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Determining Our Destiny: Do Restrictions to Collective Autonomy Fuel Collective Action?

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Groups experience collective autonomy restriction whenever they perceive that other groups attempt to limit the freedom of their group to determine and express its own identity. We argue that collective autonomy restriction motivates groups (both structurally advantaged and disadvantaged) to improve their power position within the social hierarchy. Four studies spanning real-world (Studies 1 and 2) and lab-based (Studies 3 and 4) intergroup contexts supported these ideas. In Study 1 (N = 311), Black Americans' (a relatively disadvantaged group) experience of collective autonomy restriction was associated with greater support for collective action, and less system justification. In Study 2, we replicated these findings with another sample of Black Americans (N = 292). We also found that collective autonomy restriction was positively associated with White Americans' (a relatively advantaged group, N = 294) support for collective action and ideologies that bolster White's dominant position. In Study 3 (N = 387, 97 groups), groups that were susceptible to being controlled by a high-power group (i.e., were of low structural power) desired group power more when their collective autonomy was restricted (vs. supported). In Study 4 (N = 803, 257 groups) experiencing collective autonomy restriction (vs. support) increased low-power group members' support of collective action, decreased system justification, and evoked hostile emotions, both when groups were and were not materially exploited (by being tasked with more than their fair share of work). Across studies, we differentiate collective autonomy restriction from structural group power, other forms of injustice, group agency, and group identification. These findings indicate that collective autonomy restriction uniquely motivates collective behavior.

Keywords: collective action, collective autonomy, group power, social hierarchy

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Central to the very existence of a social group is its sociocultural identity—the collection of beliefs, values, and practices that provide group members with a shared understanding of "who we are" (Wohl, Branscombe, & Reysen, 2010). Indeed, it is in part from our sociocultural identities that we articulate our own personal identities—the goals, values, and beliefs that provide us with a sense of clarity, coherence, and meaning in our lives (Hogg, 2000; Oyserman, 2007; Tajfel & Turner, 1979; Taylor, 2002). An important part of having a meaningful sociocultural identity is being able to collectively define and express it. But as groups increasingly rub shoulders—and sometimes bump heads—within heterogeneous and interconnected intergroup landscapes, some groups

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find themselves constrained in defining and expressing their own authentic culture. Groups may experience *collective autonomy restriction*—a feeling that other groups seek to control and restrict how their own ingroup articulates and expresses its sociocultural identity. How might groups respond to feeling that other groups restrict their collective autonomy? Here, we consider the unique mobilizing consequences of experiencing collective autonomy restriction on the drive for power, arguing that it spurs collective action and hierarchy contestation among disadvantaged and advantaged groups.

The experience of collective autonomy restriction is central to the narratives of disadvantaged groups and their collective struggles to improve their position within the social hierarchy. Indigenous peoples across the globe have stood in solidarity against a legacy of colonialism and slavery which they felt stripped away their freedom to express their culture, self-govern, and speak their own language (Taylor & de la Sablonnière, 2014). Black Americans (Black Panther Party, 1966) and Palestinians (Al Ghussain, 2016; Said, 1994) have also fought for power, and framed their struggles expressly as efforts to regain their collective autonomy. And ethnic minority groups living within a number of societies regularly fight for the freedom to express their cultural identity openly in society: For example, Muslim women in France have contested regulations against their freedom to wear full face coverings—a religious practice that is core to their identity (Adrian, 2015).

The sense that one's collective autonomy is being constrained is not, however, limited to the disempowered. Groups that have historically enjoyed advantaged positions atop the social hierarchy may also perceive that restrictions have been placed on their collective autonomy, often resulting in a backlash against outside influences and a push to stem changing social currents in favor of the traditional structure. The rhetoric of political campaigns such as Donald Trump's "Make America Great Again" campaign, Brexit's "Leave" campaign, and populist movements in France, The Netherlands, and Germany, all suggest a growing concern among some groups (e.g., Whites, Christians) that (what they see as) a hypersensitivity to the well-being of disadvantaged minorities has taken precedence over their own ability to practice their culture (e.g., traditions such as "Merry Christmas" greetings; Cooper, 2016; Illing, 2017; Magistad, 2016; Nossiter, 2015). Similar sentiments have also been expressed by more extreme groups, including White supremacists such as Jared Taylor who stated: "White people just want to be left alone to let their own destiny unfold in a way that is unhindered by the embrace of people unlike themselves who arrive in large numbers to change their culture" (cf., Cooper, 2016).

Why is collective autonomy restriction experienced by so many different groups across the social hierarchy, especially among the disadvantaged but also among the advantaged? The pervasiveness of collective autonomy restriction is in part attributable to the multitude of distinct motives that might lead groups to restrict the collective autonomy of other groups. Groups might restrict the autonomy of other groups to dominate. That is, groups might restrict others' cultural practices to exploit or impose their will on those groups (Sidanius & Pratto, 1999; Sidanius, Cotterill, Sheehy-Skeffington, Kteily, & Carvacho, 2016). For example, in addition to materially exploiting African peoples, slave owners in the United States actively tried to prevent African peoples from expressing their own culture as a means of subjugation and control (Karenga, 1984; Spring, 2016). On the territory under its control, Islamic State of Iraq and Syria (ISIS) has restricted other religious practices and even different interpretations of Islam in part to have its own interpretation of Islam predominate (Wood, 2015). Sometimes, groups' motives for restricting collective autonomy may be less overtly domineering and more paternalistic, even if experienced as no less constraining or patronizing by those on the receiving end. When groups perceive the outgroup's culture to be less advanced and "civilized" relative to the ingroup's own, they may seek to restrict the outgroup's culture for that group's "own good" (Bruneau, Szekeres, Kteily, Tropp, & Kende, 2019). For example, the dominant white majorities in the United States and Canada have, respectively, restricted the use of Ebonics by the African American community (Nichelle, 2018) and Indigenous languages by Aboriginal Canadians (Taylor & de la Sablonnière, 2014) on the basis of their perceived inferiority to English (and the stated belief that it would be better for those groups' own prospects to adopt the majority language).

Groups may also restrict the cultural practices of other groups when they perceive these practices as harming other individuals or groups (Kymlicka, 1995; Taylor, 1994; Walzer, 1983). This perceived harm can come in a number of forms. For example, cultural practices may be perceived as harmful when they are thought to pose a security risk to others in society. Some French citizens have justified restrictions banning Muslim women from wearing full-face coverings on the basis that they might compromise French security screenings (Adrian, 2015). Cultural practices may also be perceived as harmful (and thereby restricted) when they are considered to reflect or advance intolerance or prejudice toward other groups. In The Netherlands, there has been opposition to the tradition of Zwarte Piet, which involves White Dutch citizens wearing blackface as part of a Christmas celebration—a practice that some consider offensive to Blacks (Little, 2018). Similar debates in the United States have brought pressure to remove Confederate statues from public space on account of the perceived offense to African Americans (Sellers, 2018). Finally, cultural practices may also be restricted when they are seen as harmful because they infringe on basic rights of individuals (e.g., the right to not endure physical abuse; the right to free speech). For example, there has been controversy in Germany over the practice of nonmedical Jewish male circumcision because of concerns over the harm experienced by Jewish children (Munzer, 2015).[1]

Despite the pervasive potential for collective autonomy restriction, the psychological impact and consequences of experiencing collective autonomy restriction remain vastly understudied by scholars of intergroup relations. This is particularly surprising given how clearly research in interpersonal contexts has highlighted the impact of *personal* autonomy on individual psychological outcomes. More than 30 years of research in the self-determination theory tradition has provided robust cross-cultural evidence that individuals experience reduced psychological well-

[1] Of course, these motives can also operate in synchrony to drive collective autonomy restriction. For example, European colonizers and religious missionaries sought to Westernize rich and diverse cultures of Indigenous peoples likely for both paternalistic reasons (i.e., wanting to civilize who they perceived to be noble savages; Jahoda, 1999) and because they wanted their Western culture to become the dominant world culture.

being when they feel that their personal autonomy to volitionally define and express their own individual identity has been stifled (see Ryan & Deci, 2017, for review). For example, the extent to which people feel volitional in determining their behavior at work (Deci, Olafsen, & Ryan, 2017), at school (Reeve & Lee, 2014), and in the doctor's office (Ng et al., 2012) have all been linked to psychological well-being.

Only two papers have examined the effects of autonomy restriction at the intergroup level, and here too, its substantial psychological toll is clear. Kachanoff and colleagues (2019) proposed that because individuals personally derive their values, goals, and ways of behaving in part from their social groups, individuals who feel that the (*collective*) autonomy of their social group has been stifled will themselves feel a restricted sense of personal autonomy, in turn reducing personal psychological well-being. Supporting this hypothesis, these authors found cross-sectional, longitudinal, experimental, and cross-cultural evidence that collective autonomy restriction is robustly associated with feeling reduced personal autonomy, which mediated collective autonomy's deleterious effects on individual psychological well-being. Similarly, Parker and colleagues (2019) showed among large samples in the United States and Australia that the frustration of collective autonomy needs at the group level has detrimental consequences for individuals' personal autonomy and psychological well-being.

Although past research has shed some light on the important negative implications of collective autonomy for individuals' psychological well-being, little is known about how groups collectively respond within an intergroup context when their collective autonomy is challenged. Here, we propose that compared with group members who experience collective autonomy, group members who perceive that their collective autonomy is restricted will become motivated to seek out greater structural power for their group within the social hierarchy—a valuable resource distinct from but useful for protecting or restoring their collective autonomy. In particular, we test whether experiencing collective autonomy restriction leads group members to support collective action initiatives on behalf of their ingroup and endorse hierarchy-relevant ideologies and beliefs consistent with bolstering the ingroup's structural standing (i.e., hierarchy-attenuating ideologies and beliefs among disadvantaged groups; hierarchy-enhancing ideologies and beliefs among advantaged groups).

Collective Autonomy as Distinct From Group Power

Central to our theorizing is the idea that structural power is useful for collective autonomy, but nevertheless distinct from it. Structural power involves occupying a position that can help a group (or individual) to resist the influence of other groups (individuals) who could potentially seek to control them (Cislak, Cichocka, Wojcik, & Frankowska, 2018; Keltner, Gruenfeld, & Anderson, 2003; Lammers, Stoker, Rink, & Galinsky, 2016; Pratto, 2016; Pratto, Pearson, Lee, & Saguy, 2008).[2] On the other hand, autonomy involves a group (or individual) feeling volitional in choosing how to define and express its own identity without feeling that other groups (or individuals) seek to unduly control them (Kachanoff et al., 2019; Ryan & Deci, 2017).

Self-determination theory has differentiated autonomy and power as related but distinct constructs at the interpersonal level by showing that both structurally high- and low-power individuals can vary greatly in the extent to which they feel autonomous (Deci & Ryan, 1985, 1987; Ryan & Connell, 1989). In interpersonal contexts, low-power individuals (e.g., patients, children, students, employees) feel little autonomy when high-power individuals (e.g., doctors, parents, teachers, bosses) seek to control them with the use of external rewards and pressures (Niemiec et al., 2006; Reeve & Jang, 2006; Williams et al., 2006). Importantly however, this research also shows that—despite their structural position—low-power individuals feel relatively *autonomous* when high-power individuals support their personal autonomy by conveying well-meaning direction, while at the same time actively supporting the personal choices of the low-power individual. On the other hand, individuals in a high-power position can also feel that their autonomy is restricted by less powerful counterparts: For example, teachers may feel pressured and controlled by their students, and respond in turn by being more controlling in their teaching style (Pelletier, Séguin-Lévesque, & Legault, 2002; Reeve, 2009).

We argue that these same distinctions between autonomy and power can be made at the intergroup level. By virtue of their relative dependence, disadvantaged groups that lack power may be more at the mercy of high-power groups when it comes to ensuring their collective autonomy is respected; that is, powerful groups can choose whether or not to allow low-power groups the freedom to determine and practice their own culture. As noted earlier, there is a long legacy of the Canadian government seeking to suppress Aboriginal culture through a state-sanctioned "residential" schooling system that sought to "kill the Indian in the child" (Taylor, 2002). However, disempowered groups can also sometimes feel that their autonomy is supported—that other groups protect their group's freedom to express its own culture—despite their disadvantaged position. Indeed, in stark contrast to the mandates of the past residential schooling system in Canada, National Aboriginal People's Day in present-day Canada involves a yearly celebration of Aboriginal people being free to define and express their culture. Further highlighting the theoretical distinction between power and autonomy, this increase in collective autonomy experienced by Aboriginal people has not come with a concomitant increase in their structural position in society; indeed, despite presently enjoying more collective autonomy, their continued low-power position leaves them vulnerable to any future policy decisions by more powerful groups that restrict their ability to freely define and express their culture (Taylor, 2002; Taylor & de la Sablonnière, 2014).

Advantaged groups high in power tend to have greater levels of independence relative to low-power groups, and as a result should be relatively freer to behave according to their chosen norms and practices (i.e., enjoy collective autonomy). And yet, despite their structural position atop the social hierarchy, high-power group members may still feel that other groups seek to control how their group expresses its culture. For example, President Donald Trump has publicly lamented that White Christians in the United States—a relatively high-power group—are no longer free to wish each other "Merry Christmas" in light of debates about the need to avoid alienating non-Christian minorities (Boorstein & Pulliam Bailey, 2017).

[2] We note that another aspect of power involves the capacity of a group (or individual) to influence and control others (Lammers et al., 2016).

The Utility of Power for Collective Autonomy

Although structural group power is theoretically distinct from collective autonomy and does not *guarantee* it, we argue that those who experience collective autonomy restriction will still strive for greater structural power because having power provides resources useful for securing autonomy. The more power a group attains, the more resistant it is, on average, to the influence of others, including any attempts by others to restrict its collective autonomy. For low-power groups who feel chronically controlled by other groups, it is clear that attaining more power and reducing other groups' capacity to affect their outcomes would reduce their susceptibility to collective autonomy restriction. But even for relatively powerful groups, attaining more power could help to stymie any efforts to restrict the ingroup's collective autonomy. For example, having more power can involve a greater ability to set the agenda for public discourse, including enhanced control over media outlets that shape the narrative about what cultural practices are acceptable and desirable. More power can also provide the opportunity to shape policy in ways that promote collective autonomy for the high-power group. For example, to the extent that a group such as Christians in the United States are able to position more committed members of their group into positions of authority (e.g., Congress, the Supreme Court), they will be better placed to push policies that entrench and protect their group's ability to freely express their cultural practices (e.g., retaining "Merry Christmas" as a culturally accepted yuletide greeting). Thus, at the group level, advantaged and disadvantaged groups who feel they lack (vs. enjoy) collective autonomy should desire greater power as a means of restoring their collective autonomy.[3]

Collective Autonomy Restriction Evokes Power-Enhancing Behaviors and Beliefs

How can advantaged and disadvantaged groups who experience collective autonomy restriction improve or bolster their power position within the social hierarchy? Drawing on social dominance theory (Sidanius & Pratto, 1999; Sidanius et al., 2016), we distinguish between behaviors and beliefs which help to maintain or enhance existing social hierarchy (thereby consistent with gaining structural power for advantaged groups at the top) versus those that challenge it (thereby consistent with gaining structural power for disadvantaged groups at the bottom). Collective action on behalf of the ingroup in the face of autonomy restriction is one way to seek group power. Collective action initiatives on behalf of a disadvantaged group—such as the Black Lives Matter movement, for example—can attenuate social hierarchy when enacted as a means of raising its standing within the hierarchy. In contrast, collective action initiatives on the part of the advantaged group can help *maintain* the social hierarchy (as the White Lives Matter and Blue Lives Matter countermovements illustrate). Beyond collective action, group members seeking power on behalf of their group may also vary in the extent to which they support versus oppose beliefs which legitimize, maintain, or enhance the hierarchical status quo. For example, advantaged groups seeking to consolidate power might be especially likely to endorse ideologies such as the Protestant Work Ethic—which reinforces the legitimacy of the status quo by suggesting that differences in outcomes are legitimately driven by differences in effort (Sidanius et al., 2016; Kay & Jost, 2003)—whereas disadvantaged groups seeking power might be especially apt to oppose them. The same is true for these groups' willingness to psychologically justify versus challenge the existing (hierarchical) social system (Osborne, Jost, Becker, Badaan, & Sibley, 2018; Vargas-Salfate, Paez, Liu, Pratto, & Gil de Zuniga, 2018).

In the current research we examined whether disadvantaged groups who experience collective autonomy restriction (vs. enjoy collective autonomy) would show greater support for collective action initiatives on behalf of their ingroup and greater opposition to the hierarchical social system as reflected in lower system justification and more opposition to system-legitimizing ideologies such as the Protestant Work Ethic. We focused on disadvantaged groups primarily given that by virtue of their greater relative dependence on others, disadvantaged (i.e., low-power) groups are most at-risk of experiencing collective autonomy restriction.

Still, even though their advantaged position tends to help protect their ability to express their culture freely, we propose that advantaged (high-power) group members can also sometimes experience collective autonomy restriction, highlighting the important theoretical distinction we draw between the experience of having structural power and enjoying collective autonomy. Thus, we also considered whether advantaged groups experiencing collective autonomy restriction would support collective action initiatives on behalf of their ingroup and show greater support for the hierarchical social system as reflected in higher system justification and more support for system-legitimizing ideologies such as Protestant Work Ethic.

Collective Autonomy Restriction as Unique Motivator for Group Power

The viability of our predictions is contingent on whether we can theoretically distinguish collective autonomy restriction from other factors previously associated with group members' motivations to engage in actions to improve the standing of the ingroup. Contemporary models of collective action such as the Social Identity Model of Collective Action (SIMCA; Van Zomeren, Postmes, & Spears, 2008) and dual process models (e.g., Van Zomeren, Leach, & Spears, 2012; Van Zomeren, Spears, Fischer, & Leach, 2004) propose that group members engage in collective action on behalf of their group when they perceive that injustices have been committed against their ingroup (Grant & Brown, 1995; Mackie & Smith, 2002; Smith & Ortiz, 2002; Van Zomeren et al., 2004; see Van Zomeren et al., 2008, for review). For example, group members are more likely to engage in collective action when they feel exploited in terms of being deprived relatively equal access to scarce resources, when they feel discriminated against as a group, and/or feel that their position in society is illegitimate (e.g., Crosby, 1976; Mummendey, Kessler, Klink, & Mielke, 1999; Tajfel & Turner, 1979; Walker & Smith, 2002).

