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David Igliozzi

Yael Granot Ph.D. Loyola University Chicago, ygranot@luc.edu

Victor C. Ottati Loyola University Chicago, vottati@luc.edu

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#### **RESEARCH ARTICLE**



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# A fair share: Effects of disparity, allocation strategy and system justification on perceptions of policy support in the education domain

David Igliozzi<sup>1</sup> 💿 🕴 Yael Granot<sup>2</sup> 👘 Victor Ottati<sup>1</sup>

<sup>1</sup>Department of Psychology, Loyola University Chicago, Chicago, Illinois, USA

<sup>2</sup>Department of Psychology, Smith College, Northampton, Massachusetts, USA

#### Correspondence

David Igliozzi, Department of Psychology, Loyola University Chicago, Chicago, IL 60660, USA.

Email: digliozzi@luc.edu

#### Abstract

Utilizing experimental methods across a pilot and two studies, we explore and contrast the relationship between system-justifying attitudes and fairness perceptions of and support for redistributive policies based on theoretical accounts of distributive justice, highlighting three allocation strategies: equality, equity and need. We began our investigation with a test across multiple policy domains (e.g., health care, education, employment) to examine broad associations between system justification and policy support. Then, we chose one specific domain – education – to narrow our focus on and designed two experimental studies to test more complex models of the interaction between system justification and the type of distributive justice on support and fairness perceptions. Results indicate that as system-justifying attitudes increase, so does the level of support and perception of fairness of policies based on equality or equity. Conversely, there is no relationship between system justification and support or fairness when considering a need-based policy in the education domain.

#### KEYWORDS

distributive justice, education, fairness perceptions, policy support, system justification

#### 1 | INTRODUCTION

Inequality in the United States has been rising for decades. According to the U.S. Federal Reserve, as of 2023, the top 10% of wealthiest households hold 69% of all wealth while the bottom 50% of households only hold 2.5% of all wealth (Federal Reserve Bank of St. Louis, 2023). Recently, such disparities have been put into stark relief, as the COVID-19 pandemic increased objective inequality within the United States; those low in socioeconomic status (SES) have a higher risk of contracting COVID-19, are more likely to have their housing and employment situations completely upended and have limited access to health care than those high in SES (Patel et al., 2020). Even in the face of such stark inequality, people are often either unaware, unwilling to see or disagree about whether such disparities are indeed unfair and therefore fail to agree on optimal ways to ensure fair access to resources.

#### **1.1** | Distributive justice

Distributive justice is the perceived fairness of the distribution of conditions and goods that affect all dimensions of individual wellbeing (i.e., psychological, physiological, economic and social). According to Deutsch (1975), there are three resource allocation strategies in which distributive justice may be achieved: equality, equity and need. An equality-based allocation strategy requires that equal amounts of resources are given to each recipient, as when a parent gives

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an equal amount of their estate away to each of three children in their will. Equity is a merit-based approach to distributive justice. An equity-based allocation strategy requires that the ratio between one recipient's input (e.g., a contribution of some sort) over the output they are given is equal to other recipients' input/output ratios. An example of this would be when a parent bequeaths more of their estate to the child who paid for their nursing home bills than to their other two children who did not contribute financially to their parent's long-term care. A need-based allocation strategy requires consideration of the current relevant needs of each recipient and allocates more resources to those recipients who have the greatest need (Deutsch, 1975; Platz, 2020; Steiner et al., 2006), as when a parent leaves more to the child who has a chronic illness, to aid with their medical expenses than to their other two children who do not face the same financial challenges. Each strategy presents a different approach to resolving inequality (which will hereafter be referred to as disparity so as not to confuse similar terms). The choice between one of the three approaches often depends on what is perceived to be the fairest.

Research suggests that perceptions of fairness are not static and depend heavily on the situation as well as the goals of both the perceiver and the allocator. Certain contextual factors, including relationship or transactional goals, can predict what allocation strategy is seen as appropriate for a given situation. When the goal is generally enhancing productivity, as in many workplaces, there is evidence that an equity-based allocation is preferred by both workers and employers (Leventhal, 1976). When the goal is achieving cooperation and harmony within a group, equality-based allocation is generally deemed appropriate (Smith & Cook, 1973). Finally, a need-based allocation strategy is considered most appropriate when the most salient goal is the well-being of members of a group (Schwartz, 1975; see also Steiner et al., 2006). However, even within the same domain with the same goal, opinions about optimal allocation strategies may differ.

