

Testing the Roles of Perceived Influence and Competition in Cross-Cultural Social Learning

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## Abstract

Globalization has brought societies' international influence and competitive relationships into sharp focus. In this dissertation, I explore how these salient dimensions of influence and competition shape social learning between different cultural groups. Drawing from past theories, I suggest that people may be biased to learn from others whose countries are perceived to be highly influential. Further, I test whether perceived competition between countries may shape this process. I investigate these research questions across 4 studies. Study 1 tests whether perceived influence and competition between countries interactively predict openness to cross-country social learning using correlational data from U.S. participants ( $N = 296$ ). Study 2 (U.S. participants,  $N = 391$ ) develops a novel experimental paradigm to causally investigate whether perceived influence of a country impacts U.S. participants' social learning from individuals in that country. Studies 3 (U.S. participants,  $N = 970$ ) and 4 ( $N = 447$  U.S. participants; 301 New Zealand participants) expand on Study 2 to manipulate perceived competition. Across all studies I find that people are biased to learn from others whose countries are perceived to be highly influential, even when those countries are perceived to be in direct competition with their own. Further, an international sample in Study 4 reveals that competition's effect on social learning varies in countries with different levels of international influence. Studies 2-4 also test whether the type of cultural information people seek to learn matters, and I find that influence and competition only promote social learning for strategic, but not personal, topics. Together, these studies contribute to a growing literature seeking to understanding how culture evolves in a globalizing world.

## **Testing the Roles of Perceived Influence and Competition in Cross-Cultural Social Learning**

Our cultural landscape has shifted significantly over recent decades. In the past 30 years, international tourism has increased by at least 100% from every world region, and more than 500% from the Middle East and South Asia (Herre et al., 2023). The number of international migrants in every world region has also increased during this same time frame, rising by more than 30 million in North America, Asia, and Europe (International Organization for Migration, 2022). And in 2022, there were over 32 million flights connecting people from different cities and countries to each other (International Air Transport Association, 2023). All of this travel makes society more interconnected now than it has ever been before, and gives people increasing opportunities to engage with and learn from other cultures. But travel isn't even necessary to realize this interconnectedness: within minutes of opening a social media site like TikTok or Reddit, any user can find posts about how parenting norms differ in the United States versus Germany, proper etiquette when meeting new people in Turkey, the top strategies for success in China, or even different cultures' favorite songs to sing around the campfire. When accessing information about other cultures is so easy, people become all the more likely to absorb influences from those different cultures. But in this period of history where our potential cultural influences are more saturated than ever, who do people ultimately learn from?

People's perceptions of different countries and cultures may play a critical role in this process, motivating them to absorb cultural impact from some countries but not others. I suggest that perceptions of countries' varying levels of international influence as well as perceptions of competition between nations—both of which have been heavily shaped by globalization—may impact cross-cultural social learning. Here, I explore how perceived influence and competition

might serve as cues that either promote or hinder social learning across country lines.

Understanding how culture is transmitted as a result of these salient dimensions could help us better understand the future of our cultural landscape, from cultural convergence to divergence and conflict.

### **Context Biases and Cross-Cultural Social Learning**

Social learning is the process of adopting beliefs and behaviors through observations of and interactions with others (Heyes, 1994). Social learning is a key mechanism in the transmission of culture between people and groups, and is largely regarded as the primary process through which culture changes (Boyd & Richerson, 2005; Richerson & Boyd, 2005). Learning from others allows us to forgo the costly process of individual trial and error (Boyd et al., 2011; Rendell et al., 2011) and informs everything from how we use tools to how we solve interpersonal issues to the broad sets of cultural norms that we follow.

Much literature on social learning has focused on people's biases when selecting behavioral models to learn from. Do we follow the lead of the people we see as the most successful and powerful? The most well-liked? Our ingroup members? Our social environments are filled with people we could potentially emulate and learn from, and these biases help us narrow down to behavioral models who could help us most efficiently learn useful social information. These biases take many forms, including *prestige bias*, which makes people more likely to learn from others who are "prestigious," or who are respected and looked to by others (Atkisson et al., 2012; Chudek et al., 2012; Henrich & Gil-White, 2001). These biases also make us more likely to learn from people who we see as successful (Kendal et al., 2018) or who are more similar to us (Buttelmann et al., 2013; Corriveau & Harris, 2009; Kinzler et al., 2011; Montrey & Shultz, 2022). They also make us more likely to follow the majority (Henrich &

Boyd, 1998; Kendal et al., 2018; Mesoudi, 2016; Muthukrishna et al., 2016). These and other *context biases* shape who we learn from and the way that cultural beliefs and practices are transmitted (Kendal et al., 2018).

As these context biases demonstrate, people's decisions about who to learn from are often based off individual-level characteristics of the potential behavioral model themselves. But might these decisions also be based off perceptions of the countries those potential behavioral models come from? In a hyper-connected world where many potential behavioral models represent a wide range of cultures and countries, I suggest that perceptions about the country a person comes from may play an important role in people's decisions about whether or not to learn from that person.

### ***International Influence and Prestige-Biased Social Learning***

Just as people evaluate the characteristics of *individuals* to determine whether or not to learn from them, people may evaluate the characteristics of *countries* to determine whether or not to learn from people from those countries. One especially relevant country-level characteristic to consider is international influence, or the capacity countries have to shape global affairs. Influence can be assessed through objective indicators like economic prosperity, military strength, and cultural exports, as well as subjectively perceived by individuals when considering different countries' positions on the world stage. I focus on international influence because of its clear geopolitical importance and because it is a good country-level corollary of the individual characteristics that previous research has found to impact social learning decisions, like prestige.

Countries' varying levels of international influence—both actual and perceived—play a critical role in everything from international conflict to the handling of limited resources to the innovation of new technology. International surveys can give us a window into which countries

are commonly seen as the most influential: according to an international sample of over 8,000 people, global superpowers like the United States, China, and the United Kingdom were viewed as the most internationally influential countries in 2023 (U.S. News, 2023). Countries that were seen as the most influential were rated as having highly impactful cultures, strong political influence, and as being well-connected globally. These characteristics reflect those of prestigious individuals, who are esteemed, looked to, and impactful (Henrich & Gil-White, 2001). Because international influence is a signal of prestige, I expect that people will show a bias to socially learn from people from internationally influential countries.

This assumption is based on literature demonstrating a robust bias to learn from people who are seen as prestigious (Atkisson et al., 2012; Chudek et al., 2012; Henrich & Gil-White, 2001; Kendal et al., 2018). The logic of such a bias is that learners should benefit from emulating prestigious individuals because those people's behaviors should be more likely to lead to the learner's own success (Henrich & Gil-White, 2001). This bias has been documented across the lifespan and across contexts. For instance, children are much more likely to play with toys or try foods chosen by a demonstrator when that demonstrator was previously given attention (versus ignored) by others (Chudek et al., 2012). When adults are asked to answer difficult trivia questions, they copy the answers of those who they know have been copied most by others (Brand et al., 2021). More naturalistic data also supports prestige-biased social learning: Fijian villagers are more likely to emulate the fishing, yam-growing, and medicinal plant-use strategies of those who are seen as most successful and knowledgeable in valued domains in society (Henrich & Broesch, 2011). Across this work, we see evidence that people choose to learn from behavioral models who are viewed as prestigious. Thus, I predict that people will similarly

choose to learn from people who come from *countries* that are viewed as highly influential, as this influence is a strong cue of country-level prestige.

### **Competition as a Potential Moderator of the Influence-Learning Relationship**

As opportunities for interaction between countries rise and global markets, militaries, and resources become more intertwined, the opportunity for competition between countries also rises. Countries can compete over all sorts of things, from control over natural resources, to leadership in technological innovation, to tourism revenue, to dominance in trade and exports. Perceptions of competition can leave big cultural footprints: for example, in 2023, about half of Americans (52%) said that they viewed China as a competitor of the United States (Fagan, 2023). This perceived competition can impact geopolitics, with leaders making decisions aimed at remaining competitive in an increasingly connected world. For instance, in a 2021 speech to Congress, United States President Joe Biden remarked: “China and other countries are closing in fast. We have to develop and dominate the products and technologies of the future” (The White House, 2021)

How do perceptions of this kind of competition impact people’s willingness to socially learn from people from different countries? Contrasting hypotheses present themselves. On the one hand, it is possible that these perceptions of competition from different countries could moderate the relationship between perceived country influence and willingness to socially learn from that country. Competition is a form of threat, and it could stymie the potential effects of perceived influence on willingness to socially learn from people from that country. Intergroup Threat Theory suggests that perceived symbolic or realistic threats from outgroups—including perceived competition—lead to negative attitudes toward those outgroups (Stephan et al., 2015; Stephan & Stephan, 1996, 2000). For instance, perceiving immigrants as a threat to one’s culture



or as a competitor for resources predicts anti-immigrant attitudes (Esses et al., 1998, 2001; Stephan et al., 1998). These dynamics of competition and negative attitudes are borne out in global data: world regions with higher trade competition show more nationalistic and right-wing voting behavior (Dippel et al., 2015). These findings suggest that people may have negative reactions to groups that they see as competitors with their own. If an influential country is also seen as a competitor with one's own, this process may nullify a positive effect of perceived influence on social learning from people who come from that country.

On the other hand, competition could be seen as a cue of the very same prestige that influence is a cue of. If a country is a genuine competitor with one's own, that suggests that that country has achieved some degree of success in that domain of competition. Thus, people may assume that this country is "doing something right" and want to learn from people from that country. Some research suggests that people automatically and unintentionally emulate their competitors: in competitive situations, people synchronize their movements with competitors when the task is physical in nature, and copy their strategies when the task is more strategy-based (Belot et al., 2013; Cook et al., 2012; Naber et al., 2013). But it remains an open question whether people perceive their competitors as more prestigious, and whether this in turn predicts conscious decisions to learn from those competitors. If perceived prestige does indeed increase as a function of competition, then competition may not stymie the relationship between influence and social learning, and may in fact have its own independent impact on social learning.

### **Local Context as a Determinant of Social Learning**

Finally, the social learner's own context may play a role in the dynamics of influence, competition, and social learning. The learner's context may matter especially for competition because competition is perceived in relation to one's own country. Therefore, perceiving a

country as a competitor may mean different things and lead to different outcomes for people whose countries have relatively high versus relatively low influence. Specifically, competition may predict social learning among people from high-influence countries, but may not predict social learning among people from countries with less influence. I can think of two contrasting reasons such a pattern may emerge.

The first reason is related to threat perceptions. Unfavorable balances of power predict increased threat perception (Rousseau & Garcia-Retamero, 2007), so if one's own country has relatively low international influence, perceiving competition from other countries may be particularly threatening. This could negatively impact attitudes toward the competitive country (Stephan et al., 2015; Stephan & Stephan, 2000) and preclude social learning from people from that country. However, if one's own country is highly internationally influential, this high influence may provide a buffer against perceived threat from—and negative attitudes toward—countries who are competitors, and may pave the road for social learning. Therefore, people from countries with high levels of international influence may still socially learn from people whose countries are in competition with their own, but people from countries with less international influence may not.

The second and alternative reason is related to the specific countries people may see as their competitors. People may make lateral comparisons when they think about countries that they are in competition with: people from highly-influential countries may see other highly-influential countries as their main competitors, whereas people from countries with less influence may see other countries with less influence as their main competitors. These different perceptions of how influential one's main competitor countries are could translate into a gap in prestige perceptions of these competitor countries between people from high- and low-influence

countries, with people in high-influence countries seeing competition as a strong cue of prestige and people in low-influence countries seeing competition as a weaker cue of prestige. Therefore, an alternative reason competition may be related to social learning in high, but not low, influence countries is that it may only be seen as a cue of prestige in some places, not others.

### **Domain Specificity and Social Learning**

Just as the characteristics of behavioral models inform people's decisions about whether to socially learn from those people, so might the characteristics of the information to be learned. People may be motivated to learn *specific types* of information from influential and competitive countries—like information that is particularly relevant to influence and competitiveness—but not other types of information.

This prediction is supported by research and theorizing on domain specificity and social learning. Much of this work suggests that people are particularly likely to select behavioral models who demonstrate expertise in the domain in which they are hoping to learn (Henrich & Gil-White, 2001). For example, Fijian villagers are most likely to choose people who are successful at spear-fishing as their models for learning this skill, and are most likely to follow the lead of someone who is knowledgeable in the use of medicinal herbs when seeking to learn that particular skill (Henrich & Broesch, 2011). Similarly, people completing a trivia questionnaire that spans different topics prefer to copy the answers of people who demonstrate prestige specific to the domain of each question (Brand et al., 2021). Overall, this work suggests that when information about the domains in which behavioral models have prestige is available, social learners will rely on that information.

Influence and competition both convey a measure of prestige in domains such as economic success, cultural prowess, political leadership, and innovation. Therefore, if influence

and competition do support social learning—either independently or interactively—they may be most likely to support social learning in domains like these. In my studies, I distinguish between “strategic” domains (like work, finances, leadership) and “personal” domains (like family life, friendship, hobbies) to test my prediction that social learning from influential and/or competitive countries will be restricted to these strategic domains. This pattern would lend further support to literature on domain-specific social learning.

### **The Current Research**

Drawing on previous literature, I hypothesize that people will be more likely to socially learn from people whose countries have high levels of international influence, and I test contrasting hypotheses for the way that competition may shape (or not shape) this process. I also predict that social learning from influential and competitive countries will be limited to strategic, but not personal, topics. Finally, I predict that competition’s impact on social learning may be different among people whose own countries have relatively high levels of international influence, compared to people whose own countries have lower levels of international influence.

I use correlational and experimental approaches across four studies to test these hypotheses. In Study 1 ( $N = 296$  U.S. participants), I test whether people are more willing to socially learn from people from countries that they see as influential and whether perceived competition with those countries moderates this effect. In Study 2 ( $N = 391$  U.S. participants), I develop an experimental paradigm to test for a causal effect of country influence on a behavioral measure of social learning. In Study 3 ( $N = 970$  U.S. participants), I expand upon Study 2 to add a manipulation of country influence and test whether this interacts with influence to predict social learning. In Study 4 ( $N = 447$  U.S. participants; 301 NZ participants), I replicate Study 2 in both the United States and New Zealand, allowing me to test how results differ in contexts

with varying levels of international influence. Across Studies 2-4, I also test whether these effects are limited to strategic—and not personal—cultural information. Together, these studies help to advance our understanding of the biases that promote social learning in an interconnected world.

### **Study 1**

I first conducted a correlational study to investigate the relationship between perceived influence of a country, perceived competition with a country, and openness to social learning from people from that country. American participants answered questions about their perceptions of 12 other countries and their openness to socially learning from people from those countries. Using this data, I tested whether perceived influence and competition interactively predict openness to social learning.

See Table S4 for descriptive statistics and correlations between key variables.

### **Method**

#### ***Participants***

I recruited 300 American participants on Amazon Mechanical Turk via Cloudresearch. A total of 298 people completed the full survey. Of those 298 people, two failed a check meant to identify bots. All remaining 296 participants passed an attention check that instructed participants to select their hobbies from a provided list before telling them to select “none of the above” later in the instructions, and the final sample was therefore 296 participants. The average age was 39.98 ( $SD = 11.28$ ), and 175 participants identified as male, 119 as female, and two as another gender.

