

The perceived threat of demographic shifts depends on how you think the economy works

Group Processes & Intergroup Relations

1–20

© The Author(s) 2020

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/1368430220951621

journals.sagepub.com/home/gpi

Krystal M. Perkins,^{1*}  Alexia Toskos Dils^{1*}
and Stephen J. Flusberg¹

Abstract

Research shows that people exhibit a conservative shift in their politics when their majority group status is threatened. We reasoned that perceptions of threat posed by shifting demographics might depend on individuals' folk economic beliefs. Across three experiments, White Americans read about projected demographic changes (“threat”) or changes in online dating (“control”) before expressing support for political policies. They also indicated whether they viewed the U.S. economy as a zero- or non-zero-sum system. Relative to controls, participants in the threat condition expressed more support for conservative policies, but only if they conceptualized the economy in zero-sum terms; those who conceptualized the economy in non-zero-sum terms actually endorsed slightly more liberal positions under “threat.” However, these effects obtained only when participants expressed their economic views before their political attitudes. This suggests folk economic beliefs shape how people respond to threats to their majority status, provided those beliefs are first made explicit.

Keywords

demographics shift, folk economics, folk theories, group threat, metaphor, political attitudes

Paper received 28 February 2020; revised version accepted 28 July 2020.

If every economic issue is framed as a struggle between a hardworking White middle class and an undeserving minority, then workers of all shades are going to be left fighting for scraps. . . . Our economy doesn't have to be a zero-sum game. Last year, incomes rose for all races, all age groups, for men and for women.

— Barack Obama, *Farewell Address*, 2017

We have to listen to the concerns that working people, our forgotten working

people, have over the record pace of immigration and its impact on their jobs, wages, housing, schools, tax bills and general

¹The State University of New York at Purchase, USA

*Indicates equal author contributions

Corresponding author:

Krystal M. Perkins, Purchase College, The State University of New York, 735 Anderson Hill Road, Purchase, NY 10577, USA.

Email: krystal.perkins@purchase.edu

living conditions. . . . Within just a few years immigration as a share of national population is set to break all historical records.

—Donald Trump, *Immigration Speech*, 2016

The U.S. Census Bureau estimates that by 2040, the population will be more diverse than it has ever been before. Racial minorities will make up the majority of the population by 2043, and by 2060, 57% of the population will be non-White (U.S. Census Bureau, 2012). In his final address to the public as president, Barack Obama argued that this changing demographic landscape could be viewed as an economic opportunity that would lead to a prosperous future. In contrast, in his 2016 campaign for president, Donald Trump evoked a bleaker picture, where limited resources are being taken away by immigrants, damaging the lives of hard-working Americans.

Trump's electoral success—and the simultaneous resurgence of nativist, right-wing populism across the world—suggests that his arguments hold a particular persuasive power. In fact, research shows that White Americans exhibit a conservative shift in their politics when their majority group status in society is threatened (e.g., Craig & Richeson, 2014b; see Craig et al., 2018, for a review). This work has not specifically examined how beliefs about the economy might moderate these effects, however, despite considerable political rhetoric on the economic consequences of demographic change. The present set of studies addressed this limitation, examining whether presenting information about the changing ethnic diversity in the US causes a conservative shift in political attitudes only among those who, like Trump, view the economy as a competitive, zero-sum system.

Effects of Diversity on Majority Group Attitudes

A growing body of evidence suggests that the perceived size of a given minority group has a direct bearing on the majority group's attitudes. For example, many studies have found that discrimination moderately increases with the relative

size of the subordinate group (Alba et al., 2005; Blalock, 1957; Fossett & Kiecolt, 1989; Pettigrew, 1957; Quillian, 1995). Likewise, experiments have shown that exposure to anticipated demographic changes results in increased feelings of anxiety and negative affect in majority group members and can influence their political attitudes and behaviors (Bai & Federico, 2019; Craig & Richeson, 2014a, 2014b; Danbold & Huo, 2015; Major et al., 2016; Mutz, 2018; Outten et al., 2012; Wetts & Willer, 2018; see Craig et al., 2018, for a review). Reading about increasing diversity, for instance, reduces White Americans' perceptions that ethnic diversity is valued in American society and increases support for the idea that racial minorities should assimilate into mainstream society (Craig & Richeson, 2017; Danbold & Huo, 2015). In one particularly influential set of studies (Craig & Richeson, 2014b), White Americans read about either the projected U.S. demographic racial shift (threat condition) or the growth in geographic mobility (control condition) before indicating their support for various policy-related issues. Results indicated that making racial demographic changes salient led to greater support for conservative policy positions.

Theories of "legitimacy" in social and political psychology argue that anti-minority attitudes and the shift toward conservatism are reactions to a perceived challenge that racial diversity represents to White Americans' position and power (Blumer, 1958; Bobo, 1991; Craig et al., 2018; Jost et al., 2003; Knowles & Tropp, 2018; Wetts & Willer, 2018; Willer et al., 2016). When members of a majority group feel like their societal status is under threat, they double down on conservative ideologies that are associated with maintaining the current social order.

A number of recent studies suggest that reactions to racial demographic changes depend in a principled way on how people think and feel about their identity and place in society (Craig & Richeson, 2014b; Knowles & Tropp, 2018; Major et al., 2016). For example, one study found that impending demographic changes were only perceived as a threat by Americans who identified strongly with their White ethnicity (Major et al., 2016). In addition, Craig and Richeson's (2014b)

“conservative shift” effect was mediated by participants’ level of concern about the loss of their societal status (Study 2), while telling White Americans that impending demographic changes would not impact existing social and economic structures amongst racial groups (“assuaged threat” condition) eliminated the shift altogether (Study 3). Taken together, this work suggests that racial identification and support for existing social hierarchies (e.g., social dominance orientation [SDO]; Ho et al., 2015) by majority group members mediates perceptions of the threat posed by increasing diversity in society.

Folk Economics as a Potential Moderator

One factor that might moderate how the perceived threat of demographic changes affects political attitudes is zero-sum thinking—the tendency to believe that people can only succeed when others fail. Zero-sum thinking is both conceptually and empirically distinct from constructs like SDO and racial identification, having more to do with competitive, antagonistic beliefs about social relations and economic resources than beliefs about the self or how societies should be organized (Różycka-Tran et al., 2015; see also Experiment 3a in the present paper).

We were especially interested in zero-sum thinking in the context of how people conceptualize the economy, as this appears to be linked to issues related to diversity (Knowles & Tropp, 2018; Quillian, 1995). Consider again the quotations that appear at the beginning of this paper; Obama espouses a cooperative, non-zero-sum folk economic theory: the economy is like a boundless forest, where increased ecological diversity will help everyone succeed. According to this perspective, demographic changes in the US actually signal economic opportunities for all Americans and should not feel threatening. Trump’s statement, on the other hand, expresses a competitive, zero-sum conception of how the economy works: in his mind, economic opportunities are a limited resource, and everyone must fight for their slice of the pie. When more immigrants come into the

country, this competition grows, threatening to leave “real” Americans without a slice. Research suggests that many people hold similarly zero-sum “folk economic” beliefs (Boyer & Petersen, 2017; Rubin, 2003), and zero-sum thinking has been found to increase when economic conditions worsen (Sirola & Pitesa, 2017). Periods of economic hardship have also been associated with especially hostile attitudes towards ethnic/racial diversity (Knowles & Tropp, 2018; Quillian, 1995).

Previous research provides some hints that zero-sum thinking and folk economic beliefs might impact the reaction of White Americans towards the changing demographic landscape. In the critical Study 3 from Craig and Richeson (2014b)—which included an “assuaged threat” manipulation that eliminated the conservative shift—the language used to assuage threat specified that changing demographics would not affect the economic prosperity of White Americans: “White Americans are expected to continue to have higher average incomes and wealth compared to members of other racial groups.” This could indicate that it was the zero-sum economic views of participants that drove the conservative shift in previous versions of the study. By telling White Americans that they would not lose their economic dominance in the coming decades, this statement effectively counters the sense of threat posed by shifting demographics for those who conceptualize the economy in zero-sum terms.

That said, Craig and Richeson’s (2014b) materials were designed to test whether reducing group status threat, broadly construed, moderates the conservative shift, making it difficult to differentiate the relative effects of (a) zero-sum economic beliefs and (b) an alternative explanation for the effect that centers on a desire to maintain the current social hierarchy. All of the other information in the assuaged threat narrative described an unchanging social, rather than economic, future for White Americans:

Despite the shift in the demographic make-up, the relative societal status of different racial groups is likely to remain steady. Largely due to continuing differences in educational

attainment, White Americans are likely to remain the majority in powerful corporate and political positions . . . Overall, despite the numerical shift, racial groups' relative positions in society are likely to remain the same as they are now.

