

Matching Persuasive Messages to a Scarcity Mindset to Increase Support for Immigration

by

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Abstract

Although a strong historical and economic case can be made that Canada benefits from immigration, current indicators show decreasing levels of support for immigration among Canadians. Previous research has identified many static factors that influence support for immigration, such as demographic differences, personality traits, and political ideologies. However, the purpose of this research was to test a dynamic approach to persuasion, which sought to match the content of pro-immigration messages to the psychological mindset of those experiencing scarcity. A pre-study ($N = 192$) validated the intended interpretations of the immigration-benefits messages and a scarcity manipulation. The main study ($N = 357$) then used these materials to test the hypothesis that individuals experiencing scarcity (vs. relaxation) would show stronger support for immigration in response to a message conveying the short-term (vs. long-term) and economic (vs. non-economic) benefits of immigration. The results from a 2 (scarcity: scarcity, relaxation) x 3 (immigration benefits message: short-term economic, long-term economic, short-term non-economic) ANOVA with planned contrasts provided partial support for the hypothesis. The short-term economic message, unlike the other messages, yielded significantly warmer feelings toward immigrants from participants in the scarcity condition, as compared with those in the relaxation condition. However, the short-term economic message did not significantly outperform the other messages in raising support for immigration and immigrants from participants in the scarcity condition. The scarcity manipulation also did not have a significant main effect on immigration support, but measures of participants' prejudice and political conservatism predicted lower support. Exploratory analyses comparing immigration support by liberal- and conservative-leaning participants showed that the short-term economic message significantly reduced their polarization on this issue and appealed more to conservative-

leaning participants than did the other message types. Together, these findings suggest the potential utility of a dynamic approach to persuasion and developing message contents based on the mindset of perceived scarcity.

Keywords: matching effect, scarcity, attitudes and persuasion, immigration support

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Matching Persuasive Messages to a Scarcity Mindset to Increase Support for Immigration

On June 22, 2006, Canadian Prime Minister Stephen Harper made a formal apology in the House of Commons for the nation's immigration policies targeting Chinese immigrants throughout the late 1800s and early 1900s (Government of Canada, 2016). His apology took note of the exclusionary nature of the policies towards a specific ethnic group, the irreparable harm the policies caused to generations of Chinese immigrants and their families both in Canada and abroad, and how they contrasted with Canada's identity and values. Prime Minister Harper's apology raised an important question for research: How were these policies ever supported, and was there anything that could have been done at the time to counter them and thereby avoid their harms? The overarching goal of this research was to develop and test a psychological answer to this question.

Support for immigration varies based on demographic differences, personality traits, and political ideologies. Most of these factors are relatively stable and difficult to influence. The perception of scarcity, or that immigration somehow threatens the availability of jobs, homes, social services, or other securities for the domestic population, is a common belief and reason why many people do not support immigration. It may be possible, however, to leverage this underlying perception of scarcity to produce support for immigration. A long history of research on approaches to persuasion using the matching effect (Lavine & Snyder, 2000), when combined with recent developments in the study of scarcity's effects on cognition (Shafir, 2017; Shah et al., 2012), suggest that when individuals are experiencing resource scarcity, they prefer solutions with a short-term (compared to long-term) and economic (compared to non-economic) focus. This raises the possibility that matching a resource-scarce mindset with short-term and economic messaging can produce increased support for immigration.

To test this possibility, I developed a pre-study and main study. The pre-study validated the required manipulations of message contents and perceived scarcity. Then, the main study tested the effect of the messages emphasizing varying benefits of immigration on participants in the perceived scarcity and relaxation condition. This experimental study design helped determine if matching conditions (i.e., a scarcity mindset with a message emphasizing the short-term economic benefits of immigration) leveraged higher support for immigration, as compared with mismatching conditions.

Attitudes Toward Immigration

Attitudes can be understood as an overall favourable or unfavourable evaluation of an attitude object, such as a person, group, place, or issue (Eagly & Chaiken, 2007; Tormala & Rucker, 2025). Using this definition, attitudes towards immigration can be understood as viewing immigration as positive or negative for a country, or being in support of or opposition to immigration. Some of the most consistent individual-level factors affecting support of immigration are age and education. Older individuals tend to be less supportive of immigration while individuals with increased levels of education tend to be more supportive of immigration (Dražanová et al., 2023; Umansky et al., 2025). Many studies have looked at the role of gender on support for immigration, but the evidence has been mixed (Dražanová et al., 2023).

The immigrants' demographics are also relevant to understanding support for immigration. Many studies have shown a preference for immigrants that are higher in similarity to the domestic population. An example of this is the preference for White immigrants compared to racialized immigrants in White-majority countries (Ford, 2011; Gusciute et al., 2021) or a preference against Muslim immigrants in European countries (Gusciute et al., 2021; Strabac & Listhaug, 2008). This may stem from concerns about security and integration, although some

research has found that individuals living in countries with higher numbers of terrorist attacks by Islamic extremists have lower opposition to Muslim immigrants (Gusciute et al., 2021).

Immigrant status and category also affect immigration support. Domestic individuals are more likely to support documented compared to undocumented immigrants (Murray & Marx, 2013) and higher-skilled compared to lower-skilled immigrants (Hainmueller & Hopkins, 2015).

Certain personality traits can make individuals more likely to have negative attitudes towards immigration. Right-wing authoritarianism (RWA) and social dominance orientation (SDO) are two personality traits that are associated with negative attitudes towards immigration (Cohrs & Stelzl, 2010). RWA describes individuals who are high in submission to authority and traditional values while SDO describes individuals who believe in hierarchies and the dominance of certain groups (Altemeyer, 1998; Pratto et al., 1994). RWA and SDO have been shown to influence attitudes towards immigrants differently. Whereas individuals who score high on RWA tend to view immigrants as a threat to social cohesion, individuals who score high on SDO see immigrants as a threat to resources (Cohrs & Stelzl, 2010). Individuals who score high on nationalism also tend to show decreased support for immigration while individuals who score high on national pride do not (Jeong, 2013). Whereas nationalism describes individuals who believe their nation is superior to other nations, national pride describes a general love for one's nation.

Political partisanship is another relevant factor to understanding support for immigration as left-leaning voters tend to be more accepting of immigration (Indelicato et al., 2023). Among Canadians, respondents aligned with the right-wing Conservative Party of Canada had much higher agreement (80%) that there are too many immigrants in Canada compared to the left-wing Liberal Party of Canada (45%) and New Democratic Party (36%; Environics Institute, 2024).

Individuals' proximity and contact with immigrants can also affect attitudes towards immigration. Individuals that live in urban populations where there is increased diversity tend to be more accepting of immigrants (Garcia & Davidson, 2013; Zahl-Thanem & Haugen, 2019). However, the quality of the contact matters. Increased high-quality but not low-quality contact improves attitudes towards immigrants (Berg, 2020; Ellison et al., 2011). However, in reviewing the factors associated with more positive attitudes towards immigration, it is clear that none of these factors change easily. Therefore, attempts at increasing support for immigration need to be carefully constructed and tested to ensure their effectiveness.

Approaches to Persuasion

Early persuasion research began with the manipulation of source characteristics. Research by Hovland and Weiss (1951) on the effect of perceived source credibility on the evaluation of messages found that participants were more persuaded by information shared by sources with higher perceived credibility than sources with lower perceived credibility. Cialdini (1993) summarized decades of research on such specific effects by identifying six underlying principles of persuasion, which he termed reciprocity, commitment and consistency, social proof, liking, authority, and scarcity. The source-credibility effect, for example, illustrates the underlying principle of authority. However, the latter principle of scarcity is especially relevant for the present research. According to this principle, the availability of something can alter how its value is perceived. When the availability of a product is scarce, individuals value the product more and may experience an increased urgency to buy the product. Marketing teams may intentionally lower the perceived availability of a product to increase the product's appeal to consumers, along with their willingness to compete for it by paying higher prices. In the same way, individuals who perceive jobs, homes, or public services as scarce may experience

increased urgency to obtain these resources and willingness to compete for them by limiting their availability to immigrants.

Another important advancement in persuasion research was to move beyond simple source, message, or audience effects to consider dynamic interactions between the recipient or context and the content of a message. The matching effect describes how persuasion can be increased through matching an individual to a message on some aspect, such as through cognitive vs. affective messages, hedonic vs. utilitarian goals, or variations in regulatory focus (Teeny et al., 2021). A study by Lee and Aaker (2004), for example, found that participants induced to have a promotion focus reacted more positively to an ad emphasizing the benefits of buying a product, while participants induced to have a prevention focus reacted more positively to an ad emphasizing the costs of not buying the product. Another example of the matching effect relies on the individually specific functions of an attitude (Lavine & Snyder, 2000). For example, high-self monitors are chronically concerned with the expectations of social situations and adjust their behaviour to match such expectations. These individuals respond better to social-adjustive advertisements than do low-self monitors, who instead respond better to advertisements that promote products as expressions of their enduring values (Lavine & Snyder, 1996). A meta-analysis found a mean effect size of $r = .37$ in support of the functional matching effect (Carpenter, 2012), which shows the outperformance of matching conditions vs. mismatching conditions in a typical study design. Although research on the matching effect highlights the potential of matching individuals' psychological conditions to increase persuasion, it remains necessary to describe the mindset of individuals with negative immigration attitudes that corresponding message variations can address.

Perceived Threats and Scarcity

Perceived threats towards a group or individual can affect immigration support. These threats can be economic, as described in realistic group conflict theory, or cultural, as described in symbolic threat theory. Realistic group conflict theory explains how prejudice arises from conflict between groups over limited resources (Stephan et al., 1999). These resources can include employment opportunities, housing, and political power. Domestic individuals may perceive immigrants as a threat to their ability to access resources due to what they perceive as an increase in competition for resources that are fixed. Symbolic threat theory explains how conflict also arises over perceived threats to a group's cultural norms and values (Stephan et al., 1999). These threats can include different cultural practices, languages, and religions. Domestic individuals may view immigrants negatively because they may feel that an increase in immigrants will undermine their current ways of life and group cohesion. Although these theories disagree about the source of the threat, both theories emphasize the perceived scarcity experienced in the face of threats.