### **1.2** Individual differences affecting fairness perceptions

Such differences may stem from individual characteristics that lead some people to consider a given outcome fair while others do not across situations. For example, there is evidence that individuals perceive the cause of disparity differently across the political ideological spectrum. Conservatives are more likely to make internal attributions for others' poverty (Weiner et al., 2011), unemployment (Feather, 1985) and criminal behaviour (Carroll et al., 1987) and are more likely to oppose proposals for governmental support than their liberal counterparts (Skitka & Tetlock, 1993). This is because those high in right-wing ideology tend to be more satisfied with the existing system and believe that success is based on individual merit (Chambers et al., 2014).

Highly correlated with political ideology (Jost et al., 2017), system justification is an important individual difference to examine when con-

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sidering distributive justice. System justification is a bias that leads individuals to defend and justify aspects of the status quo (Jost et al., 2004). Economic system justification leads individuals to perceive economic disparity as a natural condition and a product of merit and deservingness (Jost & Thompson, 2000). Economic system justification is also associated with reduced support for the government intervention in disparity through redistribution or other equality-enhancing policies such as affirmative action (García-Sánchez et. al., 2018; Jost & Thompson, 2000; Rodriguez-Bailon et al., 2017). Thus, system justification should meaningfully determine support for certain policy approaches to disparity.

#### 1.3 | Research gap and the current research

While Deustch's (1975) work on these three allocation alternatives laid the groundwork for years of distributive justice research that would follow (this piece has been cited 4377 times), little empirical work has experimentally tested the conditions under which people might be willing to support equity, equality or need-based strategies.

Of the experimental research conducted in distributive justice, evidence suggests that preference for one allocation strategy over another can vary by domain, for example, preferring equality for unemployment benefits and equity for pension benefits, and by individual differences, for example, wealthier individuals prefer equity or equality while those with less wealth prefer need (Reeskens & Van Oorschot, 2013). There is also evidence that certain individual differences, such as system justification, political orientation or income, can predict support for redistribution (García-Sánchez et al, 2018). Building upon existing literature, we developed three distinct policy solutions based upon each of the three resource allocation strategies (i.e., equality, equity and need) to address a problem of disparity in various domains and measured individual differences (i.e., system justification) as predictors of support for each of the three allocation strategies. We first explored this relationship across domains (e.g., health care, employment). Next, we narrowed in on the domain of education to explore the relationship between system justification and policy perceptions, in the context of greater or lesser disparity. Finally, we conducted a within-subjects test of these relationships to address differences in how system justification affects policy support when direct policy comparisons are available.

#### 2 | PILOT STUDY

We first conducted a pilot study to explore the differences in support across domains and the patterns of relationship between system justification and policy support and to aid in selecting a domain and informing hypotheses for our primary studies. The data for the pilot study is publicly available through the Open Science Framework (OSF): https:// osf.io/xvwr9/?view\_only=0fb34c7e1bb844c9a9aa8a7acabcb658.

#### 2.1 | Method

We selected five domains (i.e., health care, hiring, the legal system, education and income) and wrote three short policy proposals per domain, each embodying one of the three allocation methods (equality, equity or need). To mute the influence of variability in U.S. political knowledge on distribution preferences, we adapted Mitchell and colleagues' (1993) hypothetical society paradigm; we asked American participants recruited for \$0.50 each through Amazon Mechanical Turk to imagine they were a citizen of a fictional 'Country Z', and to consider how likely they would be to support redistribution policy proposals across domains.

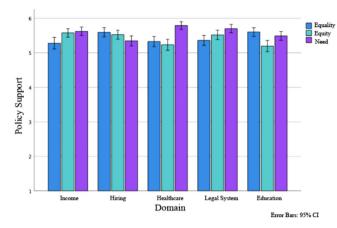
Across two studies<sup>1</sup> (N = 385) – one pre-COVID (January 2019) and one during COVID (June 2020) – we measured system justification to test if this factor predicted broad support for equality, equity and need-based proposals across several policy domains. An eightitem index assessed how strongly participants held system-justifying attitudes (Kay & Jost, 2003; 1 = strongly agree, 9 = strongly disagree).

A final sample of 385 Americans participated ( $M_{age} = 37.41$ ,  $SD_{age} = 11.57$ ;  $M_{SysJust} = 5.55$ ,  $SD_{SysJust} = 1.25$ ;  $M_{politicalO} = 7.72$ ,  $SD_{politicalO} = 2.75$ ; 242 White, 97 Black, 26 Latinx, 5 Asian, 14 Native American and 1 Pacific Islander) of whom 61.8% self-identified as men and 37.9% self-identified as women.