## *Procedure*

I administered the survey via Qualtrics. After providing informed consent, participants were told that they would answer a series of questions about 12 different countries. I chose 12 countries that varied in how influential they are commonly perceived to be using the aforementioned U.S. News ranking (U.S. News, 2023) in order to avoid a restriction of range in perceived influence. These countries were Japan, Canada, China, France, India, the United Kingdom (all in the top third of influential countries), Argentina, Indonesia, Singapore (all in the middle third of influential countries), Kenya, Algeria, and the Dominican Republic (all in the bottom third of influential countries).

Participants were shown profiles for these 12 different countries in a random order. These profiles included the location of each country on a world map, the capital of the country, official languages, population size, and land area. After viewing each profile, participants completed 10 questions about each country before continuing to the next country profile. Some questions were more central to my hypotheses (perceptions of influence, competition, and social learning), and some were more exploratory. After completing these questions for all 12 countries, participants indicated whether they had heard of each country prior to the study. They also rated how similar they thought each country was to the United States, as perceived cultural similarity is an important covariate in analyses about social learning preferences. Next, participants completed a demographics questionnaire and then the study concluded.

## *Measures*

**Reliance.** Ten questions about each country accompanied the presentation of each country profile. The first two questions were designed to assess people's perceptions of reliance between the United States and each of the 12 countries. To ensure that all participants responded

to these questions with the same conception of reliance in mind, they read the following prompt before answering questions:

In our globalized world, many countries rely on each other for things like services, trade, cultural exports, political support, security, etc. These relationships between countries can be one-sided, where one country is more reliant upon the other country. These relationships can also be two-sided, where both countries rely upon each other.

Following this prompt, participants indicated the extent to which they think the United States relies on [Country] from 0 (Not at all) to 10 (a great deal). They then answered the same question again, but this time indicating the extent to which they think [Country] relies on the United States. These questions allowed us to calculate a difference score reflecting the extent to which people think the other country relies on the United States more than the United States relies on that country. Numbers greater than 0 on this difference score would reflect a belief that the other country relies on the United States more than the reverse, and negative numbers reflect a belief that the United States relies on the other country more than the reverse.<sup>1</sup>

**Influence.** To measure overall perceptions of each country's international influence, participants then answered the question: "In general, how much international influence do you think [Country] has?" on a scale from 0 (No influence) to 10 (A great deal of influence).

**Positivity.** On the next page of the survey, participants were again shown the same country profile, this time followed by a different set of questions. The first question measured overall positivity toward each country using a feeling thermometer. Participants were instructed to indicate how they felt toward the country on a scale from 0 (Very cold or unfavorable feeling)

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<sup>1</sup> Upon inspecting this variable, I found that on average across all participants, China was the only country with a negative value average for this variable, while all other countries had a positive value average. This means that China is the only country that participants consistently believe the United States relies upon more than it relies upon the United States.

to 10 (Very warm or favorable feeling). They dragged a slider next to a graphic of a thermometer that displayed this numeric range in order to indicate their responses.

**Threat & Competition.** Next, participants answered three questions designed to measure perceived threat, competition, and zero-sum competition from a country. First, they answered the question: “How much competition do you think there is between the United States and [Country]?” Participants responded on a scale from 0 (No competition at all) to 10 (A great deal of competition).

Participants then answered a question about perceived threat from each country to the United States. They indicated how threatening they thought each country was to the United States, from 0 (Not at all threatening) to 10 (Extremely threatening).

Last on this page, participants indicated on a scale from 1 (Strongly disagree) to 6 (Strongly agree) their agreement with the following statement: “[Country’s] success would come at the cost of the United States’ success. This question reflects participants’ perceptions of zero-sum competition between the US and each country.

The two items measuring competition were strongly related to each other as shown by regressing perceived competition on perceived zero-sum competition while accounting for the random intercepts of participant and country:  $\beta = .60$ , 95% CI [.57, .63],  $p < .001$ . Therefore, I averaged these two items together into a composite “perceived competition” score which I use in all analyses reporting on competition going forward.

**Openness to Social Learning.** On the last page for each country, participants were once again shown the same country profile that they viewed on the previous two pages. Following this profile were three questions about openness to socially learning from each country: “People in the United States could learn from people in [Country]”, “People in [Country] do some things



that would be worth copying in the United States,” and “People in the United States should learn about [Country] principles and morals.” Participants responded to each of these questions on a scale from 1 (Strongly disagree) to 6 (Strongly agree). These items showed high internal reliability at the person-country level ( $\alpha = .90$ ) and were averaged to create a composite index of openness to social learning.

**Demographics.** Last, participants completed a demographics questionnaire that included measures of gender, age, race/ethnicity, education (1 = < High School degree; 8 = Doctorate degree), subjective SES (measured by the MacArthur Ladder), political party identification (1 = Strong Democrat; 7 = Strong Republican), conservatism, and religiosity. Participants were then debriefed.

## **Results**

### ***Relationship Between Influence, Competition, and Openness to Social Learning***

I first tested the individual relationships between influence and openness to social learning and competition and openness to social learning using separate multilevel regressions. These models were cross-classified, specifying random intercepts for both participant and for country to account the study's the design, which had the same 296 participants rate the same 12 countries. Variables were standardized prior to analyses.

I found that openness to social learning was significantly and positively predicted by country influence,  $\beta = .26$ , 95% CI [.23, .29],  $p < .001$ . This effect held controlling for gender, age, education, political affiliation, SES, perceived similarity between the US and each country, and positivity toward each country,  $\beta = .19$ , 95% CI [.16, .22],  $p < .001$ . This result supports my prediction that people would be biased to learn from highly influential countries, in line with accounts of prestige-biased social learning.

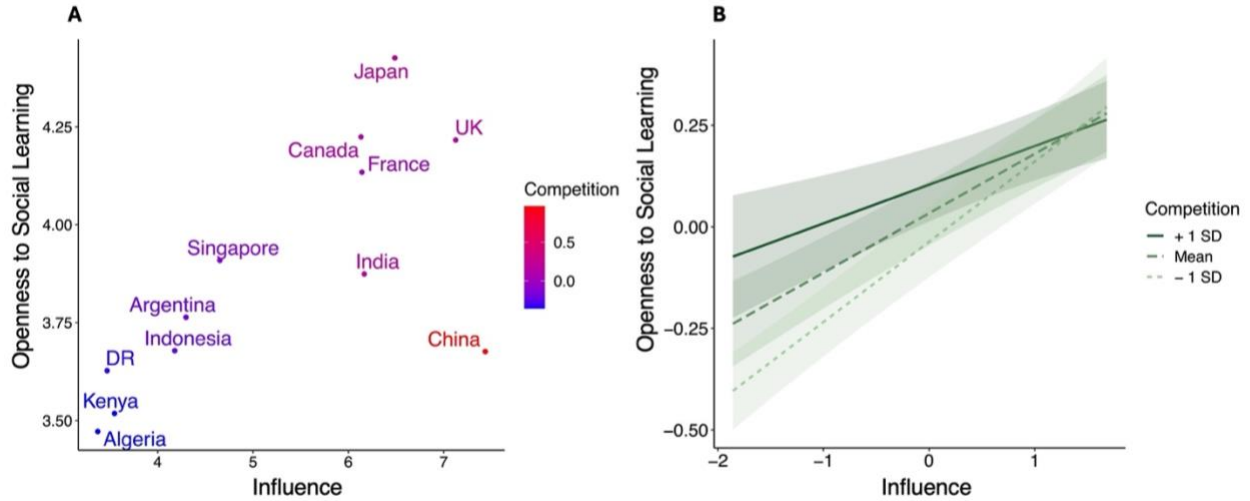
Competition was also a significant and positive predictor of openness to social learning,  $\beta = .18$ , 95% CI [.14, .22],  $p < .001$ , and this effect was robust to covariates,  $\beta = .17$ , 95% CI [.14, .22],  $p < .001$ . Predictions informed by research on competition, threat, and negative attitudes toward outgroups (Esses et al., 1998, 2001; Stephan et al., 2015) may expect these perceptions to negatively predict openness to social learning. This data, however, suggests the opposite relationship: greater perceived competition predicts greater openness to social learning. However, it is worth noting that the effect size of competition's relationship with openness to social learning is smaller than that of influence.

### ***Interactive Relationship Between Influence, Competition, and Openness to Social Learning***

Next, I tested whether competition moderated the relationship between influence and openness to social learning. This interaction was significant,  $\beta = -.07$ , 95% CI [-.11, -.05],  $p < .001$ , and robust to covariates,  $\beta = -.06$ , 95% CI [-.08, -.03],  $p < .001$  (see Table 1 for full results). Simple slopes analyses showed that the relationship between influence and openness to social learning was still significant and positive at all levels of competition. However, this effect was stronger when competition was low (-1SD;  $\beta = .20$ , 95% CI [.16, .24],  $p < .001$ ) than when it was high ( $\beta = .10$ , 95% CI [.05, .15],  $p < .001$ ). These results are depicted in Figure 1 along with a scatter plot depicting the average ratings of threat, competition, and openness to social learning for each country. These results suggest that while competition may slightly weaken the relationship between influence and openness to social learning, it does not nullify it. Further, as shown in Figure 1, it appears that when competition is low, people become increasingly open to socially learning from a country as their perceptions of that country's competition with their own increase.

**Figure 1**

*Scatter Plot of Perceived Influence, Competition, & Openness to Social Learning; Simple Slopes*



*Note.* Panel A depicts a scatter plot of participant ratings of influence and openness to social learning, with points colored by competition. Panel B depicts simple slopes analyses for the interactive effect of influence and competition on openness to social learning.

**Table 1**

*Influence, Competition, and Their Interaction Predicting Openness to Social Learning*

| <i>Predictors</i>       | <b>Openness to Social Learning</b> |                |                  |
|-------------------------|------------------------------------|----------------|------------------|
|                         | $\beta$                            | <i>CI</i>      | <i>p</i>         |
| Influence               | 0.15                               | [0.11, 0.18]   | <b>&lt;0.001</b> |
| Competition             | 0.08                               | [0.03, 0.12]   | <b>0.001</b>     |
| Man (v. Woman)          | -0.03                              | [-0.10, 0.04]  | 0.414            |
| Age                     | -0.02                              | [-0.09, 0.05]  | 0.605            |
| Education               | -0.05                              | [-0.13, 0.04]  | 0.260            |
| Party Affiliation       | -0.09                              | [-0.16, -0.02] | <b>0.008</b>     |
| SES                     | 0.08                               | [-0.01, 0.17]  | 0.067            |
| Country Positivity      | 0.35                               | [0.32, 0.37]   | <b>&lt;0.001</b> |
| Country Similarity      | 0.07                               | [0.04, 0.10]   | <b>&lt;0.001</b> |
| Influence X Competition | -0.05                              | [-0.08, -0.03] | <b>&lt;0.001</b> |

### ***Perceived Threat and Openness to Social Learning***

As an exploratory analysis, I also tested whether perceived threat from a country predicted openness to social learning. This analysis served as an additional check of predictions informed by Intergroup Threat Theory, which may expect perceived threat and competition to preclude social learning. However, I found that threat, like competition, was a positive predictor of openness to social learning,  $\beta = .05$ , 95% CI [.01, .09],  $p = .01$ , and this effect was robust to covariates,  $\beta = .10$ , 95% CI [.07, .13],  $p < .001$ . And much like competition, threat did significantly interact with influence to predict openness to social learning (both with and without covariates; results from model including covariates are reported here),  $\beta = -.04$ , 95% CI [-.07, -.01],  $p = .004$ , but the relationship between influence and openness to social learning was still significant and positive across all levels of threat ( $.14 \leq \beta \leq .22$ ,  $ps < .001$ ).

### **Discussion**

This study lends support to my prediction that perceiving a country as highly influential would be related to increased openness to socially learning from people from that country. Further, competition does moderate this relationship, but does not change the nature of the relationship between influence and openness to social learning: this relationship is significant and positive across all levels of perceived competition. Competition only reduces the magnitude of this relationship. And when perceived influence is low, greater perceived competition seems to be associated with a greater openness to social learning. These findings cast initial doubt on the idea that competition would prevent social learning and nullify the relationship between influence and social learning.

Participants' responses to China are also worth noting. As indicated in Figure 1 and Footnote 1, China is seen as the most influential country, the country in the most competition

with the United States, and as the only country that the United States relies upon more than that country relies upon the United States. Figure 1 shows that people’s willingness to socially learn from China is relatively low.<sup>2</sup> China’s position as an outlier in these data is likely due to the fact that all participants were from the United States, and the United States is widely viewed as a highly influential country (U.S. News, 2023). Therefore, participants did not rate many countries as having very high levels of competition with their own – only China. This restriction of range in perceived competition is a limitation that I seek to address through my experiments. Further, sampling only from a high-influence country is another limitation that I address in Study 4.

## **Study 2**

While Study 1 tested for correlational relationship between influence, competition, and openness to social learning, Study 2 sought to test for a causal relationship between influence and social learning. The aim of this study was to first test whether influence had a significant causal effect on social learning prior to adding in competition (which I do in Study 3).

I also developed a behavioral measure of social learning in Study 2. Specifically, I measure people’s choices to send either a) advice written by someone from another country or b) advice that they themselves wrote on to another person in their own country. In experimental paradigms, social learning is typically operationalized as the implementation of strategies demonstrated by others or the use of information provided by others in order to solve a problem or complete a task, and is often contrasted with asocial learning, or the reliance on oneself to solve the problem or complete the task (Brand et al., 2021; Kalkstein et al., 2016). My operationalization reflects this standard by measuring people’s preference to rely on information provided by someone else over the alternative of producing new information themselves.

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<sup>2</sup> All the effects reported above replicate (and become stronger in most cases) when responses to China are removed from analyses.

Further, advice-giving is a useful framework for studying social learning across cultures because advice can contain rich cultural information about norms and customs that vary across cultures and countries. Taking advice from people from different countries, and then giving that advice to others within one's own country, could be a potent way that culture transmits and diffuses in a hyper-connected world. Finally, participants complete this measure of social learning for different kinds of advice topics, allowing me to test the domain specificity of social learning.

I predicted that social learning would be higher when the person from whom participants could learn was from a high-influence (vs. low-influence) country. However, because I predicted that this social learning would be domain-specific, I only expected this effect to emerge for social learning about advice topics that are strategic in nature (vs. personal), as these strategic topics are more aligned with the domains of country influence and competition than are personal topics.

Pre-registered hypotheses and analysis plans can be found at [https://aspredicted.org/46K\\_6G4](https://aspredicted.org/46K_6G4). See Table S5 for descriptive statistics and correlations between key variables.

## **Method**

### ***Participants***

Based on results from a pilot study (see Supplemental Study S1 for details), I seeded an a-priori power analysis for a logistic regression with an expected odds ratio of 2 for the effect of influence condition on social learning, and with an expected social learning rate of 67% in the control condition. This analysis suggested recruiting 350 participants to achieve 80% power to detect such an effect. I recruited 400 participants via Prolific Academic to account for potential check failures.