Thus, we address the important question of whether collective autonomy restriction uniquely motivates groups to improve the position of their ingroup both when group members do and don't

[3] This idea is consistent with and extends research at the interpersonal level showing that individuals have a greater desire for personal power when they feel that they lack rather than enjoy personal autonomy (Lammers, Stoker, Rink, & Galinsky, 2016).

experience other forms of injustice previously considered within contemporary models of collective action (e.g., exploitation in terms of being deprived relatively equal access to scarce resources, general discrimination, or the perceived illegitimacy one's position in society; see Van Zomeren et al., 2008). In other words, even among groups who are harmfully exploited by groups in other ways (e.g., by being denied equal access to important material resources), do group members differ significantly in their support for collective action as a function of whether they feel that their collective autonomy is supported or restricted? If they do, then collective autonomy restriction is distinct from other forms of injustice.

Given the psychological necessity of collective autonomy (Kachanoff et al., 2019; Parker et al., 2019), we propose that—just as with the experiences of injustice, discrimination and resource exploitation emphasized by other theories—group members who experience collective autonomy restriction will support collective efforts to gain power on behalf of the group. We expect collective autonomy restriction to have unique effects from other forms of material injustice or discrimination, because these do not necessarily involve group members losing the freedom to express their culture openly in society—the defining feature of collective autonomy restriction. That is, groups can materially exploit other groups or signal dislike toward them without restricting their ability to articulate and express a distinct cultural identity. For example, working-class individuals in America, despite often being devalued or exploited materially in society, may still feel free to express strong cultural values and norms associated with their working-class identity (e.g., see Fox's (2004) description of country music as an expression of American working-class culture). It is also true that groups might have their collective autonomy restricted without necessarily being intentionally materially exploited. For example, Syrian refugees in Germany have received material support in the form of training and housing even as they have faced certain restrictions on their ability to express their religious and cultural values.

Contemporary models of collective action also specify two important social-identity-related factors which positively contribute to group members' support for collective action. Previous research shows that group members who feel closely connected to and identified with their group (i.e., group identification; Giguère & Lalonde, 2010; Stürmer & Simon, 2004a, 2004b) are more likely to support collective action, and also, are more sensitive to the injustices their group may experience. Moreover, group members who experience high levels of group agency (Shnabel & Nadler, 2015)—who feel strong and efficacious in terms of their group's capacity to achieve its collective action goals (Stürmer & Simon, 2004b; Van Zomeren, et al., 2004)—are also more likely to support collective action.

We argue that experiencing collective autonomy (or a lack thereof) is distinct from an individual's group identification and perception of group agency. For example, while fighting against restrictions placed on their collective autonomy, members of the Black Power Movement emphasized the Black community's capacity to effect change (high group agency), and, the importance of group members personally remaining closely tied to and identified with their fellow group members and Black community (high individual levels of group identification). Importantly, for Black Americans, their perceived ability to successfully challenge the restrictions being placed on their Black Identity (i.e., agency), and the extent to which they internalized their Black identity (i.e., identification), was distinct from (and compatible with) feeling a lack of freedom to express their Black Identity. Given their independence, collective autonomy restriction should uniquely predict collective action when controlling for group agency and group identification.

We also situate the present theorizing within the context of prior research which shows that groups care deeply about and challenge symbolic threats to the "integrity or validity of the ingroup's meaning system" such as their "religion, values, belief system, ideology, philosophy, morality, or world view" (Stephan, Ybarra, & Morrison, 2006, pp. 3–5; see also, Branscombe, Ellemers, Spears, & Doosje, 1999; Nagar & Shamir, 2013; Stephan & Stephan, 2000; Tajfel & Turner, 1979). For example, group members are motivated to ensure that their sociocultural identity is positive and distinct from that of other groups (Brewer, 1991; Scheepers, Spears, Doosje, & Manstead, 2002, 2003; Tajfel & Turner, 1979). Group members also react adversely when they feel that the content of their group's culture (e.g., values, customs) clash with the content of another group's (e.g., Grant & Brown, 1995; Stephan, Ybarra, & Bachman, 1999), a phenomenon shown both within interracial (Stephan et al., 2002) and immigration contexts (Stephan et al., 1999; Stephan & Stephan, 2000). Our own emphasis on the importance of collective autonomy as a motivator of the desire for group power aligns neatly with this research on the importance of symbolic resources for groups, but focuses more specifically on the felt freedom to *define and express* the ingroups' cultural identity (as compared with the need for distinctiveness or the feeling that the content of an ingroup and outgroup's identity are incompatible).

Finally, we also consider whether one route by which experiencing collective autonomy restriction might motivate the desire for group power is by evoking hostile emotions. Previous research based on contemporary models of collective action finds that experiencing injustice against one's group elicits hostile group-based emotions such as anger and contempt. In turn, these hostile emotions galvanize group members to engage in collective efforts to improve and challenge their group's situation (Grant & Brown, 1995; Mackie & Smith, 2002; Smith & Ortiz, 2002; Van Zomeren et al., 2004; see Van Zomeren et al., 2008, for review). Consistent with this past research, we hypothesized and tested whether experiencing hostile emotions mediates the relation between experiencing collective autonomy restriction and group members desiring to improve the ingroup's position within the hierarchy.[4]

Overview of Present Research

We tested our hypotheses across four studies involving real-world intergroup contexts (Studies 1 and 2) and artificial laboratory groups (Studies 3 and 4). Study 1 examined the relation between collective autonomy restriction, collective action motives,

[4] This idea is also consistent with research at the interpersonal level which finds that individuals express outrage when their personal autonomy is undermined and oppose such attempts to control their behavior (i.e., reactance, see Brehm, 1993). Thus, we predict that a similar response of outrage and resistance will occur when group members experience collective autonomy restriction.

and willingness to challenge the status quo among a sample of Black Americans, a historically disadvantaged and structurally disempowered group in the United States. Study 2 sought to replicate Study 1 among another sample of Black Americans, and further tested the experience (and effects) of collective autonomy restriction among White Americans, a historically advantaged and structurally powerful group in the United States. In Study 3, we tested whether groups that were at risk of losing their cultural freedom would desire group power more when their collective autonomy was restricted versus supported by the high-power outgroup. Finally, in Study 4 we tested whether experiencing collective autonomy restriction versus collective autonomy support significantly increased collective action support and system challenge both when group members had equal and unequal (i.e., deprived) access to scarce resources. Study 4 also examined the mediating role of hostile group emotions in linking collective autonomy restriction and collective action. Across the four studies we differentiated collective autonomy restriction from exploitation in terms of being deprived relatively equal access to scare resources, general discrimination, the illegitimacy of one's power position, group agency, and group identification. Data and the analysis script used in the present research are available on the Open Science Framework (OSF): https://osf.io/tkp6w/?view_only=f233d9351691448981082ba683f9d89c.

Study 1

In Study 1, we examined the relation between experiencing collective autonomy restriction and endorsement of hierarchy-attenuating (vs. enhancing) behaviors and beliefs among Black Americans, a relatively disadvantaged group that lacks structural power. Specifically, we assessed Black Americans' general support for collective action, their support of a "Black Power" poster taken from the Black Civil Rights movement of the 1960s, and their tendency to justify their social system (given that system-justification is hierarchy-enhancing, we expected it to be lower among Black Americans who experienced collective autonomy restriction). Importantly, in assessing the role of collective autonomy restrictions, we accounted for two other factors known to predict collective action: group members' perception that their group's position in their social system is legitimate, and group identification (Mummendey et al., 1999; Tajfel & Turner, 1979; Van Zomeren, et al., 2008).

Method

This study was approved by the Northwestern University ethics board, under the project title "Antecedents and Consequences of Legitimizing Ideologies."

Participants. We recruited 412 self-identified African Americans using Instantly's (formerly uSamp) online panel services to participate in a study exploring people's social attitudes. One hundred and one participants failed at least one of three attention checks embedded in the survey and were therefore excluded from our analyses. Our final sample thus consisted of 311 participants[5] (70 males, 239 females, two not specified, M_{age} = 40.29, SD = 16.26; see Supplemental Table 1 for detailed demographic information). Participants responded to an omnibus survey of their sociopolitical attitudes (see online supplemental materials for full survey). We focus our attention here on variables central to our research question.

Materials and procedure. Collective autonomy restriction was assessed with 8 items adapted from Kachanoff and colleagues' (2019) collective autonomy restriction scale. Specifically, participants indicated their agreement with eight statements described as "involving the extent to which Black Americans have been free to determine and practice their own identity and culture." These items were: "Black Americans have been free to determine and practice their own identity and culture," "Other groups have tried to control us," "Other groups have tried to control what we can do," "Other groups have tried to control what we should value and believe," "Other groups have tried to control what customs and practices we should follow," "In general, other groups try to control the extent to which we can act in accordance with our identity," "In general, other groups try to control the extent to which we can follow our customs and practices," "In general, other groups try to control the extent to which we can act in accord with our cultural values" and "Other groups impose aspects of their culture onto our culture." Participants rated their response from 1 (*strongly disagree*) to 7 (*strongly agree*; α = .94). For all scales used in the present research, unless indicated otherwise, we computed a scale mean from all items, and used the mean in our analyses.

Outcomes variables.

Support for collective action. We assessed support for collective action with four items: "In order for Black Americans to achieve political gains, they need to close ranks and redouble their efforts," "Black Americans need to stick together to fight against their place in the present social hierarchy," "Black Americans should work together to ensure progress towards changing their place in the present social hierarchy," and "There's no point in trying to bring all Black Americans together to fight against their place in the present social hierarchy"(reverse scored). Participants rated their agreement with each item from 1 (*strongly disagree*) to 7 (*strongly agree*; α = .70).

As an additional outcome, we assessed Black Americans' support for collective action to improve their group's power position by adapting a picture used by the Black Panther party during the Black Power movement. Participants were shown a poster containing an image of a black panther, with the caption "Move on over, or we'll move on over you" (see the online supplemental materials). Participants rated their level of agreement of the message being conveyed in the picture using a slider from 0 (*not at all*) to 100 (*very much so*). We selected this image given the historical significance of the Black Power movement to the Black community's push for collective empowerment.

System justification. System justification was assessed with Kay and Jost's (2003) eight-item scale. Sample items included: "In general, I find society to be fair," and "Our society is getting worse every year (reverse scored)." Participants rated their response from 1 (*strongly disagree*) to 7 (*strongly agree*; α = .79).

Control variables.

Illegitimacy of the ingroup's position in society. We assessed Black Americans' perceptions of the illegitimacy of their group's

[5] We repeated all analyses without exclusions and found that the significance of our findings remained consistent across all outcomes.

position within the social system with two[6] items from Mummendey and colleagues (1999): "I think the current balance of power between White Americans and Blacks Americans in the United States is unfair" and "The fact that White Americans in the United States are currently doing better than Black Americans is unjust.," $r = .51$, $p < .001$. Participants rated their agreement with each item from 1 (*strongly disagree*) to 7 (*strongly agree*).

Group identification. We measured group identification using four items. Participants rated two items: "How strongly do you identify with your ethnic group?," and "How important is your ethnicity to your identity?" from 1 (*not at all*) to 7 (*very much so*). Participants then rated their agreement to two items: "I feel a strong bond with other members of my ethnic group," and "I feel solidarity with other members of my ethnic group" from 1 (*strongly disagree*) to 7 (*strongly agree*; $\alpha = .86$).

Results

Descriptive statistics and variable intercorrelations are presented in Table 1. We conducted a multivariate regression to test the unique association between collective autonomy restriction and the collective action/system justification outcomes while controlling for the covariates in the model.[7] Collective autonomy restriction was significantly associated with variance in the cluster of outcomes, Pillais' Trace = .16, $F(3, 285) = 18.56$, $p < .001$. Consistent with previous research, perceptions of system illegitimacy, Pillais' Trace = .16, $F(3, 285) = 17.96$, $p < .001$, and group identification, Pillais' Trace = .08, $F(3, 285) = 8.21$, $p < .001$, were also significant predictors in the model. We conducted a series of follow-up univariate regressions to assess the precise association between collective autonomy restriction and each outcome: As predicted, Black Americans who experienced greater collective autonomy restriction were significantly more likely to support collective action initiatives for their Black community, and were also more supportive of a Black Panther poster from the Black Power movement. Moreover, and as theorized, Black Americans who experienced greater collective autonomy restriction were significantly *less* likely to justify their present social system (all *ps* $< .001$; see Table 2).[8]

Discussion

Study 1 provides initial (correlational) support for our hypothesis that experiencing restrictions to collective autonomy uniquely relates to support for advancing the structural standing of the ingroup among members of a disadvantaged group (Black Americans). Specifically, collective autonomy restriction was related to endorsement of collective action on behalf of the ingroup and *lower* levels of (hierarchy-enhancing) system justification, even after accounting for potentially overlapping factors previously shown to relate to collective action support: the legitimacy of their group's position in society (Mummendey et al., 1999), and identification with the ingroup (Van Zomeren et al., 2008).

Study 2

In Study 2 we sought to replicate and advance Study 1 by simultaneously assessing how collective autonomy restriction relates to the drive for structural power among both relatively disadvantaged and advantaged groups. To this end, we recruited a sample of Black Americans (i.e., a relatively disadvantaged group), and a sample of White Americans (i.e., a relatively advantaged group). We ensured that our sample approximated the demographics of the 2010 United States Census in terms of age, gender, education, household income, and geographic region.

Consistent with Study 1, we measured collective action support both in general and with reference to a specific collective action movement (i.e., among Black Americans: support for Black Lives Matter; among White Americans: support for White solidarity and White Lives Matter). As in Study 1, we assessed system justification; in Study 2, we additionally assessed endorsement of another hierarchy-enhancing legitimizing ideology, the Protestant Work Ethic (which helps legitimize inequality by making it seem meritocratic; Kay & Jost, 2003). Finally, building on Study 1, we additionally assessed group members' explicit desire to have more power as a group. We controlled, among both racial groups, for ingroup identification, as well as group members' subjective feelings of group agency—another important predictor of collective action (Van Zomeren et al., 2008). We also controlled for other forms of social injustice: perceptions that one's group is relatively materially disadvantaged (i.e., in terms of their access to scarce resources), and the extent to which group members felt generally discriminated against as a group.

We expected that among both advantaged *and* disadvantaged groups, collective autonomy restriction would relate positively with the desire to increase the structural power of the ingroup. Specifically, for both advantaged and disadvantaged groups, we expected that higher levels of collective autonomy restriction would predict our measure of the desire for ingroup power and more support for both general and specific collective action movements advancing ingroup interests.

Consistent with the link between collective autonomy restriction and the desire to advance the structural standing of the ingroup, we expected that collective autonomy restriction would be negatively associated with hierarchy-enhancing legitimizing ideologies (i.e., system justification and Protestant Work Ethic) among the disadvantaged group, but positively associated with these same ideologies among the advantaged group (which benefits from the hierarchical status quo).

[6] The scale also included a third item: "White Americans deserve to be better off than Black Americans in the U.S. today." However, we dropped this item because of poor reliability when including it with the other two items ($\alpha = .51$). Our results do not change when including this item within our regressions as a separate factor (see Supplemental Table 2).

[7] We observed non-normality with respect to the distribution of the residuals as well as some indication of heteroscedasticity and nonlinearity for the outcome variables (see Supplemental Table 3). Importantly, our results remained consistent when using a robust linear regression with M-estimator (Huber function) and 95% bias-corrected boot-strapping confidence intervals (5,000 samples; Fox & Weisberg, 2011; see Supplemental Table 4).

[8] We conducted supplemental confirmatory factor analyses (CFA; Byrne, 1994) using Lavaan (Rosseel, 2012) to ensure that the items used to measure collective autonomy restriction loaded on separate factors from the items assessing the covariates, group identification and system illegitimacy (separate CFAs were conducted for each covariate). As shown in Supplemental Table 5, for both covariates, a two-factor model in which collective autonomy restriction loaded on a separate factor from the covariate provided a significantly better fit for the data relative to the one factor model.

Table 1
Intercorrelations Between Collective Autonomy Restriction, Collective Action Support, Support of Black Power Movement, System Justification, Illegitimacy of Group Position, and Group Identification (Black American Sample, Study 1)

Variable	*M*	*SD*	1	2	3	4	5	6
1. Collective autonomy restriction	5.23	1.30	1	.41***	.29***	−.24***	.31***	.23***
2. Collective action support	5.66	1.06		1	.16**	−.24***	.45***	.28***
3. Support of Black Power Movement	42.52	34.58			1	−.09	.13*	.16**
4. System justification	3.26	1.11				1	−.26***	.10†
5. Illegitimacy of group position	5.63	1.36					1	.09
6. Group identification	5.51	1.25						1

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Although we expected that collective autonomy restriction would predict a greater motivation for structural power among both Blacks and Whites, we did not have any clear predictions as to whether the strength of these associations would be similar or different across the two racial groups: Black Americans may be more reactive to perceived collective autonomy restriction given the vulnerability to being restricted imposed by their relatively disadvantaged power position. However, White Americans (relative to Black Americans) may be more reactive to collective autonomy restriction because by virtue of their historically advantaged position in society, they may have an expectation that no other group should impose any form of control upon their group (Durrheim et al., 2011; Hall, 2004; Major, 1994).

Method

This study was approved by the Northwestern University ethics board under the project title "Collective Autonomy and Intergroup Relations."

Participants. We recruited samples of 300 Black Americans and 300 White Americans through Prodege's panel service to participate in a preregistered study (http://aspredicted.org/blind.php?x=mx425c.). As shown in Supplemental Table 6, the observed demographics of both samples approximated the 2010 Census. The final sample after excluding participants who failed at least one of two attention checks embedded in the survey consisted of 292 Black Americans (145 males, 147 females, M_{age} = 37.52, *SD* = 15.09) and 294 White Americans (146 males, 148 females, M_{age} = 46.46, *SD* = 17.24). With the exception of items pertaining to a collective action movement specific to their respective ingroups, Black Americans and White Americans responded to the same scale items.

Collective autonomy restriction. We assessed collective autonomy restriction using the same 8-item scale utilized in Study 1. Participants rated their response from 1 (*strongly disagree*) to 7 (*strongly agree*; $\alpha_{\text{Black Americans}}$ = .94, $\alpha_{\text{White Americans}}$ = .98).

Outcome variables.

General support for ingroup collective action. We assessed group members' general support for collective action with 4 items: "Members of my racial group, Black/White Americans, need to close ranks and redouble their efforts"; "Members of my racial group, Black/White Americans, need to stick together and act collectively"; "Members of my racial group, Black/White Americans, should work together to ensure we have a place in society"; "Members of my racial group, Black/White Americans, need to fight together to protect and claim our rights." Participants rated their agreement with each item from 1 (*strongly disagree*) to 7 (*strongly agree*; $\alpha_{\text{Black Americans}}$ = .88, $\alpha_{\text{White Americans}}$ = .95).

