



Perceiving economic inequality in everyday life decreases tolerance to inequality[☆]



Juan Diego García-Castro^{a,b,*}, Rosa Rodríguez-Bailón^b, Guillermo B. Willis^b

^a University of Costa Rica

^b University of Granada, Spain

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ABSTRACT

Economic inequality is one of the main issues of modern societies, and one of the ways to reduce it is through decreasing inequality tolerance and increasing support for economic redistribution. However, there are no consistent results in previous research about the relationship between perceived economic inequality, tolerance to inequality, and support for redistributive policies. In this paper, we argue that rather than measuring the effects of abstract perceived inequality (e.g., measured at the country level), it is important to consider Perceived Economic Inequality in Everyday Life (PEIEL) and close relationships. In one correlational study ($N = 207$) we found that a PEIEL scale predicts intolerance toward inequality controlling for the common measures of perceived inequality. Moreover, we developed a novel manipulation which was validated in a pilot study ($N = 293$), and in four experimental studies ($N = 261$; $N = 373$; $N = 289$, $N = 289$), we found that PEIEL decreases tolerance to inequality. Furthermore, we found a preliminary indirect effect of PEIEL on attitudes toward redistribution through intolerance to inequality. A mini meta-analysis using political ideology, social class, sex, and age as covariates, corroborated these results. All studies were preregistered. In short, these results highlight the importance of perceived inequality in everyday life as an additional tool when considering the psychosocial effects of economic inequality.

1. Introduction

Economic inequality is one of the main issues of current societies (Wilkinson & Pickett, 2017; World Economic Forum, 2017). In the last three decades, the global top 1% of the world population increased their income twice as much as the 50% poorest segment (Alvaredo, Chancel, Piketty, Saez, & Zucman, 2017). In Spain, the context of the current study, inequality has increased significantly in the last years, and it is now one of the most unequal countries in the European Union (EUROSTAT, 2018).

One of the main ways to reduce economic inequality—and to stop its progression—is through redistribution (Atkinson, 2015). But is economic inequality perception enough to change tolerance to inequality? Do people have positive attitudes toward redistribution? Previous research has shown that living in highly unequal contexts does not have a straightforward impact on such attitudes, and it has instead highlighted the importance of considering perception and experience (Brown-Iannuzzi, Lundberg, Kay, & Payne, 2015; Choi, 2019; García-Sánchez et al., 2018; Gimpelson & Treisman, 2018; Wright, 2018).

The literature posits that the subjectively perceived economic inequality produces greater psychosocial impact on attitudes toward inequality than objective economic inequality (Bobzien, 2019; Choi, 2019; Evans & Kelley, 2018; Loveless, 2013). However, the findings regarding the relationship between perceiving economic inequality, tolerance to inequality, and support for redistributive policies are inconclusive (García-Sánchez, Willis, Rodríguez-Bailón, Palacio, et al., 2018; Wright, 2018). Researchers have pointed out that these inconclusive results might be due to different factors. The actual economic inequality could act as a cognitive anchor used to estimate the ideal world (García-Sánchez, Willis, Rodríguez-Bailón, Palacio, et al., 2018; Trump, 2018). Thus, although people tend to reject inequality, in countries with greater inequality, they also tend to tolerate it more (Boudreau & MacKenzie, 2018; Castillo, Miranda, & Carrasco, 2012). Additionally, people have a poor understanding of how inequality works, and they do not know how redistributive policies can alleviate it (Brown-Iannuzzi et al., 2015; Kuziemko, Norton, Saez, & Stantcheva, 2015).

In this article, we argue that one way to change tolerance to

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* Corresponding author at: Centro de Investigación Mente Cerebro y Comportamiento (CIMCYC), Campus Cartuja S/N 18071, Granada, Spain.

E-mail addresses: juandiego.garcia@ucr.ac.cr (J.D. García-Castro), rrbailon@ugr.es (R. Rodríguez-Bailón), gwillis@ugr.es (G.B. Willis).

inequality and attitudes toward redistribution is to get people to pay attention to the economic inequality they experience in their everyday lives. Building on the literature showing that the immediate context has a greater influence on individuals' attitudes than national aggregates (Franko, 2016; Newman & Hayes, 2019; Newman & Kane, 2017), and that social sampling process affects the perception and attitudes toward inequality (Dawtry, Sutton, & Sibley, 2015; Dawtry, Sutton, & Sibley, 2019), we propose that when people experience high inequality in their daily experiences, they tend to have worse attitudes toward inequality and to be more prone to redistribution.

1.1. Perceived economic inequality in everyday life, tolerance to inequality and attitudes toward redistribution

Perceived Economic Inequality in Everyday Life (PEIEL) are the daily experiences in which individuals perceive differences in the way resources are distributed between the members of a society (García-Castro, Willis, & Rodríguez-Bailón, 2019). From this perspective, experience is the basis on which individuals evaluate inequality (Ignácz, 2018).

People tend to get information about wealth distribution from their own experience and the experiences of people with whom they interact in their daily lives. This is explained by the accessibility heuristic, a systematic perceptual bias, under which individuals form their impressions about the economy from their close social circles (Evans & Kelley, 2017; Flanagan & Kornbluh, 2017). These social circles are not representative of society and create systematic differences in the perception and experience of inequality. The information extracted from closer social relations is generalized to the whole society (Brown-Iannuzzi et al., 2015; Cruces, Perez-Truglia, & Tetaz, 2013). As such, it has been found that social sampling processes influence political attitudes toward poor and wealthy people (Dawtry et al., 2015).

Economic inequality is not always considered intolerable or undesirable. The extent to which it is tolerated depends on the perception people have of it (Han, Janmaat, Hoskins, & Green, 2012; LA Roex, Huijts, & Sieben, 2019). In fact, some people not only tolerate inequality but also prefer some relative inequality (Arsenio, 2018; Son Hing, Wilson, Gourevitch, English, & Sin, 2019). Until now, it has not been clear what the relationship between tolerance toward inequality and perceived economic inequality is. However, most studies have found a negative relationship between these two factors (Castillo et al., 2012; Kuhn, 2019). Despite these findings, the opposite has also been suggested in previous research (Loveless, 2013; Trump, 2018). In a previous study, measuring perceived inequality based on the closest context, PEIEL positively predicted intolerance toward inequality over and above the most popular measures of general perception of inequality used in the literature (García-Castro et al., 2019).