I administered the survey via Qualtrics. Participants completed a CAPTCHA and an open-ended question that served as bot checks on the first page of the study. The open-ended question asked participants to write the word BOAT in all capital letters. I also included one attention check later in the survey within the American Identity Measure asking participants to “please select 3 for this question.” Any participants who failed both the open-ended bot check and the attention check were not allowed to continue the survey. Any participants who failed one of these checks were excluded from analyses. These exclusions left a final sample size of 391 people. Of this sample, 185 identified as men, 198 identified as women, five identified as nonbinary, and three identified with another gender. The average age was 42.56 years ( $SD = 13.59$ ).

### ***Procedure***

For this study, I developed a paradigm that allows participants to choose to either submit their own advice that will be sent on to a “future” participant, or to submit advice that was written by someone from a different country. I operationalize social learning as the decision to submit the advice written by someone from a different country. To set up this paradigm, after providing informed consent, participants were told that they were part of a three-phase study on advice giving (in reality, there were no phases). They were told that during Phase 1 (“International Phase”), participants from many different countries had completed the study and had given advice on five different topics. They were then told that they were in Phase 2 (“USA Phase”), where participants in the United States would give advice on those same five topics, and that that advice would then be sent on to other participants in the United States in Phase 3. Finally, I told participants that they would be randomly paired with a previous participant’s

responses from Phase 1 of the study, and that they would have the option of submitting that person's advice on the five different topics.

After this introduction to the study design, participants saw information on the previous participant they were paired with (all participants were told they were paired with Participant 278, henceforth referred to as "P278"), including the manipulation of that previous participant's country's level of international influence. Participants then made decisions about whether to submit P278's advice or to submit their own advice for each of the five topics. They then answered a series of other exploratory questions (described below) as well as demographics questions, and were then debriefed.

**Manipulation.** After (purportedly) pairing participants with a Phase 1 participant's responses, I showed them a country profile for P278. I told them that I could not disclose which specific country P278 was from for ethics reasons, but that I could provide other information about P278's country. The country profile included the population size and land area (both made-up) of the purported country, as well as that country's "International Influence Index" score. This index, purportedly by the World Bank, was fabricated for the purposes of this study. I told participants that this index "calculates a yearly score of how much international influence each country has," and that it is a composite of many factors, including trade capacity and exports, security provision, political and cultural influence, and economic performance. I included these different indicators of influence to prevent participants from anchoring on one type of influence (e.g. economic influence) and simply equating the Influence Index with that one indicator (e.g. wealth).

I told participants that this Index ranged from 0 (lowest possible international influence) to 100 (highest possible international influence). In the high influence condition, a graphic





them that this advice would be sent on to another U.S.-based participant in Phase 3 (in reality, there is no Phase 3). The advice prompt asked participants to “Please list what you think are the top 5...” and then completed the prompt with one of the following five topics: “strategies for success at work,” “most important qualities for children to learn,” “qualities of a good friend,” “best habits to include in a daily routine,” and “tips for financial success.” Following this prompt, participants were told that they had a choice: they could either submit their own advice on the topic or could submit the advice that P278 submitted without actually seeing that advice. P278’s country profile was included as a reminder.

Participants’ choice of whether to submit their own advice or to submit P278’s advice was the main dependent variable and measure of social learning. They made this choice in succession for each of the five different advice topics, which were presented to them in a randomized order. If they chose to submit their own advice, they were able to write their own advice on the following page of the survey.

**Exploratory Measures.** I included exploratory questions following the advice paradigm meant to assess participants’ views of the previous participant, of the previous participant’s country, of the advice topics, and of their cultural attitudes more broadly.

***Quality of Previous Participant’s Advice.*** Directly following the advice paradigm, I asked three questions meant to assess participants’ assumptions about the quality of P278’s advice, including “This participant probably gave good advice,” and “Following this participant’s advice would probably help people in the United States.” Participants responded to these questions on a 1 (Strongly disagree) – 6 (Strongly agree) scale. These items showed high reliability,  $\alpha = .88$

***Perceptions of Previous Participant and Previous Participant's Country.*** Next, participants answered three items about their views of P278, and three items about their views of P278's country. The items about P278 included statements like "This participant is probably successful in many domains of life" and "This participant is smart." The items about P278's country included statements like "This participant's country is doing things right" and "This participant's country is probably in competition with the United States. Participants answered these questions on a 1 (Strongly disagree) – 6 (Strongly agree) scale. Both sets of items showed high reliability: questions about P278  $\alpha = .89$ ; questions about P278's country  $\alpha = .75$ .

***Confidence.*** Next, participants indicated how much they agreed that they were "confident in my own ability to give good advice" about each of the 5 topics on a 1 (Strongly disagree) – 6 (Strongly agree) scale. They then answered a similar question about their confidence in P278's ability to give good advice about each topic.

***American Identity.*** Next, participants completed the American Identity Measure (Schwartz et al., 2012). This scale included items like "I have a strong sense of being an American" and "I have a lot of pride in the United States," and showed high reliability:  $\alpha = .94$ .

***Intercultural Sensitivity.*** Participants then completed a subset of items from the Intercultural Sensitivity Scale (Chen & Starosta, 2022). This scale included items like "I am open-minded to people from different cultures" and "I think my culture is better than other cultures (reverse coded)," and showed high reliability:  $\alpha = .84$ .

***Intellectual Humility.*** Finally, participants completed the "lack of intellectual overconfidence" sub-scale from a measure of intellectual humility (Krumrei-Mancuso & Rouse, 2016), which included items like "My ideas are usually better than other people's ideas" and "On

important topics, I am not likely to be swayed by the viewpoints of others.” This scale showed high reliability:  $\alpha = .86$ .

**Demographics.** Following these measures, participants completed a demographics questionnaire that included measures of gender, age, race/ethnicity, education (1 = < High School degree; 8 = Doctorate degree), subjective SES (measured by the MacArthur Ladder), political party identification (1 = Strong Democrat; 7 = Strong Republican), conservatism, and religiosity. Participants were then debriefed.

## **Results**

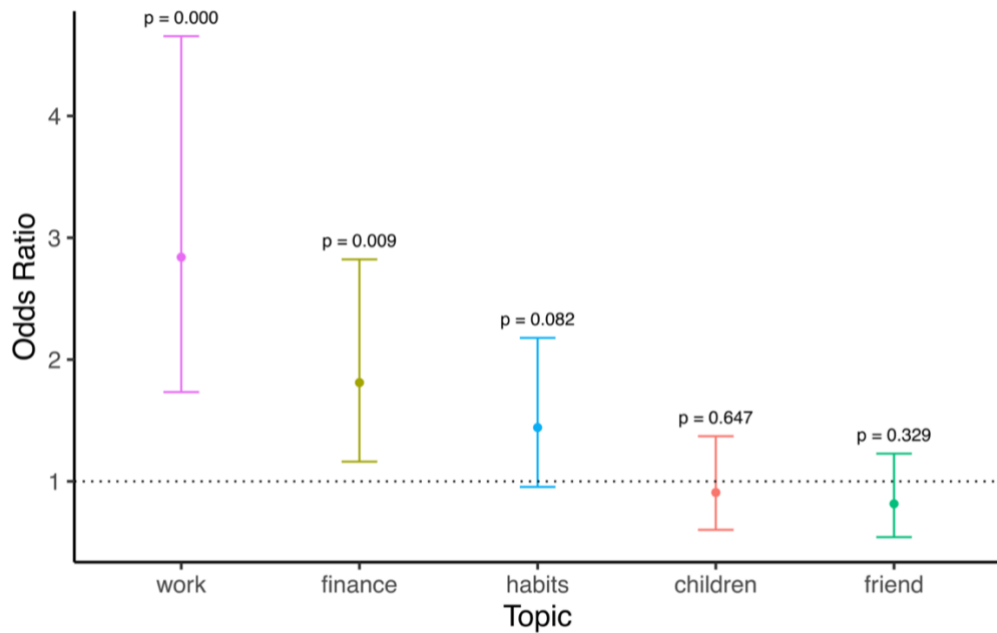
### ***Pre-Registered Analyses***

I performed a series of logistic regressions to test whether influence condition (high vs. low) increased participants’ likelihood of submitting P278’s advice, and whether this effect emerged only for advice on work and finances (as anticipated). I ran separate regressions for each of the five advice topics. Because the dependent variable is binary, regression estimates are exponentiated and presented as odds ratios.

As predicted, participants were significantly more likely to submit P278’s advice on success at work ( $OR = 2.84$ , 95% CI [1.75, 4.71],  $p < .001$ ) and on financial success ( $OR = 1.81$ , 95% CI [1.17, 2.84],  $p = .009$ ) when P278’s country was highly influential. Participants were also marginally more likely to submit P278’s advice about habits to include in a daily routine when P278’s country was highly influential,  $OR = 1.44$ , 95% CI [0.96, 2.18],  $p = .08$ . There was no significant effect of influence on the likelihood of submitting advice related to the qualities that are important for children to learn or the qualities of a good friend,  $ps > .33$ . These results are illustrated in Figure 3.

**Figure 3**

*Effect of Influence on Likelihood of Submitting P278's Advice by Topic*



*Note.* Point estimates reflect odds ratios, and error bars reflect 95% CIs. Any odds ratio whose confidence interval does not pass through 1 (dotted horizontal line) is statistically significant. P-values are displayed above confidence intervals.

***Exploratory Analyses***

To test whether the effect of influence on the choice to submit P278's advice was statistically different for work and finance topics (strategic) versus topics about habits, children, and being a good friend (personal), I conducted a single multilevel logistic regression with advice-submission choices nested within participant and topic. I created a binary "category" variable that reflected whether advice was strategic (1; work, finance) or personal (0; habits, children, friendship) in nature, and interacted this variable with influence condition to predict decisions to submit P278's advice. This model specified a random intercept for participant ID and a random slope for the advice category variable. I used contrast coding for the influence

condition and advice category variable so that main effects in the models would be interpretable as the effect of one manipulation collapsed across levels of the other manipulation. Thus, influence was coded as -.5 for the low influence condition and .5 for the high influence condition. Advice category was coded as -.5 for personal topics and .5 for strategic topics.

The interaction between influence condition and advice category was significant,  $OR = 2.84$ , 95% CI [1.66, 4.87],  $p < .001$  (see Table 2 for full results). Further, simple slopes analyses revealed that for advice on strategic topics, being in the high-influence condition made submitting P278’s advice more likely,  $OR = 3.02$ , 95% CI [1.82, 5.02],  $p < .001$ . For advice on personal topics, the effect of condition on the likelihood of submitting P278’s advice was non-significant,  $OR = 1.06$ , 95% CI [0.66, 1.72],  $p = .80$ . These results suggest that believing that P278 is from a high-influence country makes people more likely to submit P278’s advice on strategic topics, but not on personal topics.

**Table 2**

*Effect of Influence, Advice Category, and Their Interaction on Submission of P278’s Advice*

|                      | <i>Odds Ratio</i> | <i>95% CI</i> | <i>p</i>         |
|----------------------|-------------------|---------------|------------------|
| Influence            | 1.79              | [1.18, 2.72]  | <b>0.006</b>     |
| Category             | 1.87              | [1.32, 2.67]  | <b>&lt;0.001</b> |
| Influence X Category | 2.84              | [1.66, 4.87]  | <b>&lt;0.001</b> |

**Discussion**

This study builds on Study 1 by contributing a causal test of the relationship between influence and social learning. As predicted, and in line with Study 1 results, perceiving someone’s country as high-influence increases the likelihood of socially learning from that person about strategic (but not personal) topics. These results support the assumption that people

use the characteristics of individuals' countries to inform their decisions of whether to socially learn from those individuals, much in the same way as previous work has shown that people use characteristics of individuals themselves to inform their decisions of whether to socially learn from those individuals (Kendal et al., 2018). They also demonstrate support for domain-specific social learning (Brand et al., 2021; Henrich & Broesch, 2011).

### **Study 3**

In Study 3, I expanded upon Study 2 to test whether the effect of influence on strategic social learning is moderated by how competitive people think a country is. If competition is seen as a threat and produces negative attitudes toward the other country, it could potentially dampen the effect of influence on social learning. Alternatively, competition may not dampen this effect if people view it as a cue of prestige, and competition may even have its own independent effect on social learning.

Synthesizing results from Studies 1 and 2, I predicted that for strategic advice topics, a negative interaction between influence and competition would emerge such that the effect of influence on social learning would be stronger for those in the low-competition condition than in the high-competition condition, but that the effect of influence on social learning would still be significant and positive in both competition conditions. I did not predict a similar interaction for the personal advice topics.

Pre-registered hypotheses and analysis plans can be found at [https://aspredicted.org/QS8\\_KZJ](https://aspredicted.org/QS8_KZJ). See Table S6 for descriptive statistics for key variables.

## **Method**

### ***Participants***

I conducted simulations to estimate power for a logistic regression with two binary variables and their interaction as predictors. I used Studies 1 and 2 to inform the expected levels of social learning in each of the four conditions in the 2x2 design. Using these estimations, I simulated datasets of varying sizes, and power analyses on these simulated datasets suggested that 1000 participants would yield 83% power to detect the hypothesized interaction. I recruited 1000 participants via Prolific Academic.

I administered the survey via Qualtrics. Participants completed a CAPTCHA and an open-ended question that served as bot checks on the first page of the study. The open-ended question asked participants to write the word BOAT in all capital letters. I also included one attention check later in the survey within the American Identity Measure asking participants to “please select 3 for this question.” Any participants who failed both the open-ended bot check and the attention check were not allowed to continue the survey. Any participants who failed one of these checks were excluded from analyses. These exclusions left a final sample size of 970 people. Of this sample, 402 identified as men, 552 identified as women, two identified as nonbinary, and four identified with another gender. The average age was 41.78 years ( $SD = 13.34$ ).

### ***Procedure***

I used the same advice paradigm as in Study 2, and the procedure of Study 3 is exactly the same as that of Study 2 up until the manipulation of P278’s country profile. Participants viewed the same international influence manipulation as in Study 2, but new to this study, the profile also included a manipulation of competition between P278’s country and the United



States. After viewing this information, and as in Study 2, participants decided whether to submit P278's advice or to write their own advice (on a series of different topics) that would then be sent on to a "future participant" in the United States. They then answered a series of other exploratory questions as well as demographic questions, and were debriefed.