Support for collective action (specific movement). We assessed Black Americans' support for the Black Lives Matter movement with four items: "I stand in solidarity with supporters of the BLM movement"; "I do not agree with the messages put forth by the BLM movement (reverse scored)"; "I support the Black Lives Matter movement"; "Overall, I think that the Black Lives Matter movement is very harmful to our country" (reverse scored; α = .90). Participants rated their agreement to each item from 1 (*strongly disagree*) to 7 (*strongly agree*). Similarly, we assessed White Americans' support for White solidarity and a White Lives Matter movement with four items: "I think there are good reasons to have organizations that look out for the interests of Whites"; "More needs to be done so that people remember that 'White Lives' also matter"; "Whites need to do more to remind the world about the challenges that White people face"; "Whites should

Table 2
Unstandardized Slope Coefficients (b) and 95% Confidence Intervals When Regressing Collective Action Support, Support of Black Power Movement, and System Justification on Black Americans' Perceived Collective Autonomy Restriction and Other Covariates (Study 1; Black American Sample)

Variable	Collective action support *b* [95% CI]	Support of Black Power Movement *b* [95% CI]	System justification *b* [95% CI]
Intercept	2.15*** [1.54, 2.75]	−13.59 [−37.31, 10.13]	4.37*** [3.64, 5.10]
Collective autonomy restriction	.21*** [.13, .29]	6.91*** [3.74, 10.08]	−.18*** [−.27, −.08]
Illegitimacy of group position	.27*** [.20, .35]	.82 [−2.13, 3.78]	−.18*** [−.27, −.08]
Group identification	.16*** [.08, .24]	2.74 [−.48, 5.96]	.15** [.05, .24]

* $p < .05$. ** $p < .01$. *** $p < .001$.

lobby to repeal laws that give minorities an advantage on the basis of their race, at the expense of Whites." Participants rated their agreement to each item from 1 (*strongly disagree*) to 7 (*strongly agree*; $\alpha = .92$).

Desire for group power. We adapted four items from Shnabel and Nadler (2008) to assess the extent to which group members desired group power. Items included: "We as Black/White Americans would like to have more power as a group in American society"; "We as Black/White Americans would like to have more influence as a group in American society"; "We as Black/White Americans would like to have more of a say over how to run American society"; and "We as Black/White Americans would like to have greater control as a group in American society." Participants rated their agreement to each item from 1 (*strongly disagree*) to 7 (*strongly agree*; $\alpha_{\text{Black Americans}} = .93$, $\alpha_{\text{White Americans}} = .96$).

System justification. Consistent with Study 1, we assessed system justification with Kay and Jost's (2003) eight-item scale ($\alpha_{\text{Black Americans}} = .74$, $\alpha_{\text{White Americans}} = .79$). Participants rated their response from 1 (*strongly disagree*) to 7 (*strongly agree*).

Protestant work ethic. Using a 16-item scale taken from (Kay & Jost, 2003) we assessed support for values consistent with the Protestant Work Ethic. Sample items included: "People are responsible for their own situation in life"; and "If people work hard enough they are likely to make a good life for themselves" ($\alpha_{\text{Black Americans}} = .85$, $\alpha_{\text{White Americans}} = .91$). Participants rated their response from 1 (*strongly disagree*) to 7 (*strongly agree*).

Control variables.

Relative resource deprivation. Four items assessed the extent to which group members felt that their racial group was deprived of scarce resources in their society relative to a relevant racial outgroup (i.e., Black Americans rated their relative resources in comparison to White Americans, while White Americans made ratings relative to Black Americans). Sample items included: "Black/White Americans don't have fair access to education compared with White/Black Americans"; and "Black/White Americans don't have fair representation in government relative to White/Black Americans." Participants rated their agreement with each item from 1 (*strongly disagree*) to 7 (*strongly agree*; $\alpha_{\text{Black Americans}} = .89$, $\alpha_{\text{White Americans}} = .92$).

Perceived antigroup discrimination. Discrimination toward the ingroup was assessed with three items: "It is common that members of other groups discriminate against Black/White Americans"; "Black/White Americans have been the target of prejudice"; "It is rare that Black/White Americans face discrimination." Participants rated their agreement with each item from 1 (*strongly disagree*) to 7 (*strongly agree*; $\alpha_{\text{Black Americans}} = .51$, $\alpha_{\text{White Americans}} = .79$).

Group identification. We measured group identification with three items. Participants first rated two items: "How strongly do you identify with your ethnic group?," and "How important is your ethnicity to your identity?" from 1 (*not at all*) to 7 (*very much so*). Participants then rated their agreement to one item: "I feel a strong bond with other members of my ethnic group" from 1 (*strongly disagree*) to 7 (*strongly agree*; $\alpha_{\text{Black Americans}} = .88$, $\alpha_{\text{White Americans}} = .83$).

Group agency. We assessed group agency using four items adapted from Shnabel and Nadler (2008): "We as White/Black Americans feel relatively strong as a group"; "We as White/Black Americans have a lot of power as a group"; "We as White/Black Americans have a lot of control as a group"; and "We as White/Black Americans have a lot of influence as a group." Participants rated their agreement to each item from 1 (*strongly disagree*) to 7 (*strongly agree*; $\alpha_{\text{Black Americans}} = .88$, $\alpha_{\text{White Americans}} = .94$).[9]

Results

Descriptive statistics and variable intercorrelations are presented in Table 3 for Black Americans within the sample, and in Table 4 for White Americans within the sample. Descriptive statistics when combining both races are shown in Supplemental Table 8.

Multivariate analysis. Using multivariate regression, we regressed all five outcomes (i.e., desire for power, general collective action support, specific collective action support, system justification, and Protestant Work Ethic) onto collective autonomy restriction, all four control variables (i.e., antigroup discrimination, relative deprivation, group identification, and group agency), participants' racial group, and the race by collective autonomy restriction interaction. All continuous predictors in the model were grand-mean-centered, and race was effect-coded (White American = −1; Black American = 1). Collective autonomy restriction was significantly related to variance across the cluster of outcomes, Pillais' Trace = .15, $F(5, 574) = 19.55$, $p < .001$. The effect of race, Pillais' Trace = .12, $F(5, 574) = 15.93$, $p < .001$, and the collective autonomy restriction by race interaction, Pillais' Trace = .16, $F(5, 574) = 22.48$, $p < .001$, were also significant. The simple effect of collective autonomy restriction on the cluster of outcomes was significant for Black Americans (Pillais' Trace = .09, $F(5, 574) = 11.43$, $p < .001$) and for White Americans (Pillais' Trace = .24, $F(5, 574) = 35.90$, $p < .001$). Consistent with previous research, the effect of all four covariates was also significant (all ps $< .001$). All multivariate statistics are summarized in Table 5. Univariate regression results (including univariate simple effects) are summarized in Supplemental Table 9.

Multigroup structural equation path model. We contrasted the association between collective autonomy restriction and the five outcomes across the two racial groups simultaneously within one multigroup structural equation path model (SEM; Byrne, 1994; see Figure 1 for the model specification and the unstandardized path estimates). This analysis was conducted using the Lavaan package in R (Rosseel, 2012). In the model, we regressed each of the five outcomes onto collective autonomy restriction and the four other control variables. We allowed the five predictor variables to covary, and, the five outcome variables to covary. The unconstrained model (i.e., in which all path coefficients could vary freely between the two racial groups) was fully saturated, $\chi^2(0) = 0$.

Among Black Americans within the unconstrained model, collective autonomy restriction was significantly and positively related with a stronger desire for power ($b = .24$, 95% CI [.13, .35], $p < .001$), general collective action support ($b = .12$, 95% CI [.01, .23], $p = .031$), and was marginally related to specific collective action support (i.e., Black Lives Matter support; $b = .13$, 95% CI

[9] As shown in Supplemental Table 7, a series of confirmatory factor analyses show that amongst each racial group and for each covariate, a two-factor model in which collective autonomy restriction loaded on a separate factor from the covariate provided a significantly better fit for the data relative to the one factor model.

Table 3
Intercorrelations Between Collective Autonomy Restrictions, General Collective Action Support, Specific Collective Action Support, Desire for Group Power, System Justification, Protestant Work Ethic, Relative Deprivation of Scarce Resources, Anti-Group Discrimination, Group Identification, and Group Agency (Black American Sub-Sample, Study 2)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Collective autonomy restriction	5.57	1.32	1	.49***	.42***	.56***	−.37***	.00	.51***	.53***	.43***	.26***
2. Collective action support	5.92	1.23		1	.53***	.68***	−.19**	.14*	.40***	.49***	.54***	.28***
3. Black Lives Matter support	5.44	1.57			1	.46**	−.22***	.01	.36***	.37***	.54***	.23***
4. Desire for group power	5.82	1.29				1	−.20***	.15*	.53***	.46***	.47***	.23***
5. System justification	3.28	1.07					1	.34***	−.40***	−.39***	−.06	.11†
6. Protestant work ethic	4.49	1.01						1	−.09	−.07	.14*	.24***
7. Relative deprivation of scarce resources	5.33	1.53							1	.39***	.32***	.09
8. Anti-Black discrimination	6.09	1.05								1	.31***	.17**
9. Group identification	5.52	1.47									1	.40***
10. Group agency	5.03	1.53										1

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

[−.02, .27], $p = .085$). On the other hand, collective autonomy restriction was significantly and negatively related to system justification ($b = -.16$, 95% CI [−.27, −.06], $p = .002$), and was not related to Protestant Work Ethic ($b = .01$, 95% CI [−.10, .12], $p = .875$).

Among White Americans, collective autonomy restriction was significantly and positively related to desire for power ($b = .33$, 95% CI [.21, .45], $p < .001$), general collective action support ($b = .42$, 95% CI [.32, .52], $p < .001$), and specific collective action support (i.e., White Lives Matter support; $b = .49$, 95% CI [.40, .58], $p < .001$). Collective autonomy restriction was nonsignificantly positively associated with system justification ($b = .070$, 95% CI [−.02, .16], $p = .139$), and was significantly positively related to Protestant Work Ethic ($b = .20$, 95% CI [.13, .28], $p < .001$).

We hypothesized that collective autonomy restriction would be differentially related to hierarchy-enhancing outcomes (i.e., system justification and Protestant Work Ethic) among Black Americans (i.e., a negative association) compared with White Americans (i.e., a positive association). Providing some support for this hypothesis, we found that compared to the unconstrained model, a constrained model in which the paths linking collective autonomy restriction to system justification for each group were constrained to equality had a significantly worse fit, $\Delta\chi^2(1) = 10.64$, $p = .001$. Similarly, a model constraining the path linking collective autonomy restriction to Protestant Work Ethic also had significantly worse fit relative to the unconstrained model, $\Delta\chi^2(1) = 7.72$, $p = .005$.

We expected that amongst both Black and White Americans collective autonomy restriction would relate positively with desiring ingroup power and supporting collective action initiatives that favor the ingroup's structural power position within the hierarchy. We had no strong predictions, however, as to the relative strength of these relationships across the two racial groups. We found that constraining the paths from collective autonomy restriction to the desire for power across the two groups to equality did not significantly worsen the model fit relative to the unconstrained model, $\Delta\chi^2(1) = 1.23$, $p = .268$. However, constraining the collective autonomy restriction to general collective action support path, $\Delta\chi^2(1) = 16.00$, $p < .001$, or, the collective autonomy restriction to specific collective action support path, $\Delta\chi^2(1) = 16.85$, $p < .001$, significantly worsened the model fit relative to the unconstrained model.[10]

Discussion

Study 2 provided evidence that both advantaged and disadvantaged groups can experience collective autonomy restriction: 86.3% of Black Americans reported levels of collective autonomy restrictions above the scale midpoints (despite meaningful variability in the extent of collective autonomy restriction reported). But members of relatively advantaged groups (i.e., White Americans) were not immune to experiencing collective autonomy restriction either: More than 42% of White Americans had collective autonomy restriction scores above the scale midpoint.

Still more importantly to our theorizing, Study 2 provided evidence that experiencing collective autonomy restriction is associated with a greater desire for structural power among both relatively disadvantaged and relatively advantaged group members. These associations held, among both groups, when controlling for relative deprivation of scarce resources, anti-ingroup discrimination, group identification, and group agency.

As predicted, collective autonomy restriction was associated with Black Americans desiring greater power, and also, collectively seeking to reduce their power deficit within the social hierarchy by engaging in collective action initiatives benefitting their ingroup. Moreover, Black Americans who felt that their collective autonomy was restricted were more likely to challenge the present social system in which their group lacked structural power. Unexpectedly, the association between Black Americans' experience of collective autonomy restriction and endorsement of the Protestant Work Ethic (a system-legitimizing myth) was non-

[10] We observed non-normality with respect to the distribution of the residuals, as well as, some indication of heteroscedasticity and nonlinearity for the outcome variables. We also identified 6 cases as potential multivariate outliers as indicated by their Mahalanobis distance score (see Supplemental Table 11). Importantly, our multivariate regression result remained consistent when excluding potential outliers. Moreover, our SEM results remained consistent when we used a maximum likelihood estimation with robust (Huber-White) standard errors to correct for potential violations to non-normality (see Supplemental Table 12).

Table 4
Intercorrelations Between Collective Autonomy Restrictions, General Collective Action Support, Specific Collective Action Support, Desire for Group Power, System Justification, Protestant Work Ethic, Relative Deprivation of Scarce Resources, Anti-Group Discrimination, Group Identification, and Group Agency (White American Sub-Sample, Study 2)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Collective autonomy restriction	3.77	1.85	1	.71***	.78***	.48***	.23***	.55***	.49***	.69***	.32***	−.13*
2. Collective action support	3.61	1.74		1	.81**	.57***	.34***	.54***	.46***	.58***	.48***	.02
3. White Lives Matter support	3.76	1.79			1	.54***	.33***	.61***	.59***	.66***	.36***	−.18**
4. Desire for group power	3.82	1.66				1	.17**	.37***	.27***	.33***	.32***	.18**
5. System justification	3.69	1.09					1	.45***	.15*	.15**	.35***	.02
6. Protestant work ethic	4.62	1.06						1	.35***	.50***	.24***	−.11†
7. Relative deprivation of scarce resources	2.48	1.44							1	.50***	.14*	−.35***
8. Anti-White discrimination	4.18	1.64								1	.20***	−.28***
9. Group identification	4.35	1.48									1	.19***
10. Group agency	4.89	1.48										1

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

significant. Taken together, these findings are consistent with and replicate the findings of Study 1.

Importantly, collective autonomy restriction was also associated positively with White Americans supporting behaviors and beliefs that can maintain or further enhance their ingroup's power position within the social hierarchy. Collective autonomy restriction was positively associated with White Americans desiring more power for their ingroup, and supporting collective action initiatives that facilitate their ingroup maintaining or enhancing its position atop the hierarchy. Collective autonomy restriction was also associated with White Americans endorsing beliefs which serve to legitimize and enhance the existing social hierarchy in which their group holds a favorable position: This included viewing the social system as just, and showing greater endorsement of the Protestant Work Ethic.

Multigroup structural equation modeling further confirmed that the relationship between experiencing collective autonomy restriction and supporting system legitimizing beliefs (i.e., system justification and Protestant Work Ethic) was conditional (and to a statistically significant degree) on group members' own advantaged versus disadvantaged position within the hierarchy. Whereas disadvantaged group members who experience collective autonomy restriction appear to challenge beliefs which maintain the status quo (and their ingroup's low-power position within the hierarchy), advantaged groups who experience collective autonomy restriction appear to be supportive of beliefs which maintain the status quo (and their high-power position within the hierarchy).

Interestingly, constraining the relevant pathways to equality in the context of multigroup structural equation modeling further revealed that the association between collective autonomy restriction and reporting having a greater desire for more group power was equivalent for both racial groups. However, we also found that the link between collective autonomy restriction and supporting general or specific collective action initiatives in favor of one's ingroup was significantly stronger for White than Black Americans. Thus, despite Black Americans experiencing overall greater levels of collective autonomy restriction, White Americans may be relatively more reactive to perceived threats to their collective autonomy. We had no specific a priori hypotheses about the relative strength of this link across high versus low power groups; we return to this issue in the general discussion to consider possible reasons for it that could be further investigated in future work.

Table 5
Multivariate Effects of All Predictors on the Cluster of Outcomes Assessed in Study 2 (i.e., General Collective Action, Specific Collective Action, Desire for Power, System Justification, and Protestant Work Ethic)

Variable	Pillais' trace	*F* statistic
Intercept	.98	4614.62***
Race	.12	15.93***
Collective autonomy restriction (CAR)	.15	19.55***
Race × CAR interaction	.16	22.48***
Relative deprivation	.08	10.15***
Anti-group discrimination	.08	9.65***
Group identification	.18	25.05***
Group agency	.05	5.93***

*** $p < .001$.

Study 3

The goal of Study 3 was to experimentally test the link between experiencing collective autonomy restriction and having a greater desire to push for group power. Furthermore, we sought to further dissociate the experience of collective autonomy restriction from lacking structural power as a group (i.e., being in a position that makes you more *vulnerable* to potentially having your collective autonomy controlled by other groups).