Perceived scarcity, in turn, has important effects on an individual's information-processing priorities. The experience of poverty, for example, tends to make individuals focus more on short-term and economic solutions and neglect long-term and non-economic goals (Shafir, 2017). Poverty is a complex condition with many associated personal and situational factors. However, an experiment by Shah et al. (2012) showed how even a single brief exposure to scarcity could produce cognition and decision-making typical of those living in poverty. In this experiment, participants who were randomly assigned to receive a small budget took out more high-interest loans than those that received a large budget. Although the loans provided a quick solution to their budgetary concerns, the high-interest nature of the loans made the small-

budget participants enter into a cycle of owing money to an additional source on top of their regular expenses, which only exacerbated their financial issues. Similar behaviour by people experiencing poverty has been taken to show that they are inherently worse at decision making and are to blame for their financial situation. However, the findings from the study suggest that anyone of any economic situation can develop this mindset of prioritizing short-term and economic solutions when experiencing scarcity, even momentarily. If perceived scarcity drives anti-immigration attitudes, providing information that emphasizes the short-term and economic benefits of immigration may help increase support for immigration.

Historical Context of Immigration in Canada

Canada has been described as a *land of immigrants* due to the country's long history and pride in immigration (Government of Canada, 2015). With 5% of the Canadian population identifying as Indigenous, it is clear that the vast majority of Canadians have an immigration story whether aware of it or not (Government of Canada, 2024b). The country's history of immigration, however, is complex with fluctuating levels of support and resistance towards newcomers over the years.

Prior to European contact, Indigenous Peoples' occupied Turtle Island for time immemorial with their own traditions, systems of governance, and ways of life (Kelley & Trebilcock, 2010). Beginning in the early 1600s, Europeans began establishing permanent settlements on the land. The growing settlement of European immigrants resulted in the displacement of Indigenous Peoples from their lands and traditional ways of life. This displacement and further colonial policies, such as residential schools and the Sixties Scoop, had devastating effects on Indigenous cultural practices, well-being, and survival (Manitoba Métis Federation, 2019; National Centre for Truth and Reconciliation, 2015). Indigenous Peoples,

however, have shown remarkable resiliency over the years. Indigenous Peoples are leading revitalization efforts to reclaim traditional practices and Indigenous languages (see Assembly of First Nations, n.d.). The Government of Canada and other institutions have also made efforts toward reconciliation (see Government of Canada, 2024c; University of Manitoba, 2025), and in recent years the Indigenous population has grown at nearly twice the rate (9.4%) of the non-Indigenous population (Government of Canada, 2023).

With the confederation of Canada in 1867, the federal government sought to populate the land via immigration to strengthen the labour force and increase economic power (Kelley & Trebilcock, 2010). Even in the early days of the country, however, there was debate over whether immigration was positive or negative for national and individual interests. Employers generally supported the open immigration policy, due to the increased supply of labour, while other individuals felt concerned over the increased competition for jobs and resources.

Immigration policy has not always been welcoming to minority groups. In the mid-1800s, there was an increase in immigration from China due to the gold rush and construction of the Canadian Pacific Railway. Soon after the railway was built, however, the federal government put measures in place to slow and restrict Chinese immigration. In 1885, the government introduced the Chinese Immigration Act which placed head taxes on immigration from China (Government of Canada, 2024e; Government of Canada, 2025d). These taxes began at \$50 but were eventually increased to \$100 and later \$500. This financial barrier, however, did not deter Chinese immigration as desired and from 1923-1947 the government effectively stopped all immigration from China. Although this stands as only one example, there are other groups that have been targeted such as Indian nationals with the continuous journey regulations and Japanese nationals

through the gentleman's agreement (Canadian Museum of Immigration at Pier 21, n.d.-b; Kelley & Trebilcock, 2010).

In 1967, Canada introduced the point system for assessing immigration applicants (Kelley & Trebilcock, 2010). This new system assessed each applicant based on individual characteristics such as age and education. The introduction of this system was viewed as a step to standardize and increase the transparency of the immigration process. Later in 1988, Canada adopted the Multiculturalism Act (Canadian Museum of Immigration at Pier 21, n.d.-a). This act formalized the country's commitment to cultural diversity but has faced criticism because it is not applied to delegitimate racism and discrimination. Since then, Canada has been recognized as a global leader in the resettlement of millions of immigrants and refugees from around the world.

Immigration Categories and Recent Trends

The established categories for permanent immigration in Canada include economic migrants, family class, refugees, and other immigrants (Government of Canada, 2025a; Statistics Canada, 2023b). The economic migrant category includes people who have been selected for their ability to contribute to Canada's economy through managing a business or filling labour shortages. This includes the categories of worker programs, business programs, the provincial nominee program, and the temporary resident to permanent resident pathway. The family class category allows Canadian citizens and residents to sponsor relatives such as spouses or children to come to Canada. The refugee category includes individuals who fit the defined criteria of a refugee and enter Canada through a government-assisted sponsorship, private sponsorship, or blended sponsorship. The other immigrant category includes individuals who are granted permanent resident status for humanitarian, compassionate, or other reasons. Individuals may also arrive in Canada as temporary residents. This admission category is divided into temporary

workers, study permit holders, and asylum claimants (Government of Canada, 2024d). Many individuals arriving as temporary residents may apply and later become permanent residents.

In 2024, Canada admitted 483,615 permanent residents (Government of Canada, 2025c). Of this cohort, 281,595 were economic migrants, 105,980 were sponsored family, 76,680 were resettled refugees and protected persons, and 19,315 arrived through the other category. Over the years, there has been a general increase in the number of permanent residents admitted to Canada, largely driven by the admission of economic migrants.

The federal government, however, appears to be rethinking the yearly increases in immigration. As outlined in the 2025-2027 Immigration Level Plan, the federal government plans to slow the growth of immigration in the coming years through decreasing the projected admissions of permanent residents by 105,000 and temporary residents by 445,901 compared to the projected 2025 levels (Government of Canada, 2024d). This plan was “rationalized” as helping to alleviate the affordable housing shortage and lower the unemployment rate while maintaining GDP growth. To achieve this plan, the government has pointed to the recent federal caps on international students and plans to reform some immigration programs. Public opinion towards immigration also seems to be changing. In recent surveys, 58% of Canadian respondents agreed with the statement “Overall, there is too much immigration to Canada” (Environics Institute, 2024, p. 6), 65% of Canadians believe the Government of Canada “will admit too many immigrants” (Leger, 2024, p. 18), and 71% support “reducing the number of new immigrants to Canada” (Nanos, 2025, p. 3).

What Resources Are at Stake in Immigration Policy Debates?

Canada’s housing crisis has made purchasing a property and paying for rent each month unaffordable for many (Government of Canada, 2024a). A number of politicians and media

outlets have been quick to point to immigration as the primary cause of the housing crisis; however, research suggests immigration may play a smaller role than assumed. One study by Akbari and Aydede (2012) found a small but statistically significant effect of immigration on housing prices. Their analysis found that the maximum rise in housing prices due to immigration to be between 0.10-0.12%. A more recent study by Hou et al. (2025) found that immigration accounted for only 11% of the increase in median house and rental prices. With the existing housing market challenges, high immigration may have exacerbated the housing crisis, but it may not be the primary driver (Champagne et al., 2023). Other research suggests interest rates and restrictions on land as other potential contributors (see Lee et al., 2022).

The effect of immigration on unemployment and wages has also been a subject of debate. A prevalent hypothesis suggests that immigration suppresses domestic wages due to increases in the labour force (Nedoncelle et al., 2025). Meta-analyses, however, find mixed support for this assertion. A meta-analysis conducted by Longhi et al. (2005) using 18 studies found a small negative effect of immigration on domestic wages. A more recent meta-analysis by Nedoncelle et al. (2025) using 88 studies found negligible effects of immigration on domestic wages but substantial variation among the studies. They found this variation to be partially explained by the diversity in contexts (e.g., countries, time periods) and methodologies. They also found that immigrants entering low skilled work were more likely to negatively impact domestic wages than immigrants entering high skilled work. Based on the meta-analyses by Longhi et al. and Nedoncelle et al., the effect of immigration on wages is likely to be negligible to small.

With the expanding size of the aging population in Canada, there are concerns for the country's economic future. In Canada, 18.9% of the population is 65 years or older (Statistics Canada, 2025a). This group comprises a larger proportion of the Canadian population than the 0-

14 years age group (15.2% of the population). The growing size of the aging population has been driven by increased life expectancy and decreased fertility rate compared to past years. In 2023, life expectancy at birth was 81.7 years which was a dramatic increase from 57.1 in 1921 and no change from 2011 (Decady & Greenberg, 2014; Statistics Canada, 2025b). In 2023, the total fertility rate was 1.26 which followed previous year's trends as a record low (Statistics Canada, 2024). An aging population is likely to shrink the labour force as older generations enter retirement. It is also likely to increase government spending on public services such as health care and pensions. A decreased labour force and increased demand for public services have the potential to severely impact Canada's economic stability if left unaddressed.

With many developed countries experiencing similar population issues, various solutions have been proposed. Some solutions focus on incentivizing women to have more children (see Yamaguchi, 2023) while others stress the potential of immigration. Immigrants are often immediately able to contribute to the labour force to fill existing and future labour shortages. There are certain sectors in Canada where there have been lasting labour market shortages such as in healthcare, agriculture, and transportation (Government of Canada, 2025b). With strategic selection, immigrants can immediately fill these vacancies and provide relief to the domestic population. Over time, economic migrants also pay more in taxes than they receive in benefits (Kapsalis, 2021). Immigration is a promising solution; however, it does not come without resistance.