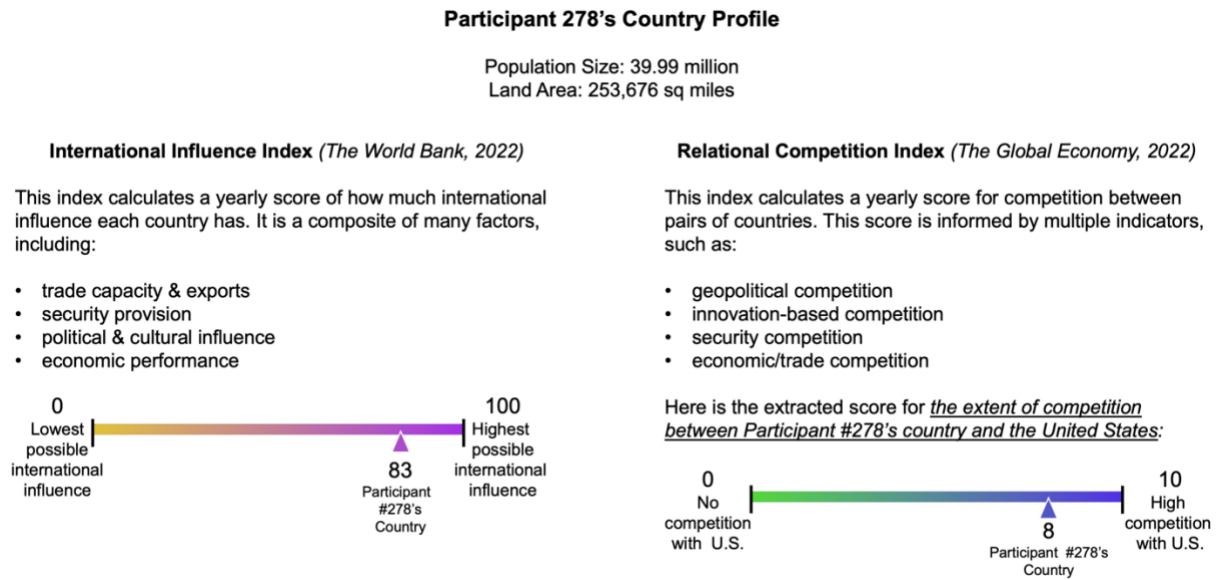
**Manipulation.** Participants were shown a country profile for the previous participant that they were purportedly paired with (P278) after they read about the purported phases of the study. These country profiles were exactly the same as those presented in Study 2, except that they now included a second manipulation of P278's country's level of competition with the United States. Alongside the International Influence Index manipulation from Study 2, I added a "Relational Competition Index" (purportedly calculated by The Global Economy). I told participants that this index "calculates a yearly score for competition between pairs of countries," and that it is a composite of different indicators like geopolitical competition, innovation-based competition, security competition, and economic/trade competition. The country profile showed the extracted Index score for competition between P278's country and the United States. This Index ranged from 0 (No competition with the U.S.) to 10 (High competition with the U.S.). The country profile showed a Relational Competition Index score of 8 in the high competition condition, and a score of 2 in the low competition condition. See Figure 4 for a depiction of the full country profile, including the influence manipulation and the competition manipulation.

I included two manipulation check questions directly after the country profile. The question for the influence manipulation was the same as in Study 2, and participants could indicate whether they thought the previous participant's country had low (1), medium (2), or high (3) international influence. The question for the competition manipulation asked, "Based on this profile, how much competition would you say there is between Participant 278's country and

the United States,” and participants could answer with low (1), medium (2), or high (3) competition. Participants in the high influence condition reported significantly higher perceptions of P278’s country’s influence,  $t(943.66) = -47.82, p < .001, d = 1.93$ , and participants in the high competition condition reported significantly higher perceptions of P278’s country’s competition with their own country,  $t(944.46) = -49.07, p < .001, d = 1.98$ .

**Figure 4**

*Influence and Competition Manipulations*



*Note.* Image depicts high-influence and high-competition condition manipulations. In low-influence condition, the slider scale reflects a value of 17 for Participant #278’s Country. In low-competition condition, the slider scale reflects a value of 2 for Participant #278’s Country.

**Social Learning.** The advice paradigm portion of the study was exactly the same as in Study 2, aside from the addition of one new advice topic. I added “strategies for being a good leader” as an additional strategic topic for which participants could choose to either give their

own advice or use P278's advice. Including this additional item evened out the number of strategic and personal advice topics to three for each category.

Participants' choice of whether to submit their own advice or to submit P278's advice was the main dependent variable and measure of social learning. The presentation of the six different advice topics was randomized as in Study 2, and I once again showed participants P278's country profile as a reminder alongside each advice topic choice. If participants chose to write their own advice, they were prompted to do so before moving on to the next advice topic.

**Exploratory Measures.** A series of questions following the advice paradigm assessed participants' views of P278, of the previous participant's country, of the advice topics, and of participants' cultural attitudes more broadly. These were largely the same as in Study 1, with some additions.

***Quality of Previous Participant's Advice.*** I asked the same three questions about participants' assumptions about the quality of P278's advice (e.g. "This participant probably gave good advice") as in Study 2. These items showed high reliability,  $\alpha = .88$ ).

***Perceptions of Previous Participant and Previous Participant's Country.*** Next, participants answered the same three items about their views of P278 (e.g. "This participant is probably successful in many domains of life";  $\alpha = .90$ ) and the same three items about their views of P278's country (e.g. "This participant's country is doing things right";  $\alpha = .64$ ) as in Study 2.

***Confidence.*** Next, participants completed the same measures of their confidence in their own ability to give good advice on each topic and their confidence in P278's ability to give good advice on each topic as in Study 2.

***Country Success and Favorability.*** New to this study, participants completed a measure of how they thought people in P278's country performed relative to people from other countries on each of the different topics that participants could give advice on (e.g. "doing well financially" and "having good daily routines"). For each of the six topics, participants could move a slider from 0 (Far below average) to 100 (Far above average), with a midpoint of 50 (Average). Next, participants indicated how favorable they felt toward the previous participant's country on a scale from 0 (Very cold or unfavorable feeling) to 100 (Very warm or favorable feeling).

***Topics' Relations to Success and Morality.*** Next, participants completed an exploratory measure of how "relevant for success" they thought each topic was. Response options ranged from 1 (Not at all relevant for success) to 6 (Extremely relevant for success). Participants also answered a question asking how much they agreed that "You have to be a moral person in order to..." succeed at each of the advice topics (e.g. "be a good friend"; "be a good leader"). Response options ranged from 1 (Strongly disagree) to 6 (Strongly agree).

***American Identity.*** Next, participants completed the same American Identity Measure (Schwartz et al., 2012) as in Study 2. This scale showed high reliability:  $\alpha = .92$ .

***Intercultural Sensitivity.*** Participants then completed the same subset of items from the Intercultural Sensitivity Scale (Chen & Starosta, 2022) as in Study 2. These items showed high reliability:  $\alpha = .86$ .

***Demographics.*** Following these measures, participants completed a demographics questionnaire that included measures of gender, age, race/ethnicity, education (1 = < High School degree; 8 = Doctorate degree), subjective SES (measured by the MacArthur Ladder),

political party identification (1 = Strong Democrat; 7 = Strong Republican), conservatism, and religiosity. Participants were then debriefed.

## **Results**

### ***Pre-Registered Analyses***

I performed a series of logistic regressions to test whether the effect of influence condition (high vs. low) was moderated by competition condition (high vs. low) when predicting participants' likelihood of submitting P278's advice to a "future participant" from the participant's own country (the U.S.). I ran separate regressions for each of the six advice topics. Because the dependent variable is binary, regression estimates are exponentiated and presented as odds ratios. I used contrast coding for the influence and competition conditions as well as for the advice category variable so that main effects in the models would be interpretable as the effect of one manipulation collapsed across levels of the other manipulations. Thus, the low influence and competition conditions were both coded as -.5, and the high influence and competition conditions were both coded as .5. Personal advice topics were coded as -.5, and strategic advice topics were coded as .5.

I expected that for strategic advice topics, influence and competition would negatively interact when predicting social learning, such that the effect of influence would be slightly weaker in the high-competition condition (vs. low competition) but still significant. Contrary to my predictions, no significant interactions emerged between influence and competition when predicting decisions to submit P278's advice for strategic topics (see Table 3 for full results, and Figure 5 for advice submission rates across conditions and topics). I did, however, see evidence of separate main effects of competition and influence on advice-submission for these strategic topics. For advice on doing well at work, people were significantly more likely to submit the

previous participant's advice if that participant's country was highly influential,  $OR = 1.48$ , 95% CI [1.12, 1.96],  $p = .005$ , and if that participant's country was in greater competition with the U.S.,  $OR = 1.70$ , 95% CI [1.29, 2.24],  $p < .001$ . High influence also predicted a higher likelihood of submitting the previous participant's advice on being a good leader ( $OR = 1.42$ , 95% CI [1.09, 1.86],  $p = .009$ ) and on financial success ( $OR = 1.90$ , 95% CI [1.44, 2.51],  $p < .001$ ).

No significant interactions between influence and competition emerged for any of the personal topics, either (see Table 3). There was, however, a significant main effect of influence on participants' likelihood of submitting the previous participant's advice about the qualities children should learn, such that participants were more likely to submit that advice when the previous participant came from a high influence (vs. low influence) country,  $OR = 1.47$ , 95% CI [1.14, 1.90]  $p = .003$ . Neither influence nor competition had significant main effects for any of the remaining advice topics.

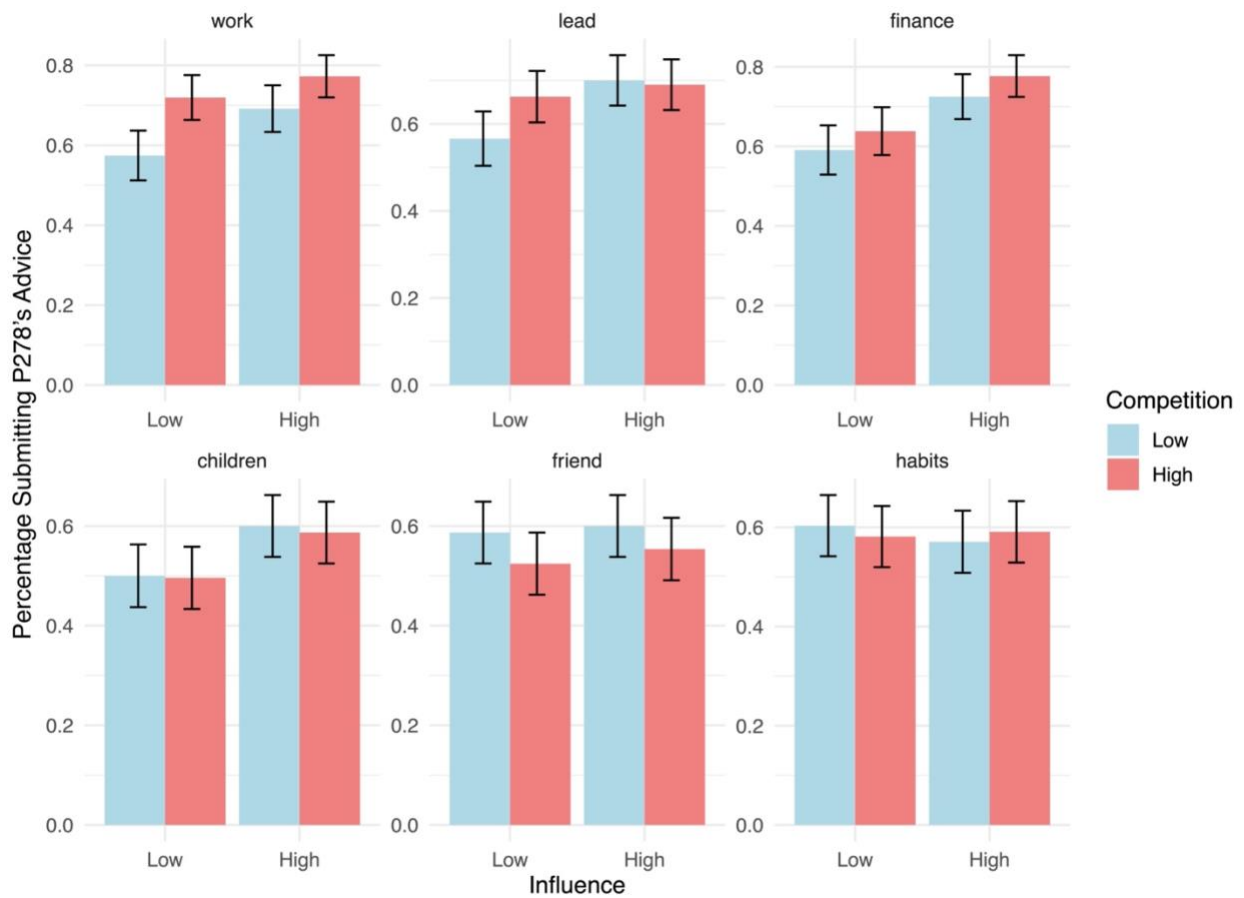
**Table 3***Effect of Influence, Competition, and Their Interaction on Submission of P278's Advice by Topic*

|             | Work         | Leader       | Finance      | Children     | Friend       | Habits       |
|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Influence   | 1.48 **      | 1.42 **      | 1.90 ***     | 1.47 **      | 1.09         | 0.95         |
|             | [1.12, 1.96] | [1.09, 1.86] | [1.44, 2.50] | [1.14, 1.90] | [0.85, 1.41] | [0.74, 1.23] |
| Competition | 1.70 ***     | 1.20         | 1.27         | 0.97         | 0.80         | 1.00         |
|             | [1.29, 2.24] | [0.92, 1.57] | [0.96, 1.67] | [0.75, 1.24] | [0.62, 1.03] | [0.77, 1.29] |
| Inf X Comp  | 0.80         | 0.63         | 1.08         | 0.96         | 1.07         | 1.19         |
|             | [0.46, 1.39] | [0.37, 1.08] | [0.62, 1.88] | [0.58, 1.60] | [0.64, 1.77] | [0.71, 1.98] |

*Note.* Odds ratios are listed next to asterisks representing significance. 95% confidence intervals around the odds ratio are presented in brackets. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

**Figure 5**

*Percentage of Participants Submitting P278's Advice By Condition and Topic*



*Note.* Error bars represent 95% confidence intervals.

### ***Exploratory Analyses***

To more explicitly test whether the effects of influence and competition on decisions to submit P278's advice varied across strategic versus personal topics, I conducted a multilevel regression with observations nested in participant and in advice topic. I created a binary “category” variable that reflected whether advice was strategic (.5; work, finance; leadership) or personal (-.5; habits, children, friendship) in nature, and tested a three-way interaction between this variable, influence condition, and competition condition when predicting advice-submission

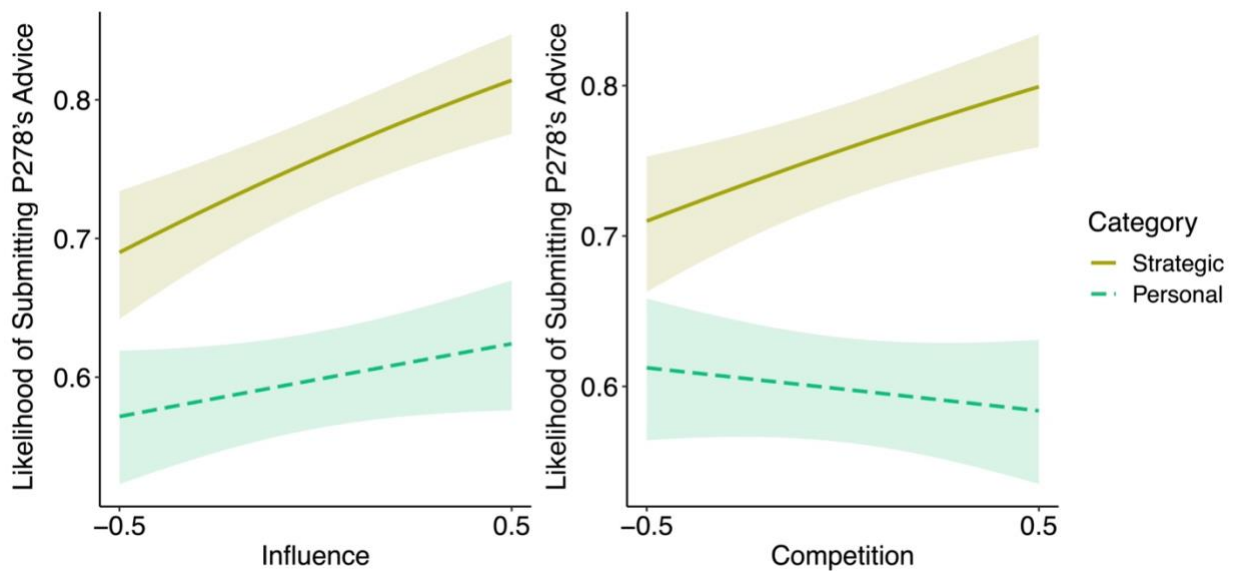


decisions. The model specified random intercepts for participant ID and for advice topic, and a random slope for the category variable.