We created an engaging laboratory context in which group members first created a novel and meaningful cultural identity for their group. Groups could then actually act in accordance with that cultural identity within the context of an interactive and engaging cooperative video game. However, in two key experimental conditions, participants were told that another outgroup had the power to control and influence whether or not the participants' ingroup was permitted to maintain and practice its culture in the video game. In the *collective autonomy restriction* condition, participants' low-power ingroup had its cultural identity forcefully changed by a high-power outgroup. In contrast, in the *collective autonomy support* condition participants' low-power group was

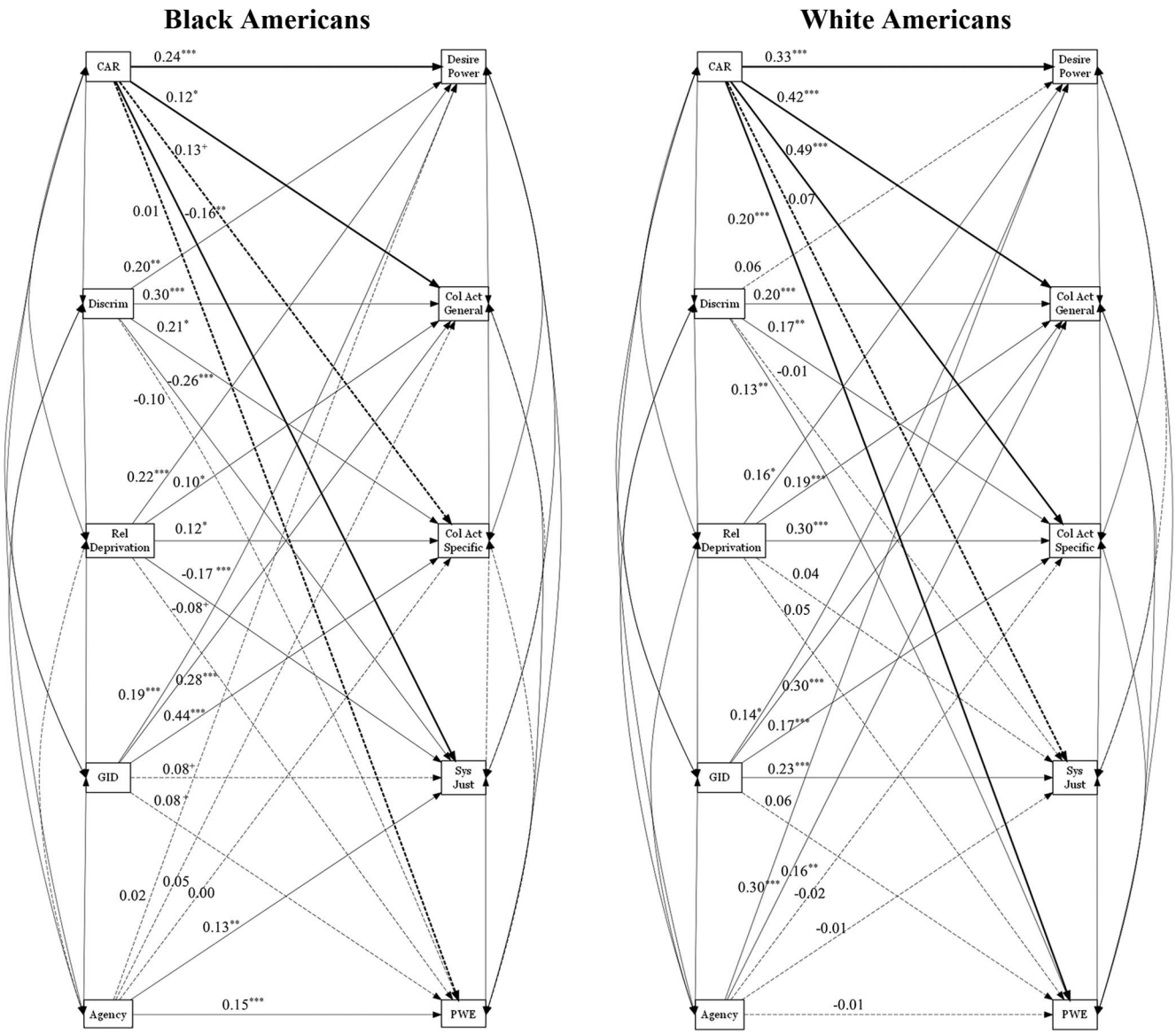

Figure 1. Multigroup Structural Equation Model (Study 2). CAR = collective autonomy restriction; Discrim = antigroup discrimination; Rel Deprivation = relative deprivation; GID = group identification; Agency = group agency; Desire Power = desire for group power; Col Act General = support for collective action in general to support the ingroup; Col Act Specific = support for specific collective action initiatives to benefit the ingroup; Sys Just = system justification; PWE = Protestant Work Ethic. Path coefficients represent unstandardized path estimates from the unconstrained model. Path arrows pertaining to CAR are emphasized with darker lines. Significant paths are represented by unbroken lines. Nonsignificant paths are represented by broken lines. Covariances of adjacent nodes are represented by straight double arrows. $^{+}$ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

permitted to practice their culture by the high-power outgroup. In the control condition, participants were told that the outgroup would be able to determine the rooms in which each group would participate in the study.

In all three conditions, group members lacked structural power in that the outgroup could control an element of the study that would impact the experience of the ingroup (i.e., by controlling the cultural expression of the ingroup or by controlling in which room each group participated in the study). However, in contrast to the experimental conditions, there was no indication in the control condition that the ingroup's freedom to determine or express its identity was ever in jeopardy of being controlled by the high-power outgroup. By contrasting the control condition with the other two conditions we can disentangle the key effect of feeling that other groups seek to control how one's ingroup expresses its sociocultural identity from the effect of being vulnerable to losing

collective autonomy. We predicted that those in the collective autonomy restriction condition (who were vulnerable to losing collective autonomy and who actually lost collective autonomy) would seek greater group power than those in the collective autonomy support condition (who were vulnerable to losing collective autonomy but ultimately enjoyed collective autonomy) and those in the control condition (who were never vulnerable to losing collective autonomy). We posited no differences between those in the collective autonomy support and control conditions, seeing as groups in both these conditions enjoyed collective autonomy.

We also assessed two other group factors central to contemporary models of collective action: group members' perceptions of group agency (i.e., feeling strong, efficacious, and in control as a group) and their group identification. We did not expect that group members would differ across conditions in terms of their perceptions of agency or in their level of group identification.

Finally, we predicted that perceptions of collective autonomy restriction would significantly mediate the impact of experimental condition on group members' desire for collective power when controlling for group identification and group agency.

Method

This study was approved by the McGill University ethics board, under the project title: "The Coat of Arms Paradigm: Exploring the effects of collective autonomy and collective distinctiveness on group cohesion and group motivation".

Sample. We targeted a sample of 400 participants (and 30 groups per condition) to conform to guidelines for conducting multilevel and group level analyses (Maas & Hox, 2005; Scherbaum & Ferreter, 2009). We recruited 415 participants[11] from the McGill University community (i.e., through a paid participant pool, an extra credit psychology participant pool, McGill classified ads and posters) over a 2-year period.[12] Twelve participants were unable to complete the experiment due to not enough participants attending the session, or because of a computer error. Sixteen participants were excluded because they had missing data for at least one of the measured outcomes focused on in the present study. Thus, a total of 387 participants (97 groups) were included in our analyses (collective autonomy restriction condition, n = 133, 32 groups; collective autonomy support condition, n = 123, 31 groups; control condition, n = 131, 34 groups; 289 Female, 92 Male; 6 not specified; M_{age} = 20.70, SD = 3.42).

Participants were compensated with twenty Canadian dollars for engaging in the two-hour experiment or with two extra credits in their psychology course. Ethnicity was not recorded during the first year. During the second-year participants were asked the open-ended question of "What is your ethnic background?" which we then recoded adapting guidelines from the Canadian Census (18.6% Canadian/Quebecois/Western/Eastern European; 28.1% White/Caucasian; 27.5% Asian/South Asian/South East Asian; 6.2% Black/African/ Caribbean; 2.8% Arab; 4.1% Latin American; 3.9% Other/Mixed Race, and 3.4% did not specify).

Procedure and materials.

Group formation. Groups of six to 10 participants were greeted by two experimenters, and were told that the purpose of the experiment was to investigate intragroup dynamics and team performance when playing a cooperative video game designed for up to five people. Participants were randomly divided into two groups of two to five people by drawing slips labeled J and K. Following group assignment, participants were led by one of the experimenters into a separate testing room in which their group completed the rest of the experiment (there was no direct contact between groups following group assignment). Regardless of whether participants were assigned to Group J or K, they learned that their ingroup was disempowered compared with the other group. Furthermore, all subgroups within a given experimental session were randomly assigned to receive the same manipulation (this was done for logistical purposes to make the experiment easier to run). The purpose of having participants see members of the other group at the beginning of the experiment was to make the intergroup context of the experiment salient, and to enhance the believability of the cover story (i.e., that there was another real outgroup involved in the experiment with power over the ingroup). Once each group was in their separate room, we described the details of the experimental procedure to the participants.

Identity formation. A core feature of the present experiment was giving groups the opportunity to create a meaningful cultural identity that they would be invested in preserving and practicing. To form this identity, groups created a *coat of arms*—a shield decorated with different colors, objects and animals (called charges) that visually represent the various shared traits and values of the group (Fox-Davies, 1909). Such symbols have been found to be important aspects of a group's identity and promote a cohesive and shared sense of identity among group members (Callahan & Ledgerwood, 2016). Groups formed their coat of arms using an interactive "coat of arms generator" that we developed for the purpose of the experiment. Using the coat of arms generator, participants chose a color for their shield (e.g., gold, silver, blue), a charge (e.g., boar, tiger, stag), and a color for their charge. For each option, the program provided a short description of the values and traits symbolized by that item. For instance, a Stag was described as symbolizing that "group members are able to grow and improve themselves even in the face of adversity. They are constantly growing as individuals, and are able to recuperate when they struggle." Participants were also able to create a

[11] We note that this study was also reported in the published paper by Kachanoff et al. (2019, Study 4) examining the relation between collective autonomy restriction and personal autonomy. We focus on theoretically distinct outcome measures here.

[12] Data collection occurred over a two-year period given the time required to run this experiment. During the second semester of the first year of data collection, we added two additional independent conditions to the study that were part of the thesis project of an undergraduate research student and beyond the scope of the present research: The student compared whether participants experienced less personal autonomy when playing the Group Quest video game because of an ostensible technical computer glitch (n = 38 participants). The student compared this "computer glitch" condition to a condition in which group members experienced no computer glitch (n = 38 participants). We also note that during the first year of testing the study description was delivered verbally to participants, and participants then read a written description of the experiment explaining the coat of arms and group quest video game. During the second year of testing we created a video recording of the verbal/written instructions to reduce potential experimenter variance. We obtained a consistent pattern of results across both sub-years (see Supplemental Table 13).

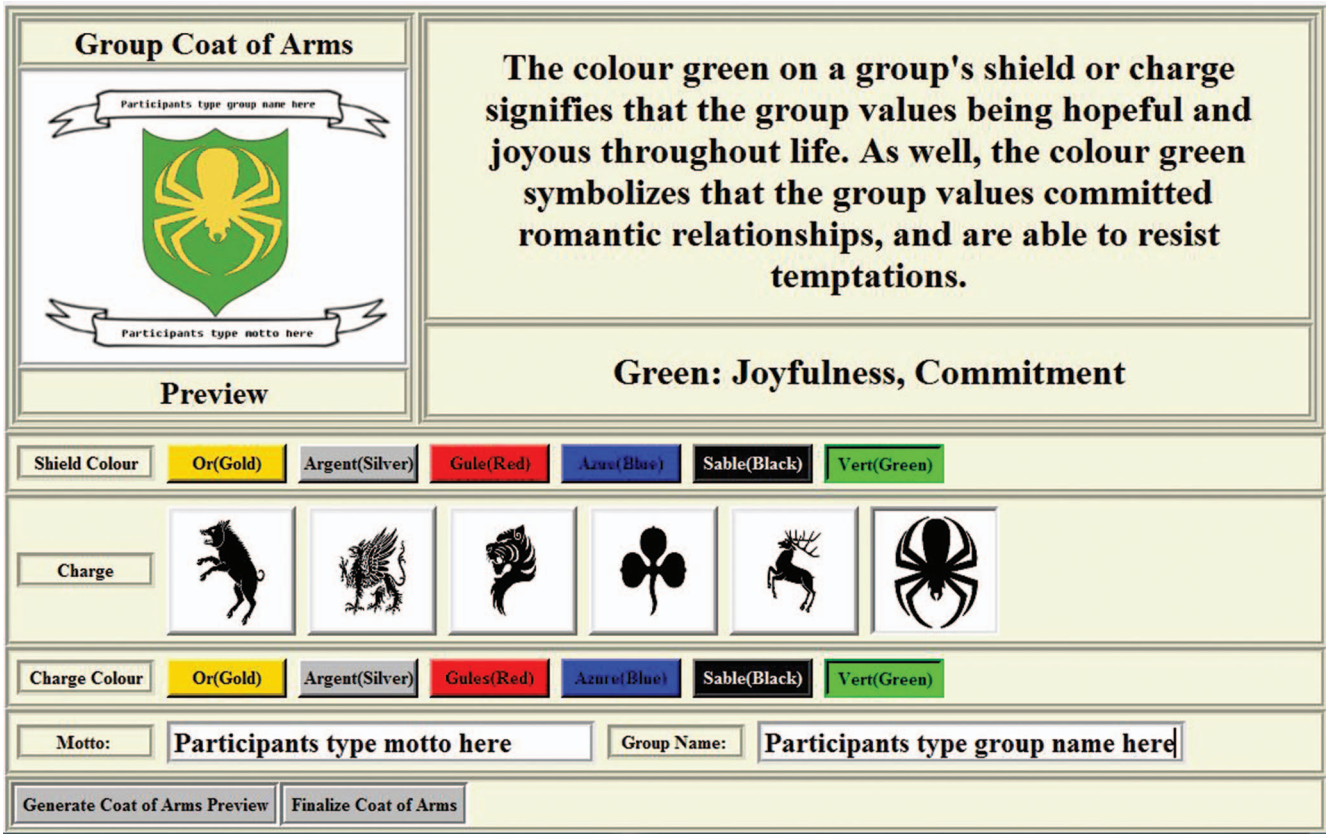

Figure 2. User interface of the coat of arms generator that group members used to form a novel and meaningful identity for their group in Study 3 and Study 4. Groups selected: (a) a color for the background of their shield, (b) a charge for their coat of arms, (c) the color of their shield, (d) a motto for their group, and (e) a name for their group (figure adapted from "The chains on all my people are the chains on me: Restrictions to collective autonomy undermine the personal autonomy and psychological well-being of group members," by F. J. Kachanoff et al., 2019, *Journal of Personality and Social Psychology*, *116*, pp. 141–165. Copyright 2019 by American Psychological Association. Adapted with permission.). See the online article for the color version of this figure.

name for their group, as well as a group motto (see Figure 2 for a snapshot of the coat of arms generator taken from Kachanoff et al., 2019).

Identity-concordant behavior (Group Quest). The second core feature of the present experiment was that group members could actually behave in accord with their social identity. To this end, we created a video game in which ingroup members controlled identical in-game avatars which were a direct reflection of their coat of arms. Specifically, following the creation of their coat of arms, participants played the interactive group videogame, Group Quest. Group Quest was programmed for the purpose of the experiment using the War Craft 3 world map editor (Blizzard Entertainment, 2002). When they created their coat of arms, it was explained to participants that the colors and symbols that they chose for their coat of arms would have a direct impact on the abilities and characteristics of an in-game avatar that each group member would control when playing an interactive multiplayer video game later on in the experiment. Importantly, however, participants were told that: "While all combinations of charges and colors will provide a different experience in the game, the overall advantage of any combination is the same!" This ensured that, in the case that participants had their coat of arms changed by the outgroup, participants' potential dissatisfaction with their avatar would be a reflection of the avatar not representing their chosen identity and culture rather than any concern over the overall power associated with the avatar or its effectiveness in Group Quest. Participants each played the game at separate computers that were connected using a LAN network, such that participants' characters interacted in the same virtual in-game world. Participants were able to communicate verbally with their teammates throughout game play, as their computers were located in the same room. The game involved completing different quests, in which team members cooperated to solve puzzles and combat enemies generated by the computer. Participants were given 21 min to complete as many quests as possible. It was made clear to participants that they were not competing with members of the outgroup in the other room; rather, they played against computer-controlled units in the game.

Experimental manipulation. In the *collective autonomy restriction* condition participants were told, prior to creating their coat of arms, that the outgroup would have the power to look over, evaluate and potentially alter their ingroup's coat of arms. After group members created their coat of arms, the experimenter ostensibly left the room to show the coat of arms to the other group. The experimenter then reentered the room with a modified coat of arms and explained to participants that the outgroup had chosen to alter their coat of arms. The coat of arms was systematically altered (in a separate room) by changing the chosen charge, the shield color and the color of the charge with the next available option in the coat of arms generator, to the right of participants' chosen option. Specifically, participants were told:

> The other group had a hard time deciding whether or not they wanted you to keep your own coat of arms design. But in the end they decided to change your coat of arms design.

In the *collective autonomy support* condition ingroup members were also told prior to forming their coat of arms, that the outgroup would have the power to look over, evaluate and change their coat of arms. However, in this condition the experimenter returned with an unaltered version of the ingroup's coat of arms. Specifically, participants were told:

> The other group had a hard time deciding whether or not they wanted you to keep your own coat of arms design. But in the end they decided not to change your coat of arms design.

Finally, in the *control* condition, participants were told that the outgroup could choose whether to make the ingroup switch rooms with them (see the online supplemental materials for script). Participants were always informed that, after a hard discussion mulling over the decision, the outgroup had decided not to change the room assignments. In all three conditions, we told groups that the outgroup had a "hard time" in deciding the fate of the ingroup, to reemphasize that the outgroup had influence over their ingroup and used this power to deliberate over the fate of the ingroup.

After group members received feedback from the outgroup as to whether they could keep their coat of arms, they played Group Quest. As the game loaded, it prompted participants to indicate the shield color, charge type, and charge color of their coat of arms. As group members indicated each component of their coat of arms, a message appeared describing the special skill the component would give participants' in-game avatar. For example, participants who had selected a "boar" as their charge saw the message: "You have selected the strong and courageous Boar! Out of all the units, the boar's melee attacks are the strongest." To further link the in-game avatar to group members' coat of arms, the appearance of the in-game avatar reflected the group's coat of arms (see Figure 3 for a snapshot of game play from Group Quest, taken from Kachanoff et al., 2019). Although group members in the collective autonomy support condition and in the control condition were able to enter the original characteristics of their coat of arms during the loading phase, group members in the collective autonomy restriction condition had to enter in the characteristics of the altered coat of arms. Thus, group members in the collective autonomy restriction condition were not able to play with the avatar that reflected their original coat of arms. Rather, they had to control an avatar based on the attributes ostensibly imposed by the high-power outgroup.

Measured variables. Once participants completed playing Group Quest they individually completed a survey including measures of collective autonomy restriction and desire for group power. Agreement with all survey items was rated using a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Collective autonomy restriction. Perceptions of collective autonomy restriction were assessed using 5 items taken from Kachanoff and colleagues (2019). Sample items included: "The other group told our group what we could and could not do" and "We felt pressured by the other group" (α = .89; see the online supplemental materials for all scale items).

Desire for group power. Participants' desire for group power was measured using four items adapted from Shnabel and Nadler (2008). Items included: "During this study, our group would have liked to have had a greater level of control over the interactions between ourselves and the other group," "During this study, our group would have liked to have had more power as a group," "During this study we would have liked to have had more say during our interactions with the other group," "During this study we would have liked to have had more influence as a group" (α = .81).

Group identification. Group identification was assessed with 9 items adapted from Cameron's (2004) tripartite scale of group identification. Sample items included: "I felt good thinking about myself as a member of my group," "I felt strong ties to the other members of my group" and "During the study, being a member of my group was an important part of my self-image" (α = .81).

Group agency. Group members' subjective feeling of group agency during the experiment was assessed with three items adapted from Shnabel and Nadler (2008): "During the study we felt relatively strong as a group"; "During the study we had a lot of control over what we did"; and "During the study we had a lot of influence over what we did."