#### 2.2 Results

We conducted a 3 (allocation strategy: equity, equality, need)  $\times$  5 (domain: hiring, income, education, health, the legal system) repeated measures ANOVA<sup>2</sup> to examine the difference in ratings of the three policies by domain. Across all domains, a main effect of allocation strategy on support emerged, F(2, 645) = 10.655, p < .001, partial  $\eta^2 = .028$ . Bonferroni post hoc tests indicated significantly higher support for need-based policies over and above equity- and equality-based policies (p = .002 and p < .001, respectively), though there was no significant difference between equity- and equality-based policies. Further, results indicated a significant interaction of allocation strategy and domain, F(8, 2393) = 12.253, p < .001, partial  $\eta^2 = .032$ , suggesting that context affects which policies were more or less likely to be supported. For example, in the healthcare domain a need-based policy was preferred over both the equality-based policy, t(2393) = 7.38, p < .001, and equity-based policy, t(2393) = 8.90, p < .001 while in the education domain both need- and equality-based policies were preferred over equity-based policies, *t*(2393) = 4.69, *p* < .001, and *t*(2393) = 6.47, p < .001, respectively (see Figure 1).

Next, we were interested in the effects of system justification on support between policies. We conducted a multilevel model lin-



**FIGURE 1** Mean policy support across allocation strategies and domains.

ear regression analysis for repeated measures. While often used for longitudinal data, multilevel modelling is useful for cross-sectional experimental data with repeated measures (Hoffman & Rovine, 2007). To prepare the data for multilevel modelling, we stacked the data in such a way that instead of one row for each participant with three measures of fairness (one each for equality, equity and need) we created six columns in the data (one for each domain as well as a mean support for each allocation strategy pooling across domain). For each participant, an index variable was created to connect each instance of participant data with the allocation strategy associated with their rating on fairness and support (index: 1 = equality, 2 = equity and 3 = need). Then, to compare the three allocation strategy conditions, we created two variables to serve as dummy codes such that equality was our reference category.<sup>3</sup>

First, we ran a multilevel model with support pooled across the domain as our dependent variable. The model consisted of two levels. Level 1 was our repeated variable: allocation strategy. Level 2 was our subject level. We specified system justification, our two allocation strategy dummy coded variables and the interactions between those variables as our fixed factors and income, education, age and political orientation as covariates. Additionally, we ran the same multilevel model for each of the five domains.

Pooled across the domain, results indicated a significant interaction effect of system justification and resource allocation strategy on support when comparing equality to need, b = -0.12, SE = 0.03, t(580) = -3.61, p < .001, and when comparing need to equity, b = -0.13, SE = 0.03, t(632) = -4.02, p < .001. There was no interaction when comparing equality to equity. These results indicated that there was a positive relationship between a participant's support and level of system justification when presented with either an equality or equity policy -b = 0.18, SE = 0.04, t(417) = 5.15, p < .001 and b = 0.19, SE = 0.04, t(364) = 5.45, p < .001, respectively. That is, as system-justifying attitudes increased, so did support for policies based on either equality or equity. However, there was no significant relation-

<sup>&</sup>lt;sup>1</sup> We collapsed participants across two periods of data collection – the first preceding and second during COVID- because most primary analyses did not reveal a significant moderating effect of time (p > .05). Participants who were unable to pass an attention check were dropped from the sample (n = 15).

 $<sup>^2</sup>$  Mauchley's test indicated that the assumption of sphericity had been violated, so Greenhouse–Geisser corrected tests are reported (Howell, 2012).

<sup>&</sup>lt;sup>3</sup> We had to run an analysis with each allocation condition as reference category to get the full results. Tables for those results can be found in the Supporting Information.

ship between system-justifying attitudes and support when presented with a need-based policy, p > .05.