The three-way interaction between influence, competition, and category was not significant, and neither was the two-way interaction between influence and competition. However, there was a significant interaction between influence and category (see Table 4), and simple slopes analyses show that the effect of influence on the likelihood of submitting P278's advice is significant for strategic items,  $OR = 1.97$ , 95% CI [1.46, 2.65],  $p < .001$ , but not for personal items,  $OR = 1.24$ , 95% CI [0.95, 1.63],  $p = .12$ . I find the same pattern of results for the competition manipulation: there is a significant interaction between competition and category (see Table 4), and the effect of competition on the likelihood of using P278's advice is significant for strategic items,  $OR = 1.63$ , 95% CI [1.21, 2.19],  $p = .001$ , but not for personal items,  $OR = 0.89$ , 95% CI [0.68, 1.17],  $p = .39$ . Thus, results suggest that the effect of P278's country's influence and competition on decisions to use P278's advice does vary based on whether the advice topic is strategic or personal. These simple slopes results are depicted in Figure 6.

**Table 4***Effect of Influence, Competition, Category, & Their Interactions on Submission of P278's Advice*

|                                    | Odds Ratio | 95% CI       | <i>p</i>         |
|------------------------------------|------------|--------------|------------------|
| Influence                          | 1.56       | [1.22, 2.01] | <b>&lt;0.001</b> |
| Competition                        | 1.20       | [0.94, 1.54] | 0.149            |
| Category                           | 2.10       | [1.77, 2.48] | <b>&lt;0.001</b> |
| Influence X Category               | 1.58       | [1.20, 2.09] | <b>0.001</b>     |
| Competition X Category             | 1.83       | [1.39, 2.41] | <b>&lt;0.001</b> |
| Influence X Competition            | 0.89       | [0.54, 1.46] | 0.640            |
| Influence X Competition X Category | 0.65       | [0.38, 1.12] | 0.123            |

**Figure 6***Effects of Influence and Competition on Submission of P278's Advice for Strategic vs. Personal**Topics*

## **Discussion**

Contrary to my predictions and to the interaction found in Study 1, I did not find a significant interaction between influence and competition on social learning for strategic topics. This divergence could be due to a number of differences between Study 1 and the current study, including the correlational versus experimental designs or the specific countries included in Study 1. However, I did find that influence and competition separately interacted with advice category (strategic vs personal) to predict social learning when I integrated responses to all topics into one model. Specifically, both influence and competition predict increased social learning for strategic advice topics, but not for personal advice topics. This effect of influence on social learning for strategic advice topics replicates findings from Study 2. The fact that competition has its own positive effect on social learning independent of influence suggests that perceiving a country as competitive may not stymie social learning, and suggests that people may view competition from another country as a cue of that country's prestige. I test this idea more explicitly in Study 4.

### **Study 4**

Study 4 sought to address a limitation of Studies 1-3: that all participants have so far come from the United States, a country that is widely viewed as having very high international influence (U.S. News, 2023). The United States' relatively high level of influence means that Americans might interpret influence and competition from other countries in different ways than people from countries with less influence would.

I collected data from both the United States and New Zealand to address this limitation. I chose these countries because they are culturally quite similar (Inglehart & Welzel, 2010), but vary greatly in how much influence people think they have on the global stage (U.S. News,

2023). The United States ranks 1st in U.S. News's perceived influence ranking that is based off of more than 8,000 international responses, while New Zealand ranks 35th. Collecting data from these two countries allows me to test whether the relationship between influence, competition, and social learning varies in contexts with different levels of international influence.

While I predicted the same pattern of results as in Study 3 for the United States, I had less specific expectations for results within New Zealand. On the one hand, results in New Zealand could indeed mimic those in the United States. On the other hand, results in New Zealand could show a distinct pattern if influence and competition are interpreted differently there than in the United States.

This difference in interpretation may be particularly likely for competition because competition is judged in relation to one's own country. I can think of two potential reasons that competition may not predict social learning in New Zealand like it does in the United States. First, the US's relatively high influence could buffer against perceived threat from and negative attitudes toward a competing country, paving the way for social learning. This same buffering effect may not be provided by New Zealand's relatively lower level of international influence, however. An alternative possibility is that—if people make lateral comparisons and assume that countries in competition with their own also share their country's level of influence—competition may not serve as as strong of a cue of prestige in countries with lower influence. Therefore, competition may not increase social learning in countries with less influence because it may not be seen as as strong of a prestige cue. I test the effects of influence and competition on these attitudes toward other countries and prestige perceptions in the current study.

Pre-registered hypotheses and analysis plans can be found at [https://aspredicted.org/YRV\\_NY2](https://aspredicted.org/YRV_NY2). See Table S7 for descriptive statistics for key variables.

## Method

### *Participants*

I conducted simulations seeded on Study 3 data to estimate power for Study 4. Because the main DV in Study 4 is new to the current study and is a continuous measure, I chose a continuous variable from Study 3 that showed a similar pattern of results as the binary choice variable for seeding my power analysis (see Supplemental for results for this variable). This item asked participants how confident they were in P278's ability to give good advice on each topic. I used the "simr" package in R to simulate datasets of different sizes and conduct a power analysis based on model parameters from Study 3 data. Simulations accounting for the multilevel structure of the data suggested that I would need 450 participants to achieve 80% power to detect the interactive effect of category (strategic vs personal) and influence on confidence in P278's advice. Therefore, I aimed to collect 450 adult respondents from the United States and 450 adult respondents from New Zealand for a total sample size of 900 people. I was able to recruit 450 United States respondents, but due to the smaller pool of New Zealanders on Prolific, I only collected data from 311 people in New Zealand.<sup>3</sup>

I administered the survey via Qualtrics. Participants completed a CAPTCHA and an open-ended question that served as bot checks on the first page of the study. The open-ended question asked participants to write the word BOAT in all capital letters. I also included one attention check later in the survey within the American/New Zealand Identity Measure asking participants to "please select 3 for this question." Any participants who failed both the open-ended bot check and the attention check were not allowed to continue the survey. Any participants who failed one of these checks were excluded from analyses. Further, any

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<sup>3</sup> I am continuing to collect data in New Zealand and hope to reach a final sample of 450 there, but decided to begin analyzing once I reached 300 participants for the sake of this dissertation.

participants who said they lived in any country other than the country they were being sampled from (the USA or New Zealand) were not able to complete the full survey, and therefore were not included in the sample.

These exclusions left a final sample size of 748 people (447 from the United States, and 301 from New Zealand). Of the United States participants, 192 identified as men, 241 as women, 1 as nonbinary, 4 as another gender, and 9 preferred not to say. The average age was 43.96 years ( $SD = 14.38$ ). Of the New Zealand participants, 112 identified as men, 180 as women, 3 as another gender, and 6 preferred not to say. The average age was 35.41 years ( $SD = 13.36$ ).

### ***Procedure***

I used the same advice paradigm as in Study 3, except that I used updated personal advice topics based on results from an advice topics pilot study (see Supplemental Study S2).

**Manipulation.** The manipulations of both influence and competition were the same as in Study 3. I also included the same manipulation checks as in Study 3. Participants in the high influence condition reported significantly higher perceptions of P278's country's influence,  $t(737.11) = -48.32, p < .001, d = 1.97$ , and participants in the high competition condition reported significantly higher perceptions of P278's country's competition with their own country,  $t(715.73) = -44.67, p < .001, d = 1.91$ .

**Social Learning.** Due to power restrictions for estimating interactions using logistic regressions, I introduced a continuous measure of people's preferences to either submit their own advice or the advice written by P278 as the main measure of social learning. To measure this, I asked participants to indicate their preference for submitting their own advice versus P278's advice on a 10-point slider. On this slider, 0 corresponded to "Definitely submit my own advice" and 10 corresponded to "Definitely submit Participant 278's advice." I still included the binary

choice measure of whether to submit P278's advice or their own advice. These two measures were highly correlated,  $r = .78, p < .001$ .

I also changed two of the personal advice topics in the advice paradigm. These changes were informed by a pilot study that tested how participants rated a number of different topics on their relevance to personal and strategic domains (see Supplemental Study S2). I replaced the topics on qualities that children should learn and habits to include in a daily routine with strategies for finding a good dating partner and for finding a new hobby.

Finally, for this study, I standardized the phrasing of how I solicited advice on all topics. While Studies 2 and 3 varied in this phrasing and sometimes asked for the "Top 5 strategies for doing well at work" or the "Top 5 qualities of a good friend," I rephrased all prompts to be about the "Top 5 strategies." Thus, the new phrasing asked for the "Top 5 strategies" for doing well at work, finding a new hobby, being a good friend, etc.

**Exploratory Measures.** I asked a series of questions following the advice paradigm to assess participants' views of P278, of P278's country, and of the participants' cultural attitudes more broadly. These were largely the same as in Studies 2 and 3, with some alterations.

**Quality of Previous Participant's Advice.** I asked the same three questions about participants' assumptions about the quality of P278's advice as in Studies 2 and 3. These items showed high reliability,  $\alpha = .86$ ).

**Perceptions of Previous Participant and Previous Participant's Country.** Next, participants answered the same three items about their views of P278 ( $\alpha = .89$ ) and the same three items about their views of P278's country ( $\alpha = .56$ ) as in Studies 2 and 3.

**Perceived Power.** New to this study, I asked participants "How powerful do you think [participant's country] is as a country?" on a sliding scale from 0 (Not at all powerful) to 10

(Extremely powerful). I also asked them how powerful they thought their own country was relative to Participant 278's country, on a sliding scale with anchors of 0 (Participant 278's country is far more powerful), 5 (Both countries are equally powerful), and 10 ([Participant's country] is far more powerful).

***Perceived Prestige.*** Also new to this study, I asked participants “Do you think Participant 278's country is [wealthy/prestigious/successful]” on a sliding scale from 0 (Not at all) to 10 (A great deal). These items showed high reliability ( $\alpha = .95$ ), so I averaged them into a single index of perceived prestige.

***Confidence.*** Next, participants completed the same measures of their confidence in their own ability to give good advice on each topic and their confidence in the previous participant's ability to give good advice on each topic as in Studies 2 and 3.

***Country Success and Favorability.*** As in Study 2, participants completed a measure of how they thought people in P278's country performed relative to people from other countries on each of the different topics that participants could give advice on (e.g. “doing well financially” and “having good daily routines”). For each of the six topics, participants could move a slider from 0 (Far below average) to 100 (Far above average), with a midpoint of 50 (Average). Next, participants indicated how favorable they felt toward the previous participant's country on a scale from 0 (Very cold or unfavorable feeling) to 100 (Very warm or favorable feeling).

***Country Guess.*** I asked participants which country they thought P278 was from. Participants chose from a drop-down list of all countries.

***National Identity.*** Next, participants completed the American Identity Measure (Schwartz et al., 2012) as in the previous studies. For the New Zealand study, I changed all mentions of the United States to New Zealand. This scale showed high reliability:  $\alpha = .91$ .



***Intercultural Sensitivity.*** Participants then completed the same subset of items from the Intercultural Sensitivity Scale (Chen & Starosta, 2022) as in previous studies. These items showed high reliability:  $\alpha = .85$ .

**Demographics.** Following these measures, participants completed a demographics questionnaire that included measures of gender, age, race/ethnicity, education (1 = < High School degree; 8 = Doctorate degree), subjective SES (measured by the MacArthur Ladder), political party identification (1 = Strong Democrat; 7 = Strong Republican), conservatism, and religiosity. Participants were then debriefed.

## **Results**

### ***Pre-Registered Analyses***

I first conducted a multilevel regression to test for three-way interactions between influence condition, advice category (strategic vs. personal), and country, and between competition condition, advice category, and country. This model specified random intercepts for participant and advice topic, and a random slope of advice category. I used contrast coding for the influence and competition conditions so that main effects in the models would be interpretable as the effect of one manipulation collapsed across levels of the other manipulations. Thus, the low influence and competition conditions were both coded as  $-.5$ , and the high influence and competition conditions were both coded as  $.5$ . I also applied this contrast coding to the country variable (USA =  $.5$ , NZ =  $-.5$ ) and to the advice category variable (strategic =  $.5$ , personal =  $-.5$ ).

Results showed a significant three-way interaction between competition condition, advice category, and country,  $b = .76$ , 95% CI [0.11, 1.42],  $p = .02$ . The three-way interaction between influence condition, advice category, and country did not reach significance,  $b = -.43$ , 95% CI [-

1.09, .22],  $p = .19$ , but I did find a significant two-way interaction between influence and category,  $b = .72$ , 95% CI [.40, 1.05],  $p < .001$ . See Table 5 for full results.

