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Energy subsidies versus cash transfers: the causal effect of misperceptions on public support for countermeasures during the energy crisis

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Abstract

In reaction to the energy crisis that has unfolded since 2021, governments have implemented countermeasures to protect citizens against energy price hikes. In this article, we study public support for four government countermeasures in the United Kingdom and in France ($N_{\text{total}} = 4600$): energy subsidies and cash transfers, both either universal or targeted towards vulnerable households. In Study 1, we find that citizens prefer energy subsidies to cash transfers, and especially universal energy subsidies, despite their negative social and environmental impacts. In Study 2, we show that this preference for universal energy subsidies is partly due to widespread misperceptions about the cost, social impact, and environmental impact of this policy. Correcting these misperceptions lowers support for universal energy subsidies in the UK and increases relative mean support for the three other policies in France. In Study 3, we show that citizens also misperceive the effectiveness of targeted cash transfers, a policy that is socially fairer and more environmentally friendly than universal subsidies. Correcting this misperception increases support for targeted cash transfers in the UK but not in France.

Keywords: acceptability, energy crisis, policy misperceptions, public support, energy subsidies, cash transfers

1. Introduction

Since 2021, a global energy crisis has unfolded, characterized by shortages and sharp increases in oil, gas, and electricity prices. The crisis was partly caused by the rapid post-pandemic economic rebound that outpaced the energy supply, and the Russian invasion of Ukraine [1]. In reaction to these events, several governments implemented subsidies to lower energy prices for consumers [2]. In France, for example, the government introduced a universal fuel discount in April 2022 to offset the rise in fuel prices. In the UK, the Energy Price Guarantee was implemented in October 2022, freezing gas and electricity bills across the country. However, there is strong agreement among experts that fossil fuel subsidies have negative impacts on environmental sustainability, social inequality, and economic efficiency [3–5]. From an environmental point of view, fossil fuel subsidies interfere with the price-signal (influenced by carbon taxes or cap-and-trade systems) and lead to an overconsumption of carbon-intensive energy [6,7]. From a social point of view, fossil fuel subsidies are regressive because middle- and high- income households consume more carbon-intensive goods, and thus receive most of the benefits from fossil fuel subsidies [8,9]. Lastly, from an economic perspective, fossil fuel subsidies increase the fiscal burden on governmental budgets, and reduce the competitiveness of low-carbon industries [6,10].

To counter energy price shocks, using targeted monetary transfers towards low-income households (e.g., cash transfers or tax rebates) is both fairer and more aligned with pro-environmental objectives. Such transfers only help the most vulnerable households and do not distort energy prices [11–13], hence not interfering with the price-signal associated with carbon emission. Although targeted monetary transfers are more effective from a redistributive and environmental point of view than non-targeted fossil fuel subsidies (i.e. universal subsidies), they might not be favored by the population. As public support is key for policy implementation, examining public preferences with regard to government countermeasures in response to the energy crisis bears important practical relevance. Moreover, trust in government in times of crisis is shaped by the perception of government reactions and implementation

of countermeasures [14,15]. Hence, public perceptions of government countermeasures during the energy crisis can have important political consequences.

To the best of our knowledge, no study has examined citizens' preferences towards different policy responses to energy price shocks. In this paper, we hypothesized that (a) public support varies with policy characteristics such as policy instrument (energy subsidies vs. monetary transfers) and policy target (universal vs. the most vulnerable only), and (b) policy misperceptions causally affect public support for countermeasures in response to energy price shocks. Previous work conducted in the US has identified widespread misperceptions about several policy areas such as social security, national debt and social assistance, and showed that a single correction significantly decreased misperception prevalence [16]. Moreover, correcting misperceptions about existing refugee policy increased support for refugees among the American public [17]. In the environmental field, correcting misperceptions about the prevalence of climate-friendly behaviors and norms increased individual willingness to act against climate change as well as individual support for climate policies [18].

Here, we suggest that public support for countermeasures in response to the energy crisis varies with citizens' (mis)perception of policy features such as cost and impact, and that correcting potential misperceptions can affect policy support. Previous research has shown that environmental policy support depends on several mental representations of policy characteristics such as perceived policy cost [19,20], perceived policy fairness [21,22] and perceived policy effectiveness [23,24]. Moreover, empirical evidence shows that citizens can misperceive these policy features. Regarding policy cost, several studies suggest that citizens can be subject to a *fiscal illusion* [25], a "systematic misperception of fiscal parameters and an associated pattern of over- and under-estimation of expenditure and taxation liabilities" [26]. Questionnaire evidence on fiscal knowledge in the UK suggests a general ignorance of how fiscal structures work, both in terms of expenditure and of taxation [27]. Moreover, in Singapore, less than 30% of citizens believe that pronatalist tax deductions are provided at a cost to taxpayers [28]. As a result, when a public policy is complex and budgets are non-transparent, citizens may favor subsidy programs because they underestimate their cost [29,30].

Regarding policy fairness, Slemrod [31] found that Americans hold significant misconceptions regarding the incidence - progressive or regressive - of several tax policies (flat tax, retail sales tax, estate tax, income tax). Focusing on the value-added tax (VAT), a study conducted in multiple countries of Latin America showed that a large fraction of respondents underestimate its regressivity [32].

Moreover, respondents who are informed that an increase in the VAT is regressive are significantly more likely to prefer policy reforms that make the tax more progressive [32], which shows that perceived policy fairness influences policy support.

Finally, several misperceptions of policy effectiveness have been documented in the literature, two of which are of particular relevance here. Citizens largely underestimate the price-signal effect of a carbon tax, i.e. the fact that a higher price will lead to less demand for the taxed product, and this misperception lowers support for a carbon tax [24,33]. Moreover, cash transfer programs directed towards low-income households suffer from the misperception that beneficiaries will misuse the cash (for example by spending it on non-essential products such as alcohol and tobacco), favoring the belief that this policy is ineffective [34–36].

