The promise of a better group future:

Cognitive alternatives increase students' self-efficacy and academic performance

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Abstract

Drawing on classic social identity theorising (Tajfel, 1978), we propose that low-status minority group members' self-efficacy and performance on intellectual tasks can be enhanced by prompting them to believe in a better future for their group (i.e., increasing awareness of cognitive alternatives to the existing low-status position). Study 1 manipulated cognitive alternatives among 157 migrant workers' children in China, showing that self-efficacy was enhanced in the high compared to the low cognitive alternative condition. Study 2 extended this experimental finding among 114 migrant workers' children: Participants in the high cognitive alternative condition performed better on mathematics and attention tasks than did participants in the low cognitive alternative condition. Results highlight the power of believing in a better future for the collective as a means of enhancing self-efficacy and educational outcomes among members of disadvantaged groups.

Keywords: cognitive alternatives, self-efficacy, academic performance, low-status groups, social identity

Students of low-status minority racial, ethnic, and socio-economic groups typically report relatively low levels of self-efficacy—or belief in their capabilities to organise and execute a course of action to produce results (Bandura, 1986, 1994). Compared to their high-status majority group counterparts, students of low-status minority groups also tend to perceive themselves as less capable of achieving a goal or outcome in the academic domain (Thompson & Subich, 2011; Usher & Pajares, 2008). This discrepancy extends to indicators of academic performance. Low-status minority group students lag significantly behind those in the majority group on outcomes such as test scores, school completion rates, and college degree attainment (American Psychological Association, 2012; Aud, Fox, & KewalRemani, 2010; Fiske & Markus, 2012).

An ingroup's low status thus appears to have a detrimental impact on two distinct outcomes: group members' self-efficacy and academic performance. However, a group is not necessarily condemned to remain in this disadvantaged position; institutional policies and social movements can seek to bring about social equality. This paper considers how the perception that a low-status minority group will, in the future, experience an improved status position *as a group* could lift its members' self-efficacy and academic performance.

Our focus on perceptions of future group prospects represents a clear departure from previous efforts to conceptualise detriments in self-efficacy and academic performance. For instance, although some scholars have argued that the development of self-efficacy cannot be isolated from the broader sociocultural context (Quintana et al., 2006), little empirical work has considered the precise way in which self-efficacy might be shaped by membership in a low-status group. Instead, work on the development of self-efficacy has tended to draw on social cognitive theory (Bandura, 1986, 1994) to investigate the impact of individual-level predictor variables such as task mastery and emotional states (Phan, 2012; Usher & Pajares, 2008).

Our future-oriented group-level approach also differs from the stereotype threat framework, which focuses on perceptions of contemporary inter-group status differences to account for performance detriments primarily among low-status groups (see Schmader & Hall, 2014; Shapiro & Neuberg, 2007). According to this model, activation of a negative stereotype inhibits task performance among group members in a stereotype-relevant domain, because they worry that their performance may confirm these negative stereotypes (Steele & Aronson, 1995; Steele, Spencer, & Aronson, 2002). To combat these performance detriments, one set of interventions aims to build individuals' capacity to cope with the anxiety elicited in the stereotype-relevant domain (e.g., Johns, Inzlicht, & Schmader, 2008). Other interventions seek to undermine the negative stereotype—for instance, by educating individuals about the stereotype threat phenomenon (e.g., Johns, Schmader, & Martens 2005), or by providing individual counter-stereotypic exemplars of group behaviour (e.g., Marx & Roman, 2002). These approaches promote strategies that help minorities cope more effectively with their disadvantaged status in society as individuals.

In contrast to the stereotype threat literature, we focus on a collective intervention strategy that can impact low-status minority members' self-efficacy and academic performance. We propose that individuals will not be able to give up on their group when real intergroup status differences are in place; rather, they can, and do, focus on the promise of a better status position for the group as a whole. When minority group members perceive so-called "cognitive alternatives to the status quo" (Tajfel, 1978), these improved future prospects for the group may shape their attitudes and behaviour in the present.

The impact of cognitive alternatives to the status quo

We investigate the impact of envisaging a *cognitive alternative* (Tajfel, 1978) to a group's current low status, whereby group members focus on the prospect of improved opportunities and resources for the group in the future, rather than its current adversity.

Cognitive alternatives may be considered analogous to possible selves that individuals imagine for themselves in the future (Oyserman, Bybee, & Terry, 2006). However, cognitive alternatives are distinct from possible selves because they represent a strategy of *collective mobility*, whereby an entire group will move into a higher-status position (Reicher & Haslam, 2012). Research indicates that cognitive alternatives are indeed viewed in collective terms: greater awareness of cognitive alternatives is linked to higher group identification, which represents a commitment to group interests and goals (Zhang, Jetten, Iyer, & Cui, 2013).

