middle-class) interaction on subjective experience with task, $F(1, 273) = 5.82, p = .017, \eta^2 = .021$. Decomposing the interaction, we first compared subjective experience with the task within social class groups. Among individuals from working-class contexts, those in the *working together* task condition reported a significantly better experience with the task ($M = 0.16, SE = 0.08$) compared to those in the *working individually* task condition ($M = -0.11, SE = 0.08$), $F(1, 273) = 5.99, p = .015, \eta^2 = .021$. In contrast, among individuals from middle-class contexts, those in the *working together* task condition did not differ in their experience with the task ($M = -0.03, SE = 0.08$) compared to those in the *working individually* task condition ($M = 0.09, SE = 0.08$), $F(1, 273) = 0.98, p = .32, \eta^2 = .004$.

Next, we compared subjective experience across task conditions. In the *working individually* task condition, individuals from working-class contexts reported a marginally worse experience with the task ($M = -0.11, SE = 0.08$) than individuals from middle-class contexts ($M =$

0.09, $SE = 0.08$), $F(1, 273) = 3.08$, $p = .08$, $\eta^2 = .011$. In contrast, in the *working together* task

condition, individuals from working-class contexts reported a marginally better experience with

the task ($M = 0.16$, $SE = 0.08$) than individuals from middle-class contexts ($M = -0.03$, $SE =$
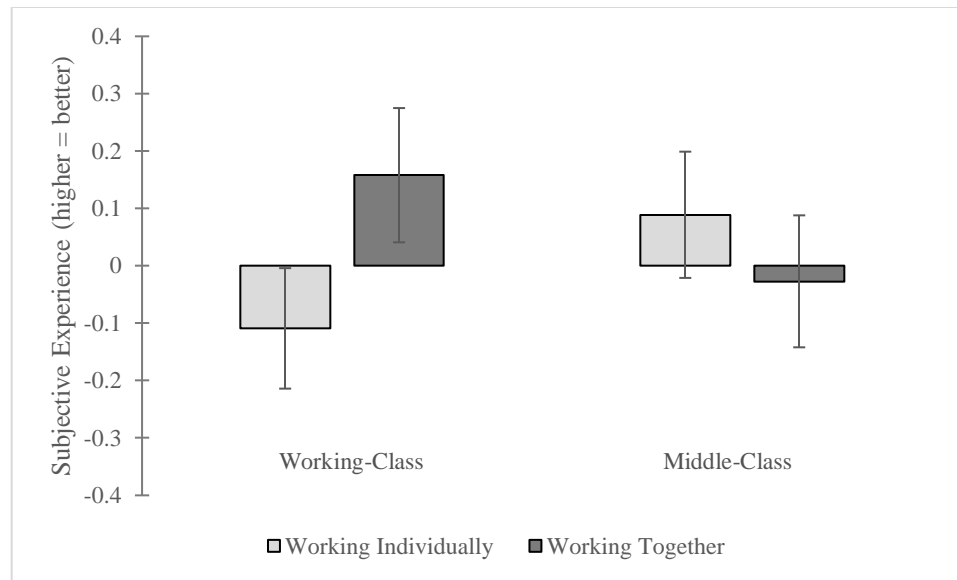
0.08), $F(1, 273) = 2.75$, $p = .10$, $\eta^2 = .01$.

Figure 6. *Mean standardized subjective experience by social class and task condition in Study 4 (Error bars represent ± 1 SE).*

Effective group processes. We next analyzed our coding results to determine whether

there were social class differences in dyads' behaviors when they were *working together*.

Supporting Hypothesis 2b, when working together on the task, dyads from working-class

contexts took significantly more turns per minute than dyads from middle-class contexts, $b =$

1.56, $t(64) = 2.44$, $p = .02$. In contrast, dyads from working-class contexts did not differ from

dyads from middle-class contexts in the other effective group processes that we captured in our

coding process: coordination, elaboration, information sharing, integrativeness, opinion seeking,

positive responsiveness, or task focus, p's > .12.

Mediation analyses. Given that dyads from working-class (vs. middle-class) contexts

took significantly more turns per minute, we explored whether turn-taking might help to

statistically explain why working-class (vs. middle-class) dyads performed better in the *working together* condition. To do so, we entered social class as our predictor, performance as our outcome, and turn-taking as our putative mediator. Mediation analyses indicated that turn-taking mediated the observed relationship between social class and performance. Specifically, the analysis yielded a point estimate of -3.27 and a 95% bias-corrected CI of [-7.46, -0.77]. This interval did not include zero, suggesting that the indirect effect of social class on performance through turn-taking was significant. This suggests that dyads from working-class (vs. middle-class) contexts took more turns while working together on the task, which helped to improve their task performance (see Figure 7).