This article is organized as follows. We start by assessing citizens' preferences towards four policy scenarios in response to the energy crisis (based on real-world countermeasures) in two countries, France and the United Kingdom. Results indicate that participants prefer subsidies on energy prices over monetary transfers to households, with universal subsidies being rated as the preferred policy (Study 1). We then seek to understand why citizens show a high level of support for universal subsidies, despite their negative effects on the environment and on social inequality. We hypothesized that many citizens hold misperceptions about the cost, as well as the social and environmental impact of universal subsidies in the energy domain, misperceptions which likely increase public support. We find evidence in favor of this hypothesis and show that correcting these misperceptions decreases support for universal subsidies in the UK and increases mean relative support for alternative policies in France (Study 2). Finally, we find that many citizens also hold a misperception about targeted cash transfers regarding low-income households' money use, namely, that low-income households might not use the money as intended and spend it on non-essential goods instead. Correcting this misperception increases support for cash transfer policies in the UK, but not in France (Study 3). All experiments were pre-registered at <https://osf.io/9jk5u/>. Written consent was obtained for all studies prior to entering the experiment.

2. Study 1

The goal of Study 1 was to establish citizens' baseline preferences regarding various government countermeasures that can be implemented in response to increased energy prices, in the United Kingdom and France. These countries were chosen for several reasons: a) as European countries, they were hit strongly by the energy crisis due to their dependence on Russia for energy supply [37], which made it a very salient political situation, b) in these two countries, public policies were put in place to respond to the energy crisis, using different approaches (price caps were mostly used in the UK, while discounts and cash transfers were favored in France [2]), and c) as democratic countries, public opinion is likely to influence policy-making in these two countries.

We predicted a main effect of the policy instrument on the level of support. More specifically, we hypothesized that participants would be more supportive of subsidies than money transfers, due to policy misperceptions increasing support for subsidies and decreasing support for money transfers (the causal impact of these misperceptions will be explored in Studies 2 and 3). We had no prediction, however, on the effect of the policy target (universal vs. vulnerable households only) on the level of support, nor on the presence of an interaction effect between policy instrument and policy target on policy support.

2.1. Materials and methods

2.1.1. Participants

We conducted pre-registered survey experiments in two countries, the United Kingdom and France ($N_{\text{total}} = 1000$). British participants were recruited through the online platform Prolific Academic and compensated with pay for their participation in the study. The experiment was conducted on representative samples of the adult population stratified according to age, gender, and ethnicity. Responses were recorded from the 18th to the 20th of June 2022. 500 participants were recruited based on a power analysis using effect sizes obtained in a pilot study. A detailed account of the pilot study is reported in Supplementary Note 1. The final number of respondents after exclusion of inattentive respondents was 462 (237 women; mean age = 45.5). French participants were recruited through the online platform CrowdPanel and compensated with pay for their participation in the study. The study

used a representative sample of the adult population stratified according to age and gender¹. Responses were recorded from the 23th of June to the 5th of July 2022. 500 participants were recruited and the final number of respondents after exclusion of inattentive respondents was 468 (239 women; mean age = 41.7). A detailed account of participants' sociodemographics measured in the survey is provided in Supplementary Table 1.

2.1.2. Design and procedure

Participants first completed an attention check (see Supplementary Note 2). They were then told to imagine that the government has decided to use £10 billion to respond to a sharp increase in energy prices. The government has a choice between four countermeasures that will be implemented for three months (see Table 1). Policy responses were chosen based on real-world countermeasures implemented in France and in the UK [2]. Each participant saw all four policies and the presentation order was randomized. This was a 2x2 within-participant design in which policies varied according to the instrument (a subsidy vs. a monetary transfer), and the target (everyone vs. the most vulnerable). Participants were asked to indicate their level of support for each policy on a 10-point Likert scale. Participants then answered questions about their level of environmental concern, their attitude towards redistribution, their perceived energy use compared to other households, their level of trust towards other people, and towards the government, as well as socio-demographic questions about their age, gender, highest level of education, perceived income level in the population, political ideology, and residence area.

	Subsidy	Transfer
Targeted towards the most vulnerable	<i>“Reducing energy prices for the most vulnerable, for three months”</i>	<i>“Sending money to the most vulnerable each month (by cheque or bank transfer), for three months”</i>

¹ Due to recruitment difficulties, participants over 60 years old were under-represented in our sample.

Universal	<i>“Reducing energy prices for everyone, for three months”</i>	<i>“Sending money to everyone each month (by cheque or bank transfer), for three months”</i>
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Table 1. Illustration of the experimental design and stimuli of Study 1. Policy schemes differ according to the policy instrument (subsidy or transfer) and to the policy target (targeted towards vulnerable households or universal). Participants see all four policy schemes (in a randomized order) and have to indicate their support for each scheme on a ten-point Likert scale.

Additional exploratory questions about the general demand for governmental intervention in response to energy price hikes were asked at the end of the survey. These results are reported in Supplementary Note 3. The full survey (with the precise wording of all questions) is available as part of the replication archive for this article at <https://osf.io/9jk5u/>.

2.3. Results

In both the British and the French sample, the presentation order of policy schemes had no significant impact on the level of policy support ($p = 0.72$ and $p = 0.42$ respectively).

Regarding differences in support between the various policies, we found that, in line with our pre-registered hypothesis, the choice of policy instrument had a significant impact on policy support, such that participants preferred subsidies ($M_{UK} = 6.85$, $SD_{UK} = 2.56$; $M_{FR} = 6.29$, $SD_{FR} = 2.86$) to cash transfer policies ($M_{UK} = 5.26$, $SD_{UK} = 3.07$; $M_{FR} = 4.79$, $SD_{FR} = 3.19$) both in the UK ($F(1, 461) = 194.99$, $\eta^2 = 0.07$, $p < 0.001$), and in France ($F(1,467) = 212.81$, $\eta^2 = 0.06$, $p < 0.001$). This effect remained significant when controlling for age, gender, education, political ideology, living area, perceived income level, environmental concern, inequality aversion, political, and social trust (see Supplementary Figures 1 and 2 for a graphical representation of preferences across socio-demographic groups and attitudes).