**Table 5**

*Effect of Influence, Competition, Category, Country, and Their Interactions on Submission of P278's Advice*

|                                  | <i>b</i> | 95% CI        | <i>p</i>         |
|----------------------------------|----------|---------------|------------------|
| Influence                        | 0.53     | [0.24, 0.83]  | <b>&lt;0.001</b> |
| Category                         | -0.08    | [-0.61, 0.46] | 0.725            |
| Country                          | 1.31     | [1.02, 1.60]  | <b>&lt;0.001</b> |
| Competition                      | 0.30     | [0.01, 0.60]  | <b>0.043</b>     |
| Influence X Category             | 0.72     | [0.40, 1.05]  | <b>&lt;0.001</b> |
| Influence X Country              | 0.22     | [-0.37, 0.81] | 0.466            |
| Category X Country               | 0.00     | [-0.32, 0.33] | 0.982            |
| Category X Competition           | 0.31     | [-0.01, 0.64] | 0.059            |
| Country X Competition            | -0.00    | [-0.59, 0.58] | 0.990            |
| Influence X Category X Country   | -0.43    | [-1.09, 0.22] | 0.193            |
| Competition X Category X Country | 0.76     | [0.11, 1.42]  | <b>0.022</b>     |

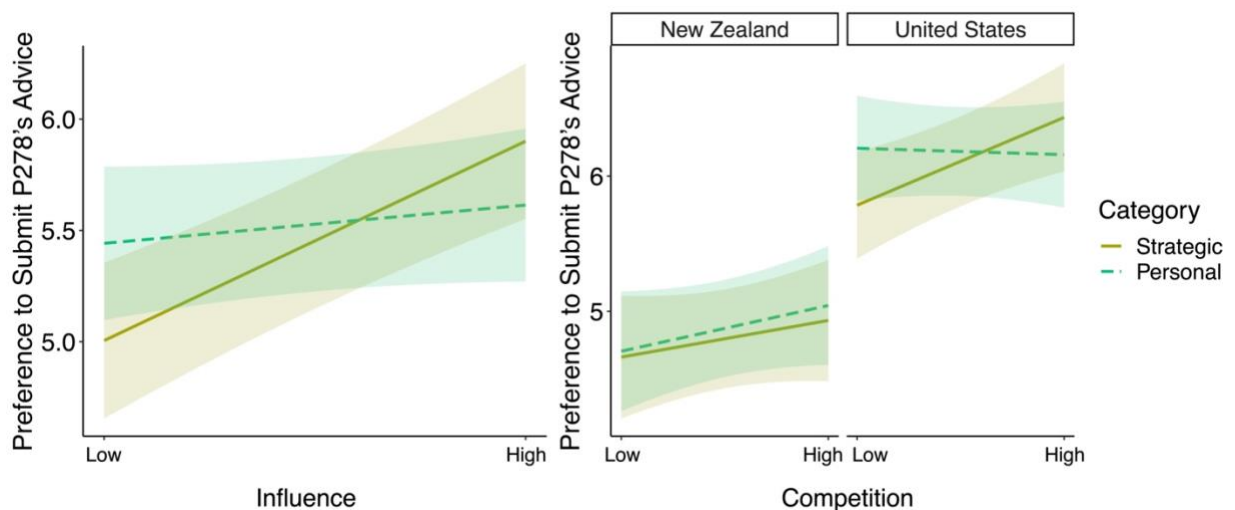
I next used simple slopes analyses to probe these interactions (see Figure 7 for depictions). Beginning with the three-way interaction between competition, category, and country, I found that among US participants, being in the high-competition condition predicted an increased preference for submitting P278's advice, but only for strategic advice topics,  $b = .65$ , 95% CI [.22, 1.08],  $p = .003$ . The effect of competition on preferences for submitting P278's advice for personal advice topics was not significant,  $b = -.05$ , 95% CI [-.47, .37],  $p = .82$ . In New Zealand, competition did not have a significant effect on preferences for submitting P278's

advice for either strategic ( $b = .27$ , 95% CI  $[-.26, .80]$ ,  $p = .32$ ) or personal ( $b = .34$ , 95% CI  $[-.17, .85]$ ,  $p = .19$ ) topics. Overall, these effects suggest that American participants use a person's country's competitiveness as a cue in favor of social learning on strategic topics, but not personal topics. New Zealand participants do not seem to use a person's country's competitiveness as a cue on favor of social learning, regardless of whether the topic is strategic or personal.

I next investigated the interaction between influence and advice category. Simple slopes analyses showed that across both countries, people showed a higher preference for submitting P278's advice on strategic topics in the high-influence condition than in the low-influence condition,  $b = .90$ , 95% CI  $[.56, 1.23]$ ,  $p < .001$ . However, influence had no effect on preferences for submitting P278's advice for personal advice topics,  $b = .17$ , 95% CI  $[-.16, .50]$ ,  $p = .30$ . These results suggest that both people in the USA and in New Zealand use a person's country's influence as a cue in favor of social learning for strategic topics, but not for personal topics.

**Figure 7**

*Effect of Influence and Competition on Preference to Submit P278's Advice by Category and Country*



### *Exploratory Analyses*

To further explore why competition only predicts social learning for strategic topics in the US, but not for any topics in NZ, I next explored how competition shapes beliefs about a country's prestige and attitudes toward that country. One potential reason competition may only increase the use of P278's strategic advice in the US (and not in NZ) is because of threat perceptions: the US is widely viewed as a highly influential country itself, so perhaps this influence buffers against perceived threat from and negative attitudes toward the other country, paving the way for social learning. An alternative reason could be that people assume that their competitor countries are similarly influential to their own countries, and in that case, competition might not be as strong as a cue of prestige among participants from New Zealand as it is among participants from the United States. These lower prestige perceptions among New Zealand participants would predict less prestige-biased social learning.

I ran two models to test these different possible explanations. First, I regressed positivity toward P278's country on competition and its interaction with country, as well as influence and its interaction with country. I did the same for perceptions of P278's country's prestige. The results from these analyses are presented in Table 6.

**Table 6***Interactive Effect of Competition, Influence, and Country on Positivity & Prestige*

|                       | Positivity Toward Country |               |                | Prestige |               |                |
|-----------------------|---------------------------|---------------|----------------|----------|---------------|----------------|
|                       | <i>b</i>                  | <i>CI</i>     | <i>p</i>       | <i>b</i> | <i>CI</i>     | <i>p</i>       |
| Competition           | 1.74                      | [-0.61, 4.09] | 0.147          | 1.04     | [0.78, 1.29]  | < <b>0.001</b> |
| Country               | 6.89                      | [4.531 9.24]  | < <b>0.001</b> | 0.21     | [-0.04, 0.46] | 0.095          |
| Influence             | 6.12                      | [3.771 8.48]  | < <b>0.001</b> | 2.32     | [2.07, 2.57]  | < <b>0.001</b> |
| Competition X Country | -0.47                     | [-5.171 4.24] | 0.845          | 0.69     | [0.19, 1.19]  | <b>0.007</b>   |
| Influence X Country   | -0.99                     | [-5.691 3.72] | 0.681          | -0.28    | [-0.79, 0.22] | 0.268          |

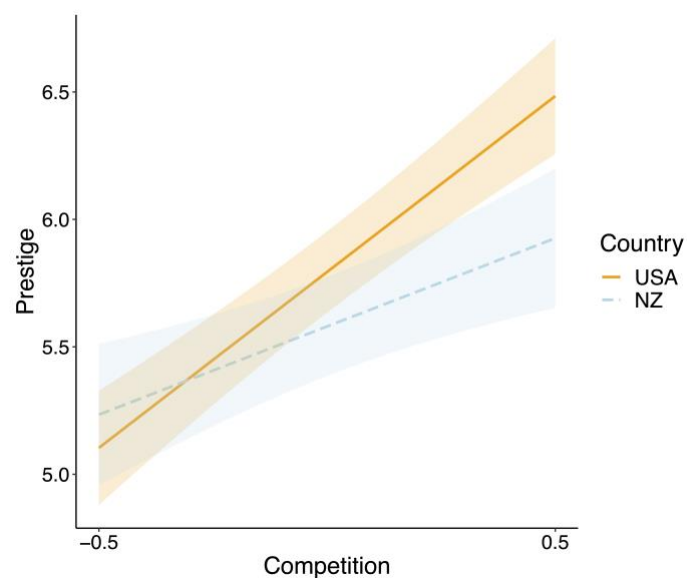
The interaction between competition and country does not reach significance when predicting positivity toward P278's country. Competition also does not have a significant main effect on positivity toward P278's country. This does not support the first potential explanation for competition's effects on social learning in the US vs NZ: that the US's relatively high influence buffers against negative attitudes toward competitive countries that would be seen in countries with less influence. On the contrary, seeing a country as a competitor does not seem to impact attitudes toward that country, regardless of whether participants are from the US or NZ.

However, I do see a significant interaction between competition and country when predicting a country's prestige (see Figure 8 for depiction). Simple slopes analyses show that American participants view P278's country as more prestigious when it is in high (vs low) competition with their country,  $b = 1.38$ , 95% CI [1.06, 1.70],  $p < .001$ . While still significantly different from zero, this effect is weaker in New Zealand,  $b = .69$ , 95% CI [.30, 1.08],  $p < .001$ .

Further, Americans in the high-competition condition saw P278's country as significantly more prestigious than New Zealanders in the high-competition condition did,  $b = .58$ , 95% CI [.21, .91],  $p = .002$ . This pattern of results suggests that competition does not serve as a cue of prestige in New Zealand to the same extent that it does in the United States. United States participants reported viewing their country as relatively high-power ( $M = 8.28$  on a scale from 1 – 10,  $SD = 1.66$ ), while New Zealanders reported viewing their country as relatively low-power ( $M = 4.35$ ,  $SD = 2.04$ ), so these results support the idea that people assume they are making lateral comparisons when considering countries that are in competition with their own. In other words, New Zealanders may assume that countries in competition with their own are of relatively lower influence and prestige than American participants would assume of countries that are in competition with the U.S. Results reflect this pattern, with competition boosting perceived prestige less for New Zealanders than for Americans.

### Figure 8

*Interactive Effect of Competition and Country on Perceived Prestige of P278's Country*



## **Discussion**

I found that the interactive effect of influence and advice category on social learning does not vary based on country, with participants in both the United States and New Zealand choosing to socially learn about strategic (but not personal) topics from people from high-influence countries. This finding replicates the effects of Study 3 and extends them to New Zealand participants. However, the interactive effect of competition and advice category *does* vary by country. Specifically, competition leads to increased social learning on strategic (but not personal) topics in the United States, but does not lead to increased social learning on either topic in New Zealand.

Analyses examining people's perceptions of P278's country's prestige are useful in understanding this pattern of effects. New Zealanders in the high-competition condition do not view countries they are in competition with to be as prestigious as Americans do, and therefore likely do not get the same boost from perceived prestige on social learning for strategic topics. I do not see evidence that more negative attitudes toward competitive countries among New Zealanders than Americans could explain this effect, as competition does not impact attitudes toward other countries among either American or New Zealander participants.

### **General Discussion**

Across four studies, I find that people are biased to socially learn from people from influential countries, regardless of how much direct competition those countries pose. Competition itself can even increase social learning under some circumstances: People from the United States—a country that is widely seen as having high international influence (U.S. News, 2023)—show a bias toward socially learning from people from countries that are in competition with their own, but people from New Zealand—a country with relatively lower levels of

international influence—do not. This suggests that people’s own countries’ levels of influence may determine their social learning from competitive countries. Finally, I find that biases to socially learn from influential and competitive countries are limited to strategic topics (which are domain-relevant to the manipulations of influence and competition), and do not apply to personal topics.

These findings show that the effect of influence on social learning is clear and consistent: across both countries sampled and using both experimental and correlational methods, viewing a country as influential is related to increased social learning from people from that country. The effect of competition on social learning is less consistent, with competition increasing social learning in only one of the two countries sampled. And while competition moderated the relationship between influence and social learning in Study 1, it did not in Studies 2-4. Therefore, this work highlights the importance of influence in shaping cross-cultural social learning, and points to a more conditional role of competition in shaping cross-cultural social learning. Future work is needed to more fully understand when and why competition may increase versus not impact social learning, and whether the specific type of competition countries engage in shapes this effect.

How can we situate these dimensions of influence and competition alongside other constructs? Just as prestige is often related to power, success, wealth, and respect (Atkisson et al., 2012; Chudek et al., 2012; Henrich & Gil-White, 2001; Kendal et al., 2018), influence is likely also related to these constructs. I propose that influence can be thought of as a country-level operationalization of prestige, which is typically used as a descriptor of individuals. Influence may also be similar to the dimension of competence (Cuddy et al., 2008; Fiske et al., 2002) because it implies success and status, but again operationalized at the country level instead



of the individual level. While influence may have conceptual overlap with the dimension of competence, competition is distinct from the complementary dimension of warmth, and as originally proposed by Fiske et al. (2002), competition may better serve as a *predictor* of warmth. Competition could be related to increased warmth perceptions of a country if competition is construed as “friendly competition” that pushes both countries to improve or innovate on some domain, but competition could be related to decreased warmth perceptions if it is construed as *unfriendly* competition or zero-sum competition. Thus, competition may be better situated as a measure of perceived goal overlap between countries, and how realistic a threat another country poses to one’s own country’s attainment of that goal.

I focus on influence and prestige in this dissertation because I believe they are particularly important to understand as globalization and geopolitical developments weave a complex web of reliance, power, competition, and conflict between different countries. However, there are likely additional constructs that also play a role in shaping cross-cultural learning. For instance, while not the focus of Study 1, I find that general positivity toward other countries and perceived similarity with those countries show positive relations with openness to social learning. These findings reflect research on individual-level social learning showing that people are biased to learn from others who have similar qualities to them (Buttelmann et al., 2013; Montrey & Shultz, 2022), suggesting that other research on individual-level social learning biases may successfully scale up to the country level and help us better understand how perceptions of countries as a whole shape social learning from people within those countries.

## **Implications**

The findings reported here support prior work documenting prestige-biased social learning (Atkisson et al., 2012; Brand et al., 2021; Chudek et al., 2012; Henrich & Gil-White,

2001; Jiménez & Mesoudi, 2019). When people view countries as more influential—either named countries as measured in Study 1 or unnamed countries as measured in Studies 2-4—they report and demonstrate greater willingness to socially learn from those countries. And when people see competition as a strong cue of prestige, they are also more likely to socially learn from people from countries in competition with their own. These results suggest that the perceived prestige of individuals' countries can impact social learning decisions in much the same way as the perceived prestige of individuals themselves, broadening our understanding of how group-level characteristics can inform individual-level social learning.

These findings also are in line with previous research on domain-specific social learning (Brand et al., 2021; Henrich & Broesch, 2011). Influence and competition signal prestige in domains like innovation, leadership, and economic success, and these are similar to the “strategic” domains of how to gain success at work, financially, and as a leader that I measured in my studies. The fact that influence and competition's effects on social learning did not extend to more personal topics like how to be a good friend or how to find a new hobby suggest that people may prefer to learn about these personal topics from different sources, and that these other sources may not be primarily characterized by influence and competition.

Interestingly, the current findings do not show evidence of competition from a country producing negative attitudes toward that country. This finding is surprising from the perspective of research on Intergroup Threat Theory, which finds that realistic and symbolic threats from outgroups often precede prejudicial and negative attitudes toward those groups (Stephan et al., 2015; Stephan & Stephan, 1996, 2000). Nevertheless, this lack of negative attitudes toward competitive countries could help explain why competition does not impede cross-cultural social learning in any of the studies presented here, and even increased cross-cultural social learning

among American participants in these studies. In Study 4, I found that instead of responding to competition from other countries with negative attitudes, people respond by perceiving the competing country as more prestigious. This is an intriguing finding, and future work could explore why these results diverge from other findings demonstrating robust negative reactions to threat and competition (Esses et al., 1998, 2001; Stephan et al., 2015). One possibility is that competition needs to be more acutely felt in order to predict negative attitudes. My manipulations described general states of competitiveness between countries, but perhaps if they had described specific events of competition (e.g. competition for control over a specific resource; a race to develop a specific new technology), negative attitudes would result. A similar pattern may emerge if competition were tied to conflict, for instance if competition over resource control or control over a particular trade sector led to political or violent conflict. Future work could test for this possibility.

