

## Original Research Reports

# A Compensatory Control Account of Meritocracy

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## Abstract

Why are people motivated to support social systems that claim to distribute resources based on hard work and effort, even when those systems seem unfair? Recent research on compensatory control shows that lowered perceptions of personal control motivate a greater endorsement of external systems (e.g., God, government) that compensate for a lack of personal control. The present studies demonstrate that U.S. citizens' faith in a popular economic ideology, namely the belief that hard work guarantees success (i.e., meritocracy), similarly increases under conditions of decreased personal control. We found that a threat to personal control increased participants' endorsement of meritocracy (Studies 1 and 2). Additionally, lowered perceptions of control led to increased feelings of anxiety regarding the future, but the subsequent endorsement of (Study 2) or exposure to (Study 3) meritocracy attenuated this effect. While the compensatory use of meritocracy may be a phenomenon unique to the United States of America, these studies provide important insight into the appeal and persistence of ideologies in general.

**Keywords:** meritocracy, compensatory control, ideology, system justification, social mobility

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The “American Dream” for many United States (U.S.) citizens is based on a belief that hard work ensures personal success; i.e., that social systems distribute resources according to merit, rewarding talent and hard work (Hochschild, 1995). A truly meritocratic system ensures that differential distributions of resources (e.g., jobs, entrance to college, salaries) are due to individual differences in talent, hard work and effort rather than categorical factors (e.g., gender, ethnicity). Drawing on compensatory control theory (Kay, Gaucher, Napier, Callan, & Laurin, 2008), we propose that endorsement of meritocracy, a system that allots resources on the basis of individual merit, can be used to compensate for lowered perceptions of personal control and to reestablish confidence for future action.

Perceived control, the belief that one is capable of influencing both internal states and external events, is an important aspect of people’s psychological experience. People generally have the need to believe that they will be able to cope with life’s circumstances (e.g., self-regulation) and that their behaviors will achieve desired outcomes

(e.g., efficacy; [Bandura, 1977](#)). A threat to these perceptions may lower the individual's sense of control and lead to a number of aversive consequences. For instance, a context-dependent loss of influence over outcomes may lead to a more global sense of helplessness across situations. This learned sense of helplessness is often associated with cognitive and affective deficits ([Seligman & Maier, 1967](#)). A lack of control also has social costs: inequality promotes a general lack of perceived personal control for those on the lower end of the social stratum ([Kraus, Piff, & Keltner, 2009](#)), and this lack of control may lead to more ambivalence about the efficacy of social reform and political participation. Taken together, a loss of personal control can have negative effects for the individual's cognitive and emotional wellbeing (e.g., depression) as well as negative effects for social reform (e.g., collective apathy on the part of the lower-class).

Research has shown threats to feelings of personal control can increase endorsement of social systems promoting order (reviewed below). Despite this prior research, the compensatory use of economic ideologies such as meritocracy remains untested. The present paper provides the first empirical investigation of this possibility. We propose that U.S. citizens' commitment to a meritocratic ideology may increase when personal control is lowered, and that this defensive endorsement of meritocracy could effectively mitigate concerns about the future. While threats to control may undermine the efficacy necessary for groups to pursue more just social relations, assuaging those threats with the endorsement of systematic ideologies like meritocracy may present a more subversive obstacle to social change by legitimizing inequality.

Ideologies, like meritocracy, offer a set of shared beliefs that groups possess to help interpret the environment as meaningfully structured, and provide prescriptions for how that environment *should* be structured ([Jost, Federico, & Napier, 2009](#)). System justification theory (for a review see [Jost, Banaji, & Nosek, 2004](#)) posits that individuals are motivated by epistemic needs to justify and endorse dominant social systems. Because ideologies represent dominant beliefs about the preferred structure of the social environment, they allow people to see the world as predictable and non-chaotic ([Jost, Federico, & Napier, 2009](#); [Jost & Hunyady, 2002](#)). In short, by endorsing the ideologies that legitimize social systems, people can feel a greater sense of control over their lives with the reassurance that the social environment will be stable and predictable.

At the heart of meritocratic ideology is the notion of individual economic mobility, or the ability to gain more economic resources (moving up in social class) than one's ancestors by following the prescriptions for success. By using hard work, effort and talent, any individual in a meritocratic nation should be able to better their social position. Therefore, in a social system that highly values meritocratic beliefs, individuals may be able to compensate for perceived drops in personal control by reaffirming their faith in meritocracy.

While these beliefs and values may appear to individuals as personal endorsements, they are often created and perpetuated at the group level (and thereby shared by members of the group). It may be true that individuals feel they personally value hard work and effort as a means to success outside of any ideological content, and indeed there are individual differences in a principled merit belief ([Son Hing, Bobocel, & Zanna, 2002](#)), however it is also true that group membership often drives the acceptance of ideological beliefs ([Jackman, 1994](#); [Tajfel & Turner, 1986](#)). This high degree of shared reality ([Hardin & Higgins, 1996](#)) among individuals arguably leads to these ideologies appearing "natural" and making interactions between group members smooth and predictable.

## Compensatory Control Theory

Perceptions that the world is chaotic and unpredictable are psychologically threatening and people are motivated to protect themselves from this threat (Jost, Banaji, & Nosek, 2004; Kay & Eibach, 2013; Lerner, 1980). This is accomplished, in part, by seeing oneself as having control over one's behavior and environment. However, when perceptions of agency and control become threatened, individuals experience anxiety (Kay, Moscovitch, & Laurin, 2010) and become motivated to assuage this negative state (Kay & Eibach, 2013). According to compensatory control theory (CCT), one way to compensate for a perceived loss of personal control is to endorse external systems that promote a sense of order and predictability in the environment (Kay et al., 2008). This compensation reestablishes a perception of control through an external agent. For example, when personal control is lowered, an individual can reaffirm their faith that god will take care of them as a way of alleviating anxiety over their loss of personal control. Alternatively, the individual can turn to ideological beliefs about society to reaffirm a sense that the *system* takes care of those who are worthy. Each of these external agents takes the onus of control off of the individual for the moment and reaffirms for them a sense that the social world is meaningfully ordered (Kay & Eibach, 2013).

Prior research has provided direct support for the prediction that individuals increase their endorsement of external systems that provide order and structure when their own sense of personal control is challenged. For example, after suffering a drop in personal control, participants increased support for a national culture emphasizing law and order which was perceived as promoting a sense of control (Shepherd, Kay, Landau, & Keefer, 2011). A vast, multi-national survey illustrated that individuals with lower levels of personal control were more supportive of governmental control (Kay et al., 2008). In addition, lowering perceived personal control caused a sample of cross-national participants to increase in defense of the federal government (Kay et al., 2008).