Thus, in addition to countering a sense of threat related to zero-sum thinking about the economy (or society more generally), this passage also counters a sense of threat related to a desire to preserve the current social order (which is associated with a greater social dominance orientation; Ho et al., 2015). While there is undoubtedly a relationship between economic and social status in society, and zero-sum beliefs may guide reasoning in both domains—zero-sum thinking and support for current social hierarchies are distinct constructs (as we discussed before and demonstrate empirically in Study 3a)—it is not clear which of these domains functioned to assuage the threat in Craig and Richeson (2014b).

The Present Research

We set out to directly assess whether folk economic beliefs in particular, moderate the sense of threat posed by a changing demographic landscape. We reasoned that the impending increase in ethnic diversity in the US would only feel threatening to those who, like Trump, view the economy as a competitive, zero-sum system. For others, following Obama, the idea of a more diverse America might signal the advent of new ideas, growth, and prosperity. We adapted the methods used by Craig and Richeson (2014b; see also Craig et al., 2018) in order to test this idea. Rather than telling participants how shifting demographics might impact their economic and social outlook, we designed the study to isolate and identify people's folk economic proclivities.

Across three experiments, White Americans read about either projected racial demographic changes (threat condition) or changes in online dating statistics (control condition) before expressing their support for various political policies. Participants also indicated whether they saw the U.S. economy as a competitive, zero-sum

system or a cooperative, non-zero-sum system by selecting between two metaphors for thinking about the current state of the economy (a pie vs. a forest). We hypothesized that White Americans would only show a conservative shift in political attitudes in response to impending increases in ethnic/racial diversity if they conceptualized the economy as a zero-sum system (i.e., as a pie).

We chose to assess folk economic beliefs using a metaphor selection task because of the central role metaphors play in communicating and reasoning about complicated issues and folk beliefs (Kövecses, 2017; Lakoff & Johnson, 1980; Landau et al., 2010; Thibodeau et al., 2019). Metaphors are frequent in discourse about complex and abstract subjects in general, and the economy in particular (e.g., Fukuda, 2009; Herrera-Soler & White, 2012; McCloskey, 1995). Lakoff and Johnson (1980) famously argued that the pervasive and systematic use of metaphors in natural language suggests that people think metaphorically, mapping structured knowledge of more familiar source domains (e.g., pies, forests) onto more abstract and complex issues (e.g., the economy). Decades of research have found support for this view, showing that metaphors both reflect and shape how people think and feel about a variety of different topics (Landau et al., 2010; Thibodeau et al., 2019). For example, recent work has shown that the metaphors people endorse can reliably predict a host of structured attitudes and beliefs about personality traits (Fetterman & Robinson, 2014), teaching styles (Hard et al., in press), and views on policing (Thibodeau et al., 2017). In this way, metaphor selection tasks are an efficient way of measuring folk beliefs because they tap into one of the central cognitive mechanisms for conceptualizing complex subjects.

Secondary Measures

We also included two additional dependent variables (DVs) that we hypothesized might be similarly impacted by our experimental manipulation for participants holding a zero-sum conception of the economy: (a) a measure of participants' outlook for the future welfare of different groups

in the US, and (b) a measure of American national identity. As Trump's words demonstrate, questions about the economy, national identity, political ideology, and hopes for the future have become increasingly entangled as populist rhetoric has taken center stage. We expected that participants who conceptualized the economy as a zero-sum system would report less optimism regarding the future of various groups and would endorse more ethnic/primordial constructions of national identity (Brubaker, 1992) in response to impending increases in ethnic diversity.

We based our future outlook prediction on the "rising tide lifts all ships" truism that suggests good outcomes benefit all people. In this regard, we expected that when White Americans were led to feel that the majority group will be worse off in the future (via exposure to racial demographic shifts), this would lead to the belief that all people will also be worse off—especially among those who view the world as a zero-sum system where people have to compete for economic resources.

Our prediction regarding national identity underscores previous theory and research that have linked the rise of far-right rhetoric within the US to (a) the perceived decline of ethnic constructions of national identity, particularly among White American men (Kimmel, 2017) and (b) a general privileging of Whiteness in the U.S. national imagination (Devos & Banaji, 2005; Yogeeswaran & Dasgupta, 2014). For example, across a series of experiments, Devos and Banaji (2005) established that White Americans were perceived as the "prototypical exemplar of the category 'American'" (p. 464) and implicitly associated with American symbols at faster rates than other groups. As a result, we theorized that those exposed to racial demographic shifts (in comparison to those who were not) would be motivated to protect their ingroup (White Americans), and in turn legitimize prototypical ethnic constructions of national identity (e.g., being born in the United States, Christianity, etc.) because of their association with Whiteness. Drawing on realistic group conflict theory (LeVine & Campbell, 1972), this should especially be the case among those who perceive the economy in zero-sum terms, as limited economic opportunities due to

increased competition in the marketplace could signal the motivation to preserve or safeguard prototypical constructions of what it "means" to be American. Due to space constraints and somewhat inconsistent support for these secondary hypotheses, detailed analyses of these two measures can be found in the supplemental material; we focus on the political policies measure in the main text.

Follow-Up Studies

In Experiment 2, we manipulated the order in which participants completed the elements of the study so that they responded to the economic metaphor task after completing the other dependent measures. In this way, we could test whether participants must be actively thinking about how the economy works in order for it to serve a moderating function in response to reading about demographic changes. Experiment 3 included an additional validation study of our economic metaphor measure, as well as a large-scale, preregistered replication of Experiments 1 and 2. Our results offer new insights into the relationship between zero-sum economic thinking and the perception of threat associated with challenges to majority status. Data and materials for all three experiments are available on the Open Science Framework (osf.io/d5fjn/).

Experiment 1

Methods

Participants. We recruited 400 people located in the US for both Experiments 1a and 1b through Amazon's Mechanical Turk in exchange for payment. We used TurkPrime.com to exclude workers from Experiment 1a from participating in Experiment 1b (as well as all subsequent experiments; Litman et al., 2017). Following Craig and Richeson (2014b), we aimed to have at least 200 analyzable participants in our sample, so we recruited twice as many people to ensure there were enough White Americans in the final dataset. Participants who identified as White were submitted to all analyses (300 in Experiment 1a and 303 in Experiment 1b). Demographic infor-

Table 1. Demographic information for each experiment.

	Experiment 1a	Experiment 1b	Experiment 2	Experiment 3a	Experiment 3b
<i>N</i> sampled	400	400	400	300	2,075
<i>N</i> analyzed	300	303	279	233	1,569
% female	44%	51%	48%	41%	54%
Mean age	37.5	34.5	34.9	36.8	38.6
% Democrats	40%	44%	38%	52%	37%
% independents	37%	36%	40%	28%	35%
Date collected	10/2/16	10/7/16	10/7/16	12/10/19	3/18/18

mation for all experiments is shown in Table 1.

Stimuli and procedure. The study was created using Qualtrics survey software (Version October 2016; Qualtrics, Provo, UT, 2005). In Experiment 1a, participants first read one of two Pew Research Center reports that described either impending changes to the demographic profile of the United States (threat condition) or recent changes to the demographic profile of online daters (control condition). Specifically, the former described an increase in the U.S. population by 2050 and attributed it largely to immigrants and their descendants, leaving Whites with a majority-minority share of the U.S. population. The report on online dating was selected from the Pew Research Center website to serve as a neutral contrast to the threatening report. It was edited to parallel the threatening report in overall structure and described a recent increase in the number of Americans using online dating websites and apps. Experiment 1b only differed from Experiment 1a with respect to the details of the control report, which was modified to better match the threatening report. Specifically, all numbers were changed to match those in the threatening report, the text was altered to describe expected future changes to the demographic profile of online daters, and the increase in online daters amongst 18- to 24-year-olds was described as happening at the expense of the other group (25- to 54-year-olds), to mirror the tradeoff in population share between Hispanics and non-Hispanic Whites in the threat condition.

After reading the report, participants in Experiment 1a filled in the values of some of the

key changes described in the report. These comprehension questions were modified in Experiment 1b for both conditions in order to encourage people to read the reports. In contrast to Experiment 1a, participants in Experiment 1b did not have access to the report when answering the questions. Instead, they had to answer from memory. We asked broadly about the direction of expected changes as opposed to their magnitude (see the supplemental material for the full text of the reports and comprehension questions).