Results

Means, standard deviations, and correlations are summarized in Table 6. The intraclass correlation coefficients (ICCs) for collective autonomy restriction, ICC = .57, group agency, ICC = .17, group identification, ICC = .09, and desire for group power, ICC = .16, were all non-negligible.

We simultaneously tested all of our predictions in one structural equation model, which we fitted using the Lavaan package for R. Because we could not assume that responses of participants were independent given that participants were nested within groups, we used a multilevel structural equation modeling framework (Hayes, 2006; Raudenbush & Bryk, 2002) that accounted for the random effect of participants' unique group. We conducted this analysis using the Lavaan.Survey package in R (Oberski, 2014). Because the small sample size of the unique group clusters can increase covariance, we used the MLMVS estimator to derive Satterthwaite p values (Oberski, 2014).

Within the multilevel SEM model, we regressed perceived collective autonomy restriction, desire for group power, group agency, and group identification (level 1 variables) onto two key

Figure 3. Game play snap-shot of the interactive video game, Group Quest used in Study 3. Group members all controlled an identical "in-game" avatar which was a direct reflection of the colors and charge of their Coat of Arms (or of the new coat of arms their group was forced to adopt). Shown in the present example is the Avatar produced from a coat of arms containing Green, Black, and a Spider charge (figure adapted from "The chains on all my people are the chains on me: Restrictions to collective autonomy undermine the personal autonomy and psychological well-being of group members," by F. J. Kachanoff et al., 2019, *Journal of Personality and Social Psychology*, *116*, pp. 141–165. Copyright 2019 by American Psychological Association. Adapted with permission.). See the online article for the color version of this figure.

condition contrast variables (level 2 variables). Specifically, to compare the collective autonomy restriction condition to each other condition, we created two dummy variables in which collective autonomy restriction was used as the reference condition (i.e., Dummy1: collective autonomy restriction = 0; control = 1; collective autonomy support = 0; and Dummy2: collective autonomy restriction = 0; control = 0; collective autonomy support = 1). Both dummy coded variables were entered simultaneously into the model. While Figure 4 shows the model analyzed using these two dummy coded variables, we also reran the same model using another set of two dummy coded variables in which the control condition was used as the reference condition (this enabled us to statistically compare the collective autonomy support condition to the control condition).

To further our confidence that group members in the collective autonomy restriction condition sought group power as a means of protecting their collective autonomy, we examined (within our SEM model) whether the effect of condition on group members' desire for group power was mediated by group members' psychological perceptions of collective autonomy restriction. Thus, we tested a 2-1-1 multilevel mediation model (Bauer, Preacher, & Gil, 2006; Zhang, Zyphur, & Preacher, 2009). To this end, we regressed desire for power (our key outcome measure) onto our measure of perceived experience of collective autonomy restriction within the model. We computed both the direct effect of experimental condition and the indirect effect of experimental condition (through perceived collective autonomy restriction) on desire for power. We also controlled for the effects group identi-

Table 6
Intercorrelations Between Collective Autonomy Restriction, Group Agency, Group Identification, and Desire for Group Power Across the Experimental Conditions of Study 3

Variable	*M*	*SD*	1	2	3	4
1. Collective autonomy restriction	2.28	1.56	1	−.02	−.13*	.36***
2. Group identification	5.02	.86		1	.42***	.08
3. Group agency	5.36	1.03			1	.09
4. Desire for group power	4.39	1.30				1

* $p < .05$. *** $p < .001$.

fication and group agency when estimating both the condition to collective autonomy restriction (i.e., "a") path, and, the collective autonomy restriction to desire for power (i.e., "b") path in the model. We followed the guidelines for mean centering within the context of a 2-1-1 mediation model, as outlined by Zhang and colleagues (2009).[13] We computed the indirect effects using 10,000 Monte Carlo simulations (Rockwood & Hayes, 2017). Please see Figure 4 for the SEM model containing the unstandardized path estimates. The model had a good fit: robust comparative fit index (CFI) = 1.00, robust standard root mean square intervals (SRMR) = .025, robust root mean square error approximation (RMSEA) = .00, 90% CI [.00, .00], robust BIC = 5898.69, robust $\chi^2(5.35) = 2.51$, $p = .81$ (Byrne, 1994; Hu & Bentler, 1999; Steiger, 1990).

Effect of condition on collective autonomy restriction. Although groups had the potential to be controlled by the outgroup in all conditions, it was only when the outgroup restricted the collective autonomy of the ingroup that participants reported elevated levels of feeling collective autonomy restriction. Specifically, when group members had their collective autonomy restricted ($M = 3.91$; $SD = 1.36$), they perceived greater levels of collective autonomy restriction relative to group members in the control ($M = 1.43$; $SD = .81$, $\gamma = -2.48$, $SE = .14$, 95% CI [−2.75, −2.21], $z = -18.20$, $p < .001$) and collective autonomy support ($M = 1.43$; $SD = .80$), $\gamma = -2.49$, $SE = .13$, 95% CI [−2.75, −2.23], $z = -18.73$, $p < .001$) conditions. As expected, there were no differences in the levels of collective autonomy restriction experienced by group members who were in the control condition versus those in the collective autonomy support condition, $\gamma = -.007$, $SE = .12$, 95% CI [−.23, .22], $z = -.06$, $p = .955$.

Effect of condition on other group factors. We found that group members in the collective autonomy restriction condition ($M = 5.26$; $SD = .96$) did not differ in perceived group agency relative to those in the control condition ($M = 5.38$; $SD = 1.12$), $\gamma = .12$, $SE = .16$, 95% CI [−.20, .44], $z = .74$, $p = .460$, or those in the collective autonomy support condition ($M = 5.46$; $SD = .99$), $\gamma = .20$, $SE = .14$, 95% CI [−.07, .48], $z = .1.45$, $p = .146$). There were also no significant differences in group agency between those in the control condition and those in the collective autonomy support condition, $\gamma = .08$, $SE = .16$, 95% CI [−.24, .40], $z = .50$, $p = .614$.

Similarly, group members in the collective autonomy restriction condition ($M = 4.97$; $SD = .86$) did not differ in their level of group identification relative to those in the control condition ($M = 4.96$; $SD = .90$), $\gamma = -.02$, $SE = .13$, 95% CI [−.26, .23], $z = -.13$, $p = .897$, or to those in the collective autonomy support condition ($M = 5.15$; $SD = .83$), $\gamma = .17$, $SE = .11$, 95% CI [−.05, .40], z = 1.54, $p = .123$. Moreover, there were no significant differences in group identification between those in the control condition and those in the collective autonomy support condition, $\gamma = .19$, $SE = .12$, 95% CI [−.05, .43], $z = 1.56$, $p = .120$.

Total effect of condition on desire for group power. Supporting our main hypothesis, low-power groups who had their collective autonomy restricted desired group power ($M = 4.77$, $SD = 1.18$) to a greater extent than group members who belonged to a group similarly lacking in structural power but which did not face the threat of losing their collective autonomy at the hands of the high-power group (i.e., those in the control condition; $M = 4.12$, $SD = 1.29$; $\gamma = -.67$, $SE = .16$, 95% CI [−.99, −.35], z = −4.12, $p < .001$). This desire for group power among low-power group members who had their collective autonomy restricted was also significantly greater than that among low-power group members who explicitly had their collective autonomy supported by the high-power outgroup ($M = 4.27$, $SD = 1.33$; $\gamma = -.54$, $SE = .20$, 95% CI [−.93, −.15], $z = -2.75$, $p = .006$). Low-power group members who had their collective autonomy supported by the outgroup and those who were in the control condition expressed similar levels of desire for group power, $\gamma = .13$, $SE = .19$, 95% CI [−.23, .49], $z = .70$, $p = .486$.

Indirect and direct effect of condition on desire for power through perceived restriction. Relative to the control condition, there was a significant indirect effect of the collective autonomy restriction condition on desire for group power through reported feelings of collective autonomy restriction, indirect effect = −1.07, $SE = .33$, 95% MCCI [−1.70, −.45], z = −3.29, $p = .001$. The direct effect was nonsignificant, $\gamma = .40$, $SE = .37$, 95% CI [−0.33, 1.31], $z = 1.07$, $p = .28$. Similarly, relative to the collective autonomy support condition, there was a significant indirect effect of the collective autonomy restriction condition on group members' desire for group power through reported feelings of collective autonomy restriction, indirect effect = −1.07, $SE = .32$, 95% MCCI [−1.73, −.46], $z = -3.36$, $p = .001$. The direct effect was nonsignificant, $\gamma = .53$, $SE = .35$, 95% CI [−.15, 1.22], $z = 1.52$, $p = .127$.

Discussion

Study 3 provides experimental evidence that low-power group members become more motivated to seek group power when they experience collective autonomy restriction: Compared with a condition in which the group was at risk of losing its collective autonomy but had its autonomy explicitly supported, as well as a control condition in which the group simply lacked power without

[13] Specifically, we separated the within and between group effects of perceived collective autonomy restriction by entering the group's mean score of collective autonomy restriction (i.e., the between group effect) and individuals' group mean centered score of collective autonomy restriction (i.e., the within group effect) separately into the model. Here, because condition is a level 2 variable, we are interested only in the pure *between group* indirect effect of condition on group members' desire for power through between group differences in the group's mean collective autonomy score. Finally, we grand mean centered the group identification and group agency covariates.

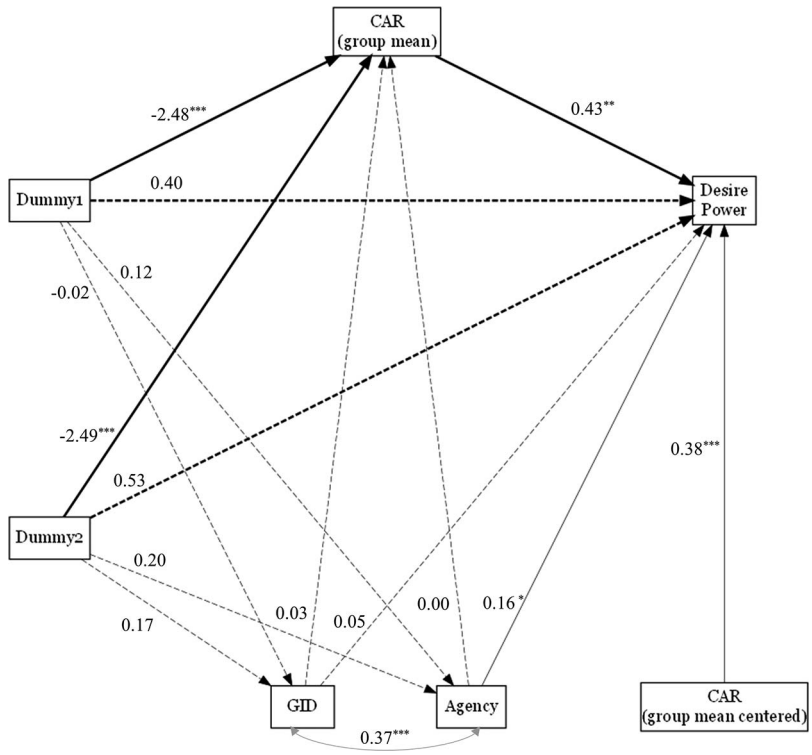

Figure 4. Multilevel Structural Equation Model Tested in Study 3. Dummy 1 = the collective autonomy restriction condition (0) versus control condition (1) contrast; Dummy 2 = the collective autonomy restriction condition (0) versus collective autonomy support (1) contrast; CAR = perceived collective autonomy restriction; GID = perceived group identification; Agency = perceived group agency; Desire Power = group members' desire for group power. Path coefficients represent unstandardized path estimates. Path arrows pertaining to the indirect effect of condition on desire for power through collective autonomy restriction are emphasized with darker lines. Significant paths are represented by unbroken lines. Nonsignificant paths are represented by broken lines. $^{+}$ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

facing the threat of autonomy restriction, those low power group members who had their collective autonomy restricted were significantly more likely to report wanting their group to have more power. This is notable insofar as it highlights that the experience of lacking power in terms of being at risk of losing collective autonomy is not in its own right fully determinative of group members' desires to seek power; rather, it matters whether the high-power group grants or denies the ingroup its collective autonomy.

Interestingly, participants in the collective autonomy support condition and the control condition did not differ from one another in their desire for group power. That is, collective autonomy support did not seem to reduce the desire for group power. This suggests that explicit collective autonomy support from the outgroup may not suppress the desire for power as much as collective autonomy restriction motivates it.

Building on our correlational studies (Studies 1 and 2) we also provided experimental evidence that group agency and group identification are distinct from collective autonomy restriction. Indeed, whereas experimental condition affected participants' feeling of collective autonomy, it did not affect their feelings of group agency or their identification with their ingroup. Moreover, condition impacted group members' desire for group power through collective autonomy restriction even after controlling for group identification and group power (whereas these constructs did not themselves mediate effects).

Study 4

In Study 3, the main form of injustice that (some) group members experienced was collective autonomy restriction. Thus, it remains unclear whether our results were simply due to the general experience of being unjustly treated (or not) by another group on some valued dimension or whether collective autonomy restriction (vs. support) would mobilize group members even when paired with unjust treatment on another valued dimension. In Study 4, we examined how group members respond to collective autonomy restriction both in the presence and absence of another form of injustice: Exploitation in terms of being deprived relatively equal access to scarce resources (e.g., Crosby, 1976; Grant & Brown, 1995; Pettigrew et al., 2008; Runciman, 1966; Van Zomeren et al., 2008; Walker & Smith, 2002).

Like Study 3, Study 4 utilized an engaging interactive laboratory experiment in which participants were randomly divided into artificial groups. Groups imagined that they were a low-power group (the Hoye) living on a fictional planet called Grabodia along

with two other groups: a high-power group (the Arado) and another low-power group (the Suebla). All three groups in the experiment were led to believe that they were the Hoye (low-power) and that the other two groups were the Arado (high-power outgroup) and the Suebla (a third-party low-power outgroup that had the same amount of power as the ingroup).[14] As in Study 3, an important aspect of the experiment was to have groups create a meaningful identity for their group. Groups then completed a tedious work task while at the same time being able to actually behave in accordance with their newly formed identity. We manipulated (a) whether groups were able to freely express their newly formed culture when they engaged in the work task or whether they had their culture forcefully changed by the outgroup (i.e., collective autonomy support vs. collective autonomy restriction). Independently, we varied (b) whether groups were exploited by being given relatively equal or unequal amounts of work by the outgroup (i.e., resource equality vs. resource inequality).

Given the importance of both collective autonomy and resource equality needs, experiencing collective autonomy restriction and resource inequality should both significantly and uniquely contribute to group members' desire for collective action. That is, and most central to our theorizing, we posit that being deprived of collective autonomy (vs. enjoying collective autonomy) will increase collective action support both when the outgroup treats the ingroup unjustly (resource inequality) or justly (resource equality) on a separate valued dimension. Our design also allowed us to explore whether, beyond two independent main effects, the effect of experiencing one form of injustice (i.e., either collective autonomy restriction or resource inequality) would be affected by how the group was treated on the other dimension (i.e., an interaction effect). It is possible that experiencing support on one dimension blunts the motivating effect of experiencing mistreatment on the other (e.g., those who are treated justly on resource distribution may be more tolerant of having their collective autonomy restricted). It is also possible that experiencing mistreatment on one dimension serves to further stoke the effect of mistreatment on the other (e.g., those who are treated unjustly on resource distribution might be *all the more* intolerant of having their collective autonomy restricted).

Study 4 also builds on the previous three studies by examining whether, similar to other models of collective action, the effects of collective autonomy restriction on the desire for group power might be mediated in part by hostile group emotions (anger, disgust, and contempt) toward the outgroup. Past research on the social identity model of collective action shows that hostile group emotions help to account for the link between perceiving injustice and collective action (Van Zomeren et al., 2004; see Van Zomeren et al., 2008). Here, we posited a serial mediation model in which group members who had their culture forcefully changed (vs. were able to freely express their culture) would experience greater collective autonomy restriction, which would in turn elicit more hostile emotions and thereby more support for collective efforts consistent with the desire for group power. Consistent with Study 3, we again sought to differentiate collective autonomy restriction from group identification and group agency.

Study 4 also extends Study 3 by assessing several of our key constructs (i.e., the desire for collective action, system justification, and hostile emotions) at both the group and individual levels. That is, we first asked individual group members what they felt privately (as was done in Study 3), but then also asked all members collectively what they felt as a group (more closely approximating real-world intergroup relations in which multiple team representatives congregate to make decisions for the group). Our dynamic and open-ended simulation paradigm also allowed us to assess behavioral outcome measures. Specifically, we examined whether groups engaged in *actual* rebellious behavior during the experiment, and expressed verbal dissent in their discussions.

Method

This study was approved by the McGill University ethics board and the Northwestern University ethics board, under the project title "Inversion: Exploring How Formerly Low-Power Groups Structure Society When They Become High Power."

Participants. We recruited 803 participants (651 female, 151 male, one unspecified; M_{age} = 20.58; SD = 2.58) from the McGill University community (i.e., the McGill psychology extra credit pool, the McGill social psychology paid participant pool, and the McGill classified ads) for a 2–2.5-hr study on intergroup relations. In total, 257 groups took part in the experiment: (a) Collective Autonomy Support + Resource Equality (197 individuals in 65 groups); (b) Collective Autonomy Support + Resource Inequality (193 individuals in 60 groups); (c) Collective Autonomy Restriction + Resource Equality (221 individuals in 68 groups); and (d) Collective Autonomy Restriction + Resource Inequality (192 individuals in 64 groups). Data were collected for the study over a 2-year period (results were consistent when each year was analyzed separately, see Supplemental Table 14). Participants were asked the open-ended question of "Which ethnic group do you belong to?" which we then recoded adapting guidelines from the Canadian Census (10.8% Canadian/Quebecois /Western/Eastern European; 34.6% White/Caucasian; 25.7% Asian/South Asian/ South East Asian; 3.1% Black/African/ Caribbean; 3.4% Arab; 0.4% Metis/First Nations/Inuit; 2.7% Latin American; 8.8% Other/ Mixed Race; and 10.2% did not specify).

Procedure and materials.

Group formation. Up to 12 participants arrived at the lab at one time and were randomly divided into three sub groups (n = 2–4) by drawing slips labeled A, B, or C. Groups were led to separate testing rooms and had no further direct contact with the other groups. Groups were told that their session would be recorded for purposes of the study (a camera was visible in the corner of the room), which we did to have access to group members' behavioral and verbal responses during the experiment. Groups watched an introductory video that provided general information about the context of Grabodia. Groups were told that they belonged to the Hoye group, and lived on Grabdodia along with the two other groups—the Arado and the Suebla. Groups were told that the high-power Arado group possessed a powerful

[14] In the present research we report on group members' experiences during a period of the experiment in which they lacked power as a group and could be controlled by and oppressed by the high-power group. This part of the experiment was one half of a larger experiment in which all groups of participants eventually became a high-power group and could impact the outcomes of other groups ostensibly partaking in the experiment. This second half of the experiment is beyond the scope of the present research. Knowing about the third-party low-power group (the Suebla) was only relevant to this second half of the study.

energy crystal that gave the Arado power to structure Grabodian society. Thus, the Arado group would have power to make decisions that would impact all three groups during the experiment.