Secondary analyses were then conducted to study the effect of policy target on policy support, as well as a potential interaction effect between policy instrument and policy target on the level of support. Policy target (universal vs. vulnerable households only) was not significantly associated with

policy preferences in both countries ($p_{UK} = 0.16$, $p_{FR} = 0.71$). However, exploratory analyses revealed significant moderation effects in both countries. In the UK, the effect of policy target on public support was moderated by inequality aversion ($p < 0.001$), environmental concern ($p < 0.001$), social trust ($p = 0.04$), and political ideology ($p < 0.001$) such that participants who are inequality-averse, environmentally concerned, high in social trust, or left-wing showed stronger support for targeted policies (see Supplementary Figure 1). In France, the effect of policy target on public support was moderated by inequality aversion ($p < 0.001$), environmental concern ($p < 0.001$), social trust ($p = 0.04$), political trust ($p < 0.001$), political ideology ($p < 0.001$), perceived income level ($p < 0.001$), and education level ($p = 0.04$) such that participants who are inequality-averse, environmentally concerned, high in social and political trust, left-wing, who received a shorter education, or perceive themselves to be lower on the income scale showed stronger support for targeted policies (see Supplementary Figure 2).

Finally, there was an interaction effect between the policy instrument and policy target both in the UK, $F(1,461) = 33.49$, $\eta^2 = 0.005$, $p < 0.001$, and in France, $F(1,467) = 63.50$, $\eta^2 = 0.01$, $p < 0.001$ (see Figure 1). For cash transfers, participants in both countries preferred targeted transfers ($M_{UK} = 5.57$, $SD_{UK} = 2.31$; $M_{FR} = 5.07$, $SD_{FR} = 2.63$) to universal transfers ($M_{UK} = 4.95$, $SD_{UK} = 2.73$; $M_{FR} = 4.51$, $SD_{FR} = 2.83$), $p_{UK} = 0.002$, $p_{FR} = 0.008$. For subsidies, French participants preferred universal subsidies ($M = 6.63$, $SD = 2.68$) to targeted subsidies ($M = 5.96$, $SD = 2.59$, $p < 0.001$), and British participants showed a non-significant preference ($p = 0.31$).

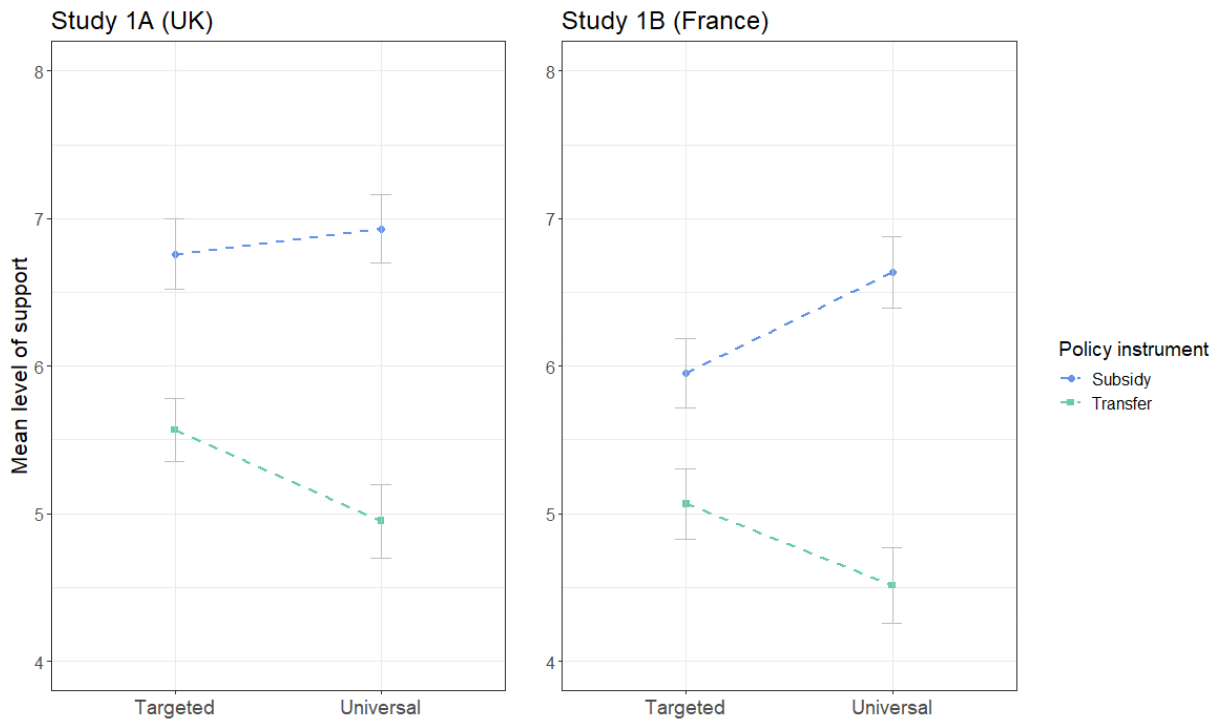


Figure 1. Mean level of support for four policy schemes varying in policy instrument (subsidy vs. cash transfer), and policy target (universal vs. vulnerable households only), from Study 1. Participants ($N_{UK} = 462$, $N_{FR} = 468$) rated each policy on a ten-point Likert-scale. Plotted are 95% CIs.