Overcoming Resistance: The Current Research

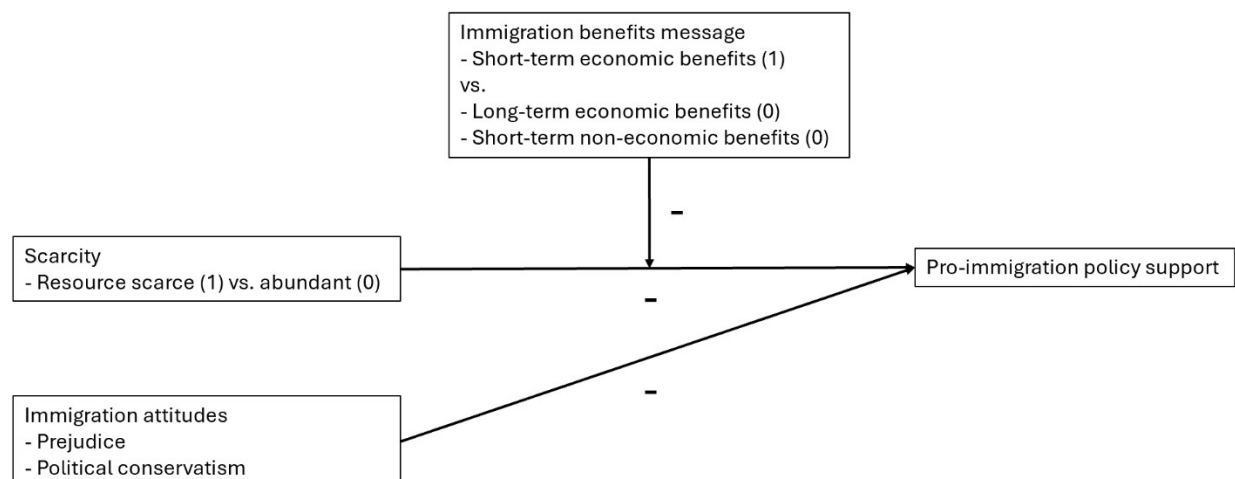
The purpose of this research was to develop an approach to pro-immigration advocacy that addressed and utilized new insights into the scarcity mindset. Perceived scarcity, among other factors, is thought to suppress immigration support. By providing persuasive messages

about immigration benefits that are tailored to the scarcity mindset, it was hypothesized that these messages could leverage immigration support from otherwise unreceptive individuals.

Figure 1 presents a theoretical model of these predictions. In the figure, scarcity is distinguished from negative attitudinal factors, such as prejudice or political conservatism, which act as stable predictors of low support for immigration (indicated by a minus sign). Scarcity, the perception of insufficient resources, is represented as a situational variable. A resource-scarce situation was assumed to decrease support for immigration. The immigration-benefits messages also represent a contrast between the theoretically matching message for a scarcity mindset (i.e., focused on the short-term economic benefits of immigration) vs. the mismatching messages (i.e., focused on the long-term economic or short-term non-economic benefits of immigration). It was assumed that matching messages for a scarcity mindset could offset the effect of scarcity on immigration support.

Figure 1

Theoretical model of support for immigration



To test the predictions in Figure 1, a pre-study was used to validate the manipulations of perceived scarcity and message contents. The main study then addressed the primary hypothesis. Both studies were reviewed by the University of Manitoba Research Ethics Board 1, and the main study was preregistered on Open Science Framework before data collection (<https://osf.io/yaewj/overview>).

Pre-Study

In the pre-study, participants that were recruited online through Prolific (<https://www.prolific.com/>) read several versions of messages describing the short-term economic, long-term economic, or short-term non-economic benefits of immigration and rated each message on various measures (e.g., the short-term/long-term focus of the message). Then the participants were randomly assigned to the scarcity or relaxation condition of an established visualization and writing exercise (Isler et al., 2024), which evoked either a resource scarce or relaxing situation, followed by ratings of how much scarcity or abundance came to their minds during the exercise.

For the pre-study, I hypothesized that the immigration benefits and scarcity manipulations would be successful. For the immigration benefits messages, I expected that participants would be able to correctly identify the benefits as either short-term or long-term and economic or non-economic. I did not expect significant differences in the evaluation of other message features, including their perceived benefits, believability, familiarity, usefulness, or simplicity, which have been shown to influence persuasion processes in past research (Hovland & Weiss, 1951). For the scarcity manipulation, I expected that participants in the scarcity (vs. relaxation) condition would report higher perceived scarcity.

Methods

Participants

A total of 210 participants took part in this study. Participants were recruited through Prolific and received monetary compensation for their participation. This study was described to participants as being interested in their views on social issues including their reactions to real and hypothetical current events. To participate in the study, participants needed to be a Canadian citizen, 18 years of age or older, and fluent in English. The pre-study data collection occurred between December 10, 2025, and December 11, 2025.

Using Brysbaert's (2019) suggested sample size for a *t*-test between-subjects study, the target sample size was identified as $N = 200$. However, I over-sampled to try to ensure the sample size was sufficient after removing participants that failed to meet the criteria. For efficient recruitment, using screens available on Prolific, the study opportunity was displayed only to potential participants who resided in Canada, had Canadian nationality, were 18 years of age or older, and were fluent in English.

After cleaning the data, the final sample size was 192 participants. Responses were removed from the data analysis for withdrawing from the study ($n = 13$), reporting not being a Canadian citizen ($n = 1$), taking too long to complete the survey ($n = 2$), and responding no or not responding to at least one of the last three questions confirming they responded honestly, with attention, and that their responses should be included in the analysis ($n = 2$). The mean age of participants was 38.88 ($SD = 12.55$) and the range was 20-77 years old. The sample was comprised of 42.2% men, 55.2% women, and 1.6% who self-identified with another gender. The sample was racially diverse with 71.9% of participants identifying as White, 24.9% Asian, 7.8% Black, 4.2% Indigenous, and 2.1% Latino. A majority of the participants were born in Canada

(85.4%). Forty-three point eight percent of the sample identified with the Liberal Party of Canada, 22.9% identified with the Conservative Party of Canada, 20.8% identified with the New Democratic Party, and 4.2% identified with the Green Party of Canada.

Measures

Immigration Benefits Manipulation Check. Seven items per immigration benefits message were used to check the effectiveness of the messages. Participants rated the degree to which the message was short-term/long-term, economic/non-economic, beneficial/costly, believable/unbelievable, familiar/unfamiliar, useful/useless, and simple/complicated on a 5-point semantic differential scale. These ratings were used to confirm the messages appropriately reflected their intended purpose.

Scarcity Manipulation Check. Five items checked the effectiveness of the scarcity manipulation (Isler et al., 2024). To assess main threat, participants were asked “...to what extent did scarcity of material resources (such as lack of goods and services) or scarcity of financial resources (such as an inadequate income or savings) come to your mind?” and to respond by entering a number between zero and 100 (0 = *Not at all* to 100 = *Very much*). To assess comprehensive threat, participants stated their agreement with four statements (e.g., “There is high risk for myself of...” “...unemployment”, “...not getting enough or timely medical help when needed”, “...not finding enough affordable food or hygiene products”, and “...higher debt”) on a 7-point Likert scale (1 = *Strongly disagree* to 7 = *Strongly agree*). Participants’ responses to the four statements were combined.

Demographics. Several questions collected participants’ demographic information. These included questions about their age, gender, ethnicity, Canadian citizenship, immigrant identity, language skills, education, political orientation, political affiliation, and religion. These

questions were used to ensure there were no significant demographic differences between the conditions.

For the purposes of this study, I defined “immigrant” as individuals who were born outside of Canada but now reside in Canada. Immigrant identity can be complex to define as some individuals that were born in Canada may view themselves as immigrants. The common definition of an immigrant also typically refers to individuals who come to live permanently, meaning that it would exclude temporary residents such as international students (Statistics Canada, 2023a). The lay understanding, however, may include international students as immigrants.

Procedure

The pre-study followed a mixed design with the immigration benefits messages altered within-subjects and scarcity altered between-subjects. On Prolific, participants viewed a consent form to read and sign. After providing consent, participants began the study. First, participants read and rated the nine immigration benefits messages emphasizing either the short-term or long-term and economic or non-economic benefits of immigration. The messages consisted of three messages focused on short-term economic benefits, three messages focused on long-term economic benefits, and three messages focused on short-term non-economic benefits (see Appendix A for the full messages). The messages were developed by creating one message for each category and prompting ChatGPT to “Make another version of this paragraph” (OpenAI, 2025). ChatGPT was prompted twice per message to create two additional versions for each category, thus keeping the meaning similar but using alternate wording that participants might see as more clearly having the intended interpretation. The messages were used to determine the messages that would be used in the main study.

Then, participants were randomly assigned to the scarcity or relaxation condition. In both conditions, participants viewed an image and were prompted to imagine either a resource scarce or relaxing condition (Isler et al., 2024). In the scarcity condition, participants viewed an image of empty store shelves and were asked to imagine urgently needing essential goods but not having access to them due to an economic crisis. In the relaxation condition, participants viewed an image of a bed and were prompted to imagine lying on their bed and feeling relaxed. After viewing the images, participants were asked to type four sentences describing how they felt about the imagined situation and what could happen to them. Next, participants completed a manipulation check to evaluate their level of perceived scarcity. Finally, participants responded to demographic questions. Once completed, participants received debriefing information and exited the survey.

Results and Discussion

The primary statistical analyses for the pre-study were analyses of variance (ANOVA) with contrasts, and independent *t*-tests, to ensure the manipulations were successful. For the immigration benefits manipulation, ANOVAs with planned contrasts were used to determine whether the messages differed as intended on the short-term vs. long-term dimension, and on the economic vs. non-economic dimension. In other words, these analyses tested whether the short-term economic (STE) and short-term non-economic (STNE) messages were perceived as more short-term than the long-term economic (LTE) message, and whether the STE and LTE messages were perceived as more economic than the STNE message. Similar analyses, but with post-hoc comparisons (and adjustment for Type I error inflation), were used to determine if the messages differed in other non-intended ways that could still be relevant to persuasion (i.e., their perceived benefits/costs, believability, familiarity, usefulness, and simplicity). Finally, for the scarcity

manipulation, a *t*-test was used to compare mean levels of perceived scarcity between the scarcity and relaxation conditions.