Identity formation. As in Study 3, we created an engaging laboratory context in which lacking collective autonomy would have meaningful and tangible consequences for group members. It was explained to participants in the introductory video that they would engage in three different tasks to form a meaningful group identity. The first task involved the creation of a coat of arms using the same procedure utilized in Study 3. Next, groups were told that food is an important component of a group's culture and thus they could determine their own cultural food for the purposes of the experiment. Groups were provided with six potential food choices: Chocolate, Chips, Cookies, Seeds, Dried Fruits, or Vegetables. Groups were told that they would be provided with their chosen food during the experiment. Finally, groups selected from among four different behavioral customs that they could enact during the experiment to express salutations and celebrate group accomplishments (e.g., elbow tapping as a greeting; see the online supplemental materials for more details). The food that group members eat and the behavioral customs which group members enact are rooted in their culture and social identity (Oyserman, 2007, 2009; Oyserman, Fryberg, & Yoder, 2007). Thus, a meaningful restriction of collective autonomy would involve having one's group being prevented from eating its own cultural food and engaging in its behavioral customs.

Work task and experimental manipulations. Following the group's formation of their cultural identity, groups watched a video explaining that the housing units and factories of Grabodia are powered by "mana-beads." Thus, an important objective of the three groups of Grabodians was to mine mana-beads from the quarries of Grabodia to send to the Grabodian power plants. In the context of the experiment, mining for mana-beads took the form of a tedious work task in which participants had to sort out several tiny light gray beads that represented "mana-beads" from a bin containing hundreds of multicolored beads.

The video also explained that mixed in the bin were unstable "black mana-beads." Incorrectly sending black mana-beads to the power plants could have destructive consequences as they could explode if Grabodians were to incorrectly try to release their energy in the power plant as they would a normal mana-bead. By including this subtle information we were able to see whether groups would of their own accord attempt to send black mana-beads to sabotage the powerplants, or use these black mana-beads as a form of weapon against the high-power group (an open-ended behavioral measure of rebellion). With the exception of a small number of groups who were careful not to handle the black mana-beads, participants in the experiment inferred that they could safely handle the black mana-beads without harming their ingroup but understood that it would be damaging to the high-power Arado to include black beads as part of their sorting. It was clear from the discussions of group members that they intended to use the black mana-beads as weaponry against the outgroup rather than feared that the black beads could be destructive to their own group. For example, one group actually gave a secret message to the experimenter stating: "place 20 black beads as explosives around (x, y, z) and lock the doors as soon as the Arado ministers enter (no Hoye people will be present)."

To make the work task feel even more tedious, it was explained to groups that once they finished their assigned work, they could relax and socialize with their fellow group members or play video games that were loaded on the lab computers until all the other groups finished their work. Regardless of condition, groups were always told that they had finished their assigned work just when the other two groups had also finished their work, and thus, never actually played the video games. Work was completed over two separate rounds, during which the groups had to sort a certain number of beads on each round.

Before groups commenced the work task they were informed that because the high-power Arado group controlled the power crystal, the Arado would be able to make important decisions concerning how the three groups would experience the work task. Specifically, participants were told that the high-power group would have a say over (a) how much work each of the groups would be responsible for doing during each work round and (b) whether each group would be permitted to practice their culture while they worked (see Figure 5 for image of participants engaging in the work task). The experimenter ostensibly left with a printout of the ingroup's coat of arms, and a paper indicating the ingroup's chosen food and behavioral custom to show the high-power Arado outgroup. The experimenter explained that s/he would ask the Arado their preference regarding the work distribution for the task, and with respect to what cultural customs/practices should be permissible on Grabodia. The experimenter returned shortly thereafter and delivered both experimental manipulations at the same time.

Resource equality/inequality manipulation. In the *resource equality* condition, groups were told for both work rounds there was a total of 180 beads to be sorted by all three groups, and that the Arado decided to divide the work equally between the Arado, the Hoye and the Suebla with each group sorting 60 beads. In the *resource inequality* condition, the Hoye ingroup was told there were a total of 120 beads to be sorted, and that the Arado decided not to work, leaving the participants' ingroup (the Hoye) and the Suebla to sort 60 beads each during each round. Thus, regardless of condition, groups always sorted 60 beads per round.

Figure 5. Image of participants completing the work task while eating their customary food and engaging in group customs in Study 4. To protect the anonymity of participants, group members depicted in this figure are research assistants who are acting out a typical group interaction we would observe when running the experiment. See the online article for the color version of this figure.

Collective autonomy support/restriction manipulation. Groups were told that they could eat food and engage in cultural customs during the work rounds. In the *collective autonomy support condition*, groups were told that the high-power group chose not to change any elements of their culture. Groups were provided with the coat of arms they had originally created, and were told that they could practice the custom they originally selected as they completed the work task. Moreover, group members were provided with the food they had originally selected as their cultural food. In contrast, in the *collective autonomy restriction condition*, groups were told that the Arado had decided to change their coat of arms, change their chosen custom, and to change their chosen food. Specifically, as in Study 3, groups were provided with a coat of arms that differed entirely from the coat of arms they initially created; the given coat of arms had a different charge, charge color, and shield color. Additionally, in Study 4, the group's name and motto were also left blank to further emphasize to group members that the outgroup completely restricted their cultural identity. Groups were also told that they had to perform a different custom from the one they originally selected as they engaged in the work task. Moreover, groups were given a different food to eat from the one they initially chose as their desired food (e.g., if groups selected cookies, they may have been given seeds, dried fruit, or carrots instead[15]). Importantly, ingroups (Hoye) were always told that the high-power outgroup (Arado) treated the other low-power group (Suebla) the same way as their ingroup to eliminate the possibility that ingroups felt mistreated relative to the other low-power outgroup. The new coat of arms, custom, and food which group members were provided were randomly chosen and counterbalanced across conditions in which groups had their collective autonomy restricted.

Rebellious group behavior during work task. Two independent coders watched video recordings[16] of the groups engaging in the unpleasant work task and coded for different ways in which the ingroup may have rebelled against the high-power Arado group. Groups rebelled during the work task by (a) mixing in black beads with the light gray beads that they then sent back to the Arado group to sabotage the energy extraction process (8.7% of groups); (b) sorting beads of colors other than gray or black (2.5% of groups), (c) choosing not to sort any beads (1.2% of groups), or (d) sorting the wrong number of beads (3.1% of groups). One group also sent their food back to the Arado group instead of mana-beads. Additionally, some groups stockpiled black mana-beads to use as weapons against the outgroup (2.3% of groups) and/or gray mana-beads to be used as fuel for a collective action initiative (3.1% of groups). We counted such behaviors as rebellious behavior only when groups verbally expressed intent to do so as a means of disrupting the Arado group and/or improving their own group's situation (thus we differentiated rebellious behavior from groups accidentally miscounting or sorting the wrong types of beads). We formed a dichotomous variable of *rebellious behavior* in which groups who exhibited any of these rebellious behaviors were coded as "1," whereas groups who did not exhibit any rebellious behavior were coded as "0." In total, 15.2% ($n = 32$) of all groups that took part in the experiment engaged in rebellious behavior.

Verbal dissent. We also assessed the extent to which group members verbally expressed dissent toward the high-power outgroup and their Grabodian social system. Independent coders watched the video recordings and counted the total number of times that members within each group expressed dissatisfaction with their Grabodian society and/or the way that they were treated by the high-power group. The types of complaints uttered by participants included: (a) complaining about the changes that may have been made to groups' culture (e.g., "we don't have a motto anymore . . . or a name . . . no!"); (b) the amount of work that participants were assigned by the high-power group (e.g., "they are not sorting anything!"); (c) general feelings of being mistreated by the high-power group (e.g., "we are being discriminated against!"); and (d) general dissatisfaction with the work task (e.g., "again? I don't see the point of this [*referring to the second round of sorting*]"). There was a high level of internal consistency between raters' scoring of the number of verbal complaints exhibited by each group during both the first year ($ICC_{AbsoluteAgreement} = .93$, 95% CI [.90, .95], $p < .001$) and second year ($ICC_{AbsoluteAgreement} = .98$, 95% CI [.97, .99], $p < .001$).[17] We used the mean of all coders' scores in our analyses.

Self-report outcomes. During both years of data collection, we assessed key outcomes (i.e., collective action support, system justification, and hostile group emotions), manipulation checks (perceived collective autonomy restriction and perceived resource exploitation), and covariates (group identification and group agency) by having group members privately complete self-report scales after the work task was finished. In addition to assessing these outcomes at the individual group member level, we also assessed collective action, system justification, and hostile emotions at the group level by having participants respond to the questionnaire items as a group. Having groups respond to scale-items collectively is time intensive because they must discuss and reach a consensus for each scale-item. Thus, we could not assess all outcomes at the group level in a given year. Instead, we assessed *collective action* and *system justification* at the group level during Year 1 only, and *hostile emotions* during Year 2 only. Questions asked at the group level were always asked after group members individually and privately responded to them.

Collective autonomy restriction. Collective autonomy restriction was assessed with two items: "I felt that my people could maintain our cultural customs and practices when the Arado group was in power (reverse scored)" and "I felt that my people were

[15] Groups who initially chose a healthy food (carrots, dried fruit, or seeds) were provided with a different healthy food. Groups who initially chose an unhealthy food (cookies, chips, or chocolate) were also provided with a healthy food. We designed the study in this manner, because unhealthy foods tend to be pleasurable, and we wanted to reduce the possibility for group members to feel that the outgroup was being kind to their ingroup by providing a rewarding food. The effect of the collective autonomy manipulation on perceived collective autonomy restriction remained significant controlling for groups' original selection of healthy versus unhealthy food ($\gamma = 4.14$, 95% CI [3.95, 4.34], $p < .001$) and was not moderated by food choice ($\gamma = -.209$, 95% CI [−.61, .19], $p = .317$).

[16] Because of camera malfunctions we did not have access to recordings for 11 groups. Percentages reported in text reflect the valid percent of groups with which we had video data.

[17] Two coders, Coder A and Coder B coded all of the data for both year 1 and year 2. An additional coder, Coder C, also coded the data collected during year 1 only. When computing the mean of coders' scores for each year we used all data points available (i.e., the score for groups run during year 1 reflects the mean ratings of Coder A, Coder B, and Coder C. The scores for groups run during year 2 reflect the mean ratings of Coder A and Coder B only).

prevented from practicing our culture when the Arado group was in power," $r = .73$, $p < .001$.

Perceived exploitation. Exploitation was assessed with two items: "I felt that my people were taken advantage of when the Arado were in power" and "I felt that my people were exploited when the Arado were in power," $r = .89$, $p < .001$ during both years of testing. We conceptualized of this measure as a manipulation check of the resource inequality manipulation.

Hostile emotions. Participants rated how much "anger," "contempt," and "disgust" they felt toward the high-power Arado group ($\alpha_{\text{individual level}} = .80$; $\alpha = .74_{\text{group level}}$). Participants (groups) rated the extent to which they felt each emotion from 1 (*not at all*) to 7 (*very much*).

Collective action support. Collective action support was assessed using five items similar to those used in Study 1 and Study 2. Sample items included: "Our people need to stick together and act collectively"; "We need to rise together to ensure that we are not pushed around" ($\alpha_{\text{individual level}} = .86$; $\alpha = .86_{\text{group level}}$). Participants (groups) rated their agreement with each item from 1 (*strongly disagree*) to 7 (*strongly agree*).

System justification. System justification was assessed using the same four items used in Study 1 and Study 2, however items were adapted to reflect justification of Grabodian society rather than American society. Sample items included: "In general, Grabodian society is fair" ($\alpha_{\text{individual level}} = .87$; $\alpha_{\text{group level}} = .87$). Participants (groups) rated their agreement with each item from 1 (*strongly disagree*) to 7 (*strongly agree*).

Group identification. We assessed group identification with three items: "In general, I am glad to be a member of my group," "I feel strong ties to the other members of my group," and "I think of myself as a member of my group" ($\alpha = .81$).

Group agency. We assessed group agency with two items: "I felt powerful as a group" and "I felt strong as a group," $r = .63$, $p < .001$. We note that group agency was only assessed during the first year of data collection.

Results

Means, standard deviations and correlations for all measured variables are summarized in Table 7 and Table 8.

The intraclass correlation coefficients (ICCs) for individual group members' perceived collective autonomy restriction, ICC = .76, perceived exploitation, ICC = .56, group identification, ICC = .16, group agency, ICC = .03, collective action, ICC = .30, and system justification, ICC = .39, and hostile group emotions, ICC = .36, were all large (with the exception of agency) and non-negligible. Because we could not assume independence of individuals nested within unique groups, we used multilevel random intercepts regression models to test the effect of condition on each outcome measured at the *individual* level. These outcomes assessed at the individual level were analyzed in R (see, Finch, Bolin, & Kelley, 2014) using the lme4 package (Bates, Mächler, Bolker, & Walker, 2015). We created dichotomous contrast coded variables for the collective autonomy restriction factor (−.5 = collective autonomy support, .5 = collective autonomy restriction) and for the inequality factor (−.5 = resource equality, .5 = resource inequality).

Collective autonomy restriction. As expected, group members reported significantly greater collective autonomy restriction when the outgroup restricted ($M = 5.89$, $SD = 1.32$) rather than supported their collective autonomy ($M = 1.73$; $SD = 1.15$), $\gamma = 4.16$, $SE = .10$, 95% CI [3.96, 4.35], $t(240.48) = 41.78$, $p < .001$. In contrast, being treated unequally ($M = 3.90$, $SD = 2.41$) versus equally ($M = 3.80$; $SD = 2.42$) in terms of access to scare resources did *not* significantly impact group members' perception of collective autonomy restriction, $\gamma = .03$, 95% CI [−.16, .23], $t(240.32) = .33$, $p = .746$. The collective autonomy restriction by inequality interaction was nonsignificant, $\gamma = .04$, $SE = .10$, 95% CI [−.35, .43], $t(239.09) = .21$, $p = .838$. These findings indicate that collective autonomy restriction is a unique perception that

Table 7
Means, Standard Deviations, and Intercorrelations of All Measured Variables Across the Conditions of Study 4

Outcome	*M*	*SD*	1	2	3	4	5	6	7
Individual-level outcomes									
1. Collective autonomy restriction (both years)	3.85	2.42	1	.38***	.39***	.33***	−.39***	−.04	−.03
2. Exploitation (both years)	4.14	2.10		1	.51***	.41***	−.52***	.002	.05
3. Hostile emotions (both years)	2.72	1.53			1	.38***	−.43***	−.002	.00
4. Collective action support (both years)	5.34	1.26				1	−.57***	.12***	−.03
5. System justification (both years)	3.43	1.41					1	.10***	.13*
6. Group identification (both years)	5.66	.95						1	.34**
7. Group agency (Year 1)	4.36	1.59							1
	M	*SD*	8	9	10	11	12		
Group-level outcomes									
8. Hostile emotions (Year 2)	2.62	1.43	1	NA	NA	.26**	.49***		
9. Collective action support (Year 1)	5.65	1.08		1	−.70***	.33***	.37***		
10. System justification (Year 1)	3.07	1.37			1	−.29**	−.40***		
11. Rebellious behavior (presence/absence; both years)	16%					1	.31***		
12. Verbal dissent (count; both years)	2.41	3.22					1		

Note. We used pair-wise deletions when computing correlations because not all variables were measured during both years. Given that hostile emotions, collective action support, and system justification were not measured at the group level during the same year, it was not possible to compute the intercorrelations between them at the group level.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 8
Condition Cell Means for Key Outcomes (Study 4)

	Resource equality				Resource inequality			
	Collective autonomy support		Collective autonomy restriction		Collective autonomy support		Collective autonomy restriction	
Outcome	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Individual-level outcomes (assessed both years)								
Collective autonomy restriction	1.73	1.14	5.85	1.39	1.73	1.16	5.92	1.25
Exploitation	1.67	1.26	4.20	1.64	5.14	1.47	5.46	1.54
Hostile emotions	1.56	1.07	3.03	1.41	2.62	1.39	3.57	1.44
Collective action support	4.46	1.55	5.62	.93	5.35	1.08	5.87	.93
System justification	4.68	1.43	3.19	1.08	3.29	1.15	2.63	1.08
Group-level outcomes								
Collective action support (Year 1)	4.88	1.42	5.85	.75	5.64	.70	6.30	.64
System justification (Year 1)	4.19	1.78	2.80	.79	2.99	.89	2.21	.79
Hostile emotions (Year 2)	1.28	.54	3.15	1.17	2.36	1.29	3.52	1.40
Rebellious behavior (Yes/No; both years)	1.6%		13.8%		15.3%		31.7%	
Verbal dissent (count; both years)	.17	.40	4.36	3.49	.61	.99	4.38	3.44

arises when one's group is forcefully prevented from expressing its own sociocultural identity.