Cognitive alternatives should have concrete benefits for self-views and task performance because they represent a vision of future higher status for the group. Building on this promise, group members should be more likely to adopt the attitudes and behaviour that are normative for the higher-status group (Onu, Smith, & Kessler, 2015). We develop this argument from theory and research on consumer behaviour, which demonstrates the broad influence of group status in shaping attitudes and behaviour: individuals from lower-status and higher-status groups report different tastes and preferences in various domains such as clothing, hobbies, and leisure activities (Bourdieu, 1984/1979; O'Cass & McEwen, 2004).

Extending this analysis, we hypothesize that cognitive alternatives will increase self-efficacy and performance on academic tasks, because they inspire group members to adopt the behaviours, norms, and values of higher-status groups—which in this case involves greater and more positive engagement with the academic domain. The collective mobility strategy draws on the belief that group boundaries are permeable and that higher status for the entire disadvantaged group will be achieved in the near future. This reasoning is consistent with the process theorised to underpin the positive impact of academic possible selves: when concrete strategies to attain academic possible selves are in place, there is a corresponding improvement in academic outcomes (Oyserman et al., 2006; Bi & Oyserman, 2015).

The Present Research

We develop and test an intervention that highlights a low-status minority group's improved future prospects. Specifically, we manipulate awareness of cognitive alternatives to assess its impact on perceived self-efficacy (Study 1) and performance on academic tasks (Study 2).

For both studies, we recruited samples of country migrant workers' children in a Chinese city. Over the past 20 years, farmers in China have moved to urban centers to improve their employment prospects. However, the move to the city relegates these migrant workers and their families to a low-status position, for at least two reasons. First, migrant workers experience institutional discrimination because China's Household Registration (*hokou*) system does not permit them to change the location of their permanent residence. Migrant workers' families are thus denied access to services in the city such as education and health care (Wong, Chang, & He, 2009). A second reason for migrant workers' lower status is prejudice from city residents: migrant workers' distinct social and cultural background means that they are treated as outsiders (Liu, 2013).

Migrant workers thus represent a low-status minority group that has scope for status improvement (see Afridi, Li, & Ren, 2015). However, recent legislative reforms have outlawed institutional discrimination against migrant workers, with the system being changed in stages to grant equal status to this group. As such, the presence of cognitive alternatives to the status quo could be varied in a credible way.

Study 1

Method

Participants and design.

We aimed to recruit a minimum sample of 60 country migrant workers' students, so that we would have at least 30 participants per experimental condition. This cell size was

chosen in order to exceed recommendations for minimum sample size (i.e., 20 participants per condition; see Simmons, Nelson, & Simonsohn, 2011) while also acknowledging the practical constraints involved in conducting field research in schools.

We identified a school in Shanghai that had at least 60 country migrant workers' students enrolled within each grade level, which provided consent and support to conduct the research. The school suggested that we recruit participants from Year 7, as these students would be old enough to voluntarily take part in the study. Following a set of procedures developed in previous research (e.g., Li, Cui, Wang, & Wong, 2009) and which received ethical approval from universities in China and Australia, the schools invited country migrant workers' children enrolled in Year 7 to participate in the study.

One hundred and fifty-seven country migrant workers' children agreed to participate in the study (93 boys and 63 girls, 1 case missing data). The children's ages ranged from 10 years to 15 years,[1] (M = 12.30, SD = .92). Each child was randomly assigned to one of two experimental conditions: 62 to the high cognitive alternative condition and 95 to the low cognitive alternative condition[2]). All completed questionnaires were retained for analyses, as were all measures and conditions.

Procedure and materials. Participants first read an ostensible summary of research about migrant workers' children, which included the manipulation of perceived cognitive alternatives. In the *high cognitive alternative* condition, participants read that research had shown that, given future societal developments, migrant workers' children would have the same opportunities as city children. In the *low cognitive alternative* condition, participants read that research indicated that migrant workers' children would not have the same opportunities as city children. We operationalised the status of the group in terms of "opportunities" in order to make the concept as concrete and specific as possible to children. Previous research has shown this manipulation to have a positive impact on general self-

esteem and in-group identification among Chinese migrant workers' children in Shanghai (Zhang et al., 2013), suggesting that it captures a high-impact and meaningful construct.