We also explored whether turn-taking might help to statistically explain why working-class (vs. middle-class) dyads had a better dyadic subjective experience in the *working together* condition.[14] To do so, we entered social class as our predictor, subjective experience as our outcome, and turn-taking as our putative mediator. Mediation analyses indicated that turn-taking mediated the observed relationship between social class and subjective experience. Specifically, the analysis yielded a point estimate of 0.09 and a 95% bias-corrected CI of [0.002, 0.292]. This interval did not include zero, suggesting that there was an indirect effect of social class on subjective experience through turn-taking. This suggests that dyads from working-class (vs. middle-class) contexts took more turns while working together on the task, which helped to improve their subjective experience.

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[14] Because turn-taking was measured at the dyadic level of analysis, in this case, we conducted our mediation analysis of subjective experience at the dyadic level, rather than the individual level.
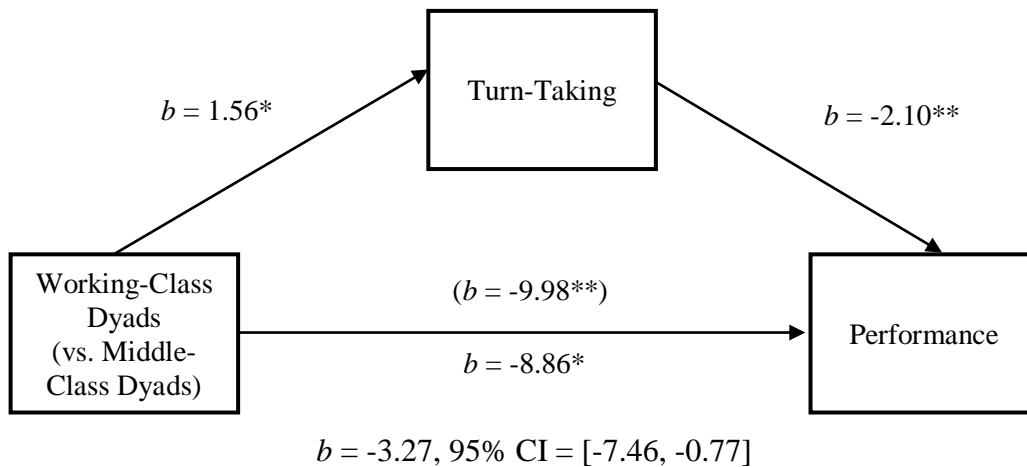
Figure 7. *Mediation model showing the effect of social class on task performance in the working together condition, as mediated by turn-taking frequency in Study 4.* $*$ $p < .05$, $**$ $p < .01$.

Discussion

Study 4 replicated and extended the results from Study 3 to a new sample of college student participants interacting face-to-face in the lab. In particular, we replicated the finding from Study 3 that assessing achievement as people *work together* (vs. *working individually*) improved the performance of people from working-class contexts, but not people from middle-class contexts. Notably, *working together* not only benefitted people from working-class contexts compared to working individually, but also led working-class groups to *perform better* than groups of their relatively advantaged middle-class counterparts. This finding suggests that working together may actually confer a performance advantage to people from working-class contexts. Compared to Study 3, this study also provided clear evidence that working together (vs. individually) improved the sense of fit of people from working-class contexts.[15]

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[15] We tested the robustness of our observed effects across the two experiments by conducting an internal meta-analysis of Studies 3-4. The key simple effects were significant across our two key dependent measures: working together (vs. individually) significantly improved the fit and performance of people from working-class contexts (see supplemental materials for full results).

Furthermore, we provided a mediational test of our hypothesized behavioral mechanism: that one reason why groups from working-class contexts perform better and feel more fit is because they more frequently engage in effective group processes when *working together*. By coding a wide range of the fine-grained behaviors that the dyads exhibited when they were working together, we were able to identify the specific types of group processes that differed between working-class and middle-class groups. Specifically, while they did not significantly differ in some group processes, such as integrativeness or information sharing, we found that dyads from working-class (vs. middle-class) contexts took more turns while working on the task. We also found that turn-taking helped to explain their improved fit and performance. Overall, these findings support our theorizing that dyads from working-class contexts more frequently engage in effective group processes, and that the frequency of doing so serves as one pathway to improve their experience and performance.