Exploitation. Being treated unequally ($M = 5.31$, $SD = 1.51$) versus equally ($M = 2.94$, $SD = 1.94$) on the work task significantly increased perceived exploitation, $\gamma = 2.36$, $SE = .12$, 95% CI [2.12, 2.60], $t(235.08) = 19.28$, $p < .001$. We also found that participants reported greater exploitation when their collective autonomy was restricted ($M = 4.85$, $SD = 1.71$) versus supported ($M = 3.40$, $SD = 2.21$), $\gamma = 1.43$, $SE = .12$, 95% CI [1.19, 1.67], $t(235.08) = 11.67$, $p < .001$. The effect of the collective autonomy condition on exploitation was qualified by a significant interaction, $\gamma = -2.21$, $SE = .25$, 95% CI [−2.69, −1.73], $t(235.08) = -9.02$, $p < .001$. Simple effects analyses revealed that collective autonomy restriction (relative to support) only increased perceived exploitation when group members were treated equally (but not unequally) by the high-power outgroup (see Table 9 for simple effects). We also tested a 2-1-1 multilevel mediation model in which we examined whether the between group effect of the collective autonomy restriction condition (level 2) on exploitation (level 1) was mediated by feelings of collective autonomy restriction (level 1). Specifically, we entered the individual's group mean centered collective autonomy restriction score, and, the group's mean collective autonomy restriction score into the model (Zhang and colleagues (2009). As in Study 3, the model was tested within a multilevel structural equation modeling framework (fitted with the Lavaan.Survey package in R; Oberski, 2014). We computed the indirect effect using 10,000 Monte Carlo simulations (Rockwood & Hayes, 2017). The effect of the collective autonomy restriction condition on perceptions of exploitation was mediated by collective autonomy restriction, indirect effect = .93, $SE = .42$, 95% MCCI [.04, .95], $z = 2.22$, $p = .027$, direct effect = .49, $SE = .45$, 95% CI [−.39, 1.37], $z = 1.09$, $p = .275$.[18]

Hostile intergroup emotions. Group members experienced more hostile emotions toward the high-power group when their collective autonomy was restricted ($M = 3.30$, $SD = 1.45$) versus supported ($M = 2.09$, $SD = 1.35$), $\gamma = 1.21$, $SE = .11$, 95% CI [.98, 1.43], $t(240.47) = 10.53$, $p < .001$. Individual group members also experienced more hostile emotions toward the high-power group when they were treated unequally ($M = 3.11$, $SD = 1.49$) rather than treated equally ($M = 2.31$, $SD = 1.45$) on the work task, $\gamma = .79$, $SE = .11$, 95% CI [.57, 1.01], $t(240.47) = 6.90$, $p < .001$. The 2-way interaction was significant, $\gamma = -.50$, $SE = .23$, 95% CI [−.95, −.05], $t(240.47) = -2.19$, $p = .030$. The effect of experiencing collective autonomy restriction (vs. support) on eliciting hostile emotions was relatively weaker (but still significant) when group members were also treated unequally versus treated equally on the work task. Similarly, the effect of being treated unequally (vs. equally) on eliciting hostile emotions was relatively weaker (but still significant) when group members had their collective autonomy restricted versus supported (see Table 9).

As a group, participants harbored more hostile emotions when their collective autonomy was restricted ($M = 3.32$, $SD = 1.29$) versus supported ($M = 1.80$, $SD = 1.11$) by the outgroup, $b = 1.51$, $SE = .19$, 95% CI [1.36, 1.89], $t(142) = 7.91$, $p < .001$, and when they were treated unequally ($M = 2.98$, $SD = 1.46$) versus equally ($M = 2.29$, $SD = 1.32$) on the work task, $b = .73$, $SE = .19$, 95% CI [.35, 1.11], $t(142) = 3.82$, $p < .001$. There was a marginally significant condition interaction at the group level, $b = -.71$, $SE = .38$, 95% CI [−1.47, .05], $t(142) = -1.86$, $p = .065$. The effect of experiencing collective autonomy restriction (vs. support) on eliciting hostile emotions was relatively weaker (yet remained significant) when group members were also treated unequally versus treated equally on the work task. The effect of being treated unequally (vs. equally) on eliciting hostile emotions

[18] Initially we conceptualized the exploitation measure as a manipulation check of the resource inequality manipulation. However, in the absence of any other form of exploitation participants may have interpreted having their culture unduly restricted as exploitation. In Year 2 of conducting the study, we also included a more explicit manipulation check for the resource inequality manipulation: "I felt that my people had to do more work than we should have when the Arado were in power." As expected, while we found a significant main effect of condition on resource exploitation, $\gamma = 3.72$, $SE = .18$, 95% CI [3.37, 4.07], $t(130.75) = 20.49$, $p < .001$, we did not find a significant effect of the collective autonomy restriction condition, $\gamma = .06$, $SE = .18$, 95% CI [−.31, .43], $t(130.75) = .35$, $p = .728$.

Table 9
Simple Effects of Collective Autonomy Restriction Condition and Resource Inequality Condition for Key Outcomes (Study 4)

	Simple effect of CA support (−.5) versus CA restriction (.5) at each level of resource inequality				Simple effect of resource EQ (−.5) versus resource inequality (.5) at each level of collective autonomy restriction			
	Equality		Inequality		CA support		CA restriction	
Outcome	*y* (*SE*)	*z*	*y* (*SE*)	*z*	*y* (*SE*)	*z*	*y* (*SE*)	*z*
Individual-level outcomes								
Collective autonomy restriction	4.14 (.14)	29.12***	4.18 (.14)	29.85***	.012 (.14)	.08	.05 (.14)	.37
Exploitation	2.54 (.18)	14.53***	.32 (.17)	1.88†	3.47 (.17)	19.87***	1.26 (.17)	7.31***
Collective action support	1.16 (.13)	8.77***	.52 (.13)	3.95***	.89 (.13)	6.66***	.25 (.13)	1.91†
Hostile emotions	1.46 (.16)	8.94***	.96 (.16)	5.94***	1.04 (.16)	6.33***	.54 (.16)	3.39***
System justification	−1.50 (.14)	−10.89***	−.68 (.14)	−4.88***	−1.39 (.14)	−9.83***	−.57 (.14)	−4.19***
	b (*SE*)	*t*	*b* (*SE*)	*t*	*b* (*SE*)	*t*	*b* (*SE*)	*t*
Group-level outcomes								
Hostile emotions (Year 2)	1.87 (.27)	7.04***	1.59 (.28)	4.20***	1.09 (.28)	3.88***	.38 (.26)	1.44
Collective action support (Year 1)	.97 (.24)	4.02***	.66 (.25)	2.61*	.76 (.25)	3.07**	.45 (.25)	1.84†
System justification (Year 1)	−1.39 (.39)	−4.70***	−.78 (.31)	−2.51*	−1.20 (.30)	−3.95***	−.59 (.30)	−1.97†
Rebellious behavior (both years)	10.12 (1.07)	2.16*	2.58 (.45)	2.10*	11.34 (1.07)	2.27*	2.89 (.45)	2.36*
Verbal dissent (both years)	25.73 (.45)	7.27***	7.17 (.26)	7.64***	3.60 (.50)	2.56*	1.00 (.12)	.04

Note. For the outcomes of rebellious behavior and verbal dissent we report the exp(*b*). The test statistic for Rebellious Behavior is the *z* test statistic.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

was relatively weaker and became nonsignificant when group members had their collective autonomy restricted versus supported (see Table 9).

Collective action support. Group members personally supported collective action to a greater degree when their collective autonomy was restricted ($M = 5.75$, $SD = .94$) versus supported by the high-power outgroup ($M = 4.90$, $SD = 1.41$), $\gamma = .84$, $SE = .09$, 95% CI [.66, 1.02], $t(242.89) = 9.04$, $p < .001$. Group members also supported collective action to a significantly greater degree when they were treated unequally ($M = 5.63$, $SD = 1.04$) versus equally ($M = 5.05$, $SD = 1.40$) on the work task, $\gamma = .57$, $SE = .09$, 95% CI [.39, .75], $t(242.89) = 6.11$, $p < .001$. The two-way interaction was also significant, $\gamma = -.64$, 95% CI [−1.01, −.28], $t(242.89) = -3.44$, $p < .001$. Specifically, the mobilizing effect of experiencing collective autonomy restriction (vs. support) on collective action was relatively weaker when group members were treated unequally versus treated equally on the work task. Critically, however, and in line with our predictions, the effect of collective autonomy restriction (vs. support) was significant in both the resource inequality and resource equality conditions. The mobilizing effect of being treated unequally (vs. equally) on collective action support was weaker (and became marginally significant) when group members had their collective autonomy restricted versus supported (see Table 9).

As a group, participants supported collective action to a greater extent when their collective autonomy was restricted ($M = 6.01$, $SD = .73$) versus supported ($M = 5.23$, $SD = 1.20$) by the outgroup, $b = .81$, $SE = .17$, 95% CI [.47, 1.16], $t(115) = 4.65$, $p < .001$, and when they were treated unequally ($M = 5.99$, $SD = .74$) versus equally ($M = 5.35$; $SD = 1.20$) on the work task, $b = .61$, $SE = .17$, 95% CI [.26, .95], $t(115) = 3.45$, $p = .001$. There was no significant two-way interaction at the group level, $b = -.31$, $SE = .35$, 95% CI [−1.00, .38], $t(115) = -.90$, $p = .372$.

System justification. Group members reported significantly lower system justification when their collective autonomy was restricted ($M = 2.90$, $SD = 1.12$) rather than supported by the high-power outgroup ($M = 4.01$, $SD = 1.47$), $\gamma = -1.09$, $SE = .10$, 95% CI [−1.28, −.90], $t(246.11) = -11.14$, $p < .001$. Individual group members also reported significantly lower system justification when they were treated unequally ($M = 2.93$, $SD = 1.16$) rather than treated equally ($M = 3.92$, $SD = 1.47$) on the work task, $\gamma = -.98$, $SE = .10$, 95% CI [−1.17, −.79], $t(246.11) = -10.01$, $p < .001$. The two-way interaction was significant, $\gamma = .83$, $SE = .20$, 95% CI [.44, 1.21], $t(246.11) = 4.22$, $p < .001$. The system challenging effect of experiencing collective autonomy restriction (vs. support) was relatively weaker (but still significant) when group members were treated unequally versus treated equally on the work task. Similarly, the system challenging effect of being treated unequally (vs. equally) was relatively weaker (but still significant) when group members had their collective autonomy restricted versus supported (see Table 9).

As a group, participants were less likely to justify their social system when their collective autonomy was restricted ($M = 2.51$, $SD = .84$) versus supported ($M = 3.64$, $SD = 1.56$), $b = -1.08$, $SE = .11$, 95% CI [−1.50, −.66], $t(115) = -5.07$, $p < .001$, and when they were treated unequally ($M = 2.58$, $SD = .92$) versus equally ($M = 3.52$, $SD = 1.55$), $b = -.90$, $SE = .21$, 95% CI [−1.32, −.47], $t(115) = -4.20$, $p < .001$. There was no significant two-way interaction at the group level, $b = .61$, $SE = .43$, 95% CI [−.24, 1.46], $t(115) = 1.43$, $p = .156$.

Rebellious group behavior. Binary logistic regression revealed that groups who had their collective autonomy restricted (22.7%) were more likely to engage in rebellious behavior during the work task than those who had their collective autonomy supported (8.1%), exp(b) = 5.12, $SE = .58$, 95% CI [1.92, 23.24], $z = 2.81$, $p = .005$. Similarly, groups who were treated unequally (23.8%) were more likely to rebel than groups who were treated

equally (7.8%), exp(b) = 5.73, SE = .58, 95% CI [2.16, 26.03], z = 3.01, p = .003. The two-way interaction was nonsignificant, exp(b) = .26, SE = 1.16, 95% CI [.01, 1.83], z = −1.18, p = .240.

Verbal dissent. We used quasi-Poisson regression (Agresti, 2002)[19] to test whether groups expressed more verbal complaints about Grabodia and/or their treatment by the Arado as a function of the collective autonomy restriction (vs. support) condition and the inequality (vs. equality) condition. Groups expressed significantly more verbal complaints when their collective autonomy was restricted (M = 4.37, SD = 3.45) versus supported by the outgroup (M = .38, SD = .77), exp(b) = 13.59, SE = .26, 95% CI [8.55, 23.85], t(237) = 10.12, p < .001. Groups who were treated unequally (M = 2.57, SD = 3.19) versus equally (M = 2.26, SD = 3.25) also expressed significantly more verbal complaints during the experiment, exp(b) = 1.90, SE = .26, 95% CI [1.18, 3.32], t(237) = 2.49, p = .013. The 2-way interaction was significant, exp(b) = .28, SE = .52, 95% CI [.09, .72], t(237) = −2.48, p = .014. Collective autonomy restriction (vs. support) significantly increased the number of complaints uttered by groups *both* when they were treated equally and unequally by the outgroup. In contrast, resource inequality only increased complaints when group members had their collective autonomy supported rather than restricted (see Table 9).

Effect on other group factors. Consistent with Study 3, experiencing collective autonomy restriction (vs. support) did not significantly impact group identification, y = −.07, SE = .08, 95% CI [−.22, .09], t(238.51) = −.86, p = .392, or group agency, y = −.10, SE = .19, 95% CI [−.46, .27], t(93.73) = −.51, p = .608. Experiencing resource inequality (vs. equality) had a marginal impact on group identification, y = −.13, SE = .08, 95% CI [−.29, .02], t(238.51) = −1.68, p = .095, and no significant impact on group agency, y = .06, SE = .19, 95% CI [−.30, .43], t(93.73) = .35, p = .731. There were no significant condition interactions for either outcome, all ts < 1. We also tested whether our results (at the individual level) were robust when controlling for people's group identification, feelings of group agency, and also, perceptions of exploitation which we included as a covariate given that it was impacted by the collective autonomy manipulation: Experiencing collective autonomy restriction (vs. support) significantly impacted hostile group emotions, support of collective action, and system justification, when accounting for all three covariates (ps < .01).

Benjamini–Hochberg procedure. Because we examined the effect of the collective autonomy manipulation on several different outcomes across both the individual and group levels (a total of 12 univariate tests), it is possible that these multiple tests could have yielded a false discovery (i.e., an incorrect rejection of the null hypothesis). Thus, we subjected all of the observed p values to the Benjamini-Hochberg procedure (Benjamini and Hochberg, 1995) which is robust against false discovery: correcting for 12 repeated univariate assessments we find that all of the p values that were below the threshold of significance remained significant (see Supplemental Table 15 for a comparison of uncorrected and corrected outcomes).

Mediation analysis. We tested a 2-1-1-1 multilevel-serial mediation model to examine whether the between group effect of the collective autonomy restriction condition (level 2) on the two outcomes of system justification and collective action (level 1) were mediated by feelings of collective autonomy restriction (level 1), and in turn, hostile group-based emotions (level 1). Consistent with Study 3, we followed the recommended group-mean-centering procedures outlined by Zhang and colleagues (2009).[20] We also controlled for whether group members were assigned to the resource inequality (vs. equality) condition, as well as their perceptions of exploitation and group identification (both of which were grand-mean-centered).[21] The model was tested within a multilevel structural equation modeling framework (fitted with the Lavaan.Survey package in R; Oberski, 2014). We computed the indirect effects using 10,000 Monte Carlo simulations (Rockwood & Hayes, 2017). The model had good fit: robust CFI = 1.00; robust SRMR = .006; robust RMSEA = .00, 90% CI [.00, .00]; robust BIC = 19,248.29; robust χ^2(14.84) = 1.25, p = 1.00. The model and all unstandardized path-estimates are shown in Figure 6.

Collective action support. The serial path in which the collective autonomy restriction condition impacted collective action support through feelings of collective autonomy restriction, and in turn, hostile emotions was significant, indirect effect = .17, SE = .08, 95% MCCI [.03, .33], z = 2.22, p = .028. The indirect path in which the collective autonomy restriction condition impacted collective action only through feelings of collective autonomy restriction was nonsignificant, indirect effect = .17, SE = .24, 95% MCCI [−.29, .64], z = .69, p = .488. The indirect path in which the collective autonomy restriction condition impacted collective action only through hostile emotions was nonsignificant, indirect effect = .07, SE = .07, 95% MCCI [−.09, .22], z = .89, p = .375. The direct effect of the collective autonomy restriction condition on collective action was nonsignificant, direct effect = .21, SE = .27, z = .77, p = .442, 95% CI [−.32, .74].

System justification. The serial path in which the collective autonomy restriction condition impacted system justification through feelings of collective autonomy restriction, and in turn, hostile group emotions was significant, indirect effect = −.16, SE = .07, 95% CI [−.31, −.03], z = −2.20, p = .028. The indirect path in which the collective autonomy restriction condition impacted system justification only through feelings of collective autonomy restriction was nonsignificant, indirect effect = −.35, SE = .22, 95% CI [−.78, .08], z = −1.62, p = .105. The indirect path in which the collective autonomy restriction condition impacted system justification only through hostile emotions was also nonsignificant, indirect effect = −.06, SE = .07, 95% CI [−.22, .08], z = −.85, p = .395. The direct effect of the collective autonomy restriction condition on system justification was nonsignificant, direct effect = −.19, SE = .24, z = −.81, p = .420, 95% CI [−.67, .28].

[19] Because this outcome was a count outcome we used the quasi-Poisson regression were run using the MASS package in R. We used the quasi-Poisson regression rather than Poisson regression because the variance of the outcome was larger than the mean (Agresti, 2002).

[20] Specifically, we entered individuals' group-mean-centered scores (within effect) and the group's mean score for each the two mediators (collective autonomy restriction and hostile emotions) into the model. This allowed us to isolate the pure between group indirect effect of condition on outcome through the mediators.

[21] We did not include group agency as a covariate because it was not assessed during both years.

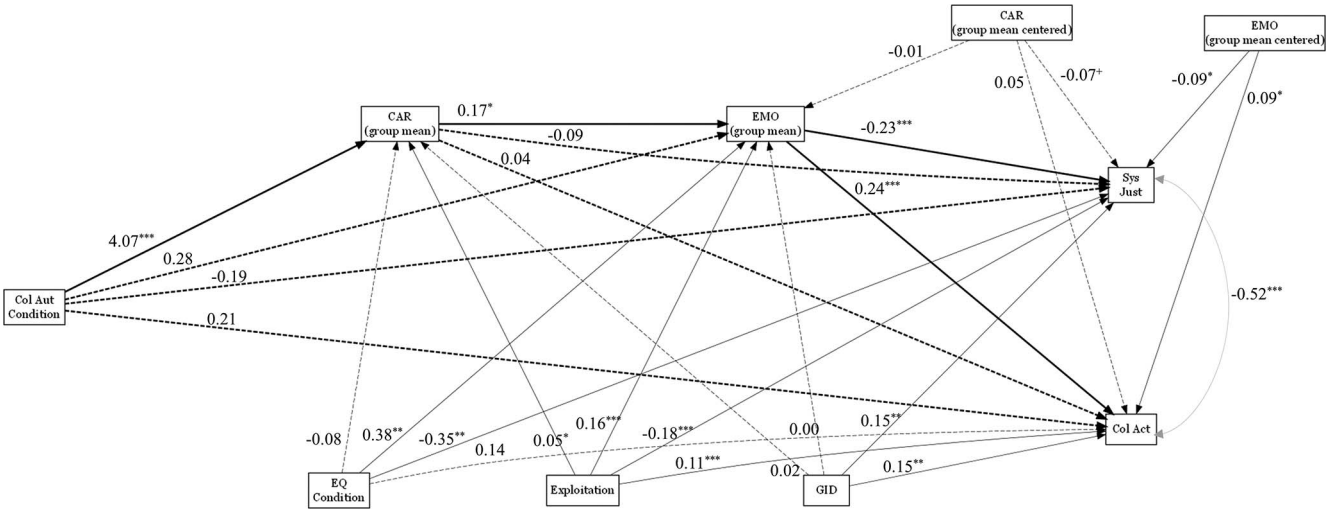

Figure 6. Multilevel Structural Equation Model Tested in Study 4. Col Aut Condition = assignment to the collective autonomy condition coded (−.5 = *collective autonomy support*, +5 *collective autonomy restriction*); EQ condition = assignment to the (in)equality condition coded (−.5 = *resource equality*, +5 *resource inequality*); CAR = perceived collective autonomy restriction; EMO = perceived hostile emotions; Exploitation = perceptions of general exploitation; GID = group identification; Sys Just = system justification; Col Act = collective action. Path coefficients represent unstandardized path estimates. Path arrows pertaining to the hypothesized indirect effect of the collective autonomy condition on outcomes through perceived collective autonomy restriction and hostile emotions are emphasized with darker lines. Significant paths are represented by unbroken lines. Nonsignificant paths are represented by broken lines. $^{+}$ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

Study 4 provides experimental evidence that experiencing collective autonomy restriction uniquely increases group members' support for collective action and their willingness to challenge their social system. These effects were observed both when group members were harmfully exploited by the outgroup in terms of being deprived relatively equal access to scarce resources, and when they were treated equally. This provides clear experimental evidence that collective autonomy restriction is a unique driver of collective action that is separate from other forms of injustice such as being deprived equal access to scarce resources.