3. Study 2

Study 1 revealed a marked preference for subsidies over cash transfers in response to a rise in energy prices for both British and French citizens. In particular, universal subsidies were rated as the preferred policy in spite of their negative effects on the environment and on social inequalities. Study 2 tests the hypothesis that this preference for universal energy subsidies is partly the result of misperceptions about their cost, their social and environmental impact, and that correcting these misperceptions reduces support for subsidies. More specifically, we hypothesize that citizens may hold the following misperceptions about universal energy subsidies:

Misperception 1: Universal subsidies on energy prices are costless to taxpayers

Misperception 2: Universal subsidies on energy prices are not regressive (i.e. rich people do not save more money than poor people with this policy)

Misperception 3: Universal subsidies on energy prices have no negative environmental impact

Our first pre-registered hypothesis is that the more of these misperceptions participants hold about universal subsidies, the more likely they are to support universal subsidies (H1). Our second pre-registered hypothesis is that when participants are presented with correct information about universal subsidies' cost, and their social and environmental impact, they are less likely to support this policy than when they are not presented with this information (H2).

3.2. Materials and methods

3.2.1. Participants

We used the software program G*Power to conduct a power analysis, with an alpha level of 5%. An a-priori analysis showed that a minimum sample of 788 participants is required to detect a significant effect for H2 with 80% power if the population effect size is above Cohen's *d* of 0.2. All other statistical tests require a smaller sample size. We thus recruited 800 French participants from CrowdPanel and 800 British participants from Prolific Academic. Participants were compensated with pay for completing the experiment. The survey period was January 31st to February 3rd 2023 for the British sample, and May 30th to June 20th 2023 for the French sample. These studies used representative samples of the adult population in terms of age and gender, as well as ethnicity in the British study. Only participants who passed the attention check (see Supplementary Note 2) were allowed to enter the main phase of the experiment.

3.2.2. Design and procedure

After completing an attention check, participants were told to “[imagine] that the government responds to a sharp increase in energy prices by providing a discount (i.e. reduced prices) on energy products (fuel, gas, electricity, etc.)” They then had to state whether they thought that this discount policy (a) had *a cost* or no cost for taxpayers, (b) made rich people save *more*, less, or an equal amount of money than poor people, (c) had a *negative*, positive, or no environmental impact (correct answers here appear in italics). Each participant saw all three questions. The presentation order of the three questions was randomized, as well as the order of possible responses for each question. Participants were forced to choose one answer per question. In addition to answering these questions, participants in the treatment

group received the correct answer and its justification (i.e. a correction treatment) after each response, whereas participants in the control group only received the correction for all questions at the end of the survey. Participants were randomly allocated to either the control or treatment group when entering the experiment.

Each correction followed the same structure: 1) the correct answer, 2) a theoretical explanation, 3) an empirical example coming from a competent source (Table 2) Manipulation checks were conducted to ensure that participants adhered to the information presented [38], and corrections were pre-tested for clarity and convincingness (see Supplementary Note 4).

Cost correction	Social impact correction	Environmental impact correction
<p><i>This subsidy policy has a cost for taxpayers.</i></p> <p><i>This is because the State compensates energy suppliers in order to reduce prices for individuals. As the State budget relies on taxpayers' contributions, this policy has a cost for taxpayers.</i></p> <p><i>In Luxembourg, for example, the subsidy on fuel implemented in the spring and summer 2022 cost the State 56 million euros (Luxemburg's Ministry of Environment, November 2022).</i></p>	<p><i>With this subsidy policy, rich people save more money than poor people.</i></p> <p><i>This is because richer households consume more energy than poorer households. Thus, richer households benefit from greater savings than poorer households when energy prices are reduced.</i></p> <p><i>In France, for example, the subsidy on fuel implemented in the spring 2022 benefited twice as much to the richest 10% households than to the poorest 10% households (French Council of Economic Analysis, July 2022).</i></p>	<p><i>This subsidy policy has a negative impact on the environment.</i></p> <p><i>If energy prices are high, people consume less polluting energy from fossil fuel products (such as oil, gas and coal). This decreased consumption decreases CO2 emissions. By reducing energy prices, subsidy policies do not make people consume less energy, and thus fail to decrease CO2 emissions.</i></p> <p><i>In G20 countries, it has been shown that eliminating subsidies on fossil fuel products would reduce CO2 emissions by 3.5% by 2030 (GSI Report, July 2021).</i></p>

Table 2. Corrections used in Study 2 about the cost, the social impact, and the environmental impact of universal energy subsidies. Each correction followed the same structure: 1) the correct answer, 2) a theoretical explanation,

3) an empirical example coming from a competent source. All corrections were pre-tested for clarity and convincingness, and underwent manipulation checks.

In a second phase, participants were told to imagine another situation in which the government has decided to use 10 billion pounds (or euros in the French study) to respond to a sharp increase in energy prices and has a choice between four policies. They were then asked the same questions, regarding the same policies, as in Study 1. Finally, as in Study 1, participants answered various questions about their attitudes and socio-demographics.

3.3. Results

In line with the results of Study 1, participants in the control group (i.e. who were not exposed to correct information about energy subsidies) expressed more support for energy subsidies than for monetary transfers, both in the UK ($F(1,399) = 44.41, p < 0.001$) and in France ($F(1,398) = 44.83, p < 0.001$).

Statistical analyses about the prevalence of misperceptions were also conducted in the control group only in order to avoid treatment effects ($N_{UK} = 400, N_{FR} = 399$), as receiving the correct answer to one question could modify participants' answers to the next. A strong majority of citizens in both countries held misperceptions about universal energy subsidies: 82.2% of British participants and 75.9% of French participants held at least one of the three tested misperceptions. In the UK, 38%, 32.2%, and 12.0% of participants held one, two or the three misperceptions respectively. In France these frequencies were respectively 38.1%, 28.1%, and 9.7%. Moreover, H1 was supported as the more misperceptions participants held about universal subsidies, the more likely they were to support this policy, both in the UK ($R^2 = 0.02, F(1,398) = 8.93, p = 0.003$), and in France ($R^2 = 0.08, F(1,398) = 37.28, p < 0.001$, see Supplementary Figure 3).