Moreover, attitudes toward inequality and redistribution are influenced by the perception of economic inequality in everyday life too (Bailey, Gannon, Kearns, Livingston, & Leyland, 2013). It has already been shown that reference groups affect attitudes toward redistributive policies (Cruces et al., 2013; Newman, 2014). For example, people support more redistributive policies when they make more economic comparisons between people (Clark & Senik, 2010; Senik, 2009), when one of their friends has economic problems (Newman, 2014), and when they are in contact with the unemployed (Franko, 2016). Furthermore, individuals who live in more unequal contexts tend to vote for senators who support more redistributive policies (Newman & Hayes, 2019).

The Meltzer-Richard model proposed that economic inequality would make people demand greater redistribution. However, so far, its results are not conclusive (Choi, 2019; García-Sánchez, Willis, Rodríguez-Bailón, Palacio, et al., 2018). As an extension of this model, it has been theoretically proposed that it is not just objective economic inequality but its subjective perception which may lead to a greater demand toward redistribution (Choi, 2019; Son Hing et al., 2019). Although the effect of perceived economic inequality, in support for

redistributive policies, may not be linear (Choi, 2019; Norton & Ariely, 2011). It has also been proposed that perceived economic inequality would make people care more about inequality, and that, in turn, would make them support more redistributive policies (Choi, 2019; Son Hing et al., 2019). Nonetheless, as far as we know, the indirect path of perceived economic inequality influencing attitudes toward redistribution through intolerance to inequality has not been empirically tested.

In this paper, we aimed to increase what we know about the relationship between perceived economic inequality, tolerance to inequality and attitudes toward redistribution in at least three ways. First, perceived inequality has been commonly assessed abstractly, bearing little relation to the ways in which people estimate the inequality within the context in which they live (García-Sánchez et al., 2018). Hence, we aimed to deepen the research on inequality in a more direct and meaningful way, through the inequality that individuals experience in their daily lives. For instance, we used a scale that measures salient experiences of inequality in everyday life, and how individuals perceive inequality in their close social circle (García-Castro et al., 2019). Second, although previous researchers have already examined the relationship between PEIEL and tolerance to inequality (García-Castro et al., 2019), no experimental research has been conducted to examine the causal direction of this effect. Finally, the possible relationship between the perception of economic inequality and attitudes toward redistribution mediated by intolerance to inequality has not yet been empirically examined. We therefore conducted four preregistered experimental studies to fulfill this gap.

Evidently, the perception of economic inequality is not the only variable that affects tolerance to inequality and attitudes toward redistribution. Literature has traditionally explained attitudes toward redistribution through personal interest and social values or ideology (Brown-Iannuzzi et al., 2015; García-Sánchez, Van der Toorn, Rodríguez-Bailón, & Willis, 2019; Mijs, 2018; Wu & Chou, 2017), and points out how other variables, like age (Elenbaas, 2019; García-Sánchez et al., 2019), and sex (García-Sánchez et al., 2019; Lierse, 2019), can also have an important influence. We consequently aim to control for these variables when examining the effects of PEIEL.

Summing up, we predicted that PEIEL would increase intolerance toward inequality and, in turn, increase support for redistribution. Specifically, in Study 1, we tested whether measured PEIEL predicts intolerance of inequality and attitudes toward redistribution when controlled for the common measures used in the literature about perceived economic inequality (H1). Then, we validated a novel manipulation of PEIEL in a pilot study. In Study 2, we corroborate the causality of the effects found in study 1 (H2). In Study 3a we ran an experimental direct replication between the PEIEL condition and the control condition (H3a and H3b), and in Study 3b we improve the control condition of equality in daily life used in study 2 and replicate the results (H4a and H4b). Finally, in Study 4, we conceptually replicated the finding using a different experimental manipulation of PEIEL (H5a and H5b). All measures, pre-registrations, hypotheses, data, and results for all the studies can be consulted in the supplemental materials. Sample sizes were determined before any data analysis. (https://osf.io/krx8m/?view_only=069f8366242e4dccb0309ccf89f88324).

2. Study 1

With this first study, we wanted to know if PEIEL's scale predicts intolerance to inequality, attitudes toward redistribution, attributions of poverty, and attitudes toward the poor. We controlled for the common measures of perception of inequality and other covariates such as political ideology, social class, sex, and age. To do this, we ran a correlational study. The results described are on intolerance toward inequality and attitudes toward redistribution as these were the effects we focused in the following studies in this paper. The results on the attributions of poverty and attitudes toward the poor are presented in

the supplementary materials.

2.1. Preregistered hypothesis

H1. The PEIEL scale (García-Castro et al., 2019) would predict—when controlling by wage gap estimation and diagrammatic perception—intolerance of inequality and attitudes toward redistribution.

2.2. Participants

Data collection was carried out at a bus station in Granada, Spain. We collected data from 210 participants but following our pre-registration plan we removed three questionnaires that presented multivariate outliers. Our final sample was composed of a total of 207 individuals between 18 and 60 years ($M = 26.3$, $SD = 8.0$), 53.1% of whom were female. Most of them (84.1%) had a university degree. Incidental non-probabilistic sampling was used. Participants voluntarily filled out the questionnaire with all the measures; they took approximately 15 min to complete it. All participants provided informed consent before answering the questions. Based on sensitivity power analyses, with this sample, a statistical power of 80%, and $p < .05$, the minimum effect that can be found is $f^2 = 0.038$.

2.3. Instruments

2.3.1. Perceived Economic Inequality in Everyday Life scale

The measured PEIEL is a 12-item Likert scale with a 7-point response format ranging from 1 (*completely disagree*) to 7 (*completely agree*). Some examples of its items are as follows: “I know people who can afford to save money and others who do not reach the end of the month,” “Among the people I know some cannot afford unforeseen expenses and others solve them without any difficulty” (García-Castro et al., 2019; $\alpha = 0.88$, $M = 5.69$, 95% CI [5.55, 5.83]).