Consistent with Study 3, we found that the collective autonomy restriction manipulation did not impact other important group factors within contemporary models of collective action (i.e., group identification and group agency). We did find that in the absence of resource inequality, experiencing collective autonomy restriction elicited feelings of being exploited as a group; however, this effect was mediated by feelings of collective autonomy restriction. Moreover, the impact of the collective autonomy restriction manipulation on increased collective action and decreased system justification remained significant controlling for group identification, group agency, and feeling exploited as a group.

We also find that group members harbored more hostile emotions toward the outgroup when the outgroup restricted rather than supported their collective autonomy. Serial indirect effects analyses further showed that experiencing collective autonomy restriction indirectly affected collective action support and system challenge in part by eliciting hostile emotions among group members. This finding is consistent with and builds upon previous work showing that hostile group emotions serve as an important mechanism through which experiencing injustices against one's group leads to collective action (Van Zomeren et al., 2004; see Van Zomeren et al., 2008). Importantly, the indirect effect was robust when controlling for group members' more general perception of being exploited by the outgroup. This further indicates that collective autonomy restriction is a unique form of injustice which fuels hostility and collective action.

Importantly, we observed consistent support for our hypotheses when assessing group members' individual attitudes privately, and when assessing all members of a group collectively. Moving beyond self-report measures, Study 4 also provides rich behavioral evidence suggesting that groups that have their collective autonomy restricted (rather than supported) will be more likely to actually engage in rebellious intergroup behavior (e.g., deliberately sending the wrong types of beads to the Grabodian power plants). Moreover, as they worked, low-power group members who had their collective autonomy restricted rather than supported verbally expressed greater dissent with respect to their treatment by the high-power group and their social system.

Notably, we found evidence of an interaction between the collective autonomy restriction and resource inequality conditions. Specifically, the effect of experiencing one form of injustice (i.e., either collective autonomy restriction or resource inequality) was relatively weaker when the group was treated unjustly (vs. supported) on the other dimension. This finding suggests that when groups experience multiple forms of mistreatment simultaneously, there may a common or shared element to the different forms of mistreatment that relates to groups desiring to improve their posi-

tion. Insofar as this is the case, there may be less unique variance left to be accounted for by each form of mistreatment than would be true if either form of mistreatment were present alone. Critically, however, and speaking to the unique psychological importance of collective autonomy, we found that experiencing collective autonomy restriction still significantly impacted all outcomes regardless of whether group members were deprived relatively equal access to scarce resources by the outgroup.

General Discussion

Four studies involving real-world and simulated intergroup contexts highlight the psychological importance of collective autonomy for group members. We integrated past work showing that collective autonomy restriction reduces group members' psychological need satisfaction and well-being (Kachanoff et al., 2019; Parker et al., 2019) with research showing that group members engage in collective action to improve their group's position when they experience injustices which threaten important group needs (e.g., realistic threats to scarce resources and symbolic threats to positive distinctiveness; Tajfel & Turner, 1979; Van Zomeren et al., 2008; Wright, Taylor, & Moghaddam, 1990). We hypothesized that, beyond the impact of experiencing other forms of injustice, experiencing collective autonomy restriction would be associated—among both advantaged and disadvantaged group members—with seeking to improve the ingroup's structural power position within the social hierarchy (Sidanius et al., 2016). Among disadvantaged groups, we expected collective autonomy restriction to associate positively with support for behaviors and beliefs which would challenge and attenuate their ingroup's disadvantaged power position within the hierarchy. On the other hand, among advantaged groups, we expected collective autonomy restriction to be positively associated with support for behaviors and beliefs which would maintain or enhance their group's advantaged power position within the hierarchy.

We find consistent correlational and experimental evidence (as well as evidence at both the individual-level and group-level) in support of these hypotheses among disadvantaged group members. Study 1 and Study 2 show that among members of a real-world disadvantaged group historically lacking structural power in society (i.e., Black Americans), experiencing collective autonomy restriction is uniquely associated with a greater desire for group power and collective action support, as well as greater system challenge. Importantly, this was true even when controlling for other forms of injustice, such as the illegitimacy of the group's power position (Study 1), discrimination, and relative deprivation (Study 2), previously identified as important motivators of collective action (Mummendey et al., 1999; Van Zomeren et al., 2008). Study 3 further differentiated lacking collective autonomy from low structural power: Even when we placed participants into groups that were equally low in structural power, those who were randomly assigned to experience collective autonomy restriction were significantly more likely to desire power on behalf of their ingroup than those who experienced collective autonomy support (or those low power group members in a control condition where their collective autonomy was not under threat). Finally, distinguishing collective autonomy restriction from the experience of being exploited more generally, we found in Study 4 that lacking (vs. enjoying) collective autonomy significantly contributed to collective action support and system challenge on behalf of the ingroup both in the absence *and* presence of material exploitation (i.e., being denied vs. granted equal access to scarce material resources). Experiencing collective autonomy restriction also had meaningful consequences for the actual behaviors of disadvantaged groups: Groups would of their own accord generate ways to rebel against restrictions placed on their collective autonomy—sometimes using deliberately violent means (e.g., using black mana-beads as weapons in Study 4). Across all four studies we found that our effects could not be accounted for by important social-identity-based factors shown to relate to collective action support (i.e., group identification, group agency; Van Zomeren et al., 2008).

We also found correlational support for our hypotheses among White Americans, an advantaged group that has historically enjoyed a position of relative structural power. Of note, we observed meaningful levels of collective autonomy restriction among this group, highlighting that even advantaged group members can sometimes feel that their autonomy to define and express their culture is constrained by other groups. Our findings are consistent with anecdotal evidence from societal debates in countries like the Netherlands about traditions like Zwarte Piet, as well as research at the individual level highlighting that despite power differentials between them teachers and managers can feel that their constrained by students and employees, respectively (Little, 2018; Pelletier et al., 2002; Sellers, 2018). Still more centrally for our purposes, we observed that variation in the extent to which White Americans felt that their collective autonomy was restricted was reliably (and uniquely) associated with their desire for power, as reflected in their support for collective action on behalf of the ingroup and their support for system-legitimizing beliefs (i.e., system justification and Protestant Work Ethic). Indeed, the relation between collective autonomy restriction and the desire for power was no weaker (and, in fact, stronger in some cases) among White Americans than among Black Americans. Our effects among advantaged groups were also robust controlling for group identification, group agency, discrimination, and relative deprivation.

Implications

Our findings have important implications for the power literature. One essential form of power pertains to a group or individual's capacity to resist the influence and control of others (Cislak et al., 2018; Keltner et al., 2003; Lammers et al., 2016; Pratto, 2016; Pratto et al., 2008). Nonintuitively however, our findings show that being susceptible to falling under the influence and control of other groups (i.e., lacking structural power) is not synonymous with people's perception that other groups seek to control and restrict their ingroup (i.e., collective autonomy restriction). Indeed, we find that even members of groups that are to a substantial degree subject to being controlled by a more powerful outgroup can still feel that their group is free to determine and express its sociocultural identity without being unduly controlled by other groups. At the same time, members of groups who enjoy a relatively advantaged position in society—and are therefore more structurally insulated from the control of other groups—may still feel that other groups seek to restrict and control the expression of their group's sociocultural identity.

Our data also have implications for understanding hierarchy contestation between advantaged and disadvantaged groups (Sidanius et al., 2016). Given that autonomy restriction relates to low power groups wanting to act against the system, our data suggests that high power groups focused on maintaining their dominance could avoid making low power groups feel restricted so as to minimize the risk of active rebellion on their part (Chow, Lowery, & Hogan, 2013; Jackman, 1994; Knowles, Lowery, & Schaumberg, 2009).

Members of advantaged groups may also push to maintain the existing social hierarchy when they experience collective autonomy restriction. In North America, for example, initiatives such as wishing people "Happy Holidays" rather than "Merry Christmas" were initially developed to equalize the extent to which the religious celebrations of all groups, rather than just those of the dominant majority group, are acknowledged in society. Ironically, however, such initiatives may backfire to the extent that they make members of the dominant group feel that their autonomy is constrained and cause them to react by further increasing their desire to hold on to their dominant position. This idea is consistent with the basic phenomenon of psychological reactance (Brehm, 1993).

Our work advances contemporary models of collective action (e.g., Stürmer & Simon, 2004a; Tajfel & Turner, 1979; Van Zomeren et al., 2008; Walker & Smith, 2002) by showing that collective autonomy restriction uniquely elicits hostile group-based emotions and subsequent collective action even after accounting for other forms of injustice previously identified as important motivators (i.e., discrimination, illegitimacy of the group's power position, and material exploitation). Notably, the results of our Study 4 suggest that although its effects may be weaker in the presence (vs. absence) of other forms of injustice, experiencing collective autonomy restriction impacts hostile emotions and collective action even when group members are (vs. aren't) exploited in other ways (e.g., by being denied relatively equal access to scarce resources). Thus, experiencing different forms of injustice such as collective autonomy restriction, and resource exploitation, each uniquely contribute to group members' support for collective action.

Our findings also suggest the importance of extending the study of symbolic threat to consider not only concerns about the positive value and distinctiveness of one's identity, but also group members' freedom to express their identity in society. Our findings extend previous work by Grant and Brown (1995) who experimentally manipulated and examined the unique effects of both being relatively deprived scarce resources, and/or experiencing symbolic threat, in driving collective action. While Grant and Brown operationalized symbolic threat as the outgroup failing to acknowledge the importance of ingroup values, we focused on symbolic threat as restrictions to the ingroup's freedom to express its culture. The distinction between value threat and collective autonomy threat is consistent with self-determination theory research, which has demonstrated (at the individual level) the distinct psychological implications of people satisfying their needs for self-esteem (i.e., feeling positive about the self) and for personal autonomy (i.e., feeling that one can express one's self-concept; Deci & Ryan, 1995; Brown & Ryan, 2003). Thus, at the group level, the desire to protect the collective autonomy of the group, as well as the positive value of the group, may both motivate groups to engage in collective action.

Beyond its theoretical contributions, the present research makes important methodological advances. Although collective action is, by definition, a group-based phenomenon, the majority of collective action research uses privately completed surveys in which group members are isolated from other members of their ingroup, or constrained laboratory experiments in which participants do not actually freely interact with other ingroup members during the experiment (but see Grant & Brown, 1995; Wright et al., 1990 for exceptions). By allowing participants to freely interact with their fellow group members and make group decisions for how to address their disadvantaged position, we assessed collective action processes as it developed naturally and organically in an intergroup context similar to what group members actually experience in the real world.

Limitations and Future Directions

Despite its contributions, it is important to note some limitations of the present research, and consider future directions. Past research has demonstrated that when disadvantaged group members experience positive contact or receive token gestures of kindness from a high-power outgroup they may become more willing to acquiesce to their overall disadvantaged position in society (Becker, Wright, Lubensky, & Zhou, 2013; Dixon, Tropp, Durheim, & Tredoux, 2010; Jackman, 1994; Saguy & Kteily, 2014; Wright & Lubensky, 2009). From this perspective, supporting the collective autonomy of a low power group might be construed as another way for a high-powered group to placate its disempowered counterpart while still disadvantaging them: Perhaps letting them express their identity would promote acquiescence among disempowered groups who are otherwise treated unjustly by the advantaged group. Interestingly, we did not find evidence for such acquiescence in our studies. That is, in Study 4, low-powered groups who had their autonomy supported were no less willing than those who had their autonomy restricted to endorse collective action as a function of being on the receiving end of material exploitation (vs. equal treatment) at the hands of the outgroup.

Nevertheless, evidence for acquiescence as a function of autonomy support may be more forthcoming using different designs. The lack of evidence for acquiescence in Study 4 may have been because collective autonomy support was framed as the outgroup's passive decision not to use its power in a controlling manner. This choice might have simply appeared to meet a normative expectation that groups should avoid actively interfering with the culture of other groups rather than making participants feel that the outgroup was proactively affirming the ingroup's autonomy. Indeed, in real-world settings, autonomy support among dominant groups frequently involves actively and publicly celebrating and affirming the importance of disadvantaged groups' freedom for cultural expression (e.g., National Aboriginal Day in Canada, gay pride celebrations in North America). Future research should therefore reassess the potential for collective autonomy support to stymie collective protest in response to material exploitation when autonomy support involves active affirmation. At the same time, it will also be important to consider the possibility of whether relatively advantaged groups may be more willing to accept restrictions being placed on their collective autonomy to the extent that they are materially privileged in society.

It is also important to note that in the present research we compared a condition of total equality (all groups do equal work) with total inequality (the high-power group does no work). Future work may examine whether disadvantaged groups would be more accepting of milder forms of resource exploitation (e.g., a 10/50 bead sorting ratio) especially when their collective autonomy was actively supported by the outgroup. Exploring these questions may be important in light of past research showing that disadvantaged groups seem unwilling to accept complete discrimination, but may actually be tolerant of partial yet still consequential forms of discrimination (e.g., tokenism; see Wright et al., 1990).

Another limitation of the present research is that whereas we provide experimental evidence for the link between collective autonomy restriction and collective action among disadvantaged groups, we only examined these associations using a cross-sectional design among advantaged groups. Therefore, future experimental research is needed to examine the relationship between collective autonomy restriction and collective action among advantaged groups before any causal claims can be extended to the advantaged group.

We also note that in the present experiments, groups never received any rationale or explanation for *why* the outgroup decided to restrict their culture, which may have contributed to their hostile responses. However, in real-world contexts, groups that impose restrictions on other groups may provide the outgroup receiving the restriction with a rationale for why. For example, some political theorists have described that it may be necessary to restrict the culture of others to protect the basic rights of individuals or groups (Kukathas, 1998; Moller Okin, 1999; O'Neill, 1999; Parker et al., 2019). Illustrating this perspective, Moller Okin has questioned whether it is correct to support cultural practices that can be perceived as harmful to women (e.g., female circumcision, polygamy). An important avenue for future research will be to examine how groups respond to restrictions imposed on their group when they are provided with a rationale for why (e.g., that their ingroup's cultural practice causes harm). At the individual level, research on self-determination finds that individuals are less resistant to adopting unpleasant behaviors (e.g., a restrictive diet or exercise routine) when the importance of doing so is made clear to them by the individual suggesting those behaviors (Williams et al., 2006). Thus, at the group level, the same principle may apply: Groups may be less likely to respond with hostility to pressure they face to give up cultural practices if the outgroup responsible for those restrictions can provide a compelling rationale for why doing so is important (i.e., to reduce potential harm to other groups or individuals). Of course, it is also conceivable that a group might find such guidance patronizing if it is done in a way that implies that the intervening group thinks it has superior morals. Highlighting the risks of our tendency to assume our (culture's) own moral codes are inherently preferable, Taylor (1989, p. 120) cautioned that it is "misguided to claim to identify culture-independent criteria of harm. What people are really doing who propose such criteria is endorsing the superiority of some culture over others." Thus, it is likely to be important for groups to be mindful that their perception of harm is shaped by their own subjective worldview (rather than self-evidently true) and to frame their rationale, to the extent possible, through the moral lens of the *other side* (consistent with research on moral reframing; Feinberg & Willer, 2013; Voelkel & Willer, 2019).

It will also be important for future work to consider potential individual difference factors which may moderate the link between collective autonomy restriction and collective action. For example, past work by Ho and colleagues (2015) has shown that Black Americans who are relatively tolerant of social hierarchies in general (i.e., high in social dominance orientation [SDO]) may endorse policies that maintain the present social hierarchy despite being in a disadvantaged position within that hierarchy. Similarly, research has shown that individuals who tend to want to adhere to existing norms and show reluctance to challenging authority (i.e., those high in Right-Wing Authoritarianism [RWA]) may be reluctant to engage in collective action to challenge the system (Duckitt & Sibley, 2010). As a result, it is possible that low-power group members high in SDO or RWA may tolerate their low-power position even when their core group need for collective autonomy is threatened. On the other hand, however, restrictions to collective autonomy may pose such a profound threat to group members that even group members who are naturally predisposed to resist collective action movements, may attempt to challenge them.

Relatedly, future work might also examine whether group members who feel high levels of ingroup superiority (i.e., a perception that one's ingroup is more worthy than other groups), or, high levels of ingroup deference (i.e., a tendency to honor and revere the cultural practices of their ingroup), might be especially reactive to restrictions being placed on their collective autonomy (see, Roccas, Sagiv, Schwartz, Halevy, & Eidelson, 2008, for review). Because such individuals have a strong inclination to want to express their culture, they may be threatened by collective autonomy restrictions which suppress their freedom to do so (Rip, Vallerand, & Lafrenière, 2012). Providing some support for this idea, Rip and collogues (2012) find that individuals who are passionate about the ideologies of their political or religious ingroups are most likely to oppose and resist threats to their ideological identity.

Conclusion

Our results show that both advantaged and disadvantaged group members sometimes feel that other groups seek to restrict their group from freely defining and expressing its culture. Groups appear to respond to feeling collective autonomy restriction with a desire to gain power on behalf of their group: Members of disadvantaged groups who feel that advantaged groups have attempted to use their power to restrict the free cultural expression of their ingroup experience a greater motivation for group empowerment and a greater willingness to collectively challenge their social system. On the other hand, members of advantaged groups may seek to protect their dominant position in society and maintain the status quo when they feel that other groups have tried to control their ingroup. These results hold even when accounting for other factors known to motivate collective action, such as discrimination, material exploitation, group identification, and group agency. Together, these findings introduce collective autonomy restriction as a unique and important factor for understanding the collective action initiatives and power dynamics between members of low-power and high-power groups.

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