More broadly, this research has implications for how cultural landscapes will shift as a function of globalization. Some scholars predict that globalization will lead to cultural convergence and the emergence of a “global” culture (Fukuyama, 2006; Marsella, 1998), while others suggest that globalization may instead lead to cultural divergence (Jackson & Medvedev, 2023), conflict (Huntington, 1996), and the maintenance of existing cultural identities (Mesoudi, 2018). The current research offers insights into the specific conditions under which convergence may occur and on what types of cultural information this convergence may emerge, but also into important boundary conditions on this convergence. Convergence may occur when people learn across cultural lines, but as this research shows, this may be more likely for some kinds of cultural information than others. Further, convergence may only happen towards certain countries and not others, based on how people perceive those countries. Specifically, these

results suggest that there may be an asymmetric diffusion of strategic cultural information from countries that have high influence. At the same time, more personal cultural information may remain more culturally localized. These findings help add nuance to the broad question of how globalization will effect cultural change.

This work may also have implications for cross-cultural conflict and cooperation. People are more likely to cooperate with others who they perceive as similar to themselves (Fischer, 2009; Fischer & Savranovski, 2023; Koch et al., 2020). If cross-cultural social learning leads to convergence on strategic topics, then it could potentially enhance cooperation between members of different cultural groups when those strategic topics are salient and perceived similarity is high. However, if cross-cultural social learning is viewed as appropriation or as a calculated move to enhance one's own competitiveness, then it may instead spark conflict. These dynamics are increasingly important as globalization continues to increase contact between diverse groups and peoples.

### **Limitations and Future Directions**

One limitation of this research is that it did not sample a wide range of countries. Although Study 4 included international data, results may take on a different nature in countries other than the two included in Study 4. New Zealand and the United States are quite culturally similar (Inglehart & Welzel, 2010) and are both WEIRD (Western, Educated, Industrialized, Rich, and Democratic) nations, which may limit the generalizability of these findings (Henrich et al., 2010; Muthukrishna et al., 2020). It is unclear whether the results documented here might change in countries with different sets of cultural norms, histories, exposures to colonialism, attitudes toward Western culture, etc. Future research could test the hypotheses outlined here in countries that are more culturally distant from the United States and New Zealand to better

understand whether there are cultural differences in these effects that I cannot capture with the current designs.

A further limitation of the experimental designs presented here is that while they do provide information about the previous participant's country, they do not actually provide a name of an actual country. This approach was useful in that it allowed me to isolate the effects of influence and competition on social learning separate from any country-specific stereotypes and beliefs that may have been triggered by using country names. However, this lack of realism limits the external validity of this design. A paradigm that can blend experimental control with greater realism would be useful in developing a fuller understanding of how these results interact with people's real-world attitudes and biases toward specific countries.

An open question I would like to address in future work is whether different kinds of competition have different impacts on cross-cultural social learning. Competition can take many forms, such as violent and non-violent competition, values and morals-based competition, and innovation-based competition. These different types competition countries engage in could differentially shape social learning. Indeed, if the competition manipulation in Studies 3 and 4 prompted American participants to think about a different type of competition than New Zealander participants, that could help explain why the effect of competition varies across countries. Future work could test this possibility more explicitly.

Additionally, it would be interesting to test whether the findings documented here extend to maladaptive social learning. Social learning can be adaptive because it allows us to forgo costly trial and error by copying the behaviors of others. However, in some cases, people may copy behaviors that are at best ineffective (Nielsen et al., 2012), and at worst incorrect or harmful (Kendal et al., 2018; Vosoughi et al., 2018). Therefore, social learning may not always

produce behaviors or beliefs that are well-adapted to individuals' environments and contexts. It would be interesting to test whether this kind of maladaptive social learning could occur in the context of the current research. Do people accept *bad* advice from people from highly influential or competitive countries? Do they adopt cultural norms or practices that are at direct odds with their own cultural context if those norms or practices are demonstrated by people from highly influential or competitive countries? Such patterns could have implications for cultural mismatch and conflict.

It would also be interesting to explore whether different manipulations may have produced different social learning outcomes for personal topics. My manipulations of influence and competition were relevant to strategic domains like economic success, leadership, and innovation, and therefore were not domain-specific to more personal topics like relationships with friends and family. However, it is possible that if I had manipulated different country-level characteristics, like well-being or happiness, that I might have seen social learning on those more personal topics because they would be more domain-relevant to the manipulation. Testing this possibility would help to fill in a more complete picture of which sources people look to for which types of cultural information.

Relatedly, future work could focus on further conceptual development of “strategic” versus “personal” topics and the boundaries of these classifications. In the present research, strategic topics tended to be related to professional success and the acquisition and maintenance of resources and status. Personal topics tended to be more varied, relating to personal relationships with friends and family and the development of one's own interests and routines. It is possible that the strategic domain is a conceptual umbrella for topics where there is a more “universal” path to success, whereas the personal domain is an umbrella for topics where there

are many different paths to success based on personal preferences and desires. An alternative possibility is that the strategic domain encompasses topics that are not heavily moralized (it is not particularly morally laden to suggest that an open communication style or consistency in work quality are strategies for achieving success at work), but the personal domain encompasses topics that *are* moralized (there may be more moral weight tied to suggestions to teach one's child certain qualities or that people should behave in a certain way in order to be a good friend). Future work could test whether these and other constructs underlie the strategic versus personal distinction.

### **Conclusion**

As our cultural inputs continue to rapidly evolve, they will inevitably shape our beliefs, practices, and behaviors. The current research contributes to a growing body of literature that seeks to disambiguate this process. The results presented here suggest that strategic information may be particularly likely to diffuse from influential, and sometimes competitive, countries. This has implications for how cultural attitudes on topics like work and leadership may change, converge, and diverge around the globe. The current work also highlights important boundary conditions—like the topic of cultural information or the relative influence of social learners' own countries—that shape these transmission processes. While this work may just scratch the surface of the complex dynamics that underpin cultural transmission in a globalized world, it contributes nuance to our current understanding and can hopefully serve as a framework for further exploration.

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**Supplemental Material For:** *Testing the Roles of Perceived Influence and Competition in Cross-Cultural Social Learning*

**Study S1: Experimental Pilot Study**

Before conducting Study 2, I ran a pilot study to test the behavioral measure of social learning that I planned to use in Study 2 and to help inform a power analysis for Study 2. This pilot study was low-powered, so its main purpose was to estimate effect sizes, not to test for significance. The procedure of this pilot study is exactly the same as Study 2, except that this pilot study includes fewer exploratory measures.

**Method**

***Participants***

I collected a sample of 100 students from the University of Virginia's Participant Pool. Of these participants, 35 identified as men and 65 identified as women. The average age was 19.36 years,  $SD = 1.71$ .

***Procedure***

As in the full run of Study 2, participants were told that they were part of the exact same three-phase study on advice giving that is described in the full Study 2.

After this introduction to the study design, participants saw information on the previous participant they were paired with, and then made decisions about whether to submit P278's advice or to write their own advice for each of the five topics. This is the main measure of social learning. They then answered a series of other exploratory questions (described below) as well as demographics questions, and were then debriefed.

**Manipulation.** After (purportedly) pairing participants with a Phase 1 participant's responses, I showed them a country profile for P278. This profile was the exact same as in Study



2, with an International Influence Index that took on a high value if participants were assigned to the high influence condition, and a low value if participants were assigned to the low influence condition.

As a manipulation check, I included a question directly after the manipulation that asked participants, “Based on this profile, how much international influence would you say Participant 278’s country has?” They could respond with the options low (1), medium (2) or high (3) international influence. People in the high influence condition scored significantly higher on this question (indicating correct responses) than people in the low influence condition:  $t(65.54) = 30.44, p < .001, d = 6.39$ .

**Social Learning.** The advice paradigm portion of the study was exactly the same as that in Study 2. Participants chose whether to submit their own advice or P278’s advice for each of the five different topics. This choice was my main measure of social learning, with the choice to submit P278’s indicating social learning.

**Exploratory Measures.** I included some exploratory questions following the advice paradigm meant to assess participants’ views of the previous participant, of the previous participant’s country, of the advice topics, and of their cultural attitudes more broadly.

**Quality of Previous Participant’s Advice.** I asked the same three questions about participants’ assumptions about the quality of P278’s advice (e.g. “This participant probably gave good advice”) as in Study 2. These items showed high reliability,  $\alpha = .90$ .

**Perceptions of Previous Participant and Previous Participant’s Country.** Next, participants answered the same three items about their views of P278 (e.g. “This participant is probably successful in many domains of life”;  $\alpha = .88$ ) and the same three items about their

views of P278's country (e.g. "This participant's country is doing things right";  $\alpha = .77$ ) as in Study 2.

**Confidence.** Next, participants completed the same measures of their confidence in their own ability to give good advice on each topic and their confidence in P278's ability to give good advice on each topic as in Study 2.

**American Identity.** Next, participants completed the same American Identity Measure (Schwartz et al., 2012) as in Study 2. This scale showed high reliability:  $\alpha = .93$ .

**Intercultural Sensitivity.** Participants then completed the same subset of items from the Intercultural Sensitivity Scale (Chen & Starosta, 2022) as in Study 2. These items showed high reliability:  $\alpha = .82$ .

**Intellectual Humility.** Finally, participants completed the "lack of intellectual overconfidence sub-scale from a measure of intellectual humility (Krumrei-Mancuso & Rouse, 2016), which included items like "My ideas are usually better than other people's ideas" and "On important topics, I am not likely to be swayed by the viewpoints of others." This scale showed high reliability:  $\alpha = .80$ .

**Demographics.** Following these measures, participants completed a demographics questionnaire that included measures of gender, age, race/ethnicity, education (1 = < High School degree; 8 = Doctorate degree), subjective SES (measured by the MacArthur Ladder), political party identification (1 = Strong Democrat; 7 = Strong Republican), conservatism, and religiosity. Participants were then debriefed.

## Results

This study was under-powered with only 100 participants. Therefore, its main purpose was to estimate effect sizes for a power analysis for the full run of Study 2 and to test the directionality of effects.

I performed a series of separate logistic regressions to investigate the effect of influence on social learning. Results revealed that being in the high-influence condition made people more likely to submit P278's advice about being successful at work (see Table S1 for full results). The odds ratio for the effect of influence on the likelihood of submitting P278's advice about financial success was also greater than 1 ( $OR = 1.80$ ) but did not reach significance. The odds ratios for the effect of influence on the likelihood of submitting P278's advice on all the personal advice topics were all less than 1. This effect was significant in the case of advice about the qualities of a good friend. The directions of these effects suggest the same divergence between strategic and personal topics that is documented in Studies 2-4, but of course, this study is severely limited by low power.

**Table S1***Effect of Influence on Likelihood of Submitting P278's Advice*

---

|           | Work         | Finance      | Children     | Friend       | Habits       |
|-----------|--------------|--------------|--------------|--------------|--------------|
| Influence | 2.88 *       | 1.80         | 0.68         | 0.35 *       | 0.79         |
|           | [1.19, 6.96] | [0.73, 4.43] | [0.31, 1.50] | [0.15, 0.80] | [0.36, 1.74] |

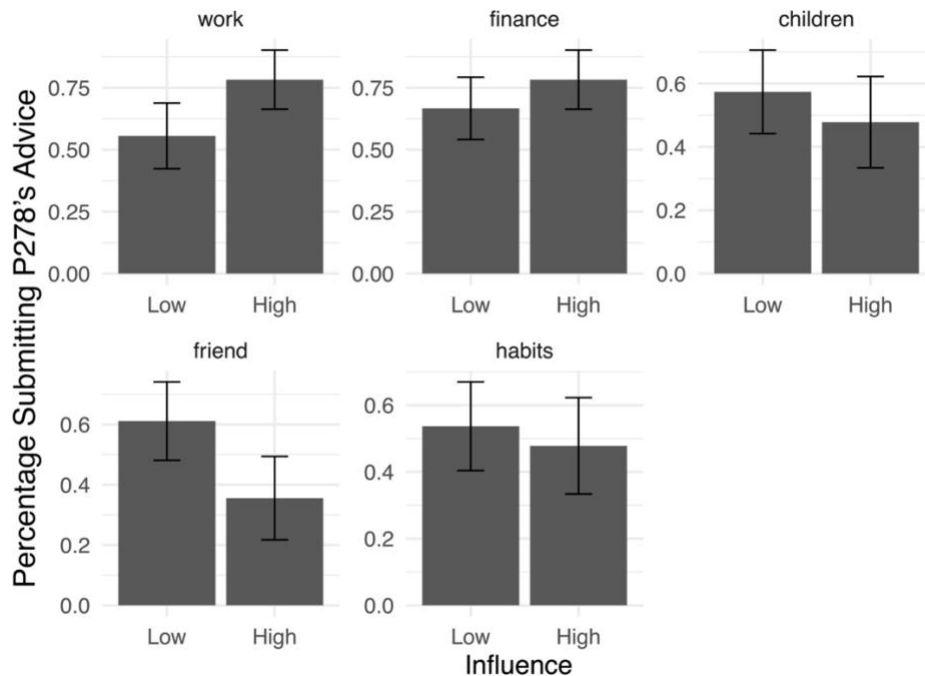
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*Note.* Table depicts odds ratios of the effect of influence on the likelihood of taking )278's advice on each topic, as well as the 95% CI around that odds ratio. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

I also calculated the percentage of participants who chose to submit the previous participant's advice in each cell of the study. These percentages informed my power analysis for Study 2 and are summarized in Figure S1.

## Figure S1

*Percentage of Participants Submitting P278's Advice by Condition and Topic*



### Study S2: Advice Topics Pilot Study

I conducted a pilot study before conducting Study 4. The purpose of this pilot study was to test how well the advice topics I used in Studies 2 and 3 reflected a distinction between “strategic” and “personal” topics, and to test whether other topics might be better suited to reflecting this distinction. Therefore, I asked participants to rate a series of 21 different advice topics on a number of different dimensions, including how relevant each topic was for “personal success” (the personal category) and “professional success” (the strategic category), and how much they agreed that each topic would make someone more influential and better able to compete with others. I used participants’ responses to these questions for each topic to inform which topics I included in Study 4.

## **Method**

### ***Participants***

I advertised this pilot study for 100 participants on the University of Virginia's Participant Pool. Ninety-six undergraduates completed the study, 30 of whom identified as men and 65 of whom identified as women (one did not provide their gender identity). The average age of participants was 19.72 years,  $SD = 1.47$ .

### ***Procedure***

After providing informed consent, participants were told that they would provide their opinions on 21 different topics on which people can give advice. They answered questions for one topic at a time and cycled through all 21 topics. The list of advice topics is displayed in Table S2.

For this pilot study, I standardized the format of all advice topics so that they could all follow the prompt "Top 5 strategies for..." I made this change because in my previous studies, some advice topics had asked for strategies while others had asked for qualities. Standardizing all advice topics so that they asked about strategies eliminates any potential variance due to asking about strategies versus qualities. This means that the personal topics I had included in previous studies changed slightly: "most important qualities children should learn" changed to "strategies for being a good parent," "qualities of a good friend" changed to "strategies for being a good friend," and "best habits to include in a daily routine" changed to "strategies for developing a good daily routine."