2.3.2. Wage gap inequality estimation

Participants were asked about their estimation of the monthly salary of the highest and lowest paid worker in a typical Spanish company. Afterward, a logarithmic ratio between these two magnitudes was computed: \ln (perceived earning highest-paid worker/lowest-paid worker). Complete equality is represented by a ratio of 0 (see Willis, Rodríguez-Bailón, López-Rodríguez, & García-Sánchez, 2015; $M = 2.40$, 95% CI [2.20, 2.61]).

2.3.3. Diagrammatic inequality perception

We used a diagrammatic measure of the perception of economic distribution in society. Participants were asked to select from among five diagrams the one that most precisely represented Spanish society. The options range from “A,” with small elite at the top and a large mass at the bottom, to “E,” with most of the people in the upper level of the distribution. Higher numbers mean more people have more resources which translates into lower perceived inequality (Castillo et al., 2012; $M = 2.50$, 95% CI [2.35, 2.66]).

2.3.4. Tolerance of inequality

We used a question that is included in most international surveys: To what extent do you agree that the income differences in Spain are too large? Response options ranged from 1 (*totally disagree*) to 7 (*totally agree*). This question has been operationalized as tolerance of inequality in several studies (Gonthier, 2017; Larsen, 2016; Schröder, 2017; $M = 5.88$, 95% CI [5.70, 6.05]). Higher scores show less tolerance of inequality—therefore, we refer to this measure hereafter as intolerance of inequality.

2.3.5. Attitudes toward redistribution

We used two items measuring the support of redistribution actions promoted by the government (ISSP, 2017). Response options ranged from 1 (*completely disagree*) to 7 (*completely agree*). The items presented were “The Government has the responsibility to reduce the income differences between those who have high incomes and those who have low incomes” and “The Government should provide a decent standard of living for those who are unemployed” ($\alpha = 0.70$, $r = 0.54$, $p < .001$, $M = 5.64$, 95%CI [5.46, 5.83]). This is the most widely used measure of redistribution preferences (Choi, 2019).

2.3.6. Political ideology

“In politics, sometimes people talk about “left” and “right”, using a scale where 1 means “left” and 7 “right” where would you posit yourself on this scale?” ($M = 3.21$, 95%CI = [3.01, 3.41]) (Piurko, Schwartz, & Davidov, 2011).

2.3.7. Social class

In line with previous studies (Piff, Kraus, Côte, Cheng, & Keltner, 2010), social class was measured by family income and completed formal education. Monthly family income in euros was coded into ten categories, with higher numbers representing greater income ($M = 4.19$; 95%CI = [3.90, 4.48]). The formal educational level completed by participants was measured using an 8-point scale ranging from 1 (primary education) to 8 (doctorate) ($M = 5.40$, 95%CI = [5.23, 5.56]). Responses on family per capita income and self-educational level were standardized and summed.

Other scales were also included. For space reasons, the details appear in Supplemental Materials.

2.4. Analysis plan

To test whether PEIEL's scale predicts intolerance to inequality and attitudes toward redistribution, when controlled for the wage gap estimation, the diagrammatic perception of inequality, political ideology, social class, sex, and age, we performed two hierarchical regressions: one for each criterion variable. In the first step, we included the variables to control and in the second step we included PEIEL's measure.

2.5. Results and discussion

As can be observed in Table 1, hierarchical regression analysis showed that measured PEIEL predicted intolerance of inequality ($B = 0.28$, $p < .001$) when controlling by the wage gap estimation, the diagrammatic perception of inequality, political ideology, social class, sex, and age, $F(7, 185) = 10.441$, $R^2 = 0.263$, $\Delta R^2 = 0.066$ for Step 2, $p < .001$. Moreover, measured PEIEL did not predict attitudes toward redistributive policies ($B = 0.08$, $p = .21$), when controlling by the wage gap estimation, the diagrammatic perception of inequality, political ideology, social class, sex, and age, $F(7, 189) = 10.898$, $R^2 = 0.296$, $\Delta R^2 = 0.006$ for Step 2, $p < .001$.

After running the preregistered analyses, we analyzed, in an exploratory way, whether the relationship between PEIEL and attitudes toward redistributive policies could be mediated by intolerance of inequality when controlling by political ideology, social class, sex, and age. We indeed found an indirect effect ($B = 0.14$, $SE = 0.05$, 95% CI [0.0517, 0.2685]) and a total effect ($B = 0.20$, $SE = 0.09$, $t(187) = 2.224$, $p = .027$, 95% CI [0.0231, 0.3853]), but not a direct effect ($B = 0.05$, $SE = 0.09$, $t(188) = 0.628$, $p = .53$, 95% CI [−0.1243, 0.2407]). Even though we presented the hypothesis of this mediation in the introduction and from the study 3a onwards, when we ran the study we did not have this prediction, and this is why we still present the result as exploratory.

In general, the results show that PEIEL is an additional relevant tool to explore the psychosocial effects produced by economic inequality. In order to know the direction of those effects, we developed an

Table 1

Hierarchical regression analysis to predict intolerance of inequality and attitudes toward redistribution (ATR).

Predicting variables	Intolerance	ATR
	<i>B</i>	<i>B</i>
Step 1		
Wage gap inequality estimation	0.113	0.116
Diagrammatic inequality perception	−0.336***	−0.223**
Political ideology	−0.233**	−0.394***
Social class	0.007	−0.039
Sex	0.092	0.066
Age	0.044	0.143*
Step 2		
Wage gap inequality estimation	0.080	0.105
Diagrammatic inequality perception	−0.261***	−0.201**
Political ideology	−0.189**	−0.380***
Social class	0.038	−0.030
Sex	0.079	0.061
Age	0.006	0.132*
Perceived Economic Inequality in Everyday Life scale	0.282***	0.084

Sex: 1 = men, 2 = women.

*** $p < .001$.

** $p < .01$.

* $p < .05$.

experimental manipulation of PEIEL, which is evaluated in the following study.

3. Pilot study

Based on the results of Study 1, we examined an experimental manipulation of PEIEL. We conducted a pilot study to evaluate the construct validity of the manipulation (Chester & Lasko, 2019) by testing its effects on the PEIEL scale used in Study 1, and on the manipulation check used in the following studies.