There were no significant differences in age, $t(154) = -.09$, $p = .929$, or gender, $t(154) = -.32$, $p = .750$, between the two conditions. After completing a series of measures, participants were debriefed about the manipulation.

Measures. All responses were provided using Likert-type scales (1 = *strongly disagree,* 7 = *strongly agree*).

To assess the success of the *cognitive alternatives* manipulation, participants were asked to respond to three items (α = .80; Zhang et al., 2013) that "relate[d] to [their] understanding of the information on the research that we just provided." The items were: "In the future, country migrant workers' children will have the same opportunities as city children," "No matter what effort s/he makes, a country migrant workers' child will never have the same opportunities as a city child (reverse coded)," and "It is nearly impossible for country migrant workers' children to have the same privileges as city children (reverse coded)." Higher scores indicate higher levels of perceived cognitive alternatives.

In assessing *self-efficacy*, we focused on a particular dimension—self-efficacy in assertiveness—that has been shown to play an important role in the development of goal setting (Solberg, Good, Fischer, Brown, & Nord, 1995) and in predicting success in academic achievements among at-risk students (Gold, 2011). Participants were asked to "indicate the [their] agreement with" four items (α = .62; adapted from Bandura, 2006): "I can express my opinions when other classmates disagree with me," "I can stand up for myself when I feel I am being treated unfairly," "I can get others to stop annoying me or hurting my feelings," and "I can stand firm to someone who is asking me to do something unreasonable or inconvenient." Higher scores indicate higher levels of self-efficacy.

Results

Manipulation check. Participants in the high cognitive alternative condition reported significantly higher perceived cognitive alternatives (M = 5.85, SD = 1.07) than did participants in the low cognitive alternative condition (M = 5.13, SD = 1.62), $t(155) = -3.10$, p = .002, 95% CI M_{diff} [-1.18, -0.26], d = .52. Furthermore, neither gender nor age was associated with awareness of cognitive alternatives. Taken together, results indicate that our manipulation of cognitive alternatives was successful.

Self-efficacy. Independent samples t-tests were conducted to determine whether the manipulation of cognitive alternatives enhanced self-efficacy. In line with our prediction, participants in the high cognitive alternative condition reported a significantly higher level of self-efficacy (M = 3.90, SD = .61) than did those in the low cognitive alternative condition (M = 3.60, SD = .75), $t(155) = -2.68$, p = .008, 95% CI M_{diff} [-0.52, -0.08], d = .44.

Discussion

The results support our hypothesis that the presentation of cognitive alternatives to the status quo enhances disadvantaged school children's self-efficacy. Compared to participants who read that their group would not have the same opportunities as city children, participants who read about future improvements to their group's opportunities were empowered to believe that they themselves would have the competence to handle challenging situations.

We next investigated whether awareness of cognitive alternatives would enhance performance on intellectual tasks, using the same manipulation of cognitive alternatives as in Study 1. In addition, we included a control condition in which no information was provided about cognitive alternatives. This design allowed us to probe the precise nature of the experimental effect. More specifically, the control condition enables us to determine whether academic performance can be enhanced by high cognitive alternatives or depressed by low cognitive alternatives.

Study 2

Method

Participants. One hundred and fourteen Year 7 country migrant workers' children from a secondary school in Shanghai participated in the study, following the same consent procedures used in Study 1. The sample included 39 girls and 73 boys (gender not provided in two cases). Participants' age ranged from 11 years to 17 years[1] (M = 13.48, SD = 1.34; two participants did not report age). Participants were randomly assigned to one of three experimental conditions: *high cognitive alternative* (30 participants), *low cognitive alternative* (34 participants), or *control* (50 participants)[2].

We aimed to recruit a minimum sample of 90 country migrant workers' students, so that we would have at least 30 participants per experimental condition. We identified a school that had enrolled at least this number of country migrant workers' students within a grade level, and then invited all these students in Year 7 to participate in the study. All completed questionnaires were retained for analyses, as were all measures and conditions.

Procedure. The study was introduced to participants as an assessment of academic performance, which included two separate sets of tasks. The first task ostensibly assessed reading comprehension, and the passage of text served as the manipulation of cognitive alternatives. The second set of tasks assessed students' performance in the domains of mathematics and attention – the main dependent variables. After completing these tasks, participants were fully debriefed.

Materials. We used the procedure developed in Study 1 to manipulate cognitive alternatives (high vs. low). We also expanded the design to include a *control condition*, which provided information unrelated to cognitive alternatives: an ostensible summary of research describing the activities of migrant workers' children and city children. In this

control condition, participants read that city and migrant workers' children tended to enjoy outdoor activities, reading books, and playing computer games.