Folk economic beliefs. To capture beliefs about the economy, participants then chose which of two metaphors they believed best describes (a) the current nature of the U.S. economy, and (b) the ideal nature of the U.S. economy: (1) a competitive, zero-sum system metaphor, which likened the economy to a pie of fixed size (“The U.S. economy can be thought of as a giant pie. Everyone is competing for the same set of jobs or the same pot of money, and not everyone will come away with their slice”), or (2) a more cooperative, non-zero-sum system metaphor, which likened the economy to a boundless forest:

The U.S. economy can be thought of as a forest wilderness. The more diverse the ecosystem (that is, the more unique animals and plants there are), the lusher it will grow and the faster it will spread to new areas.

A norming study confirmed our intuitions about the relative competitiveness of the two metaphors. A separate set of 50 subjects rated each metaphor on a 7-point scale (1 = *extremely*

competitive, 7 = extremely cooperative). People thought the pie metaphor was more competitive than not, $M_{\text{pie}} = 2.10$, $SD_{\text{pie}} = 1.66$; $t(49) = -8.11$, $p < .001$, $d = -1.15$, 95% CI [1.63, 2.57], whereas the forest metaphor was more cooperative than not, $M_{\text{forest}} = 5.42$, $SD_{\text{forest}} = 1.70$; $t(49) = 5.90$, $p < .001$, $d = 1.42$, 95% CI [4.94, 5.90], and these ratings differed reliably from one another, $M_{\text{diff}} = -3.32$; $t(49) = -8.11$, $p < .001$, $d = -1.15$, 95% CI [-4.14, -2.50]. When asked to choose which metaphor was more competitive on a two-alternative forced choice item, 94% ($N = 47$) chose the pie metaphor, whereas only 6% ($N = 3$) chose the forest metaphor, $\chi^2(1, N = 50) = 36.98$, $p < .001$ (full set of norming analyses available in the supplemental material).

Dependent measures. Next, participants completed measures of political policy support, outlook for the future welfare of different groups, and national identity. The policy support questions were adapted from Craig and Richeson (2014b). Participants indicated the degree to which U.S. policies related to immigration, diversity, the economy, and social issues should be changed on a 5-point scale (1 = decreased, 5 = increased), coded so that higher scores reflect more ideologically liberal attitudes. Our norming study confirmed that people believe that increased immigration, diversity, federal assistance to the poor (but not taxation on the wealthy), and liberal social reforms have better implications for Americans under a “forest” economy than under a “pie” economy (see Table S1 in the supplemental material for analyses). The future outlook measure was adapted from a Pew Research Center poll (Kohut, 2014). Participants used a 5-point scale to rate whether they expected the next generation of specific groups of Americans to be much worse off (1) or much better off (5) than their parents. We adapted the national identity measure from the 2013 International Social Survey Program (ISSP) National Identity Subscale that examines the attributes of being “truly” national. Particularly, participants were asked to consider what it meant to be “truly American” across seven items. Participants rated

how important each item was to them on a 5-point scale (1 = not important at all, 5 = extremely important). See Table 2 for example items from all DVs.

Finally, participants completed a series of demographics questions: age, race, gender, employment status, political ideology (continuous measure on a -5 = strongly liberal to 5 = strongly conservative scale), political affiliation, educational background, and household economic well-being (complete materials available at osf.io/d5fjn/). Data for Experiment 1a were collected on November 2, 2016, and data for Experiment 1b were collected on November 7, 2016.

Results

ANOVAs revealed that the interaction between condition and economic metaphor choice was not significantly different across the two experiments for any of the three DVs (all $ps > .250$). Therefore, we combined the data from Experiments 1a and 1b and analyzed the resulting pooled dataset (see the supplemental material for individual analyses).

Analysis of factors influencing metaphor selection. Participants chose the zero-sum (pie: 51%) and non-zero-sum (forest: 49%) metaphors to describe the actual economy in roughly equal proportions, $\chi^2(1, N = 603) = 0.16$, $p = .689$. Choice of economic metaphor did not differ reliably across Democrats (48.0% pie), Republicans (58.3% pie), and independents (50.0% pie), $\chi^2(2, N = 603) = 3.67$, $p = .160$. Given that the question about the economy always followed the threat manipulation, it is possible that the report participants read influenced which metaphor they chose. Although more people selected the pie metaphor in the threat condition (52.8%) compared to the control condition (49.0%), this difference was not statistically significant ($p = .399$). We also asked which metaphor participants thought best characterized the ideal U.S. economy. People overwhelmingly agreed that the economy should be non-zero-sum (84.6% and 82.4% chose the forest metaphor in Experiments 1 and 2, respectively). Therefore, we limited all subsequent analyses to people’s responses about the actual nature of the U.S.

Table 2. Instruments used to measure political policy support, outlook for the future welfare of different groups, and national identity.

DVs and example items

Political policy support (15 items, $\alpha = .907, .875, .891$, and $.901$ for Experiments 1a, 1b, 2, and 3b, respectively).

Please rate the extent to which you think the U.S. policy on the topic should change:

Citizenship opportunities for undocumented immigrants

Income tax rates on individuals earning more than \$250,000 annually

The minimum wage across the United States

Future outlook (10 items, $\alpha = .905, .897, .898$, and $.903$ for Experiments 1a, 1b, 2, and 3b, respectively).

Please rate the degree to which you think the next generation from each group in the United States will be better or worse off than their parents:

Overall, men, women, Asians, Blacks, Latinos, Whites, Democrats, Republicans, independents

National identity questions (7 items; $\alpha = .778, .773, .772$, and $.813$ for Experiments 1a, 1b, 2, and 3b, respectively).

Some people say the following things are important for being truly American. Others say they are not important. How important do you think the following items are?:

To have been born in the United States

To have lived in the United States for most of one's life

To respect America's institutions and laws

Note. Composite measures were computed by averaging across all items such that larger numbers reflected more liberal policy attitudes, a more positive future outlook for the country, and more of a sense of national identity (see supplemental material for additional analyses of subcategories within the political policy measure).

economy. We conservatively analyzed data from all White participants, regardless of performance on the comprehension questions (see the supplemental material for analysis and discussion of comprehension questions).

Factors influencing DVs: Overall model. Our primary goal was to examine whether perceptions of threat associated with reading about demographic changes depend on how people conceptualize the economy. To test our hypotheses on the political policy support, future outlook, and national identity measures simultaneously, we submitted the data to a 2 (condition: threat vs. control) \times 2 (economic metaphor choice: pie vs. forest) factorial MANOVA with all three dependent measures as outcome variables. We also included our continuous measure of political ideology as a covariate to test whether the relationship between condition and metaphor might be explained by political ideology; although economic metaphor choice was roughly equal across the two experiments by political party affiliation, Experiment 1b showed

a Republican skew in preference for the pie metaphor (see supplemental material), which suggests that political affiliation or ideology could be a confounding factor for interpreting some of our results. Political ideology was allowed to fully interact with all main effects and interactions in the model, but none of these interactions were statistically significant: Political Ideology \times Condition: $F(3, 593) = 2.28, p = .078$; Political Ideology \times Metaphor and the three-way interaction: both $ps > .25$, suggesting that political ideology cannot account for our overall pattern of findings (see supplemental material showing parallel results for political affiliation as well as for all zero-order relationships among variables in Experiments 1, 2, and 3b).

Factors influencing DVs: Univariate tests. We used the MANOVA results from Experiment 1 (as well as those from Experiments 2 and 3b) as a guide for selecting which relationships to further analyze for each of the three dependent measures. The overall MANOVA results for all experiments are

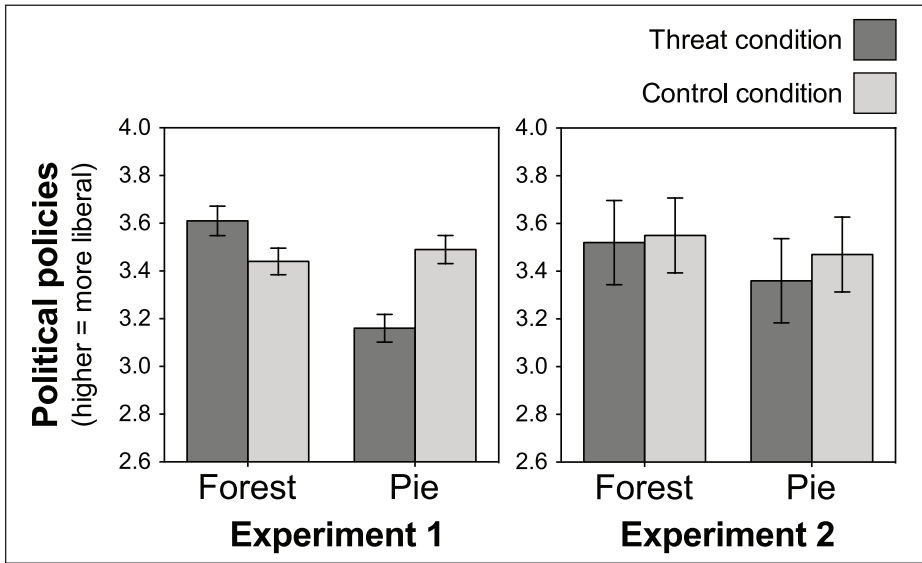


Figure 1. Descriptive statistics for Experiments 1a and 1b combined (left) and for Experiment 2 (right), split by condition (threat vs. control) and economic metaphor choice (forest vs. pie) for political policy support (larger values indicate more liberal policy positions).