3.1. Pre-registered hypothesis

Participants assigned to the Perceived Economic Inequality in Everyday Life condition will show a higher score in the PEIEL's scale compared to those assigned to the control condition.

Participants assigned to the Perceived Economic Inequality in Everyday Life condition will show a higher score in the perception of economic differences among people compared in both conditions compared to those assigned to the control condition.

3.2. Participants

They were asked in the library of the university to participate anonymously and voluntarily. We collected data from 300 participants but following our pre-registration plan we removed seven questionnaires from non-Spaniards. Our final sample was composed of a total of 293 Spanish students. Their age range between 18 and 36 years ($M = 22.2$, $SD = 3.7$), 58.7% of whom were female. Participants filled out the questionnaire at one specific time with all the measures (approximate time 10 min) and were randomly assigned to one of the conditions. Based on a sensitivity power analysis, with this sample, a statistical power of 80%, and $p < .05$, the minimum effect that can be found is $d = 0.32$.

3.3. Experimental conditions and dependent variables

3.3.1. Perceived economic inequality in everyday life condition

Participants were asked to think about the wealthiest and the least wealthy persons they personally knew. Then, they were asked to write a

paragraph about how economic resources influence the lives of the people they considered.

3.3.2. Control group

Participants assigned to this condition were asked to think about the tallest and shortest persons they personally knew. Then, they were asked to write a paragraph about how their height influences the lives of the people they considered. We chose this control group to test if the possible effects were due to PEIEL and not to the activation of social comparison processes.

As dependent variables, we used the PEIEL's scale used in the last study ($\alpha = 0.86$, $M = 5.52$, 95% CI [5.41, 5.64]) and a question about the differences in wealth between the two persons they described in the manipulation condition and the control condition ($M = 4.77$, 95% CI [4.55, 4.99]).

3.4. Results and discussion

We found an effect of the inequality manipulation on the PEIEL's scale ($t(291) = -3.260$, $p = .001$, $d = 0.38$, 95% CI [0.61, 0.15]). Specifically, the results showed that participants in the perceived economic inequality in everyday life condition ($M = 5.71$, 95% CI [5.57, 5.86]) perceived more economic inequality in their everyday life than participants in the control condition ($M = 5.33$, 95% CI [5.15, 5.51]).

In addition, we also found an effect of the manipulation in the perception of economic differences among people compared in both conditions ($t(291) = -10.941$, $p < .001$, $d = 1.27$, 95% CI [1.02, 1.52]). Participants in the perceived economic inequality in everyday life condition ($M = 5.79$, 95% CI [5.62, 5.97]) perceived more economic differences between the people they are comparing than the participants in the control condition ($M = 3.75$, 95% CI [3.42, 4.08]).

These results show that the manipulation effectively affects the construct we try to manipulate. In the following studies, we will use this manipulation to examine whether it also has an effect on tolerance to inequality and attitudes toward redistribution.

4. Study 2

Based on the results of the previous studies, we used the manipulation of perceived economic inequality to test if it has a causal relationship with intolerance of inequality, attitudes toward redistribution, external attribution of poverty, and perceived inequality of opportunities. The results described are on intolerance toward inequality and attitudes toward redistribution as these were the effects we focused in the following studies in this paper. The results for external attribution of poverty and perceived inequality of opportunities are presented in the supplemental materials. We used the two conditions from the pilot study: an experimental condition of perceived economic inequality in everyday life, a control group, and a new experimental condition of perceived equality in daily life. We included this new condition to evaluate if the level of perceived economic inequality in everyday life is what produces the effects.

4.1. Preregistered hypothesis

H2. Participants in the activation of PEIEL condition would show a higher increase in intolerance of inequality and support for economic redistribution than the two other groups.

We did not have a specific hypothesis for the comparison between the equality and the control conditions.

4.2. Participants

A total of 261 Spanish university students between 18 and 36 years ($M = 22.3$, $SD = 3.6$) participated, 52.1% of whom were female. They

were asked in the library of the university to participate voluntarily and anonymously. None of the participants' answers were excluded from data analyses. Participants filled out the questionnaire at one specific time with all the measures (approximate time 25 min). Participants were randomly assigned to one of the conditions. Based on sensitivity power analyses, with this sample, a statistical power of 80%, and $p < .05$, the minimum effect that can be found is $d = 0.38$.

4.3. Experimental conditions

We used the same conditions used in the pilot study and add a new condition of perceived equality in daily life. In this condition of perceived equality in daily life, participants were asked to think about two people they personally knew who were similar regarding their wealth. Then, they were asked to write a paragraph about how economic resources influence the lives of the people they considered.

4.3.1. Manipulation check

We included a manipulation check to assess the effectiveness of the manipulation (a question about the differences in wealth between the two persons they described at the beginning) and found a significant result, $F(2, 257) = 168.421$, $p < .001$, $\eta_p^2 = 0.57$. There were differences between the PEIEL condition ($M = 5.93$, 95% CI [5.64, 6.21]) and the equality condition ($M = 2.73$, 95% CI [2.44, 3.03], $t(169) = 16.899$, $p < .001$), and between the PEIEL condition and the control group ($M = 2.55$, 95% CI [2.27, 2.84], $t(169) = 15.948$, $p < .001$).

4.4. Dependent variables and covariates

We used the same measures of intolerance of inequality ($M = 5.24$, 95% CI [5.07, 5.42]), attitudes toward redistribution with three items ($\alpha = 0.80$, $M = 5.11$, 95% CI [4.95, 5.28]) and political ideology ($M = 3.35$, 95% CI [3.18, 3.51]) as we used in Study 1. To measure social class, we used the same procedure from the previous study, except that this time instead of using the indicator of self-education's level we used the average educational level of both parents. The educational level of both parents is more informative with university students (Diemer, Mistry, Wadsworth, López, & Reimers, 2013). This formal education level was measured using a 5-point scale ranging from 1 (without studies) to 5 (university studies; $M = 3.72$, 95% CI [3.57, 3.87]). Then we computed an index summing the standardized family income in euros ($M = 4.66$, 95% CI [4.35, 4.97]) plus the standardized index of the level of education of both parents. Other scales were also included. For space reasons, the details appear in Supplemental Materials.