Measures. In all conditions, participants were asked to summarize the key points of the article and then completed the *cognitive alternatives manipulation check* measure used in Study 1 ($\alpha = .69$).

In the next part of the study, participants were instructed to open an envelope that contained a page of maths problems and a one-page attention task. The maths task included 72 questions, which were developed in consultation with a local school-teacher. To ensure that the questions were appropriate to the skill level expected of our participants, the task had been pilot tested with an independent sample of Year 7 students.

The attention task has been widely used in China (e.g., Zhang, 2008). Participants were presented with 48 rows of Chinese characters, each of which began with a target character. The task was to identify the number of characters on each row that were different from the target character.

Participants were given 10 minutes to work on each sheet. They were asked to try their best and they were told that the more correct answers they gave, the higher scores they would achieve. It was also explained that one mark was given for each correct answer, but that one mark would be deducted for each incorrect answer. For each task, two outcome variables were calculated: the *number of correct answers* (to assess performance on the test) and the *number of questions attempted* (to assess effort on the test).

Results

Covariates. A series of one-way between-groups Analyses of Variance (ANOVAs) was conducted to examine potential differences in gender and age across the three experimental conditions. Results showed that there was no differences in gender across the three conditions, $F(2, 109) = .59$, $p = .554$, $\eta^2 = .01$. However, participants' age differed

significantly across the three conditions, $F(2, 109) = 4.02$, $p = .021$, $\eta^2 = .07$. Tukey post-hoc tests indicated that participants in the high cognitive alternative condition were significantly older ($M = 13.93$, $SD = 1.36$) than were participants in the control condition ($M = 13.10$, $SD = 1.17$), $p = .020$, 95% CI M_{diff} (0.11, 1.55), whereas participants' age in the low cognitive alternative condition ($M = 13.62$, $SD = 1.41$) was not significantly different from either the high cognitive alternative condition, $p = .598$, 95% CI M_{diff} [-1.09, 0.46], or the control condition, $p = .188$, 95% CI M_{diff} [-0.18, 1.21]. This age difference emerged even though participants were randomly assigned to experimental conditions, and is probably due to the unexpectedly large age range in the sample caused by a small number of older students.[1]

As age is likely to be associated with school performance (e.g., Larsson & Drugli, 2011), we conducted separate one-way between-group analyses (one controlling for age, and a second not controlling for age) when examining the impact of the manipulation on the manipulation check and on participants' performances on the mathematics and attention tasks. The pattern of results is largely identical whether we control for age or not. Thus, below we report the results from the analyses that do control for age (a full set of all results is available from the first author).

Manipulation check. An Analysis of Covariance (ANCOVA) controlling for age showed that awareness of cognitive alternatives differed significantly across the three conditions, $F(2, 111) = 3.97$, $p = .022$, $\eta^2 = .07$. Tukey post-hoc comparisons indicated that awareness of cognitive alternatives was significantly higher in the high cognitive alternative condition ($M = 5.34$, $SD = 1.35$) than in the low cognitive alternative condition ($M = 4.48$, $SD = 1.61$), $p = .032$, 95% CI M_{diff} [0.06, 1.67]. Reported awareness of cognitive alternatives in the control condition ($M = 5.17$, $SD = 1.14$) was not significantly different from either the high cognitive alternative condition, $p = .832$, 95% CI M_{diff} [-0.92, 0.56], or the low cognitive

alternative condition, p = .063, 95% CI M_{diff} [-0.02, 1.40]. The effect of age was not significant, F (1, 111) = 1.63, p = .21.

Mathematics task: Number of correct answers. A between-subjects ANCOVA indicated significant differences between the three conditions in the number of questions answered correctly, $F(2, 111) = 4.14$, p = .019, η^2 = .07. Tukey post-hoc tests showed that participants in the high cognitive alternative condition answered significantly more questions correctly (M = 39.53, SD =13.40) than did participants in the low cognitive alternative condition (M = 30.00, SD = 13.29), p = .002, 95% CI M_{diff} [3.24, 15.59]. However, participants in the control condition did not differ significantly in the number of questions they answered correctly (M = 34.92, SD = 13.92), compared to participants in either the high cognitive alternative condition, p = .140, 95% CI M_{diff} [-1.46, 10.91], or the low cognitive alternative condition, p = .120, 95% CI M_{diff} [-11.65, 1.37] (see Figure 1). The effect of age was not significant, F (1, 111) = 0.66, p = .42.