Focusing on each misperception, 20.8% of participants in the UK and 20.1% of participants in France wrongly believe that universal subsidies on energy prices have no cost for taxpayers. Turning to the social impact of universal subsidies, only 43.0% of participants in the UK and 46.9% of participants in France rightly believe that rich people save more money than poor people with this policy. Finally,

only 39.2% of participants in the UK and 49.6% of participants in France rightly believe that universal subsidies on energy prices have a negative impact on the environment (see Figure 2).

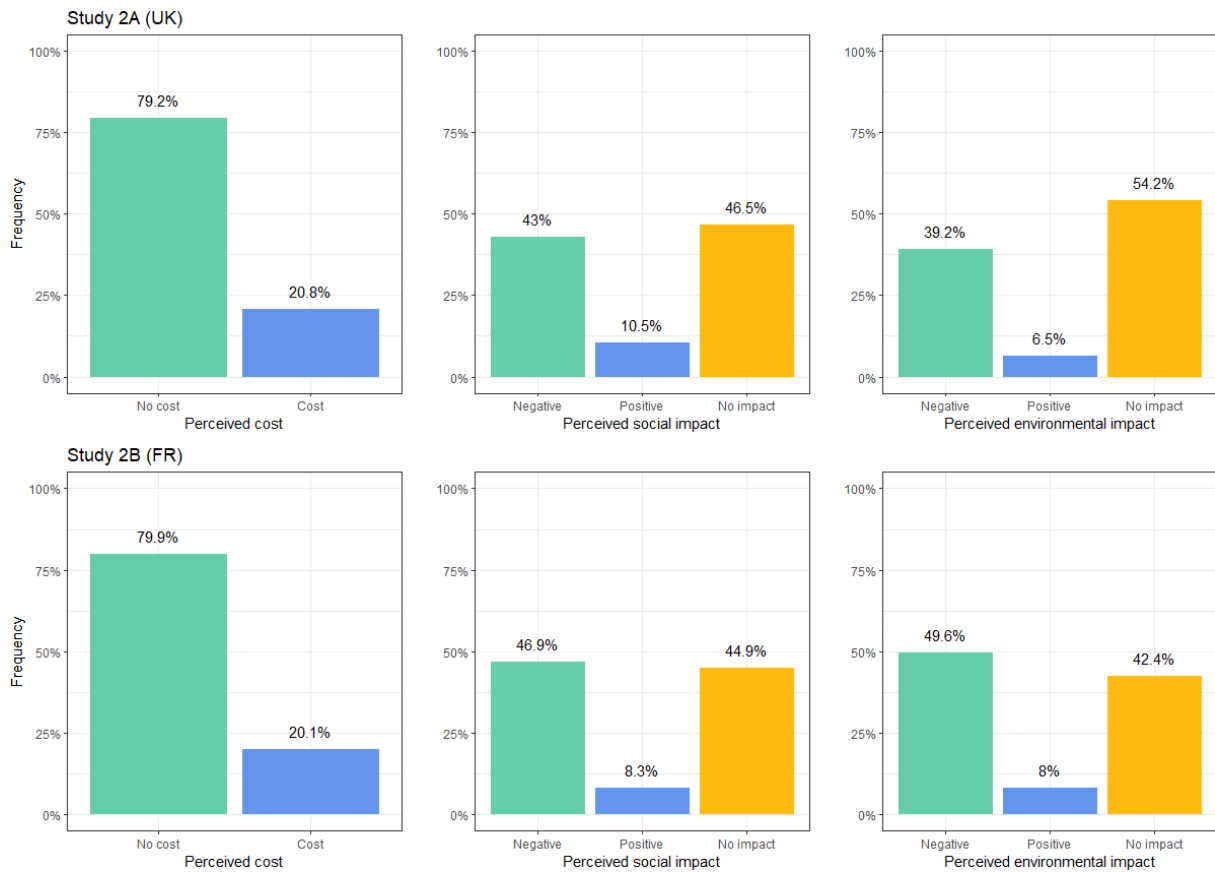


Figure 2. Frequency of answers to the three questions about universal energy subsidies (perceived cost, perceived social impact, perceived environmental impact) in the control group of Study 2 ($N_{UK} = 400$, $N_{FR} = 399$). Correct answers appear in green and are positioned on the left of each graph.

Correcting these misperceptions lowered support for universal subsidies in the UK sample, $t(796.97) = 3.08$, 95% CI [0.21, 0.96], $d = 0.22$, $p = 0.002$, in line with H2. Exploratory analyses revealed significant moderation effects of some control variables, tested in separate ANOVA models with interactions. The effect of the correction treatment varied with perceived energy use ($p = 0.03$) and perceived income level ($p < 0.001$), such that it was stronger for participants who declare using less energy and receiving less income than the average household. In the French sample, correcting misperceptions about universal subsidies did not significantly decrease support for this policy ($p = 0.21$), hence H2 was not supported in this sample. However, an exploratory analysis revealed that the correction treatment significantly increased mean support for the three other policies relative to universal subsidies, $F(1,797)$

= 6.45, $\eta^2 = 0.003$, $p = 0.01$ (see Figure 3). Exploratory analyses also showed that the effect of the correction treatment on universal subsidy support in the French sample was moderated by gender ($p = 0.02$) and inequality aversion ($p = 0.03$), such that women and inequality-averse participants showed lower support for universal subsidies with the correction treatment.