4.5. Results and discussion

We predicted (H2) that participants in the PEIEL condition would show a higher increase in intolerance of inequality and support for economic redistribution than the other two groups. We found that our manipulation of the PEIEL condition was not significant on the intolerance of inequality, $F(2, 258) = 2.652$, $p = .072$, $\eta_p^2 = 0.02$. We found that participants in the PEIEL condition ($M = 5.52$, 95% CI [5.23, 5.82]) tolerated less inequality compared with the control group ($M = 5.06$, 95% CI [4.77, 5.36], $t(172) = 2.147$, $p = .033$, $d = 0.32$, 95% CI [0.02, 0.62]). The effect was not significant when the PEIEL condition and equality condition ($M = 5.14$, 95% CI [4.85, 5.44]) were compared ($t(172) = 1.886$, $p = .061$).

In short, although results were in the expected direction with respect to intolerance of inequality and the contrast between the PEIEL condition and the control group was statistically significant, the difference between the PEIEL condition and the equality condition was not significant. We realized that this might have been because in the equality condition participants were asked to think about two people of

equivalent financial resources but the level of their resources was not specified. They could have supposed two equally rich persons, two equally average persons or two equally persons of lower socioeconomic status. This might mistakenly produce a sense of inequality rather than equality.

Likewise, it could be that the sample used was not large enough to be able to detect the effects. We therefore conducted two direct replications, Study 3a (for replicating the difference between the PEIEL condition and the control condition) and Study 3b (for replicating the comparison between the PEIEL and the equality condition).

5. Study 3a

Based on the results of Study 2, we ran an experimental direct replication study with two conditions. Because we only found differences between the PEIEL condition and control condition and to increase the statistical power, we only included these two conditions in Study 3a.

5.1. Preregistered hypothesis

H3a. Participants assigned to the PEIEL condition would show a higher intolerance of inequality compared to those assigned to control condition.

H3b. Intolerance of inequality would mediate the effect of PEIEL on support for economic redistribution.

5.2. Participants

A total of 372 Spanish university students between 18 and 39 years ($M = 22.3$, $SD = 3.4$) participated, 54% of whom were female. The recruitment procedure, location, and randomization were the same as in the previous study. None of the participants' answers were excluded from data analyses. Based on a sensitivity power analysis, with this sample, a statistical power of 80%, and $p < .05$, the minimum effect that can be found is $d = 0.28$.

5.3. Experimental conditions

We used the same procedure for manipulating PEIEL and for the control group; we also used the same manipulation check as in the previous study. In the manipulation check, we found a difference between the PEIEL condition ($M = 5.83$, 95% CI [5.62, 6.00]) and the control group ($M = 2.99$, 95% CI [2.78, 3.20], $t(370) = 18.631$, $p < .001$).

5.4. Dependent variables and covariates

In the current study, we used the same measures as in Study 2 to measure intolerance of inequality ($M = 5.34$, 95% CI [5.21, 5.47]), attitudes toward redistributive policies ($\alpha = 0.71$, $M = 5.15$, 95% CI [5.03, 5.28]), political ideology ($M = 3.65$, 95% CI [3.51, 3.79]), and social class.

5.5. Results and discussion

Based on our preregistered hypotheses, participants assigned to the PEIEL condition showed higher intolerance of inequality ($M = 5.50$, 95% CI [5.31, 5.68]) compared to those assigned to the control group ($M = 5.18$, 95% CI [5.00, 5.37], $t(370) = 2.303$, $p = .022$, $d = 0.24$, 95% CI [0.04, 0.44]). Moreover, the experimental manipulation had a total effect ($B = 0.37$, $SE = 0.12$, $t(370) = 3.041$, $p = .0025$, 95% CI [0.1374, 0.6167]), and a direct effect ($B = 0.24$, $SE = 0.10$, $t(370) = 2.198$, $p = .0285$, 95% CI [0.0254, 0.4560]) on attitudes toward redistributive policies. Additionally, it also had an indirect effect on attitudes toward redistributive policies through intolerance of

inequality ($B = 0.13$, $SE = 0.06$, 95% CI [0.0173, 0.2538]).

The results suggest that the perceived economic inequality in everyday life condition has an effect on the tolerance toward inequality, and an indirect effect on attitudes toward redistribution.

6. Study 3b

Based on the result of study 2, we corrected the manipulation of equality and carry out a new experiment to contrast the manipulation of PEIEL with this new control group. The study's purpose is to know if the level of perceived differences in economic inequality may cause the effects on inequality intolerance and attitudes toward redistribution found in Study 3a. Furthermore, we aim to disentangle if the level of inequality is what produces the effects and not just the description of economic issues. In this case, under the condition of equality, we asked participants to think of two middle-class earners they personally knew with a similar level of economic resources, and perform the same procedure. We chose this way to improve the manipulation of study 2, by specifying the level of income with the middle class of the people to be described.

6.1. Preregistered hypotheses

H4a. Participants assigned to the PEIEL condition would show a higher intolerance of inequality compared to those assigned to control condition.

H4b. Intolerance of inequality would mediate the effect of PEIEL on support for economic redistribution.

6.2. Participants

The recruitment procedure, location, and randomization were the same as in the previous study. We collected data from 300 participants but following our pre-registration plan we removed eleven questionnaires from people who were not Spanish university students. A total of 289 Spanish university students between 18 and 37 years ($M = 21.9$, $SD = 3.2$) participated, 63.3% of whom were female. Based on a sensitivity power analysis, with this sample, a statistical power of 80%, and $p < .05$, the minimum effect that can be found is $d = 0.32$.

6.3. Experimental conditions

We used the same procedure for manipulating PEIEL; for the control group of equality, we asked participants to think of two middle-class earners they personally knew with a similar level of economic resources. We also used the same manipulation check as in the previous study. In the manipulation check, we found a difference between the PEIEL condition ($M = 5.86$, 95% CI [5.68, 6.05]) and the control group of perceived equality in daily life condition ($M = 2.87$, 95% CI [2.62, 3.12], $t(289) = -19.086$, $p < .001$).