Beyond its immediate cognitive and affective benefits, compensatory support seeking has important implications for subsequent behavior. According to CCT, compensating for a loss of control first reestablishes the perception that the world is ordered and predictable, and then enables the individual to confidently pursue goals and plan for future action. In this way, the compensatory process promotes the individual's sense of agency by situating the individual in an ostensibly predictable and unthreatening social environment (Kay, Sullivan, & Landau, 2014). Supporting this argument, participants primed with the idea of structure (vs. randomness) expressed more willingness to engage in goal-oriented action (Studies 1 & 2) and were more likely to take steps toward achieving their goals (Study 3; Kay, Laurin, Fitzsimons, & Landau, 2014). These findings support CCT's claim that when individuals compensate for a loss of personal control through external sources of order and structure, this compensation subsequently promotes a sense of confidence in future action.

## Compensation Through Meritocracy

While prior research shows that threats to personal control result in a compensatory endorsement of various external social systems, to date no research has investigated the possibility that ideologies, such as meritocracy, might serve in a similar capacity (but see Kay & Eibach, 2013, for a theoretical treatment of this possibility). This is an important concept because ideologies are moralized beliefs about *what should be* in a social system and impact how the public views the structure of social relations (Jackman, 1994). Meritocracy, in particular, has often been criticized as a legitimizing myth that obscures institutional privileges and discrimination in the U.S. (Chen & Tyler, 2001; Jackman, 1994; Jost & Banaji, 1994; Raddatz, 1981; Sidanius, 1993). Group-based hierarchies can be seen as legitimate when ideologies like meritocracy provide a rationale for an unequal distribution of resources

(see [Sidanius & Pratto, 1999](#)). Therefore we contend it is highly important to understand the possible compensatory uses of meritocracy in an U.S. context that is characterized by group-based disparities ([NWLC, 2012](#); [U.S. Census Bureau, 2011](#)).

As an ideology that focuses on both individual “inputs” and system level “outputs”, meritocracy may promote perceptions of control over one’s environment in two ways. First, meritocracy offers a prescription for success and for failure. According to the ideology: If one uses hard work, ability and persistence then they should succeed, while those who fail are presumably lazy, inept, or otherwise deficient ([Hochschild, 1995](#)). In either case, the individual is uniquely responsible for her economic outcomes. Meritocracy therefore can promote a perception of personal control because it specifies what one needs to provide the system to gain the desired reward, or what one has failed to provide in the case of failure. In addition to this explanatory benefit, meritocracy offers a description of success and failure, namely that the overarching economic system of distribution recognizes and rewards the merit of the successful individual while withholding undeserved rewards from those who have not yet earned them ([Hochschild, 1995](#); [Jackman, 1994](#); [Kluegel & Smith, 1986](#)). This is represented by the individual’s belief that the external system fairly provides or withholds the desired “outputs” (e.g., job promotion, entrance to college) based on the correct level of “inputs” (i.e., hard work, perseverance) given. Thus, meritocracy also provides the perception that there is a predictable distribution of success and failure at the systematic level. Taken together, these two aspects of meritocracy can promote a perception of control for the individual in regards to an external system of distribution that provides a sense of order and predictability of outcomes.

## Current Studies

Building on compensatory control theory, we tested the prediction that individuals would increase their support for meritocracy following diminished perceptions of control. If support for meritocracy is a motivated response to lowered feelings of personal control as we predict, then when individuals’ perceptions of control are threatened, we would expect participants to endorse meritocracy to a greater degree than those who had their perception of control affirmed (Studies 1 and 2) or not manipulated (Study 2).

Furthermore, if threats to personal control increase feelings of anxiety, then participants suffering a drop in personal control may initially indicate a greater worry over their future until they are able to assuage this anxiety through the endorsement of meritocracy. If compensation provides a sense of order and structure as we have argued, then a compensatory increase in meritocracy endorsement could enable individuals to feel more confident about their future actions ([Kay, Laurin, et al., 2014](#)). We tested whether the degree of meritocracy endorsement following a threat to personal control resulted in greater optimism about future economic success (Study 2). Specifically, we expected that participants in the control threat condition (vs. control affirmation condition) would have comparable levels of confidence in their future as a direct result of their prior meritocracy endorsement.

In Study 3 we sought to rule out the possibility that the effects on restored optimism over economic success in Studies 1 and 2 were simply a result of priming economics in general, rather than specifically due to meritocracy’s emphasis on a structured social environment. In this study, all participants had their personal control threatened, and then were randomly assigned to read either an essay on meritocracy or an essay describing economics in general. Following this, we again measured participants’ confidence in their economic future. We predicted that following a control threat, participants exposed to the meritocracy essay would subsequently show greater confidence in their economic future in comparison to participants exposed to the general economics essay.

Across all three studies we used samples from Amazon's Mechanical Turk (MTurk) online service. MTurk is a service created by Amazon to facilitate the recruitment of participants for online tasks. Researchers or "requesters" can post online tasks like the studies illustrated here, and offer a small monetary incentive for participation (paid to Amazon at the time of posting). Participants or "workers" can select from various requests posted on the service and complete them. Once a worker's participation has been verified by the requesters, Amazon then disperses payment into the worker's account. For a detailed review of MTurk's growing popularity in psychological research, see [Paolacci and Chandler \(2014\)](#).

## Study 1

Study 1 tested the hypothesis that decreased personal control would increase endorsement of meritocracy. We first manipulated participants' perceptions of personal control. As a check on our manipulation, we next assessed feelings of personal control. We then followed this with an assessment of their endorsement of meritocracy to test our primary hypothesis.

### Method

#### Participants

Sixty-six participants (34 women and 32 men) were recruited via Amazon's Mechanical Turk online service. We excluded the data of 2 participants (both men) who did not complete more than half of the study materials, thus the final sample consisted of 64 participants. The sample ranged in age from 19 to 68 ( $M = 35.92$ ,  $SD = 14.34$ ). The sample was predominantly White with 89% self-described as White/Caucasian; 1.6% as Native American; 1.6% as Asian; 1.6% as Latino(a); and 6.3% who did not respond to the ethnicity question. All participants indicated they lived within the United States and 95.3% indicated U.S. citizenship. In terms of yearly household income our sample was predominantly middle-class, with 7.8% of participants reporting themselves in the \$0 to \$25,000 range; 14.1% in the \$25,000 to \$50,000 range; 35.9% in the \$50,000 to \$100,000 range; 34.4% in the \$100,000 to \$200,000 range; and 7.8% in the \$200,000 and above range. The sample was also rather liberal,  $M = 32.17$ ,  $SD = 27.72$  (rated on a 100-point scale; 1 = *extremely liberal*; 100 = *extremely conservative*).<sup>i</sup> Participants were told the study examined personality differences in economic attitudes, and they were provided a small financial incentive (\$0.45).