Note. Error bars represent structural equation models (SEMs). Note that the y-axis does not show the full range of values in order to highlight the critical interaction.

reported in the supplemental material, as are all univariate analyses of our secondary dependent measures. The analyses reported in the main text of this paper expand on the key interactions for political policy support related to our hypotheses that were significant in the overall models. Importantly, the overall models revealed no main effect of condition, $F(1, 593) = 1.02, p = .383, \eta_p^2 = .01, 95\% \text{ CI}_{\eta_p^2} [.00, .02]$, though condition did interact with economic metaphor choice, $F(1, 593) = 3.31, p = .020, \eta_p^2 = .02, 95\% \text{ CI}_{\eta_p^2} [.00, 0.02]$. Targeted analyses licensed by these findings revealed that people who selected the zero-sum pie metaphor to describe the actual economy were more conservative in their political policy support in the threat condition ($M = 3.16, SD = 0.72$) relative to the control condition ($M = 3.49, SD = 0.73$), $t(305) = 3.94, p < .001, d = 0.45, 95\% \text{ CI}_d [0.22, 0.68], 95\% \text{ CI}_{\text{diff}} [0.16, 0.49]$. In contrast, people who chose the non-zero-sum forest metaphor were more liberal in their political policy support in the threat condition ($M = 3.61, SD = 0.75$) relative to the

control condition ($M = 3.44, SD = 0.68$), $t(294) = 2.13, p = .034, d = 0.25, 95\% \text{ CI}_d [0.02, 0.48], 95\% \text{ CI}_{\text{diff}} [0.14, 0.34]$ (see Figure 1).

Discussion

We reasoned that exposure to changing demographics in the US would cause White Americans who conceptualize the economy as a competitive, zero-sum system to become more conservative in their political attitudes. The results of Experiment 1 supported this hypothesis, showing that participants holding this “pie” view of the economy who read about changing demographics endorsed more conservative political policies relative to those who read about changes in a more benign social domain. Reading about changing demographics actually resulted in a slight liberal shift in political policy support for people who viewed the economy as a non-zero-sum system. It appears that White Americans with a competitive view of the economy see their share of the pie shrinking as the proportion of minorities in the US increases,

and therefore endorse policies associated with a more protectionist ideology. Conversely, White Americans with a noncompetitive view of the economy see economic opportunity in a rising minority share of the U.S. population.

Controlling for political ideology (or affiliation) in the combined analysis did not modulate or eliminate the key interaction between condition and economic metaphor choice. Therefore, the economic metaphor task appears to be capturing something about people's folk economic beliefs—at least in the context of the U.S. economy—that is independent of how conservative or liberal they are. And this remains true despite the fact that people overwhelmingly agreed that the economy should be like a non-zero-sum forest wilderness and not a pie. This suggests that folk economic beliefs do not reflect the competitive nature of the individual per se, but rather how they perceive and understand the world around them.

One notable feature of the design of Experiment 1 is that the folk economic metaphor measure always came before we gauged participants' political attitudes. It is possible, therefore, that the interaction we observed between threat condition and conceptions of the economy only obtained because people were actively thinking about how they viewed the economy before they responded to our dependent measures. To address this issue, in Experiment 2 participants answered the metaphor questions after completing the other dependent measures. If one's view of the economy must be active in mind in order to modulate the threat effect, then there should be no interaction between condition and economic metaphor choice in this version of the experiment.

Experiment 2

Methods

Participants. We recruited 400 people located in the U.S. through MTurk in exchange for payment (as before, workers from previous experiments were excluded). We used the same inclusion criteria as in Experiment 1, which left data from 279 participants for analysis (see Table 1).

Stimuli and procedure. The stimuli and procedure for Experiment 2 were identical to Experiment 1b, except that the questions asking participants to choose which metaphor best describes the economy were presented after participants completed the other dependent measures. These data were collected simultaneously with the data for Experiment 1b.

Results

Analysis of factors influencing metaphor selection. Once again, participants chose the competitive (pie: 47.7%) and noncompetitive (forest: 52.3%) metaphors to describe the actual economy in roughly equal proportions, $\chi^2(1, N = 279) = 0.52, p = .471$. Choice of metaphor did not differ reliably across Democrats (46.7% pie), Republicans (49.2% pie), and independents (47.7% pie), $\chi^2(2, N = 279) = 0.00, p > .250$. Although slightly more people (50.0%) preferred the pie metaphor in the threat condition compared to the control condition (45.3%), this difference was not significant ($p = .473$).

Factors influencing DVs: Overall model. As with Experiment 1, we submitted the data to a 2 (condition: threat vs. control) x 2 (economic metaphor: pie vs. forest) factorial MANOVA with all three dependent measures as outcome variables. The overall model revealed no significant main effect of condition, $F(3, 273) = 0.71, p = .546, \eta_p^2 = .01, 95\% CI\eta_p^2 [.00, .03]$, or interaction between condition and metaphor choice, $F(3, 273) = 1.15, p = .328, \eta_p^2 = .01, 95\% CI\eta_p^2 [.00, .04]$, so those relationships were not further tested. For reference, people who selected the zero-sum pie metaphor to describe the actual economy were similar in their political policy support in the threat condition ($M = 3.36, SD = 0.75$) relative to the control condition ($M = 3.47, SD = 0.66$). Likewise, people who chose the non-zero-sum forest metaphor were similar in their political policy support in the threat condition ($M = 3.52, SD = 0.73$) relative to the control condition ($M = 3.55, SD = 0.65$; see Figure 1).

Comparing Experiment 2 to Experiment 1. To the extent that one's views of the economy must have been recently activated in order to interfere with the threat effect, the patterns in Experiment 2 should differ reliably from Experiment 1. To test this, we conducted a three-way ANOVA to look at political policies (see supplemental material for results of parallel analyses for other DVs) that included the full structure of the models described previously, plus a factor comparing Experiment 2 with the data from Experiments 1a and 1b (collapsed). The three-way interaction was significant for the political policy support measure, $F(1, 874) = 4.12, p = .043, \eta_p^2 = .01, 95\% CI\eta_p^2 [.00, .02]$.

Discussion

In Experiment 2, we asked whether one's view of the economy must be active in mind in order to modulate the effect that reading about changes to the demographic landscape of the US has on political attitudes. The results suggest an affirmative answer: when participants indicated their folk economic beliefs after responding the other DVs, there was no difference in political policy support between those with a zero-sum versus non-zero-sum economic outlook, regardless of whether or not they were exposed to the changing demographics manipulation. Furthermore, the results of Experiment 2 differed reliably from the results from Experiment 1 on the political policy support measure. It appears that one's view of the economy does not modulate the effect of reading about changing demographics on political attitudes unless it has been recently explicitly considered.

Several limitations in the current work may raise concerns over the reliability or generalizability of these results: first, all of the data were collected in the heated run-up to the 2016 U.S. presidential election, where many of these issues surrounding immigration, demographic change, and the economy were especially salient. Therefore, the findings may not reflect a more

generalized, lasting sentiment held by some White Americans. Second, the magnitude of the effect for the critical three-way interaction between condition, folk economic theory, and stimulus order was relatively modest ($p = .043, \eta_p^2 = .01$) and therefore should be interpreted with caution until it is replicated. Finally, the metaphors we used might have captured not only differences in competitive or zero-sum thinking about the economy, but also other constructs such as SDO or racial identification, which have each been shown to affect the relationship between threat and political attitudes (Choma & Hanoch, 2017; Knowles & Tropp, 2018; Major et al., 2016). For example, viewing the economy as a zero-sum "pie" might simply be a side effect of thinking that society should be organized according to strict power hierarchies. If so, our findings should be interpreted as replicating prior work rather than offering new insights per se in this domain.