6.4. Dependent variables and covariates

In the current study, we used the same measures as in Studies 2 and 3a to measure intolerance of inequality ($M = 5.18$, 95% CI [5.03, 5.33]), attitudes toward redistributive policies ($\alpha = 0.75$, $M = 5.12$, 95% CI [4.97, 5.27]), political ideology ($M = 3.32$, 95% CI [3.14, 3.50]), and social class.

6.5. Results and discussion

Based on our preregistered hypotheses, participants assigned to the PEIEL condition showed higher intolerance of inequality ($M = 5.43$, 95% CI [5.23, 5.63]) compared to those assigned to the control group of perceived equality in daily life condition ($M = 4.93$, 95% CI [4.72,

5.15], $t(289) = -3.358$, $p = .001$, $d = 0.39$, 95% CI [0.16, 0.63]). Moreover, the experimental manipulation did not have a total effect ($B = 0.19$, $SE = 0.15$, $t(287) = 1.262$, $p = .2078$, 95% CI [-0.1078, 0.4937]), nor a direct effect ($B = -0.05$, $SE = 0.13$, $t(287) = -0.4298$, $p = .6676$, 95% CI [-0.3263, 0.2063]) on attitudes toward redistributive policies but it had an indirect effect on attitudes toward redistributive policies through intolerance of inequality ($B = 0.25$, $SE = 0.15$, 95% CI [0.1084, 0.4161]).

By improving the control group of equality of economic resources indicating the level of economic income from two middle-class earners, we have clarified the difference between the manipulation of PEIEL and the equality condition from Study 2. This result shows that the level of perceived economic inequality in daily life is relevant to the exploration of the psychosocial effects of economic inequality. Specifically, by contrasting income differences with height disparities, we can infer that paying attention to economic differences, rather than other differences, is what produces those effects. Likewise, by comparing the condition in which economic differences are made salient with a condition of economic equality, we may conclude that is the activation of the level of inequality what produces those results and not just the activation of economic issues in participant's minds.

7. Study 4

Based on the results found in Studies 3a and 3b, we ran a new study to conceptually replicate the effect of PEIEL on intolerance of inequality and attitudes toward redistribution through intolerance of inequality. We aimed to do so by asking participants to pay attention to the pictures that their friends post on Facebook. Social media is an important source of interaction and social comparison in daily life, and it has already been used in previous studies on economic inequality (Kraus, Park, & Tan, 2017).

7.1. Preregistered hypotheses

H5a. Participants assigned to the PEIEL condition would show higher intolerance of inequality compared to those assigned to the control group.

H5b. Intolerance of inequality would mediate the effect of the difference between the PEIEL condition and the control group on the support for economic redistribution.

7.2. Participants

A total of 289 university students between 17 and 45 years ($M = 20.8$, $SD = 4.2$) participated, 69.6% of whom were female. None of the participants' answers were excluded from data analyses. A group of students was approached in their classrooms to participate for an exchange of course credits. They were also asked to send the study's link to at least five friends. We distributed the link through students at the university libraries. Based on sensitivity power analyses, with this sample, a statistical power of 80%, and $p < .05$, the minimum effect that can be found is $d = 0.32$.

7.3. Experimental conditions

We used the same procedure used in Study 3a. The only difference was that we asked participants to enter their Facebook account. For the PEIEL condition, we asked them to search for the most and least wealthy person among their friends, whereas in the control group, we asked them to look for the tallest and shortest friend on the same social media platform. Furthermore, we asked them to review the pictures and timelines of these persons (Kraus et al., 2017) and write at least a paragraph about how their wealth (height) influences their life.

As in previous studies, the manipulation checked consisted of a

question about the differences in wealth between the two persons they described. We indeed found a difference between the PEIEL condition ($M = 6.12$, 95% CI [5.95, 6.29]) and the control group ($M = 3.34$, 95% CI [3.07, 3.62], $t(282) = -16.773$, $p < .001$).

7.4. Dependent variables and covariates

We used the same measures used in the previous studies: intolerance of inequality ($M = 5.62$, 95% CI [5.47, 5.78]), attitudes toward redistribution ($\alpha = 0.71$, $M = 5.53$, 95% CI [5.40, 5.65]), political ideology ($M = 3.32$, 95% CI [3.17, 3.48]), and social class.

7.5. Results and discussion

Following our predictions, participants assigned to the PEIEL condition ($M = 5.81$, 95% CI [5.59, 6.02]) showed higher intolerance of inequality ($t(286) = -2.251$, $p = .012$,¹ $d = 0.26$, 95% CI [0.03, 0.49]) compared to those assigned to the control group ($M = 5.47$, 95% CI [5.26, 5.68]). Also, the experimental manipulation did not have a total effect ($B = 0.10$, $SE = 0.12$, $t(288) = 0.857$, $p = .19$, 95% CI [-0.1411, 0.3587]), nor a direct effect ($B = -0.02$, $SE = 0.11$, $t(288) = -0.196$, $p = .42$, 95% CI [-0.2468, 0.2019]) on attitudes toward redistributive policies. But, again, it had an indirect effect on attitudes toward redistributive policies through intolerance of inequality ($B = 0.13$, $SE = 0.05$, 95% CI [0.0182, 0.2443]).

The meaning of this study is that it allows us to perform a conceptual replication of the effect. We replicated the results of Study 2 in Study 3a, and in Study 4, we use the same constructs but using a different manipulation to replicate the results of Studies 2 and 3a. A conceptual replication allows us to support our claim that the effects are due to the perception of economic inequality in everyday life and not to a specific conceptualization or paradigm to manipulate it. The results are the same in all studies. After these series of experimental replicas, we can suggest that PEIEL decreases tolerance of inequality. We now proceed to test these results with more robust analyzes.

8. Robustness analyses

Given that we used the same measurements across the different experimental studies, and then in three studies we included a PEIEL and a control condition (i.e., comparing height), we ran a mini meta-analysis (Goh, Hall, & Rosenthal, 2016) with the data of Studies 2, 3a and 4. We used as covariates political ideology, social class, sex, and age. We did not run a mini meta-analysis with the equality condition from Studies 2 and 3b because the equality manipulation of Study 2 was not the best.