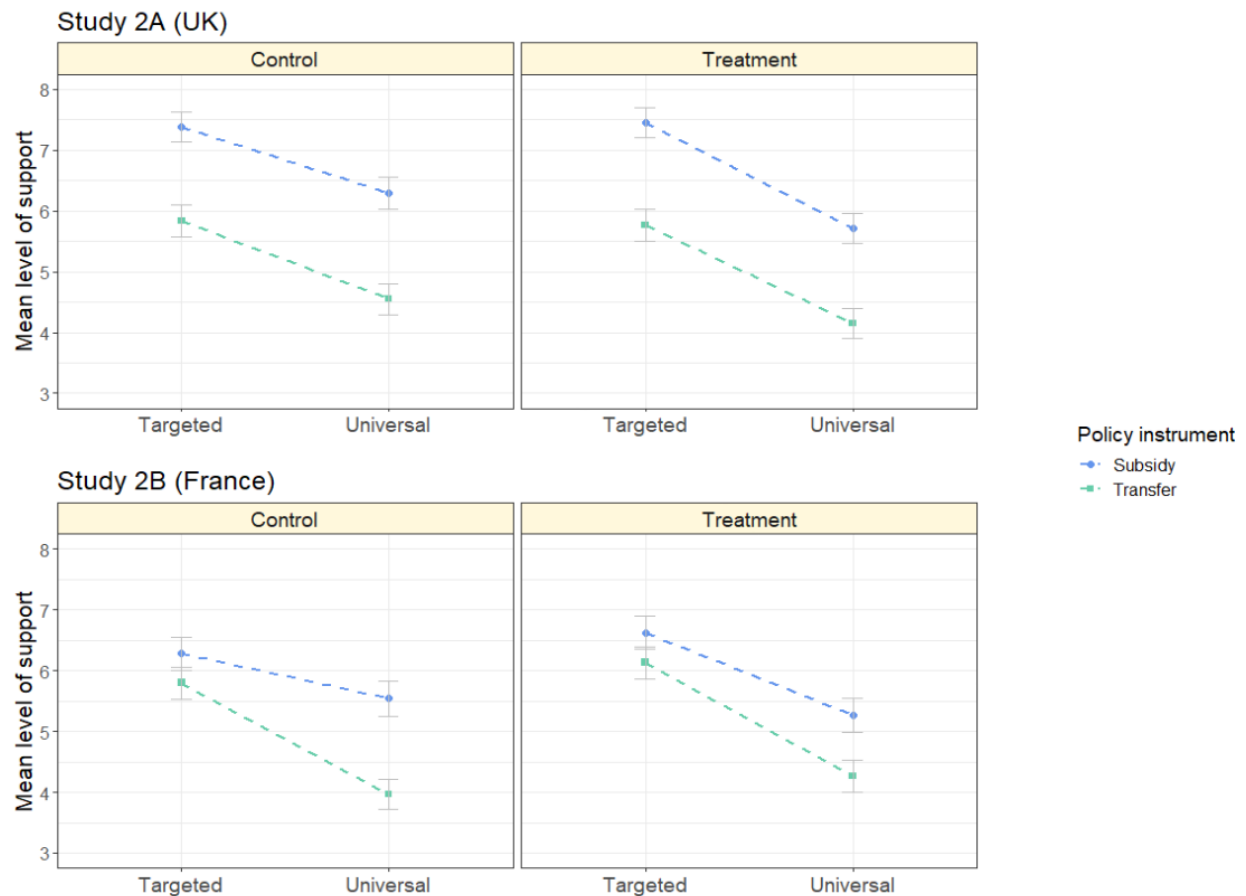


Figure 3. Mean level of support in each experimental group of Study 2 (control: no correction, treatment: correction) for four policy schemes varying in policy instrument (subsidy vs. cash transfer), and policy target (universal vs. vulnerable households only). Participants ($N_{UK} = 799$, $N_{FR} = 799$) rated each policy on a ten-point Likert-scale. Plotted are 95% CIs.

4. Study 3

Study 2 showed that most citizens in the UK and France hold misperceptions about universal subsidies as a response to a rise in energy prices, which helps explain the high level of support for a policy that is

socially and environmentally problematic. Conversely, Study 1 revealed a relatively low level of support for targeted cash transfers, a more socially and environmentally sound policy. This relative distaste for targeted cash transfers might itself stem from a misperception, namely that low-income households will use the money received from cash transfer programs on non-essential goods such as alcohol and tobacco. Interviews conducted in Kenya, for instance, have highlighted a widespread belief that cash transfer beneficiaries would “misdirect” the received money for alcohol consumption or other forms of non-essential consumption (Ikiara, 2009). An international study also evidenced a widely held prejudice against giving cash to poor people by fear of misuse, and a preference for in-kind support (Devereux, 2002). However, this widespread belief is a misperception: a meta-analysis conducted on 19 different studies showed that cash transfer beneficiaries do not spend more on alcohol and tobacco when receiving monetary help, compared to similar households who did not benefit from the policy (Evans & Popova, 2017). We thus hypothesized that the following misperception affects support for money transfer programs:

Misperception 4: When receiving money transfers, low-income households spend more on non-essential goods such as alcohol and tobacco than similar households who did not benefit from the policy.

To the best of our knowledge, the causal impact of this misperception on the support for cash transfer programs has never been tested. Our first pre-registered hypothesis is that participants holding the misperception about non-essential spending of cash transfer money by low-income households are less supportive of targeted money transfer programs (in the context of an attenuation of the effect of energy price hikes) than participants who do not hold this misperception (H1). Our second pre-registered hypothesis is that when participants are presented with correct information about low income households' use of money transfers, they become more supportive of the policy (H2).

4.1. Materials and methods

4.1.1. Participants

We used the software program G*Power to conduct a power analysis, with an alpha level of 5%. An a-priori analysis showed that a minimum sample of 998 participants is required to detect a significant effect

for H1 with 80% power if the population effect size is above Cohen's d of 0.2. All other statistical tests require a smaller sample size. We thus recruited 1000 French participants from CrowdPanel, and 1000 British participants from Prolific Academic. Participants were compensated with pay for completing the experiment. The survey period was September 20 to October 24, 2023, for the French sample, and August 18 to August 19, 2023, for the British sample. As for Studies 1 and 2, these studies used representative samples of the adult population in terms of age and gender, as well as ethnicity in the British study. Only participants who passed the attention check were allowed to enter the main phase of the experiment.