We then ran the same multilevel model, but with support in the education domain<sup>4</sup> as our dependent variable. Results indicated a significant interaction effect only when comparing equity and need, b = -0.20, SE = 0.07, t(562) = -2.93, p = .004. There was no interaction when comparing equality to equity or equality to need. These results imply that system justification's effect on policy support did not differ between equality and equity or equality and need but does differ between equity and need. Looking at the relationships between system-justifying attitudes and support, we found a positive relationship between a participant's support and level of system justification when presented with either an equality or equity policy – b = 0.14, SE = 0.05, t(391) = 2.92, p = .004 and b = 0.24, SE = 0.06, t(375) = 4.11, p = 0.04p < .001, respectively. As system-justifying attitudes increased, so did the support for policies based on either equality or equity. However, there was no significant relationship between system-justifying attitudes and support when presented with a need-based policy, p > .05.

#### 2.3 Discussion

The results of the pilot data indicate that (1) there are differences in the pattern of support for resource allocation strategy depending on the domain and (2) when pooled across the domain need-based policies receive more support than equity or equality. Further, we found that the expected pattern of results for further studies using the education domain is that as system-justifying attitudes increase, so does the support for policies based on either equality or equity. However, no significant relationship emerges between system-justifying attitudes and support when presented with a need-based policy. Additionally, the effect of system justification on need-based and equity-based policy will differ significantly, but all other comparisons will not be significant (i.e., need vs. equality and equality vs. equity). We recognize that any of the five domains would be valuable to conduct follow-up research, but with the constraints of our experimental methodology, we chose to pursue education.

#### 3 | STUDY 1

#### 3.1 | (Mis)Perception and awareness of disparity

In an attempt to create a more robust methodology with our first study, we added another component – level of disparity. It is hypothesized that the level of disparity might meaningfully impact the relationships between these variables. Unfortunately, there is often a gap between actual disparity and people's perceptions of disparity. In one study, Americans estimated the actual national distribution of wealth across

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quintiles. Democrats, wealthier individuals and those identifying as male estimated that the distribution of wealth in the United States was more disparate than did Republicans, poorer individuals and participants who identified as female. However, all demographic groups estimated a more equal distribution of wealth than actually exists in the United States (Norton & Ariely, 2011). These results indicate that there is a misperception of the magnitude of disparity that exists between U.S. citizens. Similarly, Kraus and colleagues showed that Americans vastly and consistently underestimate the wealth disparity between the richest and poorest Americans (Kraus et al., 2019). The chronic underestimation of societal disparity may lead to decreases in support for the policy that attempts to distribute resources and wealth more fairly.

Even with information readily available on systemic disparity, people might not acknowledge its existence and, consequently, oppose redistributive policies. Perception of disparity, presuming awareness, may be lowered by either reducing the magnitude of disparity one believes there to be or increasing the disparity that one believes to be acceptable. In fact, those who perceive high levels of disparity but do not report being personally affected by this disparity generally have a higher tolerance for economic disparity; conversely, those who experience economic disparity more regularly are less likely to tolerate it (García-Castro et al., 2020). These results suggest that experience with disparity may be the most effective lens for engendering awareness and accurate perceptions of disparity; yet, policy change requires broader support and, therefore, other means of potentially tuning the perceptions of the privileged to existing disparity.

#### 3.2 | Hypotheses

We hypothesized that the manipulation of objective awareness of disparity will moderate effects of system justification on support – we expected that magnifying participants' understanding of disparity would amplify the influence of individual differences in system justification on policy support and emphasize preferences for certain allocation strategies. Further, we included perceptions of fairness and behavioural intentions as proxies for support but also to allow us to explore whether approval or opposition to policy translates into will-ingness to act for or against change. Study 1 predictions, methods and proposed analyses were pre-registered with AsPredicted before data collection commenced: https://aspredicted.org/CLQ\_8RK. The data for Study 1 is publicly available through OSF. (See: https://osf.io/xvwr9/?view\_only=0fb34c7e1bb844c9a9aa8a7acabcb658).

#### 3.3 | Methods

#### 3.3.1 | Participants and procedure

In exchange for 0.75 (N = 598), Amazon Mechanical Turk Workers participated in the spring of 2021. Participants answered three attention check questions; those who answered wrong or left blank more

 $<sup>^4</sup>$  We analysed the data for all the domains, but do not include them here. Results can be found in the Supporting Information Appendix.

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than one of the questions were excluded from analyses (N = 5). The final sample in the analysis below included 593 participants (251 men, 335 women, 5 nonbinary, 2 trans; 464 White, 46 Black, 21 Latinx, 61 Asian, 6 Native American, 3 Pacific Islander) ( $M_{age} = 43$ ,  $SD_{age} = 17.14$ ;  $M_{SysJust} = 5.43$ ,  $SD_{SysJust} = 1.77$ ).