8.1. Effects on inequality intolerance

We meta-analyzed the results of Studies 2, 3a, and 4 with fixed effects in which the mean effect size was weighted by sample size. We converted out partial eta square (η_p^2) into Pearson's correlation for facilitating the analyses and presentation. In this analysis, we controlled for political ideology, social class, age, and sex. Results showed that the effect of PEIEL on intolerance to inequality was significant, $M r = 0.11$, $Z = 3.10$, $p = .001$ (two-tailed).

This result allows us to argue that the effect of PEIEL on tolerance to inequality is maintained even when controlling for political ideology, social class, age, and sex. Furthermore, this result supports previous studies that found that there is a negative relationship between perceived economic inequality and tolerance to economic inequality (Castillo et al., 2012; García-Castro et al., 2019; Kuhn, 2019) in contrast

to studies suggesting the opposite (Loveless, 2013; Trump, 2018).

8.2. Effects on attitudes toward redistributive policies

In Fig. 1, we depict a representation of the mediation model of PEIEL increasing support for redistributive policies through intolerance of inequality.

We also meta-analyzed the mediation model run in Studies 2, 3a, and 4 with fixed effects in which the mean effect size was weighted by sample size. In all these analyses we included political ideology, social class, age, and sex as covariates. In the case of the total effect and the direct effect, we converted the t -test scores into Pearson's correlation to facilitating the analyses and presentation. The total effect of PEIEL on attitudes toward redistribution through intolerance to inequality was significant, $M r = 0.08$, $Z = 2.16$, $p = .030$ (two-tailed). Moreover, the direct effect was not significant, $M r = 0.07$, $Z = 1.85$, $p = .064$ (two-tailed).

For analyzing the indirect effect, and following Peterson and Brown (2005), we also converted the standardized B coefficients into Pearson's correlation to facilitating the analyses and presentation. The indirect effect of PEIEL on attitudes toward redistribution through intolerance to inequality was significant, $M r = 0.09$, $Z = 2.37$, $p = .017$ (two-tailed). However, converting standardized B coefficients is questioned. Whenever is possible, it is recommended to use the original coefficients instead (Peterson & Brown, 2005). Therefore, in addition to the mini meta-analysis, we also carried out a pooled analysis (Taioli & Bonassi, 2003) for the indirect effect. In the pooled analysis (and after controlling for study, political ideology, social class, age, and sex), the experimental manipulation showed an indirect effect on attitudes toward redistributive policies through intolerance to inequality ($B = 0.09$, $SE = 0.03$, 95% CI [0.0306, 0.1511]).

The results of the mini meta-analysis consistently show a significant total and indirect effects of the PEIEL manipulation on attitudes toward redistribute policies through intolerance to inequality, but a non-significant direct effect. These results allow us to reconcile the discrepancies found in the mediation analyses across studies. Importantly, although we found that PEIEL has an indirect effect on attitudes toward redistributive policies, through intolerance of inequality, this result has to be interpreted with caution. The literature suggests carefulness with mediations in which the mediator is not experimentally manipulated, given the multiple plausible reasons that can cause this result (Fiedler, Harris, & Schott, 2018; Rohrer, 2019). These possible reasons are discussed in the next section.

9. General discussion

We found that PEIEL has an effect on the intolerance of inequality shown by participants. In times of increasing economic inequality (Alvaredo et al., 2017; World Economic Forum, 2017), and an apparent passive attitude regarding this issue (García-Sánchez et al., 2019; García-Sánchez, Willis, Rodríguez-Bailón, Palacio, et al., 2018), we show that focusing people's attention on the consequences of economic inequality in their daily lives leads people to tolerate less inequality.

9.1. Perceived economic inequality in everyday life and tolerance to inequality

Economic inequality results in societies being socially grouped according to economic resources, and this class segregation means that individuals interact daily with people more similar to themselves (Cruces et al., 2013; Mijs, 2019; Son Hing et al., 2019). Previous studies described how people who interact with others of their same economic condition have more meritocratic beliefs because they do not have diverse information that gives them a more accurate perspective of economic reality (Mijs, 2019; Newman, Johnston, & Lown, 2015; Wu & Chou, 2017). Therefore, beliefs about inequality have a quality of self-

¹ The results shown are the ones with one tail because it was preregistered prior to the study.