#### Manipulation

**Personal control prime** — Personal control was manipulated using a similar writing procedure validated in previous research on compensatory control ([Kay et al., 2008](#)). As a cover story, participants were told the task was designed to assess personality through writing style. Participants were randomly assigned to one of two conditions.

In the *no personal control* condition participants were asked to "recall a particular incident in which something happened and you had absolutely no control over the situation. Please describe the situation in which you felt a complete lack of control - what happened, how you felt, etc." In the *personal control* condition participants were asked to "recall a particular incident in which something happened and you had complete control over the situation. Please describe the situation in which you felt complete control - what happened, how you felt, etc." Using a writing prime in conjunction with an online sample allows us to read participants' responses and confirm that: a) they accurately followed instructions, and b) that the response was made by an actual participant.<sup>ii</sup>

## Measures

**Personal control** — Four items were modified from the Mastery Scale (Pearlin, Lieberman, Menaghan, & Mullan, 1981) to measure perceptions of personal control: “I have a great degree of control over what happens to me in my life;” “The events in my life are mainly due to my own actions;” “I am not in control of most of the things that occur in my life;” (reverse-coded); and “I have little control over what happens in my life” (reverse-coded). Participants rated their agreement with these (and all subsequent) statements using a 7-point scale (1 = *Strongly Disagree*; 7 = *Strongly Agree*). These items formed a reliable composite ( $\alpha = .74$ ) and scores were averaged, with higher scores indicating a greater perception of personal control.

**Meritocracy endorsement** — Participants rated their agreement with nine items modified from the Capitalist Values Scale (McClosky & Zaller, 1984) to assess their endorsement of meritocracy. For example: “Most people who don’t succeed at life don’t put in enough work or effort” and “Any person who is able and willing to work hard has a good chance of succeeding.” These items formed a reliable composite ( $\alpha = .78$ ) and scores were averaged.

## Results

### Personal Control

To test the effect of our manipulation, a one way between-subjects ANOVA was conducted to examine the impact of condition (*no personal control* vs. *personal control*) on perceptions of personal control. Analysis indicated a significant main effect of condition,  $F(1, 62) = 6.44$ ,  $p = .01$ ,  $\eta^2 = .09$ , with participants in the *no personal control* condition ( $M = 4.7$ ,  $SD = .99$ ) indicating significantly less perceived personal control than individuals in the *personal control* condition ( $M = 5.3$ ,  $SD = .89$ ).

### Meritocracy Endorsement

A one-way ANOVA was conducted to examine condition on meritocracy scores. Analysis indicated a significant effect,  $F(1, 62) = 5.49$ ,  $p = .02$ ,  $\eta^2 = .08$ , with participants in the *no personal control* condition ( $M = 4.1$ ,  $SD = .84$ ) endorsing meritocracy significantly more so than individuals in the *personal control* condition ( $M = 3.6$ ,  $SD = .92$ ).<sup>iii</sup>

## Discussion

Study 1 results support the hypothesis that lowered perceptions of personal control increased participants’ endorsement of meritocratic values. A manipulation check indicated that participants in the *no personal control* condition did perceive less personal control following the manipulation in comparison to participants in the *personal control* condition. Therefore we see evidence that when individuals perceive less personal control, they become more supportive of ideological statements that focus on a predictable and ordered social environment.

However, Study 1 failed to include a true control condition, so rather than meritocracy increasing in the *no personal control* condition, it is possible that meritocracy endorsement decreased in the *personal control* condition. While this alternative is unlikely due to prior research showing that control affirmation is no different from a neutral condition (e.g., Cutright, 2012); we included a neutral condition in Study 2 to test our hypothesized direction of effects. We also included measures of anxiety over the future and of perceived future economic success to test the extent to which meritocracy endorsement assuages anxiety and enables participants to positively evaluate future action.



## Study 2

Study 2 was designed to replicate the findings of Study 1, while also testing our claim that compensation through meritocracy would raise participants' confidence in their future action. We expected that participants would show greater endorsement of meritocracy when perceived personal control was lowered, as opposed to either a neutral condition or a condition where perceptions of personal control were bolstered. Furthermore, we expected that this increased belief in meritocracy in the lowered personal control condition would help restore participants' optimism about their future economic success.

We expected that reduced feelings of personal control would undermine optimism about one's future. However, if participants increased their endorsement of meritocracy following the lowered control manipulation, we predicted that this compensation would restore their confidence for future action. We tested this hypothesis with a suppression model, which allows us to test for the specific effect of lowered personal control on perceptions of future economic success, with meritocracy as the proposed cause of optimism about future economic success for participants in the no personal control condition.

## Method

### Participants

Ninety-two participants (53 women and 39 men) were recruited via Amazon's Mechanical Turk online service. We excluded the data of 2 participants (1 woman and 1 man) who did not complete more than half of the study materials and 1 participant (woman) who did not complete the manipulation. Thus, the final sample consisted of 89 participants. The sample ranged in age from 18 to 80 ( $M = 35.89$ ,  $SD = 13.82$ ). The sample was predominantly white with 79.8% self-described as Caucasian; 9.0% as African-American; 5.6% as Asian; 4.5% as Latino(a); and 1.1% who did not answer the ethnicity question. All participants indicated they lived within the United States and 95.5% indicated U.S. citizenship. In terms of yearly household income our sample was predominantly low to middle-class with 25.26% of participants reporting themselves in the \$0 to \$25,000 range; 40.0% in the \$25,000 to \$50,000 range; 23.15% in the \$50,000 to \$100,000 range; 4.21% in the \$100,000 to \$200,000 range; 4.21% in the \$200,000 and above range; and 3.17% who did not answer the income question. The sample was, on average, slightly more liberal,  $M = 44.03$ ,  $SD = 28.31$  (rated on a 100-point scale; 1 = *extremely liberal*; 100 = *extremely conservative*). Participants were told the study examined personality and economic attitudes, and they were provided a small financial incentive (\$0.40).

### Materials

**Personal control prime** — Personal control was manipulated using the same procedure in Study 1, with the inclusion of a neutral condition in which participants were asked to “please tell us about your day leading up to your participation in this study. Please describe your day - what happened, how you felt, etc.” Participants were randomly assigned to one of three conditions: *no personal control*, *personal control*, or *neutral*.<sup>iv</sup>

**Anxiety over the future** — Two items created for the study were used to measure anxiety over the future: “I am worried about my future”; and “I feel confident about my future” (reverse-coded). These items were significantly related,  $r = .58$ ,  $p < .001$ , and scores were averaged to form an anxiety over the future measure.

**Meritocracy endorsement** — Participants then rated their agreement with the same nine items used to assess meritocracy endorsement in Study 1. These items formed a reliable composite ( $\alpha = .90$ ) and scores were averaged.