4.1.2. Design and procedure

The design of this study differs from the design of Study 2 only in its focus on targeted cash transfers instead of universal subsidies. The structure of the experiment is otherwise identical. After completing an attention check, participants were told that “in several countries around the world, money transfer programs have been put in place. Usually, this policy consists in sending money to low-income households to help them meet their needs”. They then had to answer whether they thought that compared to similar households who do not benefit from money transfer programs, low-income households who benefit from this policy spend more or do not spend more on non-essential goods such as alcohol and tobacco. In addition to answering these questions, participants in the treatment group received the right answer and its justification (i.e. a correction treatment) after each response, whereas participants in the control group only received the correction at the end of the survey. The correction was the following: *“Compared to similar households who do not benefit from this policy, low-income households who benefit from the policy do not spend more on non-essential goods such as alcohol and tobacco. Scientific data [hyperlink towards Evans & Popova, 2017 inserted here] from 19 different studies conducted around the world found that low-income households do not buy more alcohol and tobacco when they receive monetary help (compared to similar low-income households).”* This correction was pre-tested for clarity and convincingness. Participants were randomly allocated to either the control or treatment group when entering the experiment.

In a second phase, participants were told to imagine another situation in which the government had decided to use £10 billion to respond to a sharp increase in energy prices and had a choice between

four policies. They were then asked the same questions, regarding the same policies, as in Studies 1 and 2. Finally, as in Studies 1 and 2, participants answered various questions about their attitudes and socio-demographics.

4.2. Results

In the control group, 43.6% of participants in the UK and 37.0% of participants in France (wrongly) believed that compared to similar households who do not benefit from money transfer programs, low-income households who benefit from this policy spend more on non-essential goods such as alcohol and tobacco. In line with H1, participants holding this misperception were less likely to support targeted cash transfers in the energy domain, both in the UK, $t(343.08) = 8.49$, 95% CI = [-2.72, -1.70], $d = 0.81$, $p < 0.001$, and in France, $t(391.87) = 5.54$, 95% CI = [-2.04, -0.97], $d = 0.56$, $p < 0.001$. This analysis was only conducted in the control group of each sample ($N_{UK} = 502$, $N_{FR} = 505$) to obtain the relationship between misperception prevalence and policy support independently of the correction treatment. In both countries, misperception prevalence explained a large share of the variance in targeted cash transfer support, as evidenced by the large effect sizes ($d > 0.5$).

Finally, support for targeted cash transfers was significantly higher in the treatment group receiving the right answer and a justification ($M_{UK} = 6.52$, $SD_{UK} = 2.83$) than in the control group ($M_{UK} = 5.77$, $SD_{UK} = 3.05$) in the UK sample, $t(993.73) = 4.05$, 95% CI = [0.39, 1.12], $p < 0.001$, but not in the French sample ($p = 0.67$, see Figure 4). Hence, H2 was only supported in the UK sample. In both countries, no heterogeneous effects of the correction treatment on the support for targeted cash transfer were found across the sociodemographic variables and attitudes recorded in the survey. In the UK, however, the effect of the correction treatment on policy support was moderated by the presence of the misperception ($F(1, 996) = 11.59$, $p < 0.001$, see Supplementary Figure 4), such that the correction treatment only impacted targeted cash transfer support for participants who held the misperception. Regarding the impact of the correction on other policies than targeted cash transfers, a significant increase in support for universal cash transfers was found in the UK, $t(997.69) = 4.08$, 95% CI = [0.41, 1.18], $p < 0.001$ (see Figure 4).