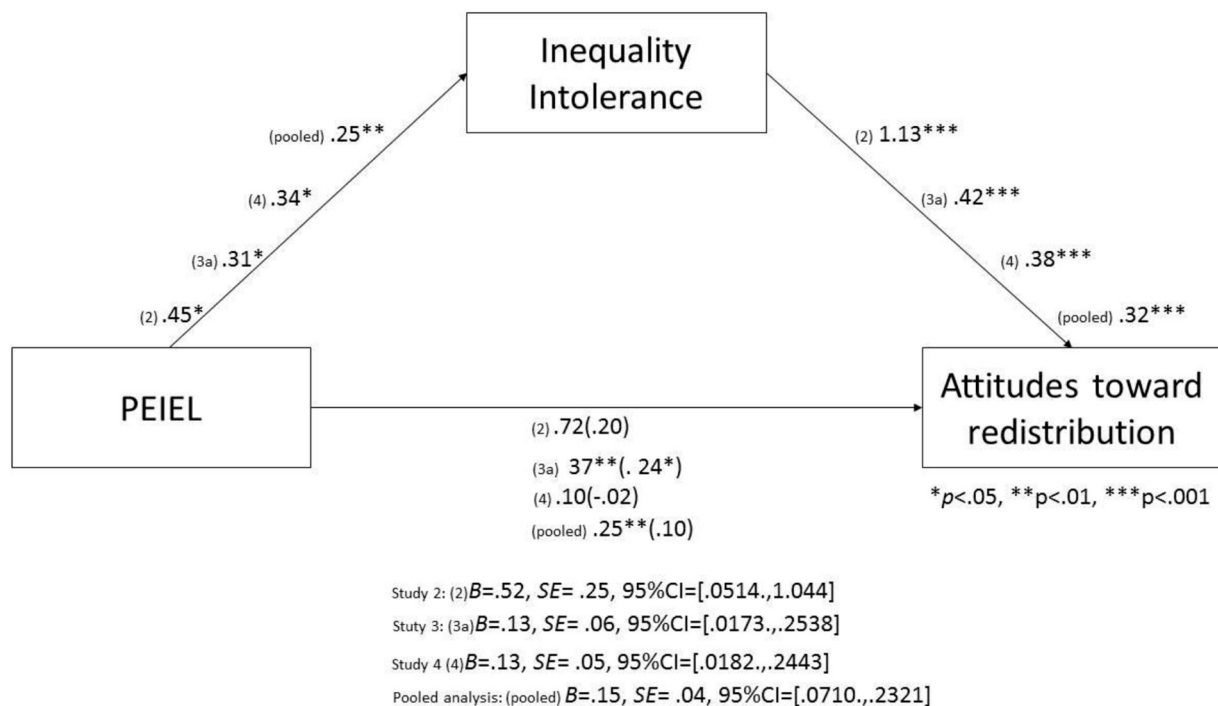


Fig. 1. Summary of the mediation model of the PEIEL condition increasing support for redistributive policies through intolerance of inequality in the studies presented in the current research.

reinforcement that is difficult to break (Mijs, 2018), given that people make inferences about how economic resources are distributed in society by sampling their immediate social environments (Cruces et al., 2013; Dawtry et al., 2015).

People are psychologically biased when evaluating economic inequality (García-Castro et al., 2019; García-Sánchez et al., 2019; García-Sánchez, Willis, Rodríguez-Bailón, Palacio, et al., 2018; Jost & Hunyady, 2005). Individuals who interact in homogeneous environments do not have to cope with inequality in their daily lives and are not exposed to inconsistencies between the explanations given by justifying ideologies (e.g., meritocracy) and their knowledge taken from their relationships with close others. **This is consistent with research showing that those who interact in heterogeneous social circles are more likely to think that success is due to situations beyond their control because they have diverse information about the causes of inequality in life** (Mijs, 2019; Newman et al., 2015; Son Hing et al., 2019; Wu & Chou, 2017).

The intrinsic process by which PEIEL works may be related to the accessibility heuristic. People judge social events from their closest social circles in which they are inserted (Dawtry et al., 2015; Flanagan & Kornbluh, 2017). When participants are asked about an estimation of inequality, they use the accessible information they keep in memory about the inequality around them to answer.

The process by which PEIEL might influence intolerance of inequality could be related to the contact theory (Mijs, 2019). People's conceptions of political affairs and society are the result of their daily experience that they get through casual observation or direct interaction with other people in various social contexts (Evans & Kelley, 2017; Mijs, 2019). Likewise, people take into account immediate experiences more than distant ones (Newman & Kane, 2017). PEIEL brings inequality closer and puts people in contact with it. It frames individuals' representations of the influence of economic resources in their social circles through their relationship with wealthy and disadvantaged close others. The perception of economic inequality in everyday life can also produce a sense of threat to one's status. When people perceive inequality, the fear of descending on the social ladder increases (Sánchez-Rodríguez, Jetten, Willis, & Rodríguez-Bailón, 2019), and this can lead

them to tolerate less economic inequality.

Moreover, we found that PEIEL scale predicts intolerance of inequality, even when we control by wage gap estimation, diagrammatic perception of economic inequality, political ideology, social class, age, and sex. This result confirms the need to take into account PEIEL measure as an additional tool to explore the effects of perception of economic inequality. It also supports previous findings that indicate that people think about economic inequality in terms of their daily lives (García-Castro et al., 2019; García-Sánchez, Willis, Rodríguez-Bailón, García-Castro, et al., 2018).

9.2. Perception of economic inequality in everyday life and attitudes toward redistribution

Being aware of the limitations of mediational models (Fiedler et al., 2018; Rohrer, 2019), we argue that the result of PEIEL's effect on attitudes toward redistribution through intolerance to inequality is preliminary. We do not rule out the possibility that other variables may be confounding the relationship we found between PEIEL and support for redistribution. For example, the literature suggests that perceived meritocracy might be an important covariate (García-Sánchez et al., 2019; Mijs, 2018).

To solve this issue in future studies, in addition to manipulating PEIEL, intolerance toward inequality should also be manipulated. In addition to what has already been indicated, it could be also important to conduct a longitudinal panel study that can capture the variations over time of these variables (García-Muniesa, 2019), as well as all possible relationships (i.e., cross-lagged analysis). Future research should deepen on the possibility that PEIEL influences attitudes toward redistribution through intolerance to inequality.

9.3. Conclusions

Other studies have already investigated the relationship between perception of economic inequality and tolerance of inequality. However, none of them had used a measure of PEIEL. Developing a procedure to activate PEIEL that decreases tolerance to inequality offers

the possibility to deepen and discern the scientific discussion of the relationship between inequality and its psychosocial effects.

Theoretically, and following the scarce literature on the subject (García-Castro et al., 2019; García-Sánchez, Willis, Rodríguez-Bailón, García-Castro, et al., 2018; Kraus et al., 2017), we propose that in addition to the experience from within one's social circle, PEIEL is also composed with what is immediately visible and salient in the environment. This may not be directly related to the experience of the social circle. For example, people may not know personally rich or poor earners but they could pass by rich and low economic status places in their daily routines. In the future, and as empirical evidence accumulates, the line of research on PEIEL's psychosocial effects should integrate both dimensions.

Economic inequality has increased in the last years (Alvaredo et al., 2017; World Economic Forum, 2017). If we want to reduce inequality, one way to achieve it is by decreasing tolerance to inequality and increasing support for social policies that seek economic redistribution. This is the main contribution of this article. Focusing on the effects of PEIEL may be a useful additional tool that can enable us to understand the psychosocial consequences of economic inequality.

Open practices

All measures, pre-registrations, hypotheses, data, and results for all the studies can be consulted in the supplemental materials: https://osf.io/krx8m/?view_only=069f8366242e4dcc0309ccf89f88324.

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Declaration of competing interest

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jesp.2020.104019>.

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