Experiment 3

To address the limitations of Experiments 1 and 2, we conducted a second more extensive validation study of our economic metaphors in order to clearly link them to zero-sum thinking while differentiating them from SDO, racial identification, and political ideology. We then sought to establish whether our previous findings would replicate in a preregistered study with a much larger sample size collected more than a year after the initial round of data collection. As before, we predicted that people who viewed the economy as a zero-sum system would show a conservative shift in their political policy support after reading about demographic changes in the US, whereas people with a non-zero-sum view of the economy would show a liberal shift after receiving the same demographic information. Finally, we predicted that these effects would be stronger when people had recently considered their views of the economy prior to indicating their social and political attitudes. We preregistered these hypotheses and planned analyses prior to the collection of data on AsPredicted.org and the OSF.

Experiment 3a: Validation of Economic Metaphors

Participants. We recruited 300 participants from MTurk using the Cloud Research/TurkPrime platform (Litman et al., 2017). All participants were at least 18 years old, located in the US, and had completed at least 100 hits with a rating of 90%. After removing participants who did not identify as White, our sample consisted of 233 participants (see Table 1).

Materials and procedure. Participants first completed three measures in a randomized order:

Economic metaphor choice. Participants were asked “Which metaphor do you think better describes the current nature of the U.S. economy?” and were given two response options. In response to feedback on an earlier version of this paper, we modified the language of the economy metaphors to be better matched. Specifically, we removed language referencing “jobs” and “money” for the pie metaphor and used the term “opportunities” for both metaphors, and we replaced the phrase “the more diverse the ecosystem” with “the more variety in the ecosystem” for the forest metaphor:

- (1) The U.S. economy can be thought of as a giant pie. Everyone is competing for the same set of opportunities and not everyone will come away with their slice;
- (2) The U.S. economy can be thought of as a forest wilderness. The more variety in the ecosystem (that is, the more unique animals and plants there are), the more it will grow, resulting in more opportunities for everyone.

After making their selection and advancing to the next screen, participants were asked to choose between the same two metaphors to describe the ideal model of the U.S. economy.

Social dominance orientation (SDO7 scale). The SDO7 is a 16-item measure of social dominance orientation—the extent to which an individual

supports hierarchies and inequality in society (Ho et al., 2015). Participants responded to each of the 16 statements (e.g., “Some groups must be kept in their place”), which were presented in a randomized order, using a 7-point Likert scale (1 = *strongly oppose*, 7 = *strongly favor*). We created a single composite SDO variable by averaging responses to all items, reverse-coding as needed (Cronbach’s $\alpha = .95$).

Belief in a zero-sum game (BZSG scale). The BZSG scale is a 12-item measure of the extent to which an individual holds a competitive or antagonistic view of social relations, where people can only succeed/gain resources when others fail/lose resources (Różycka-Tran et al., 2015). Participants responded to each of the 12 statements (e.g., “If somebody gets richer, it means that somebody else gets poorer”) using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). We created a composite BZSG variable by averaging responses to all items, reverse-coding as needed ($\alpha = .81$).

Finally, participants completed a basic demographics questionnaire. After they indicated their race, they also completed a four-item measure of racial identification, adapted from the Identity Centrality Subscale of the Collective Self-Esteem Scale (CSE; Luhtanen & Crocker, 1992). Using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*), participants indicated their level of agreement with four statements assessing the degree to which their racial group forms a central part of their identity (e.g., “The race I belong to is an important reflection of who I am”). We created a composite racial identification variable by averaging responses to all items, reverse-coding as needed ($\alpha = .88$).

Results and discussion. With respect to participants’ lay theories about how the U.S. economy actually works, we hypothesized that the economic metaphor task would show convergent validity with BZSG, which captures the degree to which people view social and economic relations in competitive, antagonistic terms. We further hypothesized that metaphor choice would show

Table 3. Zero-order correlations among variables in Experiment 3a.

		Metaphor (actual)	Metaphor (ideal)	BZSG scale	SDO scale	Racial identification	Political ideology
Metaphor (actual)	Pearson's <i>r</i>	-					
	<i>p</i> value	-					
Metaphor (ideal)	Pearson's <i>r</i>	.31	-				
	<i>p</i> value	<.001	-				
BZSG scale	Pearson's <i>r</i>	.46	.16	-			
	<i>p</i> value	<.001	.014	-			
SDO scale	Pearson's <i>r</i>	.05	.36	.02	-		
	<i>p</i> value	.447	<.001	.736	-		
Racial identification	Pearson's <i>r</i>	.10	.22	.10	.35	-	
	<i>p</i> value	.126	<.001	.146	<.001	-	
Political ideology	Pearson's <i>r</i>	-.06	.19	-.120	.47	.30	-
	<i>p</i> value	.399	.004	.068	<.001	<.001	-

Note. Variables were coded such that larger numbers reflect a preference for the “pie” economic metaphor, stronger zero-sum beliefs (BZSG), stronger support for social hierarchies (SDO), stronger racial identification, and a more conservative political ideology. Relationships significant at the $\alpha = .05$ level appear in boldface.

divergent validity with all of our other measures, as beliefs about the current state of the economy are, in our view, conceptually distinct from political ideology, racial identification, and SDO. Zero-order correlations among all variables in this study can be found in Table 3. These data demonstrate that belief in a zero-sum system indeed has a zero-order linear relationship with economic metaphor selection for the actual U.S. economy, while SDO does not. The more people believe in a zero-sum system, the more likely they are to select the pie metaphor for the actual economy.

Factors influencing actual metaphor selection. To test for convergent and divergent validity in a single model, we conducted a binomial logistic regression with actual economic metaphor selection (pie vs. forest) as the dependent variable, and BZSG, SDO, racial identification, and our continuous measure of political ideology as covariates (unstandardized).¹ The overall model was statistically significant, $\chi^2(N = 233, df = 4) = 55.80, p < .001, AIC = 277$. As predicted, of the four covariates, BZSG was the only significant predictor in the model (coefficient estimate = 1.21, $SE = 0.20; Z = 6.12, p < .001$): the

higher an individual scored on BZSG, the more likely they were to select “pie” as best representing the current state of the U.S. economy.

Factors influencing ideal metaphor selection. We then repeated this analysis using participants' choice of ideal economic metaphor as the DV. Though we did not have as firm predictions in this case, we reasoned that beliefs about what the economy should be like (a) are somewhat distinct from beliefs about what the economy is like, as indicated by diverging patterns of responding to these two questions across all of our experiments, and (b) may reflect other beliefs about how society should work, which could be captured by constructs like SDO and political ideology. The overall model was statistically significant, $\chi^2(N = 233, df = 4) = 37.30, p < .001, AIC = 183$. In this case, both BZSG (coefficient estimate = 0.49, $SE = 0.23; Z = 2.19, p = .029$) and SDO (coefficient estimate = 0.57, $SE = 0.15; Z = 3.79, p < .001$) emerged as significant predictors of ideal economic metaphor. Specifically, elevated belief in a zero-sum game and SDO were associated with increased probability of selecting “pie” as best representing the ideal state of the U.S. economy (but note that only 39 participants chose “pie” for this question).

In sum, the metaphor participants chose as best capturing the current state of the U.S. economy showed convergent validity with an established measure of belief in a zero-sum game, and divergent validity with measures of SDO, political ideology, and racial identification. This supports our hypothesis that the economic metaphor task captures something about people's zero-sum thinking more broadly, rather than something about how they view themselves or about how society should be structured. We observed a slightly different pattern when we looked at what metaphor participants chose as best capturing their ideal model of the U.S. economy, which was reliably predicted by SDO. This analysis provides additional evidence that (a) beliefs about the current versus ideal model of the economy draw on somewhat distinct cognitive processes, and (b) beliefs about the ideal (but not actual) model of the economy are related to one's beliefs about how society should be organized.

Experiment 3b

Methods

Participants. We recruited 2,075 participants located in the US through Amazon's Mechanical Turk in exchange for payment. All data were collected on March 18, 2018.² A power analysis revealed that we would need 1,564 participants in our sample in order to have 80% power to detect an effect size of $\eta_p^2 = .01$ in the three-way, 2 (condition: threat vs. control) x 2 (metaphor: pie vs. forest) x 2 (stimulus order: economic question before vs. after policy questions) ANOVA (Kraemer & Blasey, 2015). After excluding non-White-identifying participants, our final dataset consisted of 1,569 participants whose data were submitted to all analyses.