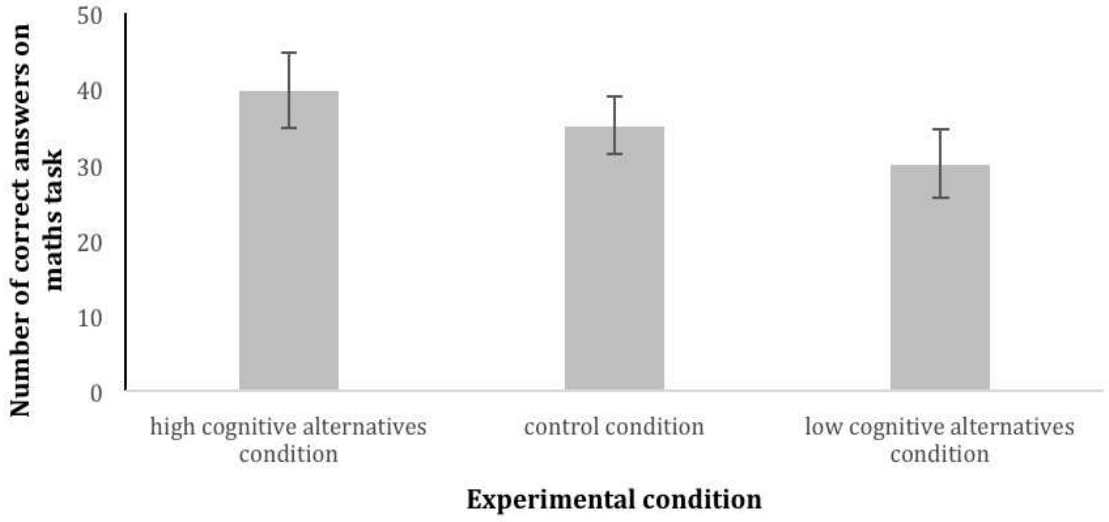

Figure 1: Study 2 – Number of correct answers on mathematics task.

Note: Error bars represent 95% confidence intervals around the mean.

Mathematics task: Number of attempted questions. An ANCOVA indicated significant differences between the three conditions in the number of questions that were attempted, F (2, 111) = 3.95, p = .022, η^2 = .07. Tukey post-hoc tests showed that participants in the high cognitive alternative condition attempted significantly more maths questions (M = 47.10, SD = 15.01) than did participants in the low cognitive alternative condition (M = 36.35, SD = 15.38), p = .006, 95% CI M_{diff} (3.34, 18.48). However, the total number of maths questions attempted by the participants in the control condition (M = 43.19, SD = 16.29) was not significantly different from either the high cognitive alternative condition, p = .232, 95% CI M_{diff} [-3.33, 11.35], or the low cognitive alternative condition, p = .074, 95% CI M_{diff} [-13.51, 0.50]. The effect of age was not significant, F (1, 111) = 0.29, p = .59.

Attention task: Number of correct answers. An ANCOVA showed significant differences between the three conditions on the number of correct answers on the attention task, F (2, 111) = 3.36, p = .039, η^2 = .06. Tukey post-hoc tests revealed that participants in the high cognitive alternative condition answered more questions correctly (M = 26.37, SD = 9.72) than participants in either the low cognitive alternative condition (M = 20.68, SD = 7.33), p = .007, 95% CI M_{diff} [1.49, 9.91], or the control condition (M = 21.35, SD = 9.92), p = .035, 95% CI M_{diff} [0.47, 9.41]. However, participants in the low cognitive alternative condition and control condition did not differ from each other, p = .677, 95% CI M_{diff} [-4.84, 2.76] (see Figure 2). The effect of age was not significant, F (1, 111) = 0.21, p = .64.