General Discussion

Challenging the idea that people from working-class contexts have fewer skills linked to academic success than their middle-class counterparts (e.g., lower intelligence, worse problem-solving skills), this research shows that how achievement is assessed contributes to social class differences in fit and performance. Four studies using a diverse range of methods provide robust and largely consistent support for our hypotheses. First, we find that working together (vs. individually) improves the fit and performance of people from working-class contexts, but not people from middle-class contexts. Second, we find evidence that the tendency to engage in effective group processes is one behavioral mechanism that helps to explain when and why working together will benefit people from working-class contexts. In Study 4, we also find evidence that working together may even confer a performance advantage to working-class

groups compared to groups of their relatively advantaged middle-class counterparts. Taken together, these results suggest that assessing achievement in a way that is congruent with interdependent models of self can help to more fully realize the potential of people from working-class contexts.

Theoretical Contributions

The current research has important theoretical implications that contribute to the literature on cultural mismatch theory, social class differences, the social class achievement gap, and the role of diversity in group performance. First, we provide evidence of a novel practice that can foster a cultural mismatch vs. match: how achievement is assessed. Previous research supporting cultural mismatch theory has demonstrated that how the college culture is framed can be an important source of a cultural match (i.e., improved fit and performance). Here, we find the first evidence to suggest that working together can also create a cultural match for people from working-class contexts, improving their fit and performance. Rather than suggesting that working together is a panacea for people from working-class contexts, we present a more nuanced picture by delineating *when* and *why* working together will benefit people from working-class contexts. We find that working together is only beneficial to the extent that people are working on tasks where they are required to work together to perform well (e.g., in basketball teams, not cross-country running teams). In these situations, people must also frequently engage in effective group processes (e.g., turn-taking) in order to realize the benefits of working together.

Second, we contribute to the literature on social class differences in psychological tendencies and behavior. Previous work shows that people from working-class contexts are more socially attuned to others (Bjornsdottir & Rule, 2017; Dietze & Knowles 2016; Kraus & Keltner,

2009), better integrate different perspectives in interpersonal situations (Brienza & Grossmann, 2017), and display greater compassion (Stellar, Manzo, Kraus, & Keltner, 2012) than people from middle-class contexts. This previous research hints at the possibility that people from working-class contexts may be more skilled at working together. However, the studies presented here are the first to provide direct evidence that this is the case.

Third, this research provides new insight into the cultural sources of the social class achievement gap. Rather than focusing on how people from working-class contexts lack skills and abilities, relative to people from middle-class contexts (Bradley & Corwyn, 2002; DeGarmo, Forgatch, & Martinez, 1999; Gottfredson, 2004), the current work suggests that institutions often fail to recognize that people from working-class contexts actually have a different set of skills that are not typically captured by individual measures of achievement. Although educators and policymakers often advocate for standardized individual assessments as "objective" (Alvarez, 2001), the current research suggests that these standardized assessments may disadvantage people from working-class contexts. Our research suggests that if achievement were instead assessed in a way that reflects the interdependent models of self that are common in working-class contexts, people from working-class contexts may have the upper hand.

Finally, we contribute to the literature on the diversity in group and team performance. Previous research has investigated how group performance is affected by different forms of compositional diversity, including: racial/ethnic, gender, and skills-based diversity (e.g., Joshi, 2014; Paletz, Peng, Erez, & Maslach, 2004; Van der Vegt & Bunderson, 2005). Our research suggests that the social class composition of groups and teams is another important, yet underexamined, form of diversity. Moreover, our studies suggest the potential benefits of including multiple people from working-class contexts in a group: when groups have a higher

number of people from working-class contexts, they more often engage in effective group processes, and ultimately perform better.

Working Together as a Route to Reducing Inequality

The current findings have important implications for interventions aimed at reducing social class inequality. To level the playing field, institutions in independent cultural contexts could include more assessments of people as they work together (e.g., in grades, performance reviews, or promotion decisions). One way to do this could be to first measure the collective achievement of groups and then assign the same achievement scores to the individuals who worked together, as Toyota does with its employee bonuses. Organizations could also change their performance evaluation metrics to increase the value placed on their employees' ability to work effectively with others. Placing more value on the ability to effectively work together may enable students and employees from working-class backgrounds to feel a greater sense of fit and have a greater chance to reach their full potential in these institutions.