Stimuli and procedure. The stimuli and procedure for Experiment 3 were nearly identical to Experiments 1 and 2, though we made a few minor changes. As before, roughly half of all participants were randomly assigned to read the threat report, while the rest were assigned to read the control report. Half of participants in each condition selected which metaphor (pie vs. forest)

they believed best describes the current state of the economy before completing the DVs (as in Experiment 1), while the other half responded to the folk economic metaphor measure only after completing the DVs (as in Experiment 2). All participants completed our demographics survey last.

The specific changes we made to our stimuli and procedures were as follows: first, for those participants who responded to the economic metaphor question before responding to the DVs, we counterbalanced whether they selected their preferred metaphor before or after reading the threat/control report (and responding to the corresponding comprehension questions). Second, we used the slightly modified economic metaphor language described in Experiment 3a. Finally, we excluded the ideal economic metaphor question and only asked participants which metaphor best describes the current nature of the U.S. economy. We did this for a few reasons: (a) the current metaphor question was the key quasi-independent variable in our previous analyses, (b) the results of Experiment 3a suggest that the ideal (but not the current) metaphor task is associated with constructs like SDO that may be confounded with our task, and (c) including both questions may have invited a comparison between the actual versus ideal states of the economy, which could have introduced a confound in our previous studies. Specifically, most people believed that the economy should be more like a forest than a pie, and expressing that belief might have increased negative affect in people who saw a disconnect between the actual and ideal economies (those who thought the economy was actually more like a pie) relative to people for whom the actual and ideal economies aligned (those who thought the actual economy was in fact like a forest).

Results

Analysis of factors influencing metaphor selection. As before, participants chose the zero- (pie: 49.6%) and non-zero-sum (forest: 50.4%) metaphors to describe the actual economy in roughly equal proportions, $\chi^2(1, N = 1,569) = 0.06, p = .807$. Choice of metaphor did not differ reliably across Democrats (47.6% pie), Republicans (53.5% pie), and independents (48.7% pie),

$\chi^2(2, N = 1,569) = 3.78, p = .151$. Although slightly more people (49.9%) preferred the pie metaphor in the threat condition compared to the control condition (49.4%), this difference was not significant ($p = .888$).

Testing for effects of presentation order. Data from Experiment 3 were analyzed using a preregistered procedure that paralleled analyses of Experiments 1 and 2. As before, the results of the overall MANOVA analyses can be found in the supplemental material. Importantly, there was a significant three-way interaction between metaphor, condition, and stimulus order, $F(3, 1551) = 2.75, p = .041, \eta_p^2 = .01, 95\% CI\eta_p^2 [.00, .01]$, suggesting that the relationship between metaphor and condition depends on whether people provided their assessment of the U.S. economy before or after providing their political attitudes. Therefore, subsequent analyses examine the data separately for the two levels of stimulus order. In the supplemental material, we report results of meta-analyses across all three experiments in which we (a) conduct our primary analyses on the collapsed data, (b) test more nuanced predictions of our future outlook measure, and (c) explore alternative models of our data in which future outlook and national identity are treated as covariates instead of outcomes. These supplementary analyses produced the same outcomes as those reported in the main text of this paper.

Effects of selecting a metaphor before expressing political attitudes. The conservative shift in the threat condition relative to the control condition depended on which metaphor participants chose for the U.S. economy on the political policies measure, $F(1, 786) = 3.93, p = .048, \eta_p^2 = .01, 95\% CI\eta_p^2 [.00, .02]$.³ Further analyses revealed that people who chose the pie metaphor were more conservative in their political policy support in the threat condition ($M = 3.31, SD = 0.75$) relative to the control condition ($M = 3.49, SD = 0.74$), $t(410) = 2.35, p = .019, d = 0.12, 95\% CI_d [0.04, 0.43], 95\% CI_{diff} [0.03, 0.32]$. In contrast, people who chose the forest metaphor were numerically (though not significantly) more liberal in their political policy support in the threat condition (M

$= 3.52, SD = 0.82$) relative to the control condition ($M = 3.42, SD = 0.81$), $t(380) = 1.15, p = .252, d = 0.06, 95\% CI_d [-0.08, 0.32], 95\% CI_{diff} [-0.26, 0.07]$. As before, there was no main effect of condition on political attitudes, $F(3, 784) = 0.62, p = .599, \eta_p^2 = .00, 95\% CI\eta_p^2 [.00, .01]$.

Effects of selecting a metaphor after expressing political attitudes. Crucially, for people who selected an economic metaphor after providing their political attitudes, there was no significant effect of condition, $F(3, 765) = 0.34, p = .799, \eta_p^2 = .00, 95\% CI\eta_p^2 [.00, .01]$, nor interaction between metaphor choice and condition in the overall MANOVA analysis, $F(3, 765) = 0.45, p = .718, \eta_p^2 = .00, 95\% CI\eta_p^2 [.00, .01]$, so we did not explore this relationship further. For reference, people who selected the zero-sum pie metaphor to describe the actual economy were similar in their political policy support in the threat condition ($M = 3.32, SD = 0.77$) relative to the control condition ($M = 3.34, SD = 0.74$). Likewise, people who chose the non-zero-sum forest metaphor were similar in their political policy support in the threat condition ($M = 3.44, SD = 0.74$) relative to the control condition ($M = 3.51, SD = 0.71$; see Figure 2).

Discussion. In this study, our findings provide further support for the claim that a conservative shift in political attitudes among White Americans following exposure to impending demographic changes depends on their folk economic beliefs. As before, only those who viewed the economy as a zero-sum system showed a conservative shift in the threat condition relative to the control condition. In contrast, reading about changing demographics did not result in a conservative shift in political attitudes in people who saw the economy as a non-zero-sum system; if anything, these participants were more likely to show a liberal shift in political attitudes, a trend that is consistent with the patterns observed previously in Experiment 1. Finally, consistent with our previous findings, these effects only appear when people's beliefs about the economy are active in mind as they consider their political attitudes. These patterns are strikingly clear in a

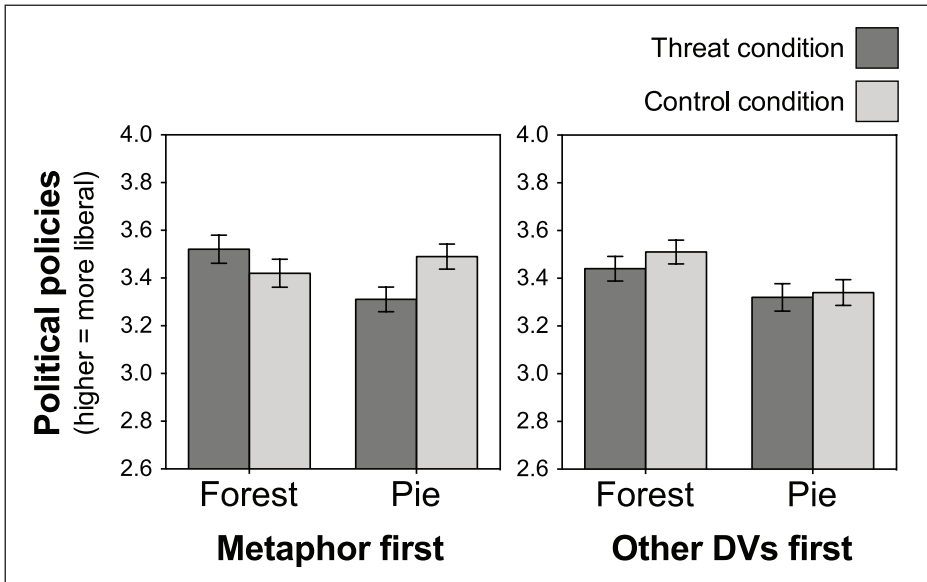


Figure 2. Descriptive statistics for political policy support in Experiment 3, split by (a) whether participants selected their folk economic metaphor before (left) or after (right) responding to the DVs, (b) condition (threat vs. control), and (c) folk economic metaphor choice (forest vs. pie).

Note. Error bars represent SEMs. Note that the y-axis does not show the full range of values in order to highlight the critical interaction.

combined analysis of all experiments (see supplemental material) and robust to a variety of controls. They are particularly noteworthy because they suggest that the link between projected demographic changes and conservative political attitudes depends on one's economic worldview in a way that is distinct from effects of racial identification or threat to majority social hierarchy status (Craig & Richeson, 2018).

General Discussion

The 2016 U.S. presidential election raised important questions about the social forces that shape political attitudes and voting behavior. As people have sought to explain Donald Trump's victory, pundits, journalists, and scholars have pointed to the threat that White Americans may feel in response to increasing ethnic diversity and how this could drive them towards conservative candidates (Rensink, 2017). This possibility has been borne out in recent empirical work, which suggests that simply exposing White Americans to

information about the changing demographic landscape can lead to a conservative attitude shift, though this is mediated by the degree to which they identify with their ethnicity and place a value on their social status (Craig & Richeson, 2014a, 2014b; Craig et al., 2018; Knowles & Tropp, 2018; Major et al., 2016; Mutz, 2018).