## Table S2

### *Topics Included in Pilot Study*

---

| <b>Topic: <i>Top 5 strategies for...</i></b>                   |
|--|
| Doing well financially   |
| Doing well at work   |
| Being a good leader  |
| Managing time well   |
| Designing an innovative product                                |
| Being productive at work                                       |
| Managing an organization well                                  |
| Developing a good daily routine                                |
| Resolving interpersonal conflicts                              |
| Managing stress  |
| Maintaining emotional well-being                               |
| Having a healthy lifestyle                                     |
| Finding a new hobby  |
| Finding a good dating partner                                  |
| Finding a sense of purpose in life                             |
| Comforting a good friend who is going through a difficult time |
| Being a good friend  |
| Being a good parent  |
| Being a respectful person                                      |
| Being a good community member                                  |
| Being a good family member                                     |

---

Participants answered a series of questions about each of these topics. Our focal measures included two questions that asked the extent to which they thought each topic was relevant for personal success (1 = Not at all relevant, 6 = Extremely relevant) and for professional success (1 = Not at all relevant, 6 = Extremely relevant). Further, to measure domain-relevance to influence and competition, we asked participants how much they agreed that doing well on each topic made people more influential, and made people better able to compete with other people. We measured responses to these items on a scale from 1 (Strongly disagree) to 6 (Strongly agree). Together, these questions measured the degree to which participants felt each topic reflected personal versus strategic advice.

## Results

Figure S2 reflects the distribution of ratings for each of the 21 topics across these four questions. These ratings show that the strategic items from previous studies (colored in red in Figure S2)—doing well financially, doing well at work, and being a good leader—were all rated as highly-relevant for professional success and low-relevance for personal success. These items also scored relatively high on agreement that they made people more influential and more competitive. Therefore, I decided to retain these topics for Study 4.

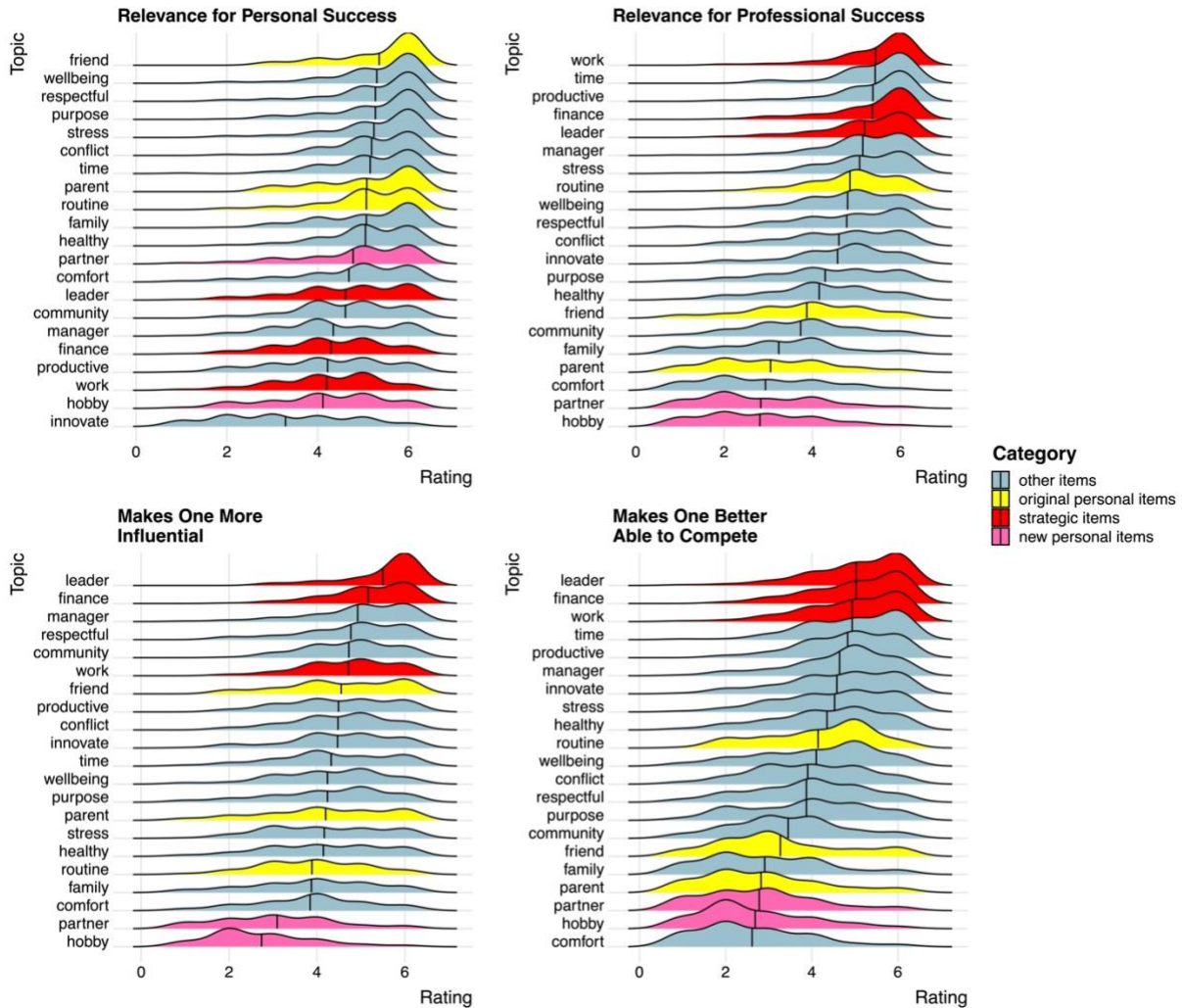
Ratings of the personal topics I included in previous studies (colored in yellow in Figure S2) were less clearly representative of the personal topic. Qualities of a good friend was rated highest in terms of relevance for personal success, and was rated relatively low in terms of relevance for professional success and in terms of making one better able to compete. It was rated relatively high in terms of making one more influential, but because it was one of the best-performing topics on three of the four metrics, I decided to retain it for Study 4. The items representing the other two personal topics I had included in previous studies, however—strategies for being a good parent and for developing a good daily routine—were ranked less consistently. Strategies for developing a good routine was rated around the middle of topics for relevance for professional and personal success and making one better able to compete with others. The only metric it clearly separated from the more strategic items on was making one more influential, where it was ranked relatively low. Similarly, strategies for being a good parent was ranked around the middle of topics for relevance for personal success. It was rated slightly lower for making one more influential, and was rated relatively low for both relevance for professional success and making one better able to compete.



Because there were items in this pilot study that separated more clearly from strategic items than did strategies for being a good parent and strategies for developing a good daily routine, I decided to replace these items. I replaced them with strategies for finding a good dating partner and finding a new hobby (colored in pink in Figure S2). Although these items were rated toward the middle or relatively low (respectively) on relevance for personal success, they were the two lowest-rated items in terms of relevance for professional success and making one more influential, and were also low-rated in terms of making one more able to compete. While these topics may not perfectly reflect all four of the focal measures, they represent the best combination of these different four measures when choosing strategic versus personal items that perform differently from each other.

**Figure S2**

*Ratings of Advice Topics*



**Study 3: Supplemental Analyses**

**Confidence in Participant 278's Advice**

Because Study 4 was designed with a continuous dependent variable, I used results from a continuous measure in Study 3 to seed a power analysis for Study 4. Specifically, I used participants' agreement with the statement "I am confident in Participant 278's ability to give good advice about [topic]" on a scale from 1(Strongly Disagree) to 6 (Strongly Agree). I chose

this measure to seed this power analysis because results on this measure reflected results on the binary choice measure of whether or not to use P278's advice.

To test for this similarity in results, I conducted the same analysis on this continuous measure of confidence in P278's advice that I conducted on the binary choice measure of whether or not to use P278's advice. I ran a multilevel regression that regressed confidence in P278's advice on influence condition and its interaction with advice category (strategic versus personal) and competition condition and its interaction with advice category. This model specified random intercepts for participant and topic and a random slope for advice category (personal versus strategic). Results (depicted in Table S3) revealed significant interactions between influence and advice category and between competition and advice category.

Simple slopes analyses revealed a similar pattern to the results from the binary choice dependent variable. While influence significantly increased confidence in P278's ability to give good advice on both strategic ( $b = .43$ , 95% CI [.31, .55],  $p < .001$ ) and personal ( $b = .22$ , 95% CI [.10, .34],  $p < .001$ ) items, this effect was stronger for strategic items than personal items. Further, competition only increased confidence in P278's ability to give good advice for strategic items ( $b = .19$ , 95% CI [.07, .31],  $p = .003$ ), but not for personal items ( $b = .01$ , 95% CI [-.11, .13],  $p = .90$ ).

**Table S3***Effect of Influence, Competition, and Advice Category on Confidence in P278's Advice*

|                        | <i>b</i> | 95% <i>CI</i> | <i>p</i>         |
|------------------------|----------|---------------|------------------|
| Influence              | 0.32     | 0.21 – 0.44   | <b>&lt;0.001</b> |
| Category               | -0.02    | -0.17 – 0.13  | 0.769            |
| Competition            | 0.10     | -0.02 – 0.21  | 0.093            |
| Influence X Category   | 0.21     | 0.13 – 0.30   | <b>&lt;0.001</b> |
| Competition X Category | 0.18     | 0.09 – 0.27   | <b>&lt;0.001</b> |

**Table S4***Means, Standard Deviations, And Correlations with Confidence Intervals, Study 1*

| Variable           | <i>M</i> | <i>SD</i> | 1                   | 2                   | 3                   | 4                   | 5                   | 6                   |
|--------------------|----------|-----------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 1. Influence       | 5.25     | 1.67      |                     |                     |                     |                     |                     |                     |
| 2. Threat          | 3.55     | 2.46      | .80**<br>[.76, .84] |                     |                     |                     |                     |                     |
| 3. Competition     | 4.41     | 2.11      | .84**<br>[.80, .87] | .89**<br>[.86, .91] |                     |                     |                     |                     |
| 4. ZeroSum         | 3.09     | 1.35      | .72**<br>[.66, .77] | .87**<br>[.84, .90] | .86**<br>[.82, .88] |                     |                     |                     |
| 5. Social Learning | 3.88     | 1.01      | .58**<br>[.50, .65] | .45**<br>[.36, .54] | .50**<br>[.41, .58] | .38**<br>[.28, .47] |                     |                     |
| 6. Similar         | 46.53    | 17.72     | .56**<br>[.48, .63] | .47**<br>[.38, .56] | .56**<br>[.47, .63] | .41**<br>[.31, .50] | .43**<br>[.33, .52] |                     |
| 7. Positivity      | 6.37     | 1.55      | .35**<br>[.25, .45] | .19**<br>[.08, .30] | .28**<br>[.17, .38] | .12*<br>[.01, .23]  | .54**<br>[.46, .62] | .26**<br>[.15, .36] |

*Note.* *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). \* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

**Table S5***Descriptive Statistics as a Function Of Influence, Study 2*

| Condition | Work     |           | Finance  |           | Children |           | Friend   |           | Habits   |           |
|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|           | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| HighInf   | 0.85     | 0.36      | 0.77     | 0.42      | 0.62     | 0.49      | 0.59     | 0.49      | 0.67     | 0.47      |
| LowInf    | 0.67     | 0.47      | 0.65     | 0.48      | 0.64     | 0.48      | 0.64     | 0.48      | 0.59     | 0.49      |

*Note.* *M* and *SD* represent mean and standard deviation, respectively. Values represent percentage of participants submitting previous participant's advice.

**Table S6***Descriptive Statistics as a Function Of Influence & Competition, Study 3*

| Condition | Work     |           | Finance  |           | Lead     |           | Children |           | Friend   |           | Habits   |           |
|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|           | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| HighInf,  | 0.77     | 0.42      | 0.78     | 0.42      | 0.69     | 0.46      | 0.59     | 0.49      | 0.55     | 0.50      | 0.59     | 0.49      |
| HighComp  |          |           |          |           |          |           |          |           |          |           |          |           |
| HighInf,  | 0.69     | 0.46      | 0.72     | 0.45      | 0.70     | 0.46      | 0.60     | 0.49      | 0.60     | 0.49      | 0.57     | 0.50      |
| LowComp   |          |           |          |           |          |           |          |           |          |           |          |           |
| LowInf,   | 0.72     | 0.45      | 0.64     | 0.48      | 0.66     | 0.47      | 0.50     | 0.50      | 0.52     | 0.50      | 0.58     | 0.49      |
| HighComp  |          |           |          |           |          |           |          |           |          |           |          |           |
| LowInf,   | 0.57     | 0.50      | 0.59     | 0.49      | 0.57     | 0.50      | 0.50     | 0.50      | 0.59     | 0.49      | 0.60     | 0.49      |
| LowComp   |          |           |          |           |          |           |          |           |          |           |          |           |

*Note.* *M* and *SD* represent mean and standard deviation, respectively. Values represent percentage of participants submitting previous participant's advice.

**Table S7***Descriptive Statistics as a Function Of Influence, Competition, & Country, Study 4*

| United States        |          |           |          |           |          |           |          |           |          |           |          |           |
|----------------------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| Condition            | Work     |           | Finance  |           | Lead     |           | Partner  |           | Friend   |           | Hobby    |           |
|                      | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| HighInf,<br>HighComp | 0.74     | 0.44      | 0.75     | 0.43      | 0.73     | 0.44      | 0.65     | 0.48      | 0.62     | 0.49      | 0.75     | 0.43      |
| HighInf,<br>LowComp  | 0.7      | 0.46      | 0.78     | 0.41      | 0.76     | 0.43      | 0.72     | 0.45      | 0.64     | 0.48      | 0.83     | 0.38      |
| LowInf,<br>HighComp  | 0.72     | 0.45      | 0.66     | 0.47      | 0.68     | 0.47      | 0.68     | 0.47      | 0.59     | 0.49      | 0.75     | 0.44      |
| LowInf,<br>LowComp   | 0.59     | 0.49      | 0.5      | 0.5       | 0.58     | 0.5       | 0.67     | 0.47      | 0.58     | 0.5       | 0.72     | 0.45      |
| New Zealand          |          |           |          |           |          |           |          |           |          |           |          |           |
| Condition            | Work     |           | Finance  |           | Lead     |           | Partner  |           | Friend   |           | Hobby    |           |
|                      | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| HighInf,<br>HighComp | 0.53     | 0.50      | 0.48     | 0.50      | 0.51     | 0.50      | 0.53     | 0.50      | 0.35     | 0.48      | 0.49     | 0.50      |
| HighInf,<br>LowComp  | 0.57     | 0.50      | 0.50     | 0.50      | 0.54     | 0.50      | 0.45     | 0.50      | 0.41     | 0.49      | 0.51     | 0.50      |
| LowInf,<br>HighComp  | 0.42     | 0.50      | 0.38     | 0.49      | 0.37     | 0.49      | 0.53     | 0.50      | 0.46     | 0.50      | 0.54     | 0.50      |
| LowInf,<br>LowComp   | 0.39     | 0.49      | 0.32     | 0.47      | 0.41     | 0.49      | 0.49     | 0.50      | 0.46     | 0.50      | 0.41     | 0.49      |

*Note.* *M* and *SD* represent mean and standard deviation, respectively. Values represent percentage of participants submitting previous participant's advice.