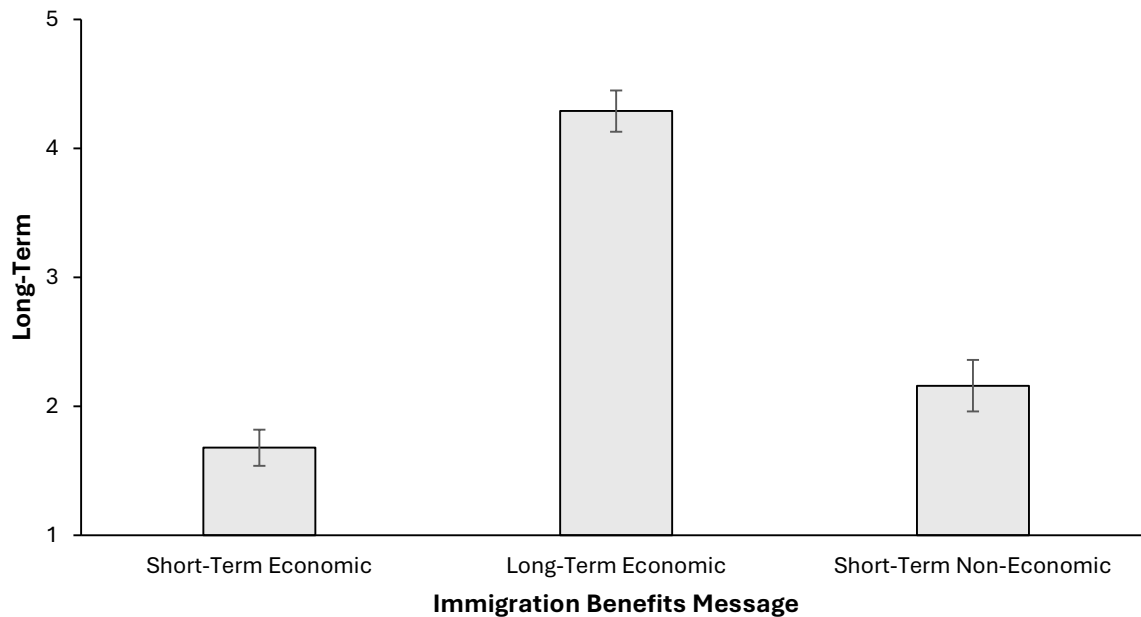
Immigration Benefits Messages

Prior to conducting the repeated measures one-way ANOVAs, the assumptions were assessed. No outliers were identified and the visual analysis of the Q-Q plots indicated that the data were approximately normally distributed. Mauchly's test of sphericity was assessed in each analysis, and the Greenhouse-Geisser degrees of freedom correction was used where applicable. As mentioned prior, participants rated three sets of messages. The following analyses compare the first set of messages (i.e., STE1, LTE1, and STNE1). Although not reported, the same analyses were run using the second and third set of messages. Similar patterns emerged for the other sets of messages; therefore, the first set of self-authored messages, as opposed to the alternatives generated by ChatGPT, were selected to be used in the main study.

A one-way repeated measures ANOVA with planned contrasts revealed a significant effect of immigration benefits messages on short-term to long-term ratings, $F(1.760, 329.127) = 277.869, p < .001, \eta_p^2 = .598$ (see Figure 2). The LTE message ($M = 4.28, SD = 1.09$) was perceived as having a greater long-term (vs. short-term) focus than the STE ($M = 1.69, SD = 0.96$) and STNE messages ($M = 2.18, SD = 1.35$). This confirms that the messages differed as intended on this dimension.

Figure 2

Short-Term to Long-Term Scores by Immigration Benefits Message

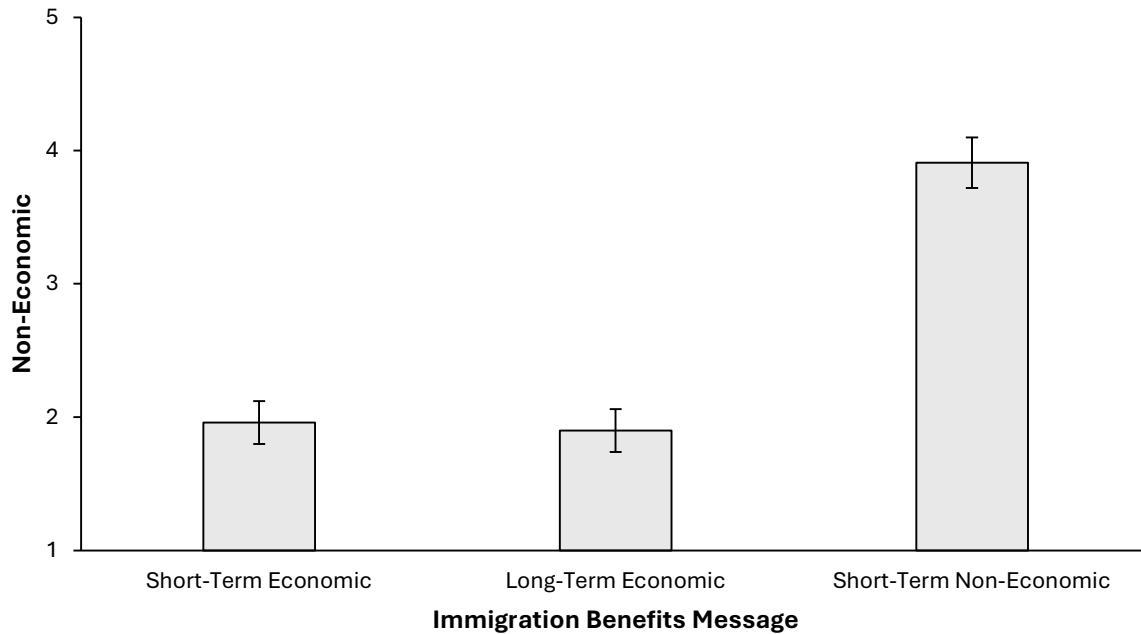


Note. $N = 188$. Error bars represent 95% confidence intervals.

A one-way repeated measures ANOVA with planned contrasts revealed a significant effect of immigration benefits messages on economic to non-economic ratings, $F(1.522, 286.131) = 195.449, p < .001, \eta_p^2 = .510$ (see Figure 3). The STE ($M = 1.97, SD = 1.07$) and LTE messages ($M = 1.90, SD = 1.08$) were perceived as having a greater economic focus than the STNE message ($M = 3.90, SD = 1.33$). This confirms that the messages differed as intended on this dimension.

Figure 3

Economic to Non-Economic Scores by Immigration Benefits Message



Note. $N = 189$. Error bars represent 95% confidence intervals.

We analyzed participants' ratings of the benefits, believability, familiarity, usefulness, and simplicity to understand if there were unintended differences that could affect the persuasiveness of the messages. Table 1 shows the means, standard deviations, and results of the omnibus and post-hoc tests of significant differences. All the means are between 3-4 on a 5-point scale, suggesting that all of the messages were perceived as moderately positively on the five dimensions. The differences in ratings of benefits, believability, usefulness, and simplicity had medium effects (Cohen, 1988), although none of the unintended differences between conditions are remotely close in effect size to the intended differences reported above. Importantly, there are no significant differences that give an advantage to the STE message, except that it was perceived as more useful than the STNE (but not the LTE) message. If the main study were to find greater persuasion by the STE message, relative to the LTE and STNE messages, none of these dimensions can provide a plausible alternative explanation for the finding.

Table 1

Other Dimensions

	Pro-Immigration Message				
	STE	LTE	STNE	<i>F</i>	η_p^2
Beneficial	3.76(1.20) ^{a,b}	3.80(1.14) ^a	3.55(1.17) ^b	5.441*	.029
Believable	3.45(1.16) ^a	3.67(1.13) ^b	3.61(1.16) ^{a,b}	4.050*	.021
Familiar	3.62(1.01) ^a	3.73(.97) ^a	3.77(1.00) ^a	2.122	.011
Useful	3.69(1.09) ^a	3.79(1.08) ^a	3.37(1.16) ^b	17.084*	.083
Simple	3.20(1.22) ^a	3.13(1.13) ^a	3.42(2.00) ^b	7.372*	.037

Note. Data are $M(SD)$ in each condition. Measures are semantic differential ratings with higher numbers corresponding to the labels above. Means that do not share a superscript are significantly different with adjusted $p < .05$ according to a Bonferroni multiple comparisons test. * $p < .05$.

Scarcity Manipulation Check

Analyses were undertaken to validate the scarcity manipulation. The manipulation check consisted of two measures: the main threat which asked participants to provide an overall evaluation of how threatened they felt and a comprehensive threat measure which asked participants to evaluate how threatened they felt in specific areas (e.g., employment, resources). Prior to conducting the independent sample t -tests, the assumptions were assessed. No outliers were identified and a visual analysis of the Q-Q plot indicated that the data were approximately normally distributed. As main threat and comprehensive threat scores were weakly to moderately correlated, they were kept separate in the manipulation check analysis (see Table 2; Akoglu, 2018).

Participants in the scarcity condition reported higher scores on both measures than did participants in the relaxation condition. Specifically, for main threat scores, $M(SD)_{\text{scarcity}} =$

74.64(29.54) vs. $M(SD)_{\text{relaxation}} = 27.64(33.17)$, $t(189) = 10.331$, $p < .001$, $d = 1.495$ (see Figure 4), and for comprehensive threat scores, $M(SD)_{\text{scarcity}} = 4.25(1.47)$ vs. $M(SD)_{\text{relaxation}} = 3.82(1.49)$, $t(190) = 2.029$, $p = .022$, $d = .293$ (see Figure 5). These results indicate that the scarcity condition raised participants' immediate concerns with scarcity, relative to those of participants in the relaxation condition, as intended.