In extending this work, we hypothesized that this effect might also depend on people's folk economic beliefs. In particular, a shift in demographics should only feel threatening if people view the economy as a competitive, zero-sum system—the very view promoted by Trump during his 2016 election campaign. The results of our experiments were largely consistent with this hypothesis. White American participants who read about the impending increase in the minority share of the population expressed more support for conservative policies—but only if they conceptualized the U.S. economy as a zero-sum system (as a metaphorical pie). For participants who conceptualized the economy in non-zero-sum terms (as a metaphorical forest), reading about a

shift in racial demographics had, if anything, the opposite effect, nudging participants towards more liberal ideals. Importantly, these effects were only reliable when participants indicated their metaphor preference before reporting their political attitudes. In other words, economic worldviews had to be active in mind to moderate the perceived consequences of demographic shifts. This suggests that the perceived threat of issues like immigration interacts with conceptual representations for how the world works, provided these representations are active in the mind.

Interestingly, we did not replicate the main effect of exposure to changing demographics observed by Craig and Richeson (2014b). This may be a result of differences in participant populations between the studies, due to sampling methods and the political climate during which these studies were conducted. For example, only one of Craig and Richeson's (2014b) three experiments used MTurk to recruit participants, and their studies also imposed additional participation restrictions (e.g., Study 1 only looked at people unaffiliated with the two political parties). Moreover, much has changed in U.S. politics over the past decade, and it seems plausible that by the week before the November 2016 election and onward into the Trump presidency, people had already spent considerable time reacting to the rhetoric on these issues. Like Craig and Richeson (2014b), however, our policy measure included items related to the demographics paragraph (e.g., immigration policies), as well as items that were unrelated (e.g., social policies). And like them, we observed responses that were highly correlated despite these distinct subcategories.

Another issue concerns whether the two metaphors we used to gauge conceptions of the economy are necessarily mutually exclusive, and how this might affect how we interpret our results. For instance, a pie need not be of fixed size, and people may have more nuanced beliefs about how some sectors of the economy are more competitive and resource-limited than others. Although a fair point, we feel that, if anything, this may have caused us to underestimate

the observed effects by preventing us from identifying people who think both metaphors have their place. Because metaphor choice showed convergent validity with a general measure of belief in a zero-sum game, however, it is possible that zero-sum thinking more broadly—rather than specifically in the context of the economy—may moderate the effects of demographic threat. Future work in our lab is aimed at teasing apart these possibilities. Along these same lines, future research should also investigate the factors that determine whether someone is a “pie” versus a “forest” person. Our findings appear to rule out political ideology, SDO, and racial identification as critical factors, but other situational factors like people's employment status or the competitiveness of their field may push them towards one view of the economy.

More broadly, our findings are especially relevant in the current social and political climate and offer novel insights into existing domains of inquiry. In particular, this work provides encouraging evidence that impending demographic changes need not feel threatening to all White Americans, as their impact depends on people's beliefs about how the economy actually works. Moreover, we demonstrated that zero-sum economic thinking and the desire to maintain social hierarchies (SDO) are distinct constructs. This differentiation helps to clarify previous work (e.g., Craig & Richeson, 2014b) by establishing that (non)zero-sum beliefs about how the economy actually works are sufficient to assuage the threat of changing demographics. Furthermore, our findings illustrate just how readily demographic threat can be modulated. In their assuaged threat condition, Craig and Richeson explicitly told people that changing demographics do not pose a threat to White Americans' positions and power. In the wild, however, people are presented with a variety of alternative scenarios and projections that might play out as a result of some impending change. Had participants been presented with all possible outcomes stemming from the changing demographic landscape, they might not have been as persuaded by the claim that losing population share would not

affect existing power structures. The present study helps to rule out this possibility. We presented participants with two opposing views of the economy: one that characterizes it as a limited resource and another that characterizes it as a boundless resource. Despite making participants aware of both perspectives, we found an effect of this moderator.

More notably, our study is one of the first to illustrate a liberal shift in attitudes when participants regard such racial demographic changes as occurring within the context of a more cooperative economic system. That is, White Americans with a noncompetitive view of the world see opportunity in a rising minority share of the US and, as a consequence, endorse policies that are associated with liberal ideology and diversity. Recent qualitative data undergird these ideas in an analysis of White Christian Americans' discussions about Muslims and Islam (Bai, 2019).

Of particular interest to researchers, policy-makers, and political actors may be the prospect of figuring out how to change the way people think the economy works, and, as a result, how threatening the shifting demographics landscape feels to White Americans. Rubin (2003) suggests that academic training in economics may be necessary in order to address the limitations inherent in folk models of the economy and improve people's economic reasoning. Our work offers perhaps more efficient avenues for modulating the effects of folk theories on a range of social and political issues via metaphor framing—the use of metaphors to shape attitudes and beliefs and, potentially, improve people's understanding of complex issues like the economy (cf. Thibodeau et al., 2017; Thibodeau et al., 2019). To the extent that we can refine folk economic intuitions and encourage people to conceive of society in cooperative terms, as a boundless forest, it may be possible to enable more constructive engagement between diverse groups.

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by the Purchase College Foundation.

ORCID iD

Krystal M. Perkins  <https://orcid.org/0000-0003-2526-7417>

Supplemental material

Supplemental material for this article is available online.

Notes

1. Note that including other covariates and factors like age, gender, and political affiliation does not change the overall pattern of results in these regression models. Analyzing the data using *t* tests to compare those who selected pie versus forest independently on each DV similarly reveals the same overall pattern of findings.
2. The data for Experiment 3b were collected a few months before the spike in fraudulent MTurk respondents in the summer of 2018. Based on reviewer suggestion, we retrospectively measured the percentage of responses flagged as coming from an international IP address ($n = 6$, 0.38%) or from a virtual private server ($n = 31$, 1.98%), as these factors are associated with an increased percentage of low-quality responses (Kennedy et al., 2018). See the supplemental material for a reanalysis of the data removing these participants from Experiment 3b, as well as from a meta-analysis of Experiments 1, 2, and 3b.
3. Exploratory analyses suggest that the effect of condition may depend on economic metaphor choice only when people select an economic metaphor after reading about demographic changes (see supplemental material).

References

- Alba, R., Nee, R. G., & Marotz, K. (2005). A distorted nation: Perceptions of racial/ethnic group sizes and attitudes toward immigrants and other minorities. *Social Forces*, *84*, 901–919. <https://doi.org/10.1353/sof.2006.0002>
- Bai, H. (2019, June 21–23). *Christian Americans display of negative affect to Muslim population growth*. Paper presented at the Society for the Psychological Study of Social Issues, San Diego, CA.
- Bai, H., & Federico, C. M. (2019). Collective existential threat mediates White population decline's effect on defensive reactions. *Group Processes & Intergroup Relations*. Advance online publication. <https://doi.org/10.1177/1368430219839763>