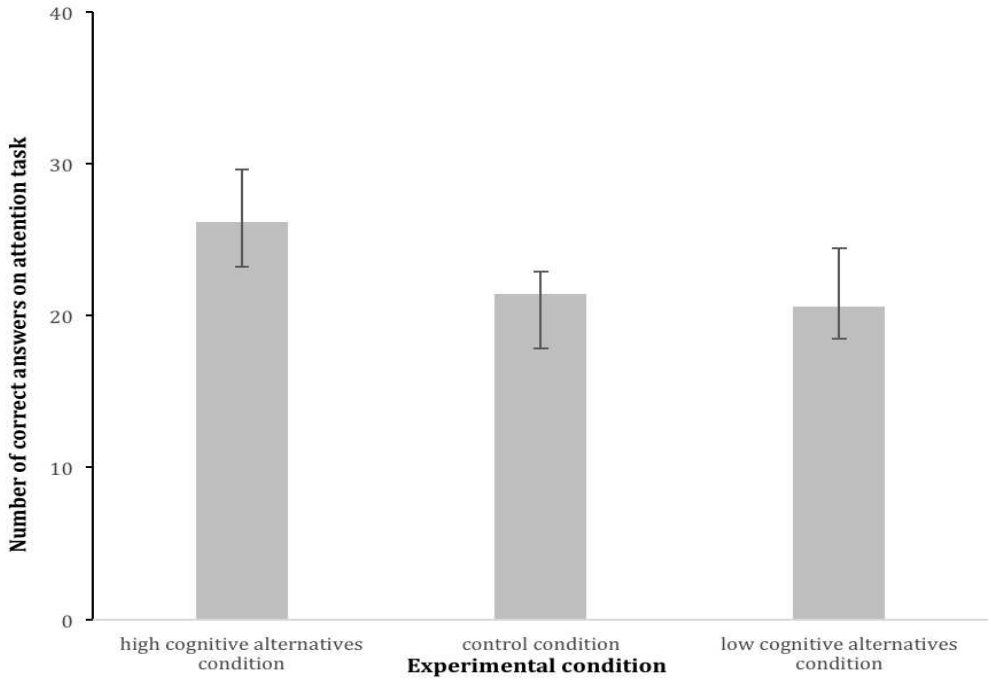

Figure 2: Study 2 – Number of correct answers on Attention task.

Note: Error bars represent 95% confidence intervals around the mean.

Attention task: Number of attempted questions. An ANCOVA revealed significant differences between the three conditions, F (2, 111) = 3.58, p = .031, η^2 = .06. Tukey post-hoc tests showed that participants in the high cognitive alternative condition attempted significantly more questions on the attention task (M = 37.50, SD = 10.31) than did participants in the low cognitive alternative condition (M = 30.97, SD = 8.79), p = .018, 95% CI M_{diff} [1.37, 11.03]. The total number of questions attempted by participants in the control condition (M = 35.04, SD = 10.48) was significantly higher than the number of questions attempted in the low cognitive alternative condition, p = .034, 95% CI M_{diff} [-9.16, -0.62], but did not differ significantly from the total number attempted in the high cognitive alternative condition, p = .593, 95% CI M_{diff} [-4.05, 6.05]. The effect of age was not significant, F (1, 111) = 3.63, p = .06.

Discussion

Participants in the high cognitive alternatives condition performed significantly better on the mathematics and attention tasks, than did participants in the low cognitive alternative condition. On both tasks, students who were informed that their group would enjoy the same opportunities as city children in the future both answered more questions correctly and attempted more questions. However, participants in the control condition did not differ from either of the other conditions on the mathematics task, and their performance on the attention task was no different to that of participants in one other condition (i.e., equivalent to the low cognitive alternatives condition in the number of correct answers, and equivalent to the high cognitive alternatives condition in the number of attempted questions). Thus there is insufficient evidence to determine whether our results are explained by both the bolstering effect of high cognitive alternatives and the damaging effect of low cognitive alternatives. We return to this issue in the General Discussion.

General Discussion

Low social status and its associated disadvantages can constrain minority groups' perceptions of their capabilities (Thompson & Subich, 2011; Usher & Pajares, 2008), as well as their academic performance (American Psychological Association, 2012; Fiske & Markus, 2012). The present research demonstrates, however, that students from disadvantaged backgrounds are not necessarily condemned to these negative outcomes. Two experiments showed that awareness of cognitive alternatives to current group disadvantage—manipulated by providing information about the group's future opportunities—enhances self-efficacy and academic performance.

Theoretical and Practical Implications

Our results are the first to demonstrate the concrete benefits of reflecting on future improvements to a group's prospects. We suggest that perceiving social change (i.e., the

group's improved social standing in the broader socio-structural context) offers some reassurance to disadvantaged minorities: if the structural barriers that currently limit their progress are perceived to be lifted in the future, this will have flow-on effects on important outcomes. That is, if a group will progress to a higher status in society, its members will be encouraged to behave in accordance with the expected norms and values of the higher-status group (Onu et al., 2015). More specifically, they will actively engage with the academic domain, thus boosting self-efficacy beliefs and test performance. In the present studies, this involves attempting more questions in the time allotted to complete the intellectual task, and being able to answer more questions correctly – an accomplishment that pays dividends in a world where test scores determine a student's prospects for success on objective measures (i.e., course marks) and subjective measures (i.e., encouragement from teachers).