Table 2

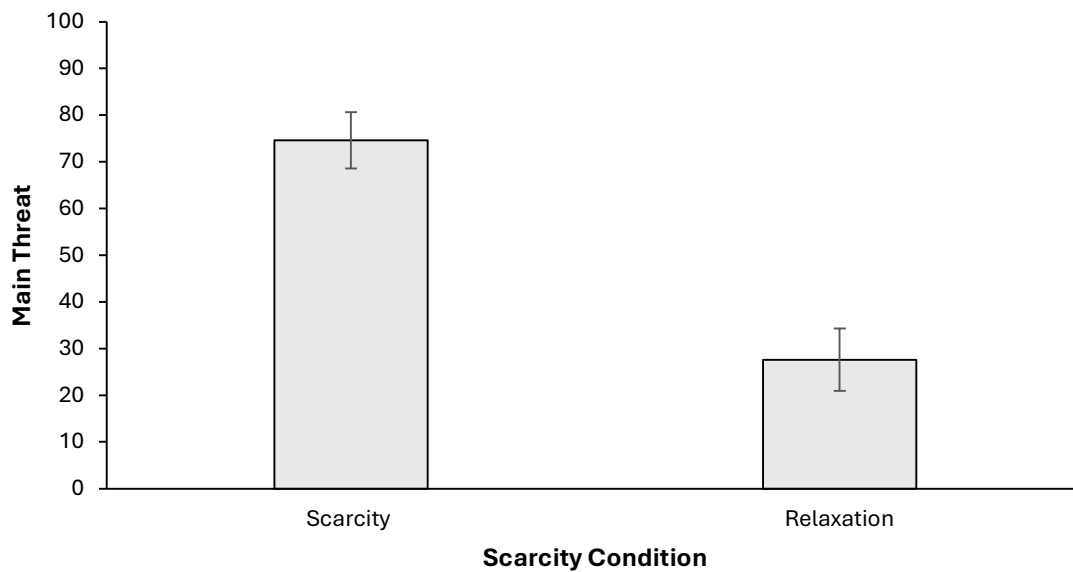
Descriptive Statistics and Correlations for the Scarcity Manipulation Variables

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	α	1	2
1. Main Threat	191	50.77	39.22	—	—	
2. Comprehensive Threat	192	4.03	1.49	.782	.377**	—

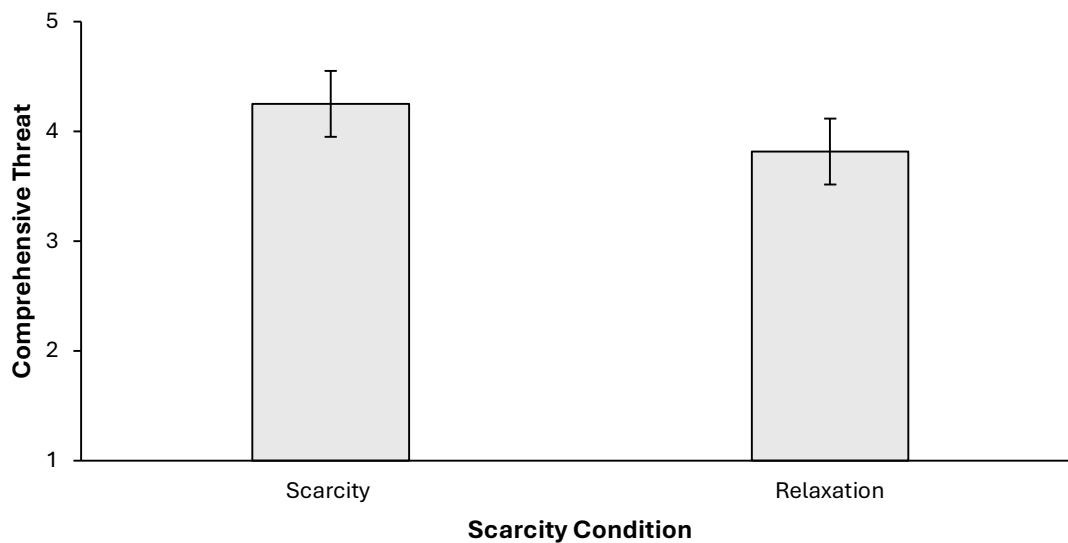
* $p < .05$. ** $p < .01$.

Figure 4

Main Threat Scores by Scarcity Condition



Note. $N = 191$. Error bars represent 95% confidence intervals.

Figure 5*Comprehensive Threat Scores by Scarcity Condition*

Note. $N = 192$. Error bars represent 95% confidence intervals.

Main Study

In summary, results of the pre-study validated both the message and scarcity manipulations that were intended to be used in the main study to test the primary hypothesis of this research. Therefore, in the main study, participants recruited through Prolific were randomly assigned to the scarcity or relaxation condition using the same manipulation from the pre-study. Then, by random assignment, they read either the short-term economic, long-term economic, or short-term non-economic immigration benefits message, also as tested in and selected from the pre-study. After, they indicated their level of immigration support, answered questions assessing their level of prejudice towards immigrants, and provided demographic information.

For the main study, I hypothesized that participants experiencing scarcity would show reduced support for immigration. However, I also expected the STE message to moderate this effect, such that among participants in the scarcity condition, those receiving the short-term

economic benefits message would show increased support for immigration compared to those receiving the other immigration benefits messages (i.e., long-term economic and short-term non-economic). As previously mentioned, this study was pre-registered on Open Science Framework prior to the collection of data.

Methods

Participants

A total of 400 participants took part in the study. Participants were recruited through Prolific and received monetary compensation for their participation. This study was described to participants as being interested in their views on social issues including their reactions to real and hypothetical current events. To participate in the study, participants needed to be a Canadian citizen, 18 years of age or older, and fluent in English. The main study data collection occurred between March 9, 2026, and March 11, 2026.

I intended to recruit 378 participants to this study. This sample size was determined using G*Power 3.1.9.7 (Faul et al., 2007), with the following specifications: design of two-way ANOVA, effect size of $f = .15$ for the contrast X factor interaction (i.e., consistent with expectations of a medium effect for the contrast in the scarcity condition, and a null effect in the relaxation condition), $\alpha = .05$, Power = .80, $df_{\text{numerator}} = 1$ (as appropriate for the contrast X factor test), and number of groups = 6. This calculation yielded a minimum sample size of 351 participants. The target of 378 allowed for the above-noted exclusions and was evenly divisible by 6 (i.e., permitting equal *ns*). For efficient recruitment, using screens available on Prolific, the study opportunity was displayed only to potential participants who resided in Canada, had Canadian nationality, were 18 years of age or older, and were fluent in English.

After cleaning the data, the final sample size was $N = 357$. Responses were excluded from the data analysis for not providing consent ($n = 1$), providing duplicate responses ($n = 8$), withdrawing ($n = 17$), not responding to the Canadian citizen question ($n = 8$), not responding to the English fluency question ($n = 1$), taking too long to complete the survey ($n = 5$), and responding no or not responding to at least one of the last three questions checking integrity ($n = 3$). The mean age was 34.38 ($SD = 11.95$), and the range was 18-70 years old. The sample was comprised of 47.1% men, 50.7% women, and 1.1% who self-identified with another gender. The sample was racially diverse, with 61.1% of participants identifying as White, 28.5% Asian, 9.8% Black, 2.8% Latino, and 2.0% Indigenous. A majority of the participants were born in Canada (77.3%). Forty-three point seven percent of the sample identified with the Liberal Party of Canada, 19.9% identified with the Conservative Party of Canada, 22.1% identified with the New Democratic Party, and 4.5% identified with the Green Party Canada.

Measures

Immigration Support. Five items measured participants' support for immigration (Abascal et al., 2021). The first item asked participants whether they believe immigration should be increased or decreased (e.g., "The number of immigrants permitted to come to Canada to live should be...") on a 5-point Likert-type scale (1 = *Decreased a lot* to 5 = *Increased a lot*). The other four items asked about immigration's impact on unity (e.g., "Immigrants make it harder to keep the country united"), jobs (e.g., "Immigrants make it harder for Canadian-born citizens to find work"), crime (e.g., "Immigration increases crime"), and fiscal responsibility ("immigrants receive more in benefits than they pay in taxes") on a 5-point Likert scale (1 = *Strongly disagree* to 5 = *Strongly agree*). In the original study, the fiscal responsibility item used the term "undocumented immigrants," but to increase relevance to this study, "undocumented" was

removed. Participants' responses to these four items were reverse-coded and averaged together with their responses to the first item to indicate their level of support for immigration.

Immigration support was used as the primary dependent variable.

Prejudice Towards Immigrants. Participants' prejudice towards immigrants was measured using the feeling thermometer, social distance measure, and competence-warmth scale. The feeling thermometer is one item and assessed participants' general feeling towards immigrants (Haddock et al., 1993). The measure uses an image of a thermometer with zero degrees labelled as "Extremely unfavourable" and 100 degrees labelled as "Extremely favourable". Participants were asked to provide a number between zero and 100 that indicated their evaluation of immigrants.

The social distance measure is seven items and assessed participants' willingness to engage in increasing levels of social distance with immigrants on a 5-point scale (1 = *Strongly disagree* to 5 = *Strongly agree*; Mather et al., 2017). In Mather et al. (2017), the scale ranged from 1 = *Strongly agree* to 5 = *Strongly disagree*. In this study, to align with the other measures, the scale was reversed and then recoded. Responses to items describing lower social distance (e.g., "I would be willing to accept an immigrant as a close relative by marriage") were multiplied by lower numbers (e.g., 1) while items describing higher social distance (e.g., "I would exclude immigrants from my country") were multiplied by increasingly higher numbers (e.g., 7). Scores on this measure range from 28-140 with higher scores indicating greater social distance from the group.

The competence-warmth scale is 12 items and assessed perceived competence and warmth (Fiske et al., 2002). To assess perceived competence and warmth, participants rated immigrants on six words related to competence (e.g., "Confident") and six words related to

warmth (e.g., “Friendly”). All items were measured on a 5-point scale (1 = *Not at all* to 5 = *Extremely*). Participants’ responses to the six competence items and the six warmth items were separately combined to indicate their perceptions of immigrants’ competence and warmth.

Demographics. Several questions collected participants’ demographic information. These included questions about their age, gender, ethnicity, Canadian citizenship, immigrant identity, language skills, education, political orientation, political affiliation, and religion. These questions were used to ensure there were no significant demographic differences between the conditions.

Procedure

This study followed a 2 x 3 between-subjects design. In the online setting, participants were provided a consent form to read and sign. After providing consent, participants were randomly assigned to the scarcity or relaxation condition. In the scarcity condition, participants viewed an image of empty store shelves and were asked to imagine urgently needing essential goods but not having access to them due to an economic crisis. In the relaxation condition, participants viewed an image of a bed and were prompted to imagine lying on their bed and feeling relaxed. Then participants were asked to type four sentences describing how they felt about the presented situation and what could happen to them. After, participants completed the scarcity manipulation check which asked them to rate their level of perceived scarcity.

Next, participants were randomly assigned to the short-term economic, long-term economic, or short-term non-economic immigration benefits conditions. Depending on their assigned condition, participants read a short passage that emphasized either the short-term or long-term and economic or non-economic benefits of immigration. Next, they completed questions assessing their support for immigration, questions that evaluated their prejudice

towards immigrants, and demographics questions. Once completed, participants viewed a debriefing sheet and exited the survey.