- Blalock, H. M. (1957). Percent non-White and discrimination in the South. *American Sociological Review*, 22, 677–682. <https://doi.org/10.2307/2089197>
- Blumer, H. (1958). Race prejudice as a sense of group position. *Pacific Sociological Review*, 1, 3–7. <https://doi.org/10.2307/1388607>
- Bobo, L. (1991). Social responsibility, individualism, and redistributive policies. *Sociological Forum*, 6, 71–92. https://scholar.harvard.edu/files/bobo/files/1991_social_responsibility_individualism_and_redistributive_policies.pdf
- Boyer, P., & Petersen, M. B. (2017). Folk-economic beliefs: An evolutionary cognitive model. *Behavioral and Brain Sciences*, 41, 1–51. <https://doi.org/10.1017/S0140525X17001960>
- Brubaker, R. (1992). *Citizenship and nationhood in France and Germany*. Cambridge, MA: Harvard University Press.
- Choma, B. L., & Hanoch, Y. (2017). Cognitive ability and authoritarianism: Understanding support for Trump and Clinton. *Personality and Individual Differences*, 106, 287–291. <https://doi.org/10.1016/j.paid.2016.10.054>
- Craig, M. A., & Richeson, J. A. (2014a). More diverse yet less tolerant? How the increasingly diverse racial landscape affects White Americans' racial attitudes. *Personality and Social Psychology Bulletin*, 40, 750–761. <https://doi.org/10.1177/0146167214524993>
- Craig, M. A., & Richeson, J. A. (2014b). On the precipice of a “majority-minority” America: Perceived status threat from the racial demographic shift affects White Americans' political ideology. *Psychological Science*, 25, 1189–1197. <https://doi.org/10.1177/0956797614527113>
- Craig, M. A., & Richeson, J. A. (2017). Information about the US racial demographic shift triggers concerns about anti-White discrimination among the prospective White “minority”. *PLoS One*, 12, e0185389. <https://doi.org/10.1371/journal.pone.0185389>
- Craig, M. A., Rucker, J. M., & Richeson, J. A. (2018). Racial and political dynamics of an approaching “majority-minority” United States. *The ANNALS of the American Academy of Political and Social Science*, 677, 204–214. <https://doi.org/10.1177/0002716218766269>
- Danbold, F., & Huo, Y. J. (2015). No longer “all-American”? Whites' defensive reactions to their numerical decline. *Social Psychological and Personality Science*, 6, 210–218. <https://doi.org/10.1177/1948550614546355>
- Devos, T., & Banaji, M. R. (2005). American = White? *Journal of Personality and Social Psychology*, 88, 447–466. <https://doi.org/10.1037/0022-3514.88.3.447>
- Fetterman, A. K., & Robinson, M. D. (2014). What can metaphors tell us about personality? *In Mind*, 2014. <http://www.in-mind.org/article/what-can-metaphors-tell-us-about-personality>
- Fossett, M. A., & Kiecolt, K. J. (1989). The relative size of minority populations and White racial attitudes. *Social Science Quarterly*, 70, 820–835. <https://www.jstor.org/stable/42862663>
- Fukuda, K. (2009). A comparative study of metaphors representing the US and Japanese economies. *Journal of Pragmatics*, 41, 1693–1702. <https://doi.org/10.1016/j.pragma.2008.12.005>
- Hard, B. M., Liang, N., Wong, M., & Flusberg, S. J. (in press). Metaphors we teach by: Uncovering the structure of metaphorical lay theories of teaching. *Metaphor and the social world*.
- Herrera-Soler, H., & White, M. (Eds.). (2012). *Metaphor and mills: Figurative language in business and economics* (Vol. 19). Walter de Gruyter.
- Ho, A. K., Sidanius, J., Kteily, N., Sheehy-Skeffington, J., Pratto, F., Henkel, K. E., Foels, R., & Stewart, A. L. (2015). The nature of social dominance orientation: Theorizing and measuring preferences for intergroup inequality using the new SDO₇ scale. *Journal of Personality and Social Psychology*, 109, 1003–1028. <https://doi.org/10.1037/pspi0000033>
- Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, 129, 339–375. <https://doi.org/10.1037/0033-2909.129.3.339>
- Kennedy, R., Clifford, S., Burchell, T., Jewell, R., & Waggoner, P. (2018). *The shape of and solutions to the MTurk quality crisis* (SSRN Scholarly Paper No. ID 3272468). <http://dx.doi.org/10.2139/ssrn.3272468>
- Kimmel, M. (2017). *Angry White men: American masculinity at the end of an era*. Hachette.
- Knowles, E., & Tropp, L. (2018). The racial and economic context of Trump support: Evidence for threat, identity, and contact effects of the 2016 presidential election. *Social Psychological and Personality Science*, 9, 275–284. <https://doi.org/10.1177/1948550618759326>
- Kohut, A. (2014). *What will become of America's kids?* <http://www.pewresearch.org/fact-tank/2014/05/12/what-will-become-of-americas-kids/>
- Kövecses, Z. (2017). Metaphor and metonymy in folk and expert theories of emotion. In F. Ervas, E. Gola, &

- M. G. Rossi (Eds.), *Metaphor in communication, science and education* (pp. 29–41). De Gruyter Mouton.
- Kraemer, H. C., & Blasey, C. (2015). *How many subjects?: Statistical power analysis in research*. Sage Publications.
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. University of Chicago Press.
- Landau, M. J., Meier, B. P., & Keefer, L. A. (2010). A metaphor-enriched social cognition. *Psychological Bulletin, 136*, 1045–1067. <https://doi.org/10.1037/a0020970>
- LeVine, R. A., & Campbell, D. T. (1972). *Ethnocentrism: Theories of conflict, ethnic attitudes, and group behavior*. Wiley.
- Litman, L., Robinson, J., & Abberbock, T. (2017). TurkPrime.com: A versatile crowdsourcing data acquisition platform for the behavioral sciences. *Behavior Research Methods, 49*, 433–442. <https://doi.org/10.3758/s13428-016-0727-z>
- Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's social identity. *Personality and Social Psychology Bulletin, 18*, 302–318. <https://doi.org/10.1177/0146167292183006>
- Major, B., Blodorn, A., & Major Blascovich, G. (2016). The threat of increasing diversity: Why many White Americans support Trump in the 2016 presidential election. *Group Processes & Intergroup Relations, 21*, 1–10. <https://doi.org/10.1177/1368430216677304>
- McCloskey, D. N. (1995). Metaphors economists live by. *Social Research, 62*, 215–237. www.jstor.org/stable/40971092
- Mutz, D. (2018). Status threat, not economic hardship, explains the 2016 presidential vote. In *Proceedings of the National Academy of Sciences of the USA, 115*, 4330–4339. <https://doi.org/10.1073/pnas.1718155115>
- Obama, B. (2017, January 10). Farewell address. *The New York Times*. <https://obamawhitehouse.archives.gov/farewell>
- Outten, H. R., Schmitt, M. T., Miller, D. A., & Garcia, A. L. (2012). Feeling threatened about the future: Whites' emotional reactions to anticipated ethnic demographic changes. *Personality and Social Psychology Bulletin, 38*, 14–25. <https://doi.org/10.1177/01461672111418531>
- Pettigrew, T. F. (1957). Demographic correlates of border-state desegregation. *American Sociological Review, 22*, 683–689. <https://doi.org/10.2307/2089198>
- Qualtrics [Online software]. (2005). Provo, UT, USA. <https://www.qualtrics.com>
- Quillian, L. (1995). Prejudice as response to perceived group threat: Population composition and anti-immigrant and racial prejudice in Europe. *American Sociological Review, 60*, 586–611. <https://doi.org/10.2307/2096296>
- Rensink, B. (2017). *White fear of demographic change is a powerful psychological force: Increasing diversity could make America a more hostile place*. <http://www.vox.com/science-and-health/2017/1/26/14340542/white-fear-trump-psychology-minority-majority>
- Różycka-Tran, J., Boski, P., & Wojciszke, B. (2015). Belief in a zero-sum game as a social axiom: A 37-nation study. *Journal of Cross-Cultural Psychology, 46*, 525–548. <https://doi.org/10.1177/0022022115572226>
- Rubin, P. H. (2003). Folk economics. *Southern Economic Journal, 70*, 157–171. <https://doi.org/10.2307/1061637>
- Sirola, N., & Pitesa, M. (2017). Economic downturns undermine workplace helping by promoting a zero-sum construal of success. *Academy of Management Journal, 60*, 1339–1359. <https://doi.org/10.5465/amj.2015.0804>
- Thibodeau, P. H., Crow, L., & Flusberg, S. J. (2017). The metaphor police: A case study of the role of metaphor in explanation. *Psychonomic Bulletin & Review, 24*, 1375–1386. <https://doi.org/10.3758/s13423-016-1192-5>
- Thibodeau, P. H., Matlock, T., & Flusberg, S. J. (2019). The role of metaphor in communication and thought. *Language & Linguistics Compass, 13*. <https://doi.org/10.1111/LNC3.12327>
- Trump, D. (2016, September 1). Immigration speech. *The New York Times*. <https://www.nytimes.com/2016/09/02/us/politics/transcript-trump-immigration-speech.html>
- U.S. Census Bureau. (2012). *An older and more diverse nation by midcentury*. <https://www.census.gov/newsroom/releases/archives/population/cb12-243.html>
- Wetts, R., & Willer, R. (2018). Privilege on the precipice: Perceived racial status threats lead White Americans to oppose welfare programs. *Social Forces, 97*, 793–822. <https://doi.org/10.1093/sf/soy046>
- Willer, R., Feinberg, M., & Wetts, R. (2016). *Threats to racial status promote Tea Party support among White Americans* (Research Papers 3422). Stanford University, Graduate School of Business.
- Yogeswaran, K., & Dasgupta, N. (2014). Conceptions of national identity in a globalised world: Antecedents and consequences. *European Review of Social Psychology, 25*, 189–227. <https://doi.org/10.1080/10463283.2014.97208>