**Future economic success** — Participants rated their agreement with six items we created to measure perceptions of future economic success: for example, “I believe I will be able to make more money in the future;” and “I believe I will be able to improve my standard of living.” The six items formed a reliable composite ( $\alpha = .86$ ) and scores were averaged.

## Results

### Anxiety Over the Future

A one way between-subjects ANOVA was conducted to examine the impact of condition (*no personal control* vs. *personal control* vs. *neutral*) on anxiety over the future. Analysis indicated a significant main effect of condition,  $F(2, 86) = 2.99, p = .05, \eta^2 = .06$ , with participants in the *no personal control* condition ( $M = 4.2, SD = 1.31$ ) indicating significantly more anxiety over the future than individuals in the *personal control* condition ( $M = 3.3, SD = 1.3, p = .02$ ) and individuals in the *neutral* condition ( $M = 3.5, SD = 1.4, p = .05$ ).<sup>v</sup> Participants in the *personal control* and *neutral conditions* did not significantly differ ( $p = .62$ ).

### Meritocracy Endorsement

A one-way between-subjects ANOVA was also conducted to examine the impact of personal control prime (*no personal control* vs. *personal control* vs. *neutral*) on meritocracy endorsement. Analysis indicated a significant effect of condition,  $F(2, 86) = 3.25, p = .04, \eta^2 = .08$ . Pair-wise comparisons revealed that participants in the *no personal control* condition ( $M = 4.54, SD = 1.08$ ) endorsed meritocracy significantly more than individuals in either the *personal control* condition ( $M = 3.92, SD = 1.18; p = .05$ ) or *neutral* condition ( $M = 3.81, SD = 1.22; p = .01$ ). There was no difference between *personal control* and *neutral conditions* ( $p = .73$ ).<sup>vi</sup>

### Future Economic Success

Next, we submitted perceptions of future economic success scores to the same one-way ANOVA. Analyses revealed no effect of condition on perceptions of future success,  $F(2, 86) = .29, p = .74$ . Participants in the *no personal control* condition ( $M = 4.69, SD = 1.34$ ) were just as optimistic about their future economic success as participants in the *personal control* condition ( $M = 4.93, SD = 1.20$ ) and participants in the *neutral* condition ( $M = 4.75, SD = 1.18$ ). Future economic success was significantly related to anxiety over the future,  $r = -.45, p < .001$ .

Because we specifically predicted that endorsement of meritocracy would compensate for the effects of the *no personal control* prime, the absence of this main effect on perceptions of future success suggested that it may be due to participants—in the *no personal control* condition—being able to endorse meritocracy prior to their assessment of future economic success. To test this prediction, we dummy-coded the priming conditions (*neutral* or *personal control* = 0; and *no personal control* = 1) to explore the specific effect of the *no control* condition and because the *neutral* and *personal control* conditions did not differ in the above analyses. Consistent with the omnibus test above, there was no significant difference between the *personal control/neutral* conditions ( $M = 4.83, SD = 1.17$ ) and the *no control* condition ( $M = 4.69, SD = 1.34$ ) on perceptions of future economic success,  $F(1, 87) = .25, p = .62$ . However, when controlling for meritocratic value endorsement using ANCOVA, a difference emerged between the *personal control/neutral* conditions ( $M = 4.94, SD = 1.03$ ) and *no control* condition ( $M = 4.41, SD = 1.05$ ) on perceptions of future economic success,  $F(1, 86) = 4.86, p = .03, \eta^2 = .05$ .<sup>vii</sup>



These results indicated that increased meritocracy endorsement in the no personal control condition may have restored perceptions of future economic success. We then directly tested this suppression effect of meritocracy on the relationship between personal control and perceptions of future economic success. A “suppressor” variable is an identified third variable that when included in a model increases the regression coefficient between the predictor and outcome variable rather than decreasing the coefficient as in mediation (Cheung & Lau, 2008). Unlike a mediation effect, where the relationship between the predictor and outcome variable is accounted for by the inclusion of a third variable, a suppression effect indicates that the full relationship between the predictor and outcome variables is hidden by a third variable. Thus, when this effect is not controlled for, the relationship may appear smaller or, in this case, non-significant.

To test for this suppression effect we used the same dummy coding (*neutral* or *personal control* = 0; and *no personal control* = 1) and used Preacher and Hayes' (2008) bootstrapping procedure. The dummy-code representing the complex comparison between the *no personal control* condition and the collapsed *personal control/neutral* conditions was included as the predictor of perceptions of future economic success with meritocracy as the proposed suppressor variable. Five-thousand bootstrap re-samples were performed. As predicted, the 95% confidence interval obtained for the dummy coded condition on future success, through the suppressing variable meritocracy, did not contain zero (.11, .70; see Table 1).

Table 1

*Suppression Effect of Meritocracy on the Relationship between Personal Control and Perceptions of Future Economic Success*

Path	Estimate	S.E.	$\beta$	95% CI
Condition to Future Success ( <i>total effect</i> )	-.14	.28	-.05	-.71, .42
Condition to Meritocracy ( <i>a path</i> )	.67**	.26	.26**	.14, 1.20
Meritocracy to Future Success ( <i>b path</i> )	.58**	.09	.58**	.40, .77
Condition to Future Success ( <i>c' path</i> )	-.53**	.09	-.20*	-1.01, -.05
Indirect Effect ( <i>c-c'</i> )	.39			.13, .72

Note. Total Adjusted  $R^2$  for the model is .31,  $F(2, 86) = 19.41$ ,  $p < .001$ .

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

## Discussion

Study 2 results supported our predictions. First, we found that participants primed with a loss of personal control showed a greater endorsement of meritocracy than participants in the personal control or neutral condition, replicating Study 1. This finding is consistent with our broad hypothesis that meritocracy may serve a compensatory control function.

Furthermore, we found that while participants with lowered levels of perceived personal control (vs. the other conditions) seemed at first glance to have similar confidence in their future economic success; differences appeared after accounting for the role of meritocracy endorsement. The significant suppression model shows that individuals in the *no personal control* condition highly endorsed meritocracy, and that through increased endorsement they were more confident in their ability to achieve future goals (in this case economic success). Beyond the direct evidence provided by the suppression model, we also found that despite initial anxiety about the future due to threatened personal control, group differences were eliminated after participants affirmed belief in meritocracy.

However, one limitation of this approach is that the suppression model relies on the covariance between meritocracy endorsement and confidence in future economic success. Since this does not randomly assign individuals to meritocracy (vs. no meritocracy) we cannot definitively show that meritocracy specifically *caused* a change in perceptions of future economic success, rather than the opposite causal relation of perceptions of future economic success increasing meritocracy endorsement.