Results and Discussion

The goal of the analysis was to determine whether participants in the scarcity condition of this experiment, as compared with those in the relaxation condition, would respond more favourably to the STE than the LTE or STNE pro-immigration messages. To do this, I used a two-way ANOVA with a planned contrast test of the hypothesized interaction for each dependent variable, with composite immigration support noted in the pre-registration as the primary dependent variable.

Preliminary Analyses

Prior to the main analyses, preliminary analyses were conducted to check the assumptions, assess condition randomization, validate the scarcity manipulation, and describe intercorrelations among the immigration support, prejudice, and political orientation measures. No outliers were identified, and a visual analysis of the Q-Q plot indicated that the data were approximately normally distributed.

To ensure that participants were successfully randomized to each condition, *t*-tests and ANOVAs were conducted. There were no significant differences (using *t*-tests, ANOVAs, or chi-square tests, as appropriate) either between the scarcity and relaxation conditions or between the message conditions, with respect to participants' ages, education levels, political orientation, or immigration status. Therefore, the randomization of participants to conditions appeared successful, and none of these variables needed to be, or were, further controlled statistically in the main analyses.

Scarcity Manipulation Check. Although the pre-study demonstrated the validity of the scarcity manipulation, the main study also included a check on this manipulation. As in the pre-study, the check consisted of two measures: the main threat measure, which asked participants to provide an overall evaluation of how threatened they felt, and a comprehensive threat measure, which asked participants to evaluate how threatened they felt in specific areas. Levene's test indicated that the assumption of homogeneity of variance was violated for the main threat variable, $F(1, 354) = 77.746, p = <.001$. Therefore, the results from the Welch's t -test were reported. Participants in the scarcity condition reported higher scores on both measures than did participants in the relaxation condition. Specifically, for main threat scores, $M(SD)_{\text{scarcity}} = 79.03(24.25)$ vs. $M(SD)_{\text{relaxation}} = 32.35(36.22)$, $t(317.54) = 14.347, p <.001, d = 1.508$, and for comprehensive threat scores, $M(SD)_{\text{scarcity}} = 4.57(1.35)$ vs. $M(SD)_{\text{relaxation}} = 3.81(1.44)$, $t(355) = 5.142, p <.001, d = .544$. These results indicate that the manipulation raised or lowered participants' immediate concerns with scarcity, as intended.

Correlations. I analyzed the correlations to assess whether the dependent measures supported the intended interpretation (see Table 3). One of the main findings was that the two threat measures showed a moderate correlation with each other but not with any other variables in the table, including immigration support. This did not align with my expectation.

The immigration support measure correlated in the expected direction with prejudice and political conservatism measures, but so highly with some measures that it was unclear whether the construct of immigration support could be distinguished from that of prejudice in interpreting the present findings. The immigration support measure correlated positively with the feeling thermometer measure, negatively with the social distance measure, and positively with the perceived warmth measure. The immigration support measure did not correlate with the

perceived competence measure. Interestingly, the immigration support measure also did not correlate with age, but it did positively correlate with education and negatively correlate with the political orientation measure (with high scores indicating conservatism).

Although the warmth and competence measures of stereotype content regarding immigrants correlated strongly with each other, only the warmth measure correlated with the other measures of anti-immigrant prejudice. In the original stereotype content model, the warmth dimension corresponds with perceptions of outgroups as competing with one's ingroup, whereas the competence dimension corresponds with perceptions of outgroups as effective or higher in status (Fiske et al., 2002). Thus, the findings suggest that the policy/prejudice views of participants in this sample were related only to their stereotypes about how competitive immigrants are, not to their stereotypes about how capable they are.

Political conservatism showed strong negative correlations with immigration support and positive correlations with immigrant prejudice, but not with perceived competence or warmth. Overall, these findings, both expected and unexpected, inform the interpretation of the main hypothesis tests.

Table 3*Descriptives Statistics and Correlations for the Main Study Variables*

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	α	1	2	3	4	5	6	7	8
1. Main Threat	356	55.16	38.75	—	—							
2. Comprehensive Threat	357	4.18	1.45	.762	.452**	—						
3. Immigration Support	357	3.08	1.06	.873	.038	-.052	—					
4. Feeling Thermometer	352	58.73	22.59	—	.070	-.012	.737**	—				
5. Social Distance	357	44.20	18.69	.909	.007	.019	-.583**	-.627**	—			
6. Competence	357	2.98	.76	.870	.037	.072	.075	.103	-.087	—		
7. Warmth	357	2.81	.79	.904	-.013	-.017	.207**	.225**	-.171**	.691**	—	
8. Political Conservatism	355	3.23	1.50	.920	.018	.014	-.604**	-.492**	.454**	.069	.011	—

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

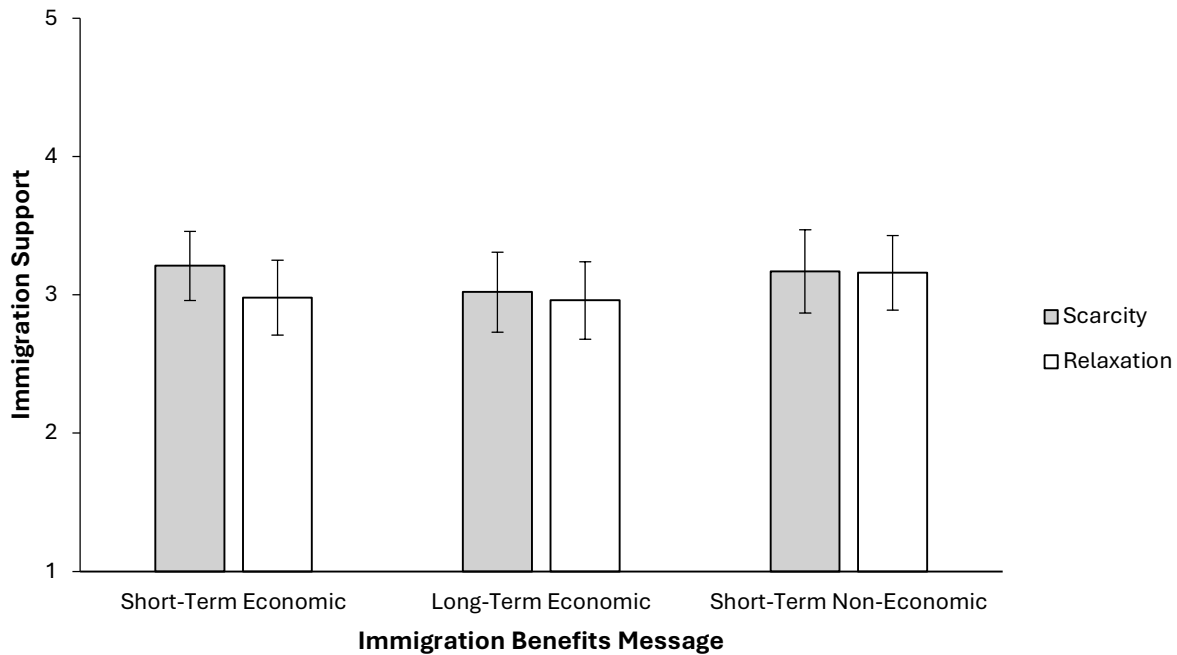
Main Analyses

The main analysis was a two-way ANOVA with planned contrasts on each dependent measure. The two factors were scarcity (scarcity vs. relaxation) and immigration benefits message (short-term economic, long-term economic, and short-term non-economic). The contrast weights of 1, -.5, and -.5 across the messages in the scarcity condition, and -1, .5, and .5 across the messages in the relaxation condition, yielded an orthogonal single-df test of the hypothesized interaction pattern, in which participants would respond especially favourably to the short-term economic message in the scarcity condition.

Figure 6 shows the mean levels of immigration support by participants in each condition. In line with the main hypothesis, only the message emphasizing the short-term economic benefits of immigration appeared to yield different, and more positive, support for immigration among participants in the scarcity condition, relative to those in the relaxation condition. The planned contrast, however, was non-significant, $F(1, 351) = 0.677, p = .411, \eta_p^2 = .002$, and within the scarcity condition, the short-term economic message did not yield a significant gain in immigration support as compared to the other messages, according to a simple effect test, $F(2, 351) = .537, p = .585, \eta_p^2 = .003$, in which both pairwise comparisons were also non-significant. This study also did not find a significant main effect of scarcity on immigration support, $F(1, 351) = .793, p = .374, \eta_p^2 = .002$. Contrary to the hypothesis, participants in the scarcity condition did not have significantly lower immigration support ratings than participants in the relaxation condition. This finding was aligned, however, with the previous correlation analysis that showed no relationship between feelings of threat and support for immigration.

Figure 6

Immigration Support by Scarcity Condition and Immigration Benefits Message



Note. $N = 357$. Error bars represent 95% confidence intervals.