Our findings indicate that focusing on the prospect of a better group future will have tangible benefits for group members in the present. That is, the promise of improved group status does not appear to increase group members' complacency about their status position. Rather, minority group members seem to embrace a proactive strategy when they encounter cognitive alternatives to their group's low-status position, as demonstrated in higher levels of self-efficacy in assertiveness (Study 1) and in the number of attempted questions on tests (Study 2).

The present research contributes to a broader conceptualization of how to tackle group disparities in self-efficacy beliefs and academic test scores. In contrast to current scholarship on self-efficacy, for instance, we offer a group-level analysis that takes into account the broader social context in which individuals exist. We also extend the focus of the stereotype threat framework to move beyond individual-level coping with the meaning of contemporary intergroup status differences, by emphasising instead the collective future prospects of the entire group.

More broadly, the present research adds to a growing body of evidence for Kurt Lewin's (1951) view that considerations of *the past* and *the future* will influence group members' present behaviour. Previous work has typically focused on the impact of group members' reflections on their group's past (e.g., Doosje, Spears, & Ellemers, 2002). In contrast, the present results underscore the importance of considering the future status of a group (Jetten & Hutchison, 2011; Reicher & Haslam, 2012).

Our studies were conducted in a rapidly changing social context in which the social position of the disadvantaged group was likely to improve. However, if the promised improvements to group status come too slowly or not at all, group members are likely to become increasingly disillusioned with the system. This possibility highlights an important caveat to cognitive alternatives: The gulf between raised expectations for improvement on the one hand, and a stagnant social reality on the other hand, could compound the negative effects of being in a low-status group, as noted by relative deprivation theory (Smith, Pettigrew, Pippin, & Bialosiewicz, 2012). Future work should investigate minority group responses to cognitive alternatives that are realised too slowly or never at all. Future work might also consider how information about cognitive alternatives might be communicated without offering false information to the target group about status improvements that may or may not come to fruition. For instance, information could be provided about another minority group's actual status improvement within the same social system, in order to provide more general evidence that a better future is attainable for disadvantaged groups more broadly.

Limitations and Future Directions

While the present studies demonstrate the impact of presenting cognitive alternatives on self-efficacy and academic performance, there are some limitations that should be noted. First, Study 2 showed that, overall, participants in the control condition (who did not receive any information relevant to future group status) did not systematically differ from those

participants in the experimental conditions (who did receive specific information about the group's future status). Thus the data do not provide conclusive evidence for the direction of our experimental effects (i.e., is academic performance bolstered by high cognitive alternatives or depressed by low cognitive alternatives?).

There are two plausible explanations for this non-significant finding. First, there was insufficient statistical power to uncover small experimental effects, as there were only between 30 and 50 participants per condition. Second, the materials presented in the control condition (which described the activities of migrant workers' children and city children) made group membership salient to participants; the aim was to make group identity just as salient in the control condition as in the experimental conditions, but an unintended consequence may have been that participants' focus on group membership in the control condition may have prompted them to spontaneously reflect on their group's present and future status. To investigate these possibilities, future work should recruit a larger sample and develop a stronger manipulation that makes the concept of cognitive alternatives more salient in the experimental conditions.

A second limitation concerns the extent to which our experimental materials made clear and direct reference to the future opportunities of the low-status group (see Appendix for the full text presented in each study). While the high cognitive alternative condition explicitly made reference to the "future improvement" of opportunities for migrant-workers' children, the low cognitive alternative condition did not. As such, the time-scale is ambiguous for participants who were told that that status quo would be maintained (i.e., low cognitive alternatives condition). Nevertheless, we propose that a future perspective is suggested in this condition, as the maintenance of the status quo implies no change in the future. Some evidence for this view can be found in the results for the manipulation check of perceived cognitive alternatives: Two of the three items are framed in the future tense in this measure,

which showed high levels of internal reliability across all conditions of both studies. Given that responses on this measure produced the expected results between the high and low cognitive alternatives conditions, we are reasonably confident that participants in both cognitive alternatives conditions were focused on future opportunities for their group. Of course, stronger evidence is needed to support this claim regarding the time perspective operating in perceptions of cognitive alternatives; subsequent work should thus explicitly refer to the future in all conditions when manipulating cognitive alternatives.

A third limitation concerns our focus on a single construct in assessing outcomes across the two studies: self-efficacy in Study 1 and academic performance in Study 2. As such, we were not able to directly assess the role of self-efficacy in mediating the relationship between cognitive alternatives and academic performance. In addition, we did not investigate the extent to which other dimensions of self-efficacy may be affected by cognitive alternatives. Future research should address both these questions.