Our results also suggest that the benefits of working together are most likely to emerge in groups that engage in effective group processes. Practically, this finding indicates that simply changing how organizations assess achievement (e.g., including working together) is not a panacea. They also should consider whether all individuals in a group are equipped with the skills to engage in effective group processes. Institutions might consider training people from diverse social class contexts (i.e., people from middle-class contexts who have more independent models of self) to better understand and appreciate how to enact behaviors that constitute effective group processes (e.g., taking turns, coordinating with others, etc.). Doing so might help ensure that working together benefits all members of a group.

Limitations and Future Directions

For the first time, this research provides evidence that working together (vs. individually) improves the fit and performance of people from working-class, but not middle-class, contexts. Nevertheless, this research leaves open several promising avenues for future research. First, to reveal that the benefits of working together are specific to people from working-class contexts, we focused our theorizing on people from working-class contexts, and used people from middle-class contexts as a reference group. However, some evidence from previous research suggests that working individually (vs. together) might create more of a cultural match and therefore benefit people from middle-class contexts. For example, people from middle-class contexts more often engage in the types of independent behaviors that are necessary to work individually (Côté, 2011; Dubois, Rucker, & Galinsky, 2015; Piff, Kraus, Côté, Cheng, & Keltner, 2010). Although our results provided some support for the idea that working individually (vs. together) would benefit people from middle-class contexts, the results were inconsistent and overall suggested that how achievement was assessed had less of an impact on middle-class participants' experience and performance. One possible explanation is that people from middle-class contexts are generally better represented in gateway institutions (Redford & Hoyer, 2017; Rivera, 2016), and tend to feel more at ease in these institutions (Johnson, Richeson, & Finkel, 2011; Ostrove & Long, 2007) than do people from working-class contexts. Thus, encountering a single measure of achievement that does not match with their independent models of self, as was the case in the experiments, might have less of an impact on their experience and performance (see Stephens, Fryberg et al., 2012 for similar results and theorizing). Future research should investigate the conditions under which working individually (vs. together) might more systematically benefit or disadvantage people from middle-class contexts.

Second, in these studies our primary goal was to better understand how working together vs. individually could impact people from working-class contexts. Future work should consider how these effects might differ based on other intersectional identities, such as race or ethnicity. Importantly, in three of our studies, we included participants from a diverse range of racial or ethnic backgrounds, used race as a covariate, and found that doing so did not alter the general pattern of our results. However, in Study 4, a face-to-face lab experiment, we did find that dyads comprised of two URM members, regardless of their social class, performed less well and experienced greater stress, consistent with work on stereotype threat (Croizet & Claire, 1998; Steele, 1988). We only observed this type of effect in the in-person lab study when two URM members were working on a performance task; this suggests that when negative stereotypes about race and performance are particularly salient, it may dampen the benefits of working together. We were not able to directly test this in our studies. In Studies 1 and 3-4, we were not adequately powered to test interactions with race. In Study 2, while we did have adequate power, we had already saturated our regression model with a three-way interaction. Future research should investigate the role of race and other intersectional identities (e.g., gender) to better understand whether and how these identities interact with social class to shape people's experiences with different ways of measuring achievement.

Finally, across the studies presented here, we examined both *when* and *why* working together benefits people from working-class contexts and tested our effects across various measures of achievement (i.e., academic course performance, sports performance, and a problem-solving task). Future research could extend our results to different types of tasks that require different group processes to be effective. Doing so would illuminate whether people from working-class contexts also engage in other effective group processes – beyond turn-taking –

that might boost performance. Similarly, future work could also investigate whether first training middle-class groups to work together effectively might lead these groups to perform just as well as working-class groups. This would provide further evidence that the benefits of working together hinge on engaging in effective group processes.

Conclusion

Research on social class inequality in the U.S. has documented that people from working-class contexts have fewer skills linked to academic success than their middle-class counterparts. However, this research tends to assess people as they work individually, which does not match the interdependent models of self that are prevalent in working-class U.S. contexts. In this research, we show that how we assess achievement is not class-neutral. In fact, assessing people's achievement as they work together better matches with the interdependent models of self of people from working-class contexts, and leads them to feel greater fit and perform better. Our findings suggest that assessing achievement as people work together may be one effective way to more fully realize the potential of people from working-class contexts.

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