### Study 3

We designed Study 3 to rule out an alternative hypothesis for our effect of meritocracy on future economic success in the *low control* condition from Study 2. Perhaps participants were simply primed with economics in general when asked to indicate their level of meritocracy endorsement, and this priming effect led to an increase in confidence over their future economic success following a control threat. In this case, meritocracy's emphasis on order and structure might not uniquely promote its use for compensation and rather *any* information regarding economics might restore confidence in one's economic future following a control threat.

To rule out this possibility we exposed all participants to the same low control manipulation used in Studies 1 and 2. Following the personal control manipulation, all participants completed the same anxiety over the future measure from Study 2 to assess general levels of anxiety. Next, each participant was randomly assigned to read one of two essays. This part of this study is conceptually very similar to study 5 from [Kay, Laurin, et al. \(2014\)](#). While those authors presented participants with either a structured (reliable pattern) or a baseline prime, we primed participants with either a student essay on meritocracy or economics in general. We constructed these essays to be matched on content; however the neutral essay was non-ideological and descriptive (thus not explicitly oriented towards structure and order), whereas the meritocracy essay was designed to emphasize a predictable system of distribution.

After reading the student essay, all of the participants were asked to complete the same future economic success assessment from Study 2. We expected that after having their personal control lowered those participants exposed to an essay on meritocracy would subsequently indicate greater confidence in their economic future in comparison to the participants exposed to the general economics essay.

## Method

### Participants

Eighty-four participants (40 women and 44 men) were recruited via Amazon's Mechanical Turk online service. All participants were included in our analysis. The sample ranged in age from 18 to 77 ( $M = 36.65$ ,  $SD = 13.85$ ). The sample was again predominantly white with 80.0% self-described as Caucasian; 5.9% as African-American; 7.1% as Asian; 3.5% as Latino(a); 2.4% as "other"; and 1.2% who did not answer the ethnicity question. All participants indicated they lived within the United States and 91.8% indicated US citizenship. In terms of yearly household income our sample was predominantly low to middle-class with 22.60% of participants reporting themselves in the \$0 to \$25,000 range; 45.3% in the \$25,000 to \$50,000 range; 25.0% in the \$50,000 to \$100,000 range; 7.20% in the \$100,000 to \$200,000 range; and 1.2% did not answer the income question. The sample was again rather liberal,  $M = 39.12$ ,  $SD = 29.46$  (rated on a 100-point scale; 1 = *extremely liberal*; 100 = *extremely conservative*).

Participants were told the study examined personality and economic attitudes, and they were provided a small financial incentive (\$0.45).

## Materials

**Personal control prime** — All participants were first asked to complete the same writing manipulation for the no personal control condition used in Studies 1 and 2.

**Anxiety over the future** — Following the writing prime, all participants rated their agreement with the same two items in Study 2 to measure anxiety over the future. These items were significantly related,  $r = .46$ ,  $p < .001$ , and scores were averaged to form an anxiety over the future measure.

**Essay prime** — Participants then were randomly assigned to view one of two essays ostensibly written by a student. The *meritocracy essay prime* was comprised of a statement describing a meritocratic social system: “*In a meritocratic social system, talented and hardworking individuals move ahead on the basis of their own individual achievement. A meritocracy distributes resources such as wealth and material possessions based on each individual’s unique merit...*”

The *neutral essay prime* was a statement describing the study of economic systems: “*Economics is the study of the production, distribution and consumption of goods and services within any country or society. A focus of the subject is how economic agents behave or interact and how economies work...*” Both essays were designed to be economic in theme, yet differing in ideological content.

**Future economic success** — After reading the essay, participants rated their agreement with the same six items used in Study 2 to measure perceptions of future economic success ( $\alpha = .85$ ).

## Results

A one way between-subjects ANCOVA was conducted to examine the impact of essay prime (*meritocracy* vs. *neutral*) on perceptions of future economic success while controlling for evaluations of anxiety over the future ( $M = 3.83$ ,  $SD = 1.33$ ). Analysis indicated a significant main effect of condition,  $F(1, 81) = 6.18$ ,  $p = .01$ ,  $\eta^2 = .06$ , with participants in the *meritocracy essay prime* condition ( $M = 5.27$ ,  $SD = 1.05$ ) indicating a significantly more positive evaluation of their economic future than participants in the *neutral essay prime* condition ( $M = 4.5$ ,  $SD = .97$ ).<sup>viii</sup>

## Discussion

Study 3 provided further support for our contention that either the endorsement of (Study 2) or exposure to (Study 3) meritocracy following a control threat can assuage feelings of anxiety that arise from a loss of personal control, and consequently allow individuals to be confident about future action. As in Study 2, participants in Study 3 exhibited a moderate level of anxiety regarding their future following a threat to personal control. However, when controlling for initial levels of anxiety we found that those participants who were exposed to a meritocracy-themed essay following the threat were more confident about their future economic goals in comparison to those participants who were exposed to a general economics essay.

These results supported our claim that meritocracy specifically (vs. economics in general) enables participants to become more optimistic about their economic future following a threat to their personal control. Perhaps another factor was at work here as well. While previous research has not investigated whether similarity between the

compensation source used and the domain of future action affects participant's optimism, it is highly probable that this relationship exists. Perhaps compensating with an external source of order like meritocracy is better suited for establishing optimism over future economic outcomes as compared to an alternative source like a powerful enemy (Sullivan, Landau, & Rothschild, 2010) or belief in precognitive abilities (Greenaway, Louis, & Hornsey, 2013).

Kay and Eibach (2013) propose that the degree of correspondence between the source of a threat to personal control and the content of an ideology (*functional fit*) determines its effectiveness as a source of control. For example, if a person feels a loss of personal control within their interpersonal relationships, an ideological belief in the existence of an ideal mate (e.g., soul mate) might provide a better sense that the one's interpersonal relationships are meaningfully ordered as opposed to an ideological belief in a strong national government. We can extrapolate from this perspective to infer that the fit between the compensation source used, and the future action assessed may also be important, such that compensating with an economic ideology specifically promotes optimism over future economic action. Future research will be needed to empirically test the role of functional fit between compensation sources and subsequent behaviors.

## General Discussion

Across three studies, we explored the role of meritocracy as a source of compensatory control. First, Study 1 validated the control threat manipulation and provided initial evidence that participants responded to a control threat with higher levels of meritocracy endorsement. Study 2 replicated this effect of lowered perceived control on meritocracy, but also extended our findings to show that our control manipulation also influenced participants' anxiety levels over their future action in general. Study 2 also furthered our understanding of the relationship between compensation and action by showing that despite higher levels of anxiety directly following a control threat, this anxiety subsided, at least in terms of their economic future, after participants were able to endorse meritocracy. Finally, Study 3 ruled out an alternative hypothesis that the effects from Study 2 (i.e., meritocracy endorsement leading to increased optimism over future success) were due to priming economics in general rather than meritocracy specifically. We did this by showing that following a control threat, participants exposed to a meritocracy-themed essay (compared to a general economics essay) showed greater optimism over their economic future despite initial levels of anxiety.