Fourth, while our manipulation of cognitive alternatives clearly differentiated between perceived cognitive alternatives in the two experimental conditions (i.e., low versus high), participants in the low cognitive alternatives condition did still report perceptions above the mid-point of the scale. This suggests that these students believed that the opportunities available to their group would improve, even when presented with information to the contrary. It is likely that additional factors (e.g., messages from family and peers, popular culture, government institutions, etc.) also played a role in shaping our participants' perceptions of cognitive alternatives, an issue that we were not able to explore with the present data. To start to understand this question, future work should investigate how members of low-status minority groups develop their perceptions of cognitive alternatives.

Lastly, our study narrowly focused on how low-status minority group members respond to information about the future status of their group. While this was the intended audience of

our intervention, members of the high-status majority group are also likely to encounter this information. Future work should consider how our manipulation might affect the attitudes and behaviour of the high-status majority group. Any unintended negative consequences for this group would undermine the success of any intervention built on cognitive alternatives, and thus must be better understood.

Parting Note

In conclusion, our results highlight the ways in which low-status minority group members' perceptions of their group's future can affect their reactions to their current disadvantaged circumstances. In particular, being able to see alternatives to the existing social reality enhances self-efficacy beliefs and performance on intellectual tasks. In this way, the prospect of positive collective change for a low-status group has clear individual-level benefits for its members.

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Footnotes

1. There are two possible explanations for the large age range for this cohort. Some children may have started school at a later age, due to their family's move to the city. Other children's academic progress may have been interrupted by the move, which may have led them to repeat at least one level prior to Year 7.

2. The cell sizes are uneven across the experiment because extra participants were inadvertently allocated to one condition. Given that each condition still included at least 30 participants (our target sample size for each cell) who were randomly allocated to that condition, we decided to retain all data for analysis.

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Appendix

Cognitive Alternatives Manipulation – Study 1

INSTRUCTIONS

This is a learning and memory task. You will read a current news article. Take your time reading the article. There is no time limit for this task. After you have finished reading the article, you will complete a comprehension/memory task to assess how well you can recall the facts presented in the article and respond to a few questions about how you view yourself.

Article:

Research on Country Children in Cities

1. High cognitive alternative condition

A group of university researchers studied two thousand country children in the main cities in China. For ten years, they followed these children and examined how well they did in all aspects of life. They found that, with the future improvement on opportunities for migrant children in city, if the country children in city try hard to do their best in whatever they do, they can do just as well as city children. Hence, the researchers conclude that country children have the same opportunities in life as city children do.

2. Low cognitive alternative condition

A group of university researchers studied two thousand country children in the main cities in China. For ten years, they followed these children and examined how well they did in all aspects of life. They found that even if the country children in city tried hard to do their best in whatever they do, it is nearly impossible for them to achieve the same outcomes as city children. Hence, the researchers conclude that country children do not have the same opportunities in life as city children do.

Reading Comprehension and Recall Task

In the spaces below please write down the critical pieces of information that you can recall from the report you just read:

1. _____
2. _____
3. _____
4. _____
5. _____

Cognitive Alternatives Manipulation – Study 2

In the learning phase, you will read a current news article. Take your time reading the article – there is no time limit for this task. After you have finished reading the article you will complete a comprehension/memory task to assess how well you can recall the facts presented in the article and respond to a few questions about how you view yourself. In the second section of the experiment you will be asked to complete maths and letter finding.

High cognitive alternative condition
A group of university researchers studied two thousand country children in the main cities in China. For ten years, they followed these children and examined how well they did in all aspects of life. They found that, with the future improvement on opportunities for migrant children in city, if the country children in city try hard to do their best in whatever they do, they can do just as well as city children. Hence, the researchers conclude that country children have the same opportunities in life as city children do.

Low cognitive alternative condition
A group of university researchers studied two thousand country children in the main cities in China. For ten years, they followed these children and examined how well they did in all aspects of life. They found that even if the country children in city tried hard to do their best in whatever they do, it is nearly impossible for them to achieve the same outcomes as city children. Hence, the researchers conclude that country children do not have the same opportunities in life as city children do.

Control condition
A group of university researchers studied two thousand country and city children in the main cities in China. For ten years, they followed these children and examined the activities children like to take part in. They found that city and country children in cities tend to like outdoor activities, play with their friends after school, enjoy reading books and playing computer games.