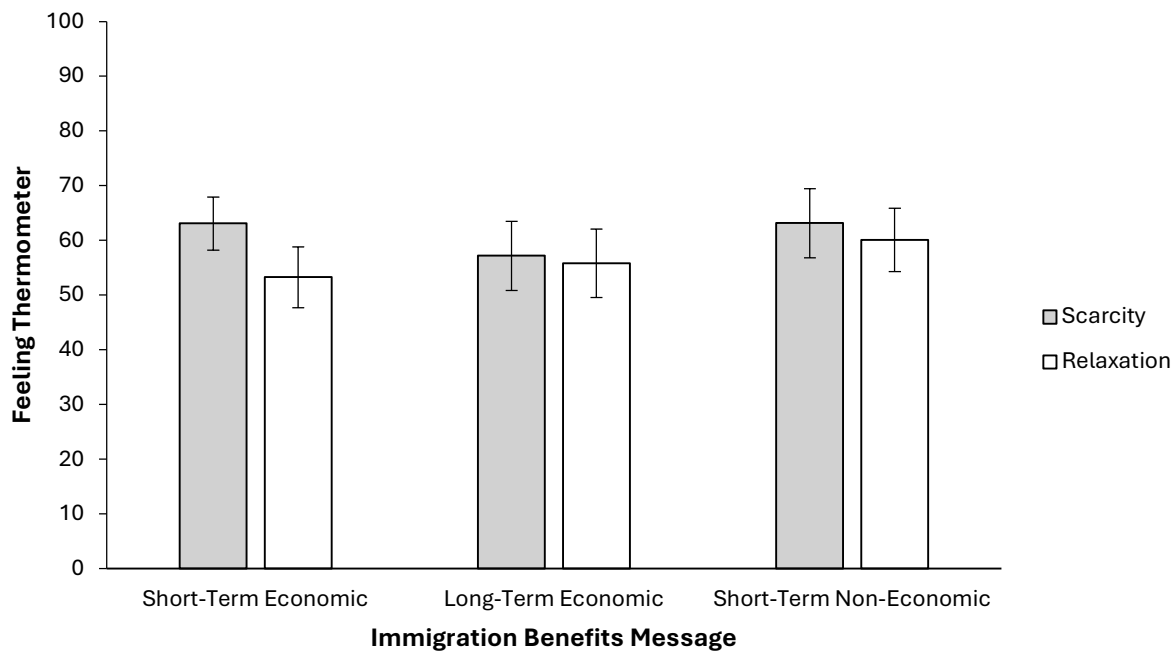
Prejudice Towards Immigrants

Next, I analyzed the anti-immigrant prejudice measures (i.e., feeling thermometer, social distance measure, and competence-warmth measure) using the same ANOVA procedure. Results for the feeling thermometer (see Figure 7) showed the same pattern as the immigration support results but were also non-significant according to the planned contrast test, $F(1, 346) = 2.24$, $p = .135$, partial $\eta_p^2 = .006$. Also, within the scarcity condition, the short-term economic message did not yield significantly warmer feelings toward immigrants than did the other messages, according to a simple effect test, $F(2, 346) = 1.33$, $p = .265$, $\eta_p^2 = .008$, in which both pairwise comparisons were also non-significant. However, the short-term economic message did produce significantly warmer feelings toward immigrants among participants in the scarcity condition, as compared to those in the relaxation condition, simple $F(1, 346) = 5.659$, $p = .018$, $\eta_p^2 = .016$, unlike the other messages and in line with the main hypothesis. The same analyses yielded no

significant effects on the remaining dependent variables of social distance, perceived competence, and perceived warmth regarding immigrants.

Figure 7

Feeling Thermometer by Scarcity Condition and Immigration Benefits Message



Note. $N = 352$. Error bars represent 95% confidence intervals.

Exploratory Analyses

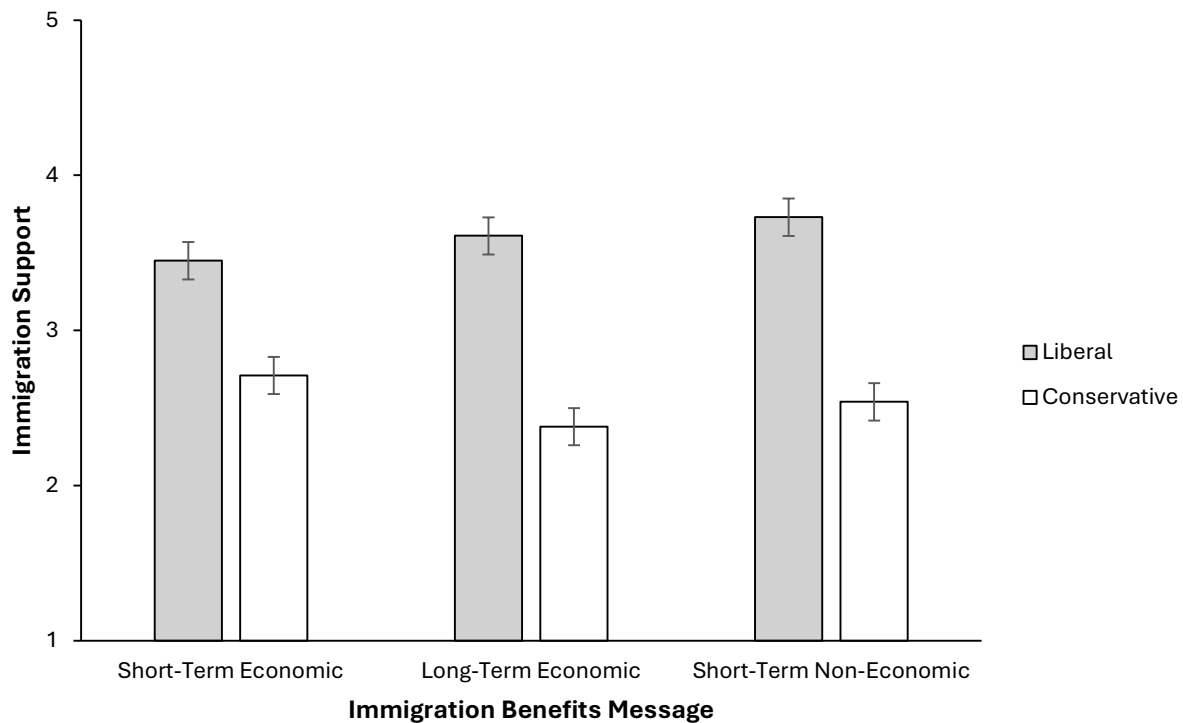
As the previous analyses showed, the scarcity manipulation affected participants' feelings of threat, but neither the scarcity manipulation nor participants' feelings of threat affected their support for immigration. Rather, as noted in Figure 1, stable individual factors predicted such support. However, the main analyses also suggested some distinctiveness in participants' responses to the short-term economic message, as compared to the other messages. Therefore, on an exploratory basis, I considered the question as to whether these messages might also moderate the influence of these stable individual factors. In particular, political orientation was a strong

predictor of immigration support. On an exploratory basis, I replaced scarcity with political orientation in the two-way ANOVA with planned contrasts to understand its influence on immigration support. The reason for maintaining this planned contrast was because conservatism is, in some ways, like perceived scarcity, in that it involves a desire to maintain a resource-based status quo (i.e., rather than to expand the availability of local resources and opportunities to additional people; Jost, 2006).

To use the composite political orientation measure as an independent variable in the ANOVA, I made the variable dichotomous by splitting scores at the value of three (scores from 1-3 were categorized as liberal-leaning and scores >3-7 were categorized as conservative-leaning). This created approximately equal groups of liberal-leaning and conservative-leaning participants. Results (see Figure 8) showed that the planned contrast was significant, $F(1, 349) = 5.165, p = .024$, partial $\eta_p^2 = .015$, indicating that the tendency for liberal- and conservative-leaning participants to oppose one another on support for immigration was significantly reduced in the short-term economic as compared to the other message conditions. Notably, among conservative-leaning participants, those receiving the short-term economic message appeared to have higher immigration support than those receiving the long-term economic message, to a degree that approached significance according to a least significant difference test, with mean difference = .326, $p = .054$, 95%CI [-.005, .658]. This suggests that the short-term economic message was the least polarizing message between liberal-leaning and conservative-leaning participants, and the most appealing message to conservative-leaning participants.

Figure 8

Immigration Support by Political Orientation and Immigration Benefits Message



Note. $N = 355$. Error bars represent 95% confidence intervals.

General Discussion

Canada's aging population and declining birth rate pose significant challenges to the country's economic growth and stability (Maestas et al., 2023; Statistics Canada, 2024; Statistics Canada, 2025a). Immigration can play an important role in alleviating the negative effects of population decline (Government of Canada, 2025e). Despite this, immigration and immigrants have become regular targets of backlash and negative attitudes (Bellefontaine, 2026; Environics Institute, 2024; Leger, 2024; Nanos, 2025; Tasker, 2025). Within this context, the purpose of this research was to draw upon recent insights into the psychology of scarcity in order to develop pro-immigration messages that would be especially effective for individuals whose opposition to immigration is grounded in perceived scarcity. Specifically, this research compared the effectiveness of pro-immigration messages that focused on either the short-term economic, long-

term economic, or short-term non-economic benefits of immigration, within experimental conditions that primed thoughts and feelings of either scarcity or relaxation. Overall, the results partially supported the main hypothesis that the message emphasizing the short-term economic benefits of immigration would produce more support for immigration than the other two messages among participants in the scarcity condition, but not in the relaxation condition. Short-term economic messages may be met with greater immigration support in conditions of scarcity than relaxation, but the short-term economic message did not lead to higher immigration support than the long-term economic or short-term economic message in conditions of scarcity. The results also did not find an effect of scarcity on immigration support, which did not align with the hypothesis.

This research was inspired by Shafir (2017) and Shah et al. (2012)'s research findings that individuals experiencing scarcity focus more on short-term and economic solutions and neglect long-term and non-economic goals. Although historical observations have suggested that anti-immigration sentiments rise when economic conditions falter or decline (Kuntz et al., 2017; Lancee & Pardos-Prado, 2013; Mohamadian et al., 2024; Vogt Isaksen, 2019; Stephan et al., 1999), research on scarcity mindsets casts these observations in a new light. Rather than being the inevitable consequence of a poor economic outlook, perhaps anti-immigration sentiments could be countered by presenting immigration as a short-term solution to meeting economic pressures or needs. To my knowledge, this was the first study to explore tailoring pro-immigration messages to a scarcity mindset to understand how these factors might jointly influence support for immigration.

The Effect of Scarcity

This research did not find an effect of perceived scarcity on immigration support. As previously covered, past research supports the idea that perceived scarcity increases anti-immigration attitudes (Kuntz et al., 2017; Lancee & Pardos-Prado, 2013; Mohamadian et al., 2024, Vogt Isaksen, 2019). This research, however, differs from many past correlational studies in that it manipulated scarcity in an experimental study. There are benefits and limitations to each research design; however, this manipulation tested the direct, causal effect of perceived scarcity on immigration support.

The results of the manipulation check in both the pre-study and main study suggest that the manipulation was able to create higher perceived scarcity in the scarcity (vs. relaxation) condition and that the results are not due to a failure of the study procedures to produce the intended states. Rather, the intended states, particularly that of economic threat, did not relate to participants' support for immigration. In relation to Figure 1, the role of stable predictors, such as prejudice and political conservatism, may have proved to be much greater than that of dynamic predictors, such as scarcity and perceived threat. However, the momentary feelings of scarcity created by the manipulation may have not been strong enough to simulate the real-life conditions of someone experiencing scarcity. Participants completed the scarcity manipulation check immediately after completing the manipulation. Participants in the scarcity condition may have temporarily felt increased feelings of scarcity, but perhaps not lasting feelings of scarcity as they completed the study.