Taken together, these studies suggest that individuals suffering a threat to their personal control are motivated to compensate for this threat through a control-affording ideology like meritocracy, and that this compensation enables them to manage this threat and once again feel confident about their economic future. In all 3 studies we report effect sizes in the form of eta squared ( $\eta^2$ ) that represent the magnitude of the differences found on our dependent variables (Levine & Hullett, 2002). Specifically, this value is interpreted in the same way as an  $R^2$  value: it communicates how effectively the differences in experimental conditions account for variance in meritocracy endorsement (Studies 1 and 2) and future economic success (Study 3). In Studies 1 and 2, the effect of the control manipulation explained about 8% of the variance in observed meritocracy scores (Study 1:  $\eta^2 = .08$ ; Study 2:  $\eta^2 = .08$ ). In Study 3, the effect of our essay manipulation explained about 6% of the variance in future economic success scores ( $\eta^2 = .06$ ). Using Cohen's guide for interpreting effect sizes where values of .01, .06, and .14 represent small, medium, or large differences respectively (1988, pp. 280–287), we can conclude that our manip-

ulations across the studies resulted in medium-sized differences between our conditions. While the patterns of means and effect sizes were consistent in our studies, further replication is needed to determine an accurate overall effect size estimate for meritocracy endorsement and to explore how this effect compares to other means of securing compensatory control (e.g., God, government).

## Future Directions

### Culture

It is likely that the effects observed in our studies are highly culturally specific. U.S. culture has inherited (and promoted) a unique form of meritocratic individualism with deep roots in the nation's past. During the colonization of North America, the dominant religious doctrines of Lutheranism and Calvinism were both prevalent forces in the founding of the new social systems (e.g., government, capitalist economic structure). Through these religious teachings, individual effort and hard work became moral imperatives for the godly person. Over time, the importance of hard work and effort morphed from a strictly religious decree to a more secular, nationalistic belief in the value and morality of hard work (and hard workers; [Weber, 2002](#)). Meritocracy evolved from this religious Protestant work ethic to become a core concept in America's founding principles of social and economic individualism. By the late 19th century, the values of self-reliance and hard work were pervasive, serving as an incentive for the poor and an inescapable moral imperative for elites (as expressed, e.g., by authors Henry David Thoreau and Ralph Waldo Emerson; see [Lipset, 1979](#)). Over time this ideology has been billed as an "American dream" for immigrants to the country, the ideal of the homesteader heading west, and the justification rolled out by elites to legitimize their wealth.

This history is important as our studies might be overlooking the boundaries of our effects. Because we used a U.S. sample and a highly popular U.S. ideology, the results of our studies are unlikely to generalize to other cultural settings with their own unique ideological histories. In fact, it is likely that even in an U.S. context, the compensatory use of meritocracy may crucially depend upon an individuals' identification with the dominant culture. [Kay and Eibach \(2013\)](#) argue that the chronic accessibility (the degree of cultural normative fit and history of personal use) of an ideology will determine its selection or rejection as an adequate source of compensation for the individual. In other words, people do not randomly select any ideological source for compensation; they select those prevalent in their culture that they have previously found useful for managing concerns about their control.

Focusing on culturally prevalent sources for compensation, we would argue that social identity theory (SIT) would provide insight into the compensation process. Because individuals who identify at the collective level (e.g., U.S. citizens) attach value to their group; this in turn allows individuals to think and act on the basis of their collective identity ([Haslam, Ellemers, Reicher, Reynolds, & Schmitt, 2010](#)). Thus, the degree to which individuals identify with their ingroup and adhere to its norms could directly influence their propensity to use an ideology such as meritocracy as a source of compensation. Future research needs to investigate the effects of group identification on the use of dominant cultural ideologies for compensatory purposes as this is likely an important factor for the selection of various compensatory sources.

By the same logic, we would expect considerable cultural variability in compensatory sources. Just as U.S. citizens may turn to meritocracy to assuage anxiety about the future, we would expect that individuals from various cultures who experience threats to personal control might be motivated to compensate through other economic and political ideologies. Sources of compensation across cultures likely vary as both the content of dominant cultural norms

for order and structure changes and, within those settings, based on the degree to which individuals identify with that culture and accept those norms.

### Individual Differences

Because one factor that determines accessibility is a history of personal use, it is also possible that some individuals may come to prefer alternative ideological sources of control when they are given the opportunity (following [Shepherd et al., 2011](#)). For example, in our studies we presented participants with only one option for compensation, meritocracy, so we cannot confirm that this ideology is the ideal or preferred source of compensatory control for our participants. It may be that meritocracy was simply the most accessible belief system available in the moment. If we had given participants the opportunity to selectively endorse an ideology, we might have seen some participants show a greater endorsement of egalitarianism, which emphasizes equal distribution of resources regardless of individual effort or ability. This non-meritocratic ideology might similarly afford people feelings of control and certainty about their outcomes by promoting a sense of order and predictability in the environment. For instance, had we a more politically diverse sample, and an alternative ideology such as egalitarianism present in these studies, we might have found that more conservative participants find meritocracy more attractive for compensation whereas more liberal participants reject meritocracy in favor of egalitarianism.

Likewise, we might expect that some individuals prefer other, non-ideological means of restoring personal control. For example, people might also turn to god ([Kay, Whitson, Gaucher, & Galinsky, 2009](#)) or isolate focal scapegoats ([Rothschild, Landau, Sullivan, & Keefer, 2012](#)) to restore feelings of control. Future research should explore the likely relationship between sources of control (personal, familial, cultural, etc.), and the ways in which threats in some contexts (e.g., economic) motivate people to derive control from particular sources (e.g., meritocracy) with particular outcomes (e.g., positive economic outcomes). While these studies only begin to gesture at such a fine-grained analysis of the process, we believe that careful attention to the context of control threat and compensation will generate key advances in future research.

Lastly, it is also important to consider variation in the motivation and types of control that individuals seek. While our work investigates a specific type of threat and a specific type of outcome, personal control may not be a universal concern. While personal control and agency are of great concern in highly independence-oriented cultures, those from more interdependent settings may place comparatively less emphasis on maintaining this control ([Markus & Kitayama, 1991](#)). Therefore, it is conceivable that in cultures with less emphasis on individual control and more emphasis on external control, chaos and unpredictability in the environment may still be threatening but have different effects for the individual. For example, Cotterill and colleagues found that the degree to which Indian participants believed in the ideology of Karma and caste, a belief that actions in a past life dictate one's social position in the current life, predicted the degree to which they endorsed hierarchy enhancing beliefs and policies ([Cotterill, Sidanius, Bhardwaj, & Kumar, 2014](#)). Extrapolating from this work, we might expect that for Hindu Indian participants, a threat to the legitimacy of Karma (as opposed to personal control) might motivate compensatory efforts to support external sources of order and structure, such as hierarchy enhancing ideologies.