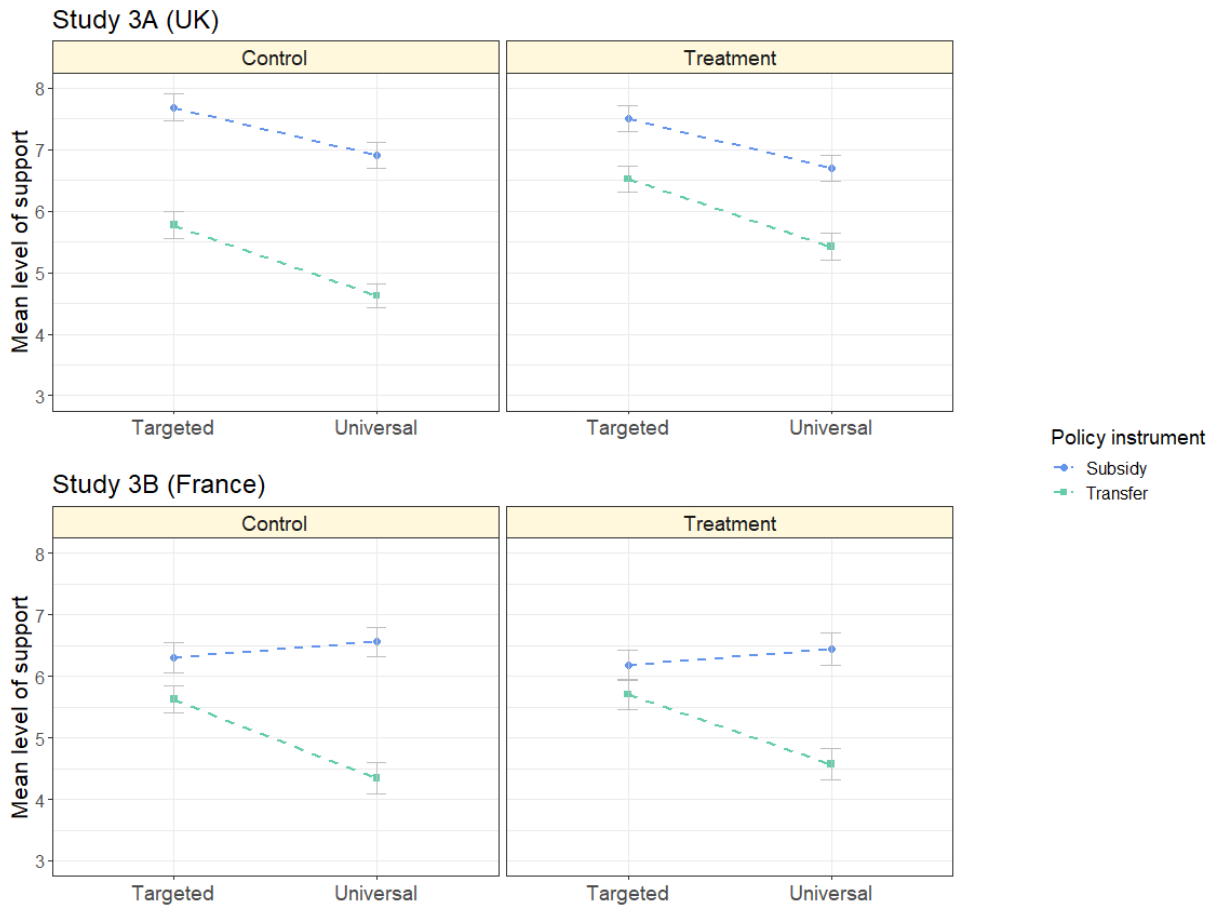


Figure 4. Mean level of support in each experimental group (control: no correction, treatment: correction) for four policy schemes varying in policy instrument (subsidy vs. cash transfer), and policy target (universal vs. vulnerable households only). Participants ($N_{UK} = 1000$, $N_{FR} = 999$) rated each policy on a ten-point Likert-scale. Plotted are 95% CIs.

5. Conclusion and discussion

In this article, we tested the acceptability of policy responses in the current context of rising energy prices across the world. In Study 1, we measured participants' support for four possible countermeasures based on real-world policies: a universal subsidy on energy prices, a targeted subsidy on energy prices for vulnerable households, a universal cash transfer and a targeted cash transfer for vulnerable households. We found that participants preferred subsidies to cash transfer policies, both in the UK and in France, and that participants' preferred policy was universal energy subsidies. In Study 2, we investigated why people favor universal energy subsidies despite their negative social and

environmental consequences. We found evidence that this can be explained by misperceptions about universal energy subsidies, misperceptions relative to their cost, their social impact, and their environmental impact. We also demonstrated that correcting these misperceptions lowers support for universal energy subsidies in the UK, and increases support for the three other policies relative to universal subsidies in France. In Study 3, we investigated the relatively low level of support for targeted cash transfers, a policy option that is fairer socially and more environment-friendly than universal subsidies. We found that the misperception that low-income households spend more on non-essential goods such as alcohol and tobacco when receiving monetary help (compared to similar households who do not receive such help) explains an important share of the support for targeted monetary transfers in the context of rising energy prices. We also showed that correcting this misperception increased support for targeted cash transfers in the UK, but not in France.

Several policy implications can be derived from the results obtained in these studies. First, the widespread nature of misperceptions about countermeasures both in the UK and in France suggest that political attitudes will be formed on the basis of inaccurate policy representations. Second, the fact that British participants increased their level of support for more redistributive and effective policies (i.e. targeted monetary transfers), and decreased their support for less redistributive and effective policies (i.e. universal subsidies) after a one-shot informational treatment suggests that communication campaigns about the cost and impact of countermeasures to energy price hikes can be an effective yet low-cost intervention to reduce the effectiveness-acceptability gap in the UK. One hypothesis for the lack of treatment effect on French participants in Study 3 relates to the level of trust in experts, as various international surveys have shown that France has lower levels of scientific trust than the UK [39]. However, participants' mean ratings of the correction's convincingness were similar in the two countries ($M_{UK} = 6.44$, $M_{FR} = 6.54$), which does not support this hypothesis. Alternatively, the fact that fewer participants in France than in the UK held the studied misperception about targeted cash transfers may have made it more difficult to observe an effect of treatment.

The experiments conducted in the reported studies have some limitations. First, public support is measured through declarative questions of agreement with policy scenario proposals. Hence, baseline levels of policy support obtained in the presented studies may be higher than those obtained with similar non-declarative tasks, due to a social desirability bias [40] and the absence of salient

decision costs [41]. Second, we only used four policies as case studies: public perceptions of other policies that can be implemented in response to energy price hikes (e.g. price caps or tax rebates) remain to be investigated. Finally, we did not differentiate between various dimensions of vulnerability to rises in energy prices in the targeted policies, such as income level or energy dependence, a limitation that could be addressed by future work.

Future work could also investigate whether misperceptions about policy cost and policy outcomes can impact support for more long-term energy policies (e.g. increasing the share of renewable energy production). A recent cross-national study showed stable levels of public support for renewable energy policies during the energy crisis [42], but heterogeneity according to policy perception was not measured. Moreover, determining whether policy misperceptions arise from an informational deficit and/or from specific cognitive biases could be an interesting area of study. Finally, other mechanisms than policy misperceptions may also play a role in shaping policy support for countermeasures in response to energy price hikes. For example, the “belief in a just world” can lower support for any policy targeted at low-income households if it is believed that these people are “deserving” of their place in society, and thus that compensatory policies are not deemed necessary [43,44].

To conclude, these studies underline the importance of policy misperceptions in shaping public support for government countermeasures in response to energy price hikes, and suggest that correcting these misperceptions with communication campaigns can be an effective intervention in the UK at least.

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Pre-registrations. All experiments were pre-registered at <https://osf.io/9jk5u>.

Data and code availability

Data and analysis code to reproduce the presented analyses are available at <https://osf.io/9jk5u>.