Does Low Immigration Support Equal Prejudice Towards Immigrants?

Measures of immigration support and prejudice towards immigrants were nearly indistinguishable in this research. When designing this research, I expected support for immigration to be more variable and open to change than prejudice towards immigrants. The

results, however, showed a high correlation between immigration support and some of the prejudice-toward-immigrants measures (i.e., the feeling thermometer and the social distance measure). Furthermore, the feeling thermometer responded similarly to the immigration support measure when entered as the dependent variable in the main analysis. These results led me to question the presumed relationship between immigration support and prejudice towards immigrants.

Political orientation was not a central focus of this study. However, consistent with past research (EnviroNics Institute, 2024; Indelicato et al., 2023), this study also found that political conservatism correlated with both lower support for immigration and more negative beliefs and feelings toward immigrants. Further, Figure 7 shows that conservative-leaning participants were consistently below the midpoint in their support for immigration, while liberal-leaning participants were consistently above the midpoint. This highlights the divisiveness of this issue in Canadian politics.

On an exploratory basis, I further analyzed whether and how the immigration-benefit messages might appeal differently to conservative- than liberal-leaning participants. These analyses showed that conservative-leaning participants responded relatively well to the STE message, compared to the other messages. Even when immigration support is rooted in stable individual features, messages seem to make a difference. To achieve this difference, the messages should align with conservative or liberal values (however unintentionally) in distinctive ways, a point that warrants further examination. For example, in valuing tradition and a smaller role for government, conservatives may be disinclined to support policies that are presented as either a long-term financial commitment (LTE message) or an imminent cultural change (STNE message). The results from this exploratory analysis suggest that immigration

support does not simply equal prejudice. Conservative-leaning individuals, who also scored higher on prejudice toward immigrants in this research, were relatively open to the STE message and less polarized from liberal-leaning participants in their responses to this message, compared to the LTE and STNE messages. It is important to note that none of the messages used in this study addressed values or prejudice directly. This suggests that it is possible to counteract these influences on immigration support without either confronting or changing them.

Realistic Group Conflict Theory vs. Symbolic Threat Theory

The initial assumptions of this research aligned with realistic group conflict theory. As previously described, realistic group conflict theory explains how prejudice arises from conflict between groups over limited resources, while symbolic threat theory explains how conflict arises over perceived threats to a group's cultural norms and values (Stephan et al., 1999). This study attempted to create feelings of scarcity due to the unavailability of resources and predicted that messages communicating that short-term economic benefits of immigration would increase immigration support. The lack of support for the hypotheses, however, leads to further questions of whether symbolic threat theory may be more important than realistic group conflict theory in understanding immigration support.

Instead of being concerned over immigration's impact on resources such as housing and jobs, Canadians may be more concerned with immigration's cultural impact. A future study could compare the threats described in realistic group conflict theory and symbolic threat theory to better understand how they contribute to immigration support. If symbolic threats are more predictive of reduced immigration support than are resource-related threats, then it may be useful to tailor messages to this mindset.

Strengths

A strength of this research is that I pre-tested the immigration-benefits messages and the scarcity manipulation. The pre-study used a mixed design with the immigration benefits messages altered within-subjects and scarcity altered between-subjects. The study asked participants to rate the messages on a variety of dimensions. The messages were intended to differ on some dimensions (i.e., short-term/long-term and economic/non-economic) but not on others (i.e., beneficial, believable, useful, familiar, simple) to confirm their use in the main study. The pre-study also tested the scarcity manipulation's ability to increase participants' perceived scarcity levels. The results from the pre-study confirmed that the messages differed on the intended short-term/long-term and economic/non-economic dimensions much more strongly than they differed on any unintended dimensions, and that the scarcity manipulation strongly affected participants' perceived scarcity levels in the intended direction. The main study also replicated the pre-study's scarcity manipulation results.

By using an experimental study, I tested the causal relationship of scarcity and immigration benefits messages on immigration support. The random assignment of participants to the conditions helped control for other factors that may influence the dependent measure. Although it is not possible to conclude from this study that scarcity has no effect on immigration support (i.e., a null study effect does not prove that the effect is absent in the population), this finding does raise the question of whether alternative theoretical explanations are possible for past correlational findings.

The main study was pre-registered on Open Science Framework. This pre-registration confirms that the hypothesis was established before data collection and analysis, as were the critical procedures for testing it. The pre-study and main study also attained adequate sample sizes, according to power analyses I conducted prior to data collection. Ensuring that the data

analyses had appropriate sample sizes increased confidence in ruling out Type II error as a potential explanation for any null results encountered.

The main study used multiple measures of immigration support and prejudice towards immigrants. The immigration support measure comprised five items (Abascal et al., 2021), and prejudice towards immigrants was measured using the feeling thermometer (Haddock et al., 1993), social distance (Mather et al., 2017), and competence-warmth measures (Fiske et al., 2002). This study found that immigration support and prejudice were strongly correlated on some measures (i.e., the feeling thermometer) and uncorrelated on other measures (i.e., perceived competence).

Limitations

Although the pre-study confirmed that the messages were perceived as sufficiently different on short-term/long-term and economic/non-economic measures, they were not rated equally on four of the five other dimensions (i.e., beneficial, believable, useful, and simple). This may have unintentionally influenced the main study results. However, the pre-study results did not show consistent advantages of the STE message over the other messages. It is also unclear whether longer messages would have been more persuasive, as they provide more information to support the argument. The appropriateness of the message's length, however, will depend on the context. If viewing the message on social media, users may be more likely to read a shorter message before scrolling past it.

Based on manipulation checks, the scarcity manipulation in the pre-study and main study was successful. Still, there may be reason to question the manipulation's effectiveness. The manipulation asked participants to look at an image of empty store shelves and to imagine and write about being in a resource-scarce situation. Participants then immediately reported their

feelings of perceived threat. These manipulation checks indicate that there was a difference in threat scores immediately after the manipulation; however, it is unclear how comprehensive and long-lasting the feelings of scarcity were.

This research included a limited sample of politically conservative participants. For both studies, participants were recruited through Prolific, and no special efforts were made to ensure adequate representation across political orientations. Approximately 20% of the participants in the main study identified with the Conservative Party of Canada. In the 2025 federal election, the Conservative Party of Canada received 41.3% of the total vote (CBC News, 2025). Although not all eligible Canadians voted in the election, this vote share suggests conservative individuals were underrepresented in this research. Based on the exploratory analyses, conservative-leaning participants had more subsequent support for immigration after reading the short-term economic message than the other messages. A higher ratio of conservative-leaning participants in the sample might have increased support for the effectiveness of the short-term economic message on immigration support. Additionally, this lack of conservative representation in the sample led to issues in dichotomizing the political orientation variables in the exploratory analysis that replaced scarcity with political orientation. To prioritize having approximately equal sample sizes in each group, the political orientation variable was dichotomized by categorizing participants with scores from 1-3 as liberal-leaning and >3-7 as conservative-leaning. This meant that participants who rated themselves as politically neutral were categorized as leaning conservative.

Conclusion

Despite the potential economic and cultural benefits of immigration, resistance remains. This research tested the use of pro-immigration messages tailored to a scarcity mindset to

increase support for immigration. The pre-study confirmed the effectiveness of the immigration benefits messages and scarcity manipulation. The main study, however, did not find support for the effect of scarcity on immigration support and only partially supported the hypothesized relationship between scarcity and short-term economic messages. Even when economic conditions are scarce and prejudice is strong, the small variations in immigration support among the experimental conditions suggest that anti-immigration attitudes are not an inevitable result. However, further research is needed to test this relationship. Future research should also explore whether short-term economic messages are especially effective among conservative-leaning individuals, a group that tends to have low immigration support. This research explored factors beyond those specified in previous research and suggests an additional tool that psychologists and policymakers can use to tackle this important issue.

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Appendix

Immigration Benefits Messages

Short-term economic benefits

In the short-term, immigration helps strengthen Canada's economy through immediately addressing labour shortages and contributing to local economies. Through alleviating the stress on workers in sectors such as healthcare and construction, immigrants help reduce wait times and increase productivity.

In the short-term, immigration boosts Canada's economy by quickly filling labour gaps and supporting local businesses. By easing workforce pressures in critical sectors like healthcare and construction, immigrants help improve service delivery, reduce delays, and enhance overall productivity.

In the short-term, immigration strengthens Canada's economy by addressing urgent labour shortages and stimulating activity in local markets. Immigrants play a vital role in high-demand sectors such as healthcare and construction, helping ease workloads, shorten wait times, and improve efficiency across key services.

Long-term economic benefits

Over the long-term, immigration helps strengthen Canada's economy through providing relief to our aging population. Immigrants expand the workforce and create jobs through entrepreneurship. Immigrants also contribute to tax revenues that support public services and pension systems.

In the long run, immigration plays a vital role in boosting Canada's economy by helping to offset the effects of an aging population. Newcomers increase the labour supply and often drive job creation through entrepreneurial activity. They also enhance government revenues by paying taxes that fund essential public services and pension programs.

Immigration contributes significantly to Canada's economic growth over time, especially by addressing challenges posed by an aging population. Newcomers add to the labour force and often lead job creation through starting businesses. Their tax contributions also help sustain vital public services and support pension systems.

Short-term non-economic benefits

In the short-term, immigration helps enrich Canada's social and cultural landscape. Immigrants bring diverse languages, cultures, and perspectives. This translates to new connections, events, and vibrant communities.

In the short-term, immigration adds richness to Canada's social and cultural fabric. Newcomers introduce a wide range of languages, traditions, and viewpoints, fostering greater cultural exchange and understanding. Their presence helps build dynamic communities, spark new cultural events, and strengthen social ties across the country.

In the short-term, immigration enhances Canada's cultural and social vitality. Immigrants contribute unique traditions, languages, and perspectives that lead to more inclusive communities, diverse cultural experiences, and enriched social interactions across the country.