Even within a culture such as the U.S., class differences ([Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012](#)) may mean that personal control is of far greater importance to wealthier (and more individualistic) individuals, while collective control (e.g., by community or ethnic groups) is more central for individuals from lower class backgrounds. While our data cannot speak to these possibilities, it is important to consider that compensatory processes may extend beyond concerns for personal control.



## Limitations

While the results of these studies provided consistent support for our predictions, they also contain some limitations.

### Sample

Our samples across all three studies were skewed towards a liberal political orientation. While we observed our expected effects even after controlling for ideology (and ideology did not moderate these effects), these results still do not rule out the possibility that a more balanced sample might produce different patterns. While meritocracy is generally more supported by conservatives than liberals (Jost et al., 2009), we might have found moderating effects had we a more diverse and representative sample. For example, it is possible that more conservative participants may find meritocracy an even more effective means of compensatory control than more liberal participants because of the centrality of this belief to conservative ideology.

All three of our samples were comprised of Amazon Mechanical Turk workers. While MTurk samples have shown themselves to be as diverse as college-student samples, and just as reliable on psychometric standards, there are some limitations to these samples (Buhrmester, Kwang, & Gosling, 2011). For instance, MTurk workers are often younger, more educated, underemployed, less religious, and more liberal than community samples (Paolacci & Chandler, 2014); limiting the variance in the social and political attitudes that are at the core of our work. MTurk workers can also “follow” the investigators they have worked for previously and sign-up for any subsequent studies. Repeated participation from a worker could influence the reliability of a manipulation used across multiple studies as participants may be aware of the intended effect following the initial exposure (Paolacci & Chandler, 2014). In brief, follow up research should be investigated with non-MTurk samples to test the generalizability of these effects.

### Design and Procedure

Another limitation is the use of an explicit writing prime to induce a control threat. While this method has been used in many prior studies, it most likely does not adequately capture the nuance and specificity of control threatening experiences in individuals' daily lives. Everyday events like a lost job, a near accident on the freeway, or an unexpected medical issue may threaten specific forms of personal control and have more far-reaching consequences than an artificial, experimental essay prime. Catching an individual in the moment of such naturally occurring threats to control may reveal differences in how they compensate with external sources that our data cannot account for.

Participants in our studies varied widely on the domain for which they described a loss of control. Some participants wrote about experiences where they lost a loved one or battled a life threatening disease, while others wrote about an experience where they lost control over a work project or their favorite sports team lost an important game. While we cannot know from our data if some of our participants suffered a more severe threat to their control than others, it is likely that in daily life the loss of a loved one threatens a person's sense of order and predictability in the world to a greater extent, and perhaps in a different way, than having their favorite team lose an important game. While this remains an empirical question, it does suggest the need for a more nuanced understanding of how threats to personal control might increase meritocracy endorsement.

While our studies provide direct evidence that the compensatory endorsement of meritocracy has downstream consequences for confidence in the future, it will also be important to explore the process in more detail. For instance, a longitudinal design that threatens participants' personal control (or not) and then subsequently measures

participants' adherence to meritocracy, perceptions of personal control, and motivated engagement in future actions would allow us to directly test the path from a threat to compensation, and on to restored feelings of control and motivated action. This approach would also afford a test of how long-lasting the effects of this process will extend: It may be that the consequences of compensation are immediate, as we observed in our studies, or that compensatory meritocracy endorsement actually creates a long-term basis for optimism about one's future. This type of design could test the possible proximal and/or distal uses of compensatory meritocracy endorsement. For instance, it may be that endorsing meritocracy in response to a control threat works to alleviate anxiety (proximal use) or that compensation increases long-term commitment to action (distal use; [Jonas et al., 2014](#)), or both as we inferred from our studies. Instead of assessing participant's perceptions of future success as we did in the current studies, future research should assess whether or not compensation through meritocracy actually induces greater effort toward goal-oriented behaviors (distal use) or is limited to avoidance motivations (proximal use). Our studies have also not looked at important behavioral indicators for which we might expect similar effects. For example, an individual who feels more confident in their economic future may be more willing to invest or spend current resources rather than stockpiling them to prepare for an uncertain future. By this example, we would expect that compensatory meritocracy endorsement has important economic implications for both the individual and society as a whole.

Another important issue is that the present studies do not provide an explanation for why meritocracy endorsement increased following a control threat. Neither perceptions of personal control (Study 1) nor anxiety over the future (Study 2) accounted for the effect of the control manipulation on meritocracy endorsement. Likewise the correlations between meritocracy and either personal control or anxiety did not differ between our experimental conditions. This would suggest that there is more to this relationship than we have assessed in these data. It is possible that motivations to endorse meritocracy following a threat to control are happening at an implicit level, or otherwise were not captured by our measures. Another possibility is that we lacked sufficient power to assess mediation. For example, in a Monte Carlo simulation of 20,000 samples based off of the observed parameters for the hypothesized model in Study 1, the indirect effect was significant in only 19.6% of cases (observed power to detect this indirect effect was approximately .20, far below a standard criterion of .80; [Cohen, 1988](#)), thus before we can rule out the possibility of this model, we would need to provide a stronger test.

## Practical Implications

This research adds to the compensatory control literature and furthers our understanding of both the psychological antecedents and outcomes of meritocracy. Individuals lacking in perceived personal control not only endorsed meritocracy to a greater degree, but in doing so they become more confident about their future economic success. These effects were observed even in the face of an ongoing economic recession and evidence that our meritocratic system seems to be less than fair in its allocation of success (e.g., inequality in wages for women and ethnic minorities).

These data illustrate one reason why people might cling so fiercely to meritocracy, despite the large (and growing) group-based disparities in economic outcomes ([PEW Research Center, 2012](#)). If individuals wish to change social conditions to provide more equitable outcomes for all members of the social system, then they must carefully consider the existential uses of meritocracy. Our data suggest that interventions that can increase feelings of personal control might help to reduce the defensive need to cling onto meritocratic beliefs in the face of evidence to the contrary. Alternatively, if other ideologies that provide order and predictability while also stressing equality of outcomes (e.g., egalitarianism) were to become dominant in our culture, these in turn might be utilized to

compensate for a perceived loss of control. Unless we more fully understand meritocracy and resulting psychological outcomes (e.g. personal control, future economic assessments), individuals in U.S. society will face an uphill battle in promoting more equal economic outcomes, which in our view is critical for social justice.

Finally, endorsement of meritocracy might explain why individuals come to passively accept, and even justify systemic inequality in their own economic outcomes (Jost & van der Toorn, 2012; Lane, 1959). Individuals may turn to meritocracy to fulfill needs for control, but this endorsement may lead them to attribute the negative outcomes they experience in U.S. society (e.g., unemployment, lack of health care, insufficient living wage) to a lack of personal hard work and effort. Interestingly, this suggests that in certain contexts, people may be exchanging a sense of self-worth and value for a sense of control: clinging to meritocracy might allow people to see order in the social world, but at the cost of feeling blameworthy for poverty, income disparity, and other negative economic outcomes.

## Notes

i) Reported effects for all studies remain significant after controlling for political ideology. The effects of condition on all outcomes were not moderated by participants' political ideology in any of the three studies reported below (all  $p$ 's > .29).

ii) We read each participant's entry to determine whether they complied with the instructions for their condition, i.e., writing about an experience of control or a loss of control. The majority of our participants did explicitly mention control (often using the phrases "complete control" or "no control" in their writing). For participants in our no personal control condition, 96% wrote about an explicit loss of control, for example: "When my father died recently. Obviously, I had no control over the situation. It was frustrating to be so helpless with nothing I could really do to improve the situation." 4% did not explicitly write about control, for example: "One of my favorite exercise instructors at the community center left and went to teach elsewhere. She was very fond of me and I liked her and her energy and her classes." For participants in our personal control condition, 91% explicitly mentioned feeling control over a situation, for example: "I was a manager at restaurant and I was in complete control over employees, budget, costs etc. I would make sure I put all my right people where they worked best and that they were doing their best to help control costs and this made me feel very important." 9% did not write about an explicit feeling of control, for example: "Well I was doing a survey and I felt that everything I explained was right, that their [sic] were no wrong answers." Excluding these participants did not change our results, so they were retained in the final sample.

iii) We tested the possibility that decreased perceptions of personal control following the manipulation mediated the effect of priming condition on meritocracy endorsement. However, this test was non-significant (95%  $CI = -.27, .10$ ). We found no evidence that the relationship between personal control and meritocracy differed by experimental condition  $t = -.27, p = .79$ . While these data support our predictions, they also indicate that there is potentially more to this relationship than these data can address.

iv) We again read each participant's entry to ensure compliance with the prime. We also looked for any evidence that participants in the neutral condition wrote about either a loss or boost of personal control. The majority of our participants in the two personal control conditions did explicitly write about an experience of control or a lack of control. For participants in our no personal control condition, 95% wrote about an explicit loss of control, for example: "For Hurricane Katrina, I felt like I had no control because I didn't. I had to listen on the radio in the dark while I heard about areas around my house getting destroyed and listen to people calling in begging for help because they were trapped. I was trapped where I was. I felt awful." 5% did not explicitly write about control, for example: "I was cleaning my room and my dad came in and he scared me and I got scared up." For participants in our personal control condition, 92% explicitly mentioned feeling control over a situation, for example: "When I got my first car I was in complete control. I felt free. I could go anywhere that I pleased. It was one of the best feelings in the world. I felt like I could get away if I wanted. The power of that is immense, and it feels great." 8% did not write about an explicit feeling of control, for example: "I quit a band where another competitive member was trying to reign supreme over me and ruin my reputation. In the midst of it, I quit so I wouldn't be kicked out." For participants in our neutral condition, 95% wrote

benign descriptions about their day, for example: "It was Sunday. I got up, fed the cats, called some friends and talked for a while and had breakfast. I worked for about 7 hours, then went to the library for about 2 hours. I felt normal." 5% did write about an experience that could be construed as a loss of control, for example: "I had a long day at work. I was frustrated and pissed most of the day. Then I went to the gym and worked off most of my stress. Then I made a pizza for dinner and that relaxed me a little more. Now I'm taking this study." We found no overt evidence that participant's in this condition wrote about an explicit feeling of control over their environment, however perhaps due to the individualistic cultural norm in America (Markus & Kitayama, 2010), most of our participant's entries in this condition could be classified as agentic in content. Many people wrote about choosing what activities they undertook throughout their day. This trend may explain why we found no significant differences between our personal control and neutral conditions across studies 1 and 2, although more data to assess this would be needed before we could be certain. Once again excluding any participants that seemed to stray from our instructions did not alter our results in a meaningful way (and they were retained within our final sample).

v) All pair-wise comparisons used Fisher's LSD.

vi) In post-hoc analyses we tested the possibility that increased anxiety about the future mediated the effect of prime on increased meritocracy. This mediation analysis was non-significant, 95% CI (-.39, .09). We also found no evidence that the relationship between anxiety over the future and meritocracy differed by experimental condition  $t = -.45$ ,  $p = .65$ .

vii) Running separate dummy coded analysis (no personal control vs. neutral & no personal control vs. personal control) when controlling for meritocracy also resulted in significant differences,  $p = .05$  and  $p = .04$ , respectively.

viii) When future anxiety scores are not accounted for, the differences between conditions became larger,  $F(1, 82) = 10.49$ ,  $p = .002$ ,  $\eta^2 = .11$

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## Competing Interests

The authors have declared that no competing interests exist.

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## Appendix

### Meritocracy Scale Items (not cited in text)

- People who fail at getting ahead have usually not tried hard enough.
- Hard work offers little guarantee of success in life. (reverse-coded)
- An education, hard work, and talent are all anyone needs to be successful.
- Capitalism teaches people the value of hard work and success.
- The poor are generally poor because they don't try hard enough.
- Getting ahead in the world is mostly a matter of ability and hard work.
- A person's income should depend on their effort, education and talent.

**Future Economic Success Scale Items (not cited in text)**

I am frustrated at my chances for getting ahead in life (reverse-coded).

I am hopeful about improving my chances for getting ahead in life.

My chances for getting ahead in life represent a fair and just system.

I am satisfied with my chances for getting ahead in life.

**Essay Primes (full text; Study 3)****Meritocracy prime:**

In a meritocratic system, talented and hardworking individuals move ahead on the basis of their own individual achievement. A meritocracy distributes resources such as wealth and material possessions based on each individual's unique merit. A truly meritocratic system treats each individual equally, no matter their gender, age, race or religion. By rewarding hard work, effort and natural talent a meritocratic system puts the responsibility for success on the individual rather than the greater social system.

**Control condition:**

Economics is the study of the production, distribution and consumption of goods and services within any country or society. A focus of the subject is how economic agents behave or interact and how economies work. Consistent with this, a primary textbook distinction is between microeconomics, or the behavior of basic elements in the economy such as individual agents and markets, and macroeconomics, the behavior of the entire economy and the issues affecting it, including unemployment, inflation, economic growth, and monetary and fiscal policy.