Participants were told that the purpose of the study was to evaluate proposed policy solutions to an ongoing issue they would read about. Participants were randomly assigned into a disparity condition and then into a policy solution condition; they then completed our survey. The experiment used a 2 (awareness of disparity: moderate, high)  $\times$ 3 (policy solution: equality, equity, need)  $\times$  2 (system justification: low, high) between-participants factorial design.

#### 3.3.2 | Manipulations

Awareness of disparity. Instead of measuring perceived disparity - which potentially conflates awareness of actual disparity with tolerance for disparity - we manipulated awareness of objective disparity. In this way, differences that emerge between those who have access to the same information on societal disparity can be inferred to stem from acceptance of or tolerance for that disparity. Participants were placed into one of two conditions: high disparity (N = 302) or moderate disparity (N = 290). In both disparity conditions, participants were asked to read a small excerpt detailing 'Country Z's' disparity in public school graduation rates between districts. In the high disparity condition, the graduation rates of the districts ranged from 90% to 50%. In the moderate disparity condition, rates ranged from 90% to 80%. To determine appropriate percentages to use, we referred to existing state-level high school graduation rates in the United States. The lowest high school graduation rate by state in 2018 was 69% in the District of Columbia; the highest was 91% in Iowa and New Jersey (National Center for Education Statistics, 2020). We reduced the lowest graduation rate to 50% for the high disparity condition in order to exaggerate the disparity treatment.

Resource allocation strategy. Participants were randomly assigned to one of three allocation policy conditions: equality (N = 196), equity (N = 198) or need (N = 199). In all conditions, participants read a policy for a new magnet school system in a hypothetical country, as per Jetten (2019), intended to help limit disparity in graduation rates between districts. These policies allotted spots into a new magnet school based on the congruent resource allocation strategy. All participants first read the same introduction: 'Country Z wants to create a magnet school system that would add one new high school per district. Magnet schools are schools that offer special courses and programs not necessarily offered in other schools, and within Country Z are proven to deliver a higher quality learning experience than the pre-existing schools. Each magnet school has an enrollment capacity of 50% of the total children in each district'. Then, each policy specified a different protocol for allotting spots to new magnet schools.

*Equality-based policy*: 'Every child will be entered into a lottery and those randomly chosen from the lottery can attend the magnet school, regardless of their testing scores'.

*Equity-based policy*: 'Students who place within the highest 50% of testing scores from the previous year can attend the magnet school'.

*Need-based policy*: 'Students who place within the lowest 50% of testing scores from the previous year can attend the magnet school'.

As an attention check, all participants were asked to report (1) the two different graduation rates in percentages reported in the text (e.g., 90% and 80%/50%) as well as (2) the policy domain (education) and (3) the name of the country discussed in the text (Z).

#### 3.3.3 | Dependent measures

Disparity manipulation check. To determine if the awareness of disparity manipulation effectively shifted perceptions, we asked: "Better performing schools have a higher graduation rate than lower performing schools. Based on what you learned about different graduation rates in Country Z, how large do you feel the disparity is between the graduation rates of the best and lowest performing schools?" (1 = extreme disparity, 7 = no disparity at all).

Perceived fairness and policy support. Participants were asked to what extent they believed the policy they were presented with was fair (1 = not fair at all, 7 = extremely fair). Participants also indicated how likely they would be to support the policy (1 = not at all likely, 7 = extremely likely) as well as how likely they were to oppose the policy (1 = not at all likely, 7 = extremely likely). These measures were highly inversely correlated, r(593) = -.779, p < .001. We reverse-coded the opposition survey item and averaged these two measures together to create an aggregate measure of policy support (M = 4.20, SD = 1.8).

Behavioural intention. Participants rated how likely they would be to engage in behaviour to support the policy and to oppose the policy through either petition or protest (1 = not at all likely, 7 = extremely likely). We reverse-coded the two opposition survey items and averaged them together with the two support survey items to create an overall measure of behavioural intent to support the policy (M = 4.11, SD = 1.32,  $\alpha = .34$ ).

#### 3.3.4 | Individual differences and demographics

Participants completed an eight-item index designed to measure how strongly they hold system-justifying attitudes (1 = strongly agree, 9 = strongly disagree) with statements such as 'In general, you find society to be fair' (Kay & Jost, 2003). Participants also indicated their age, gender, ethnicity, political ideology and SES.

#### 3.4 | Results

#### 3.4.1 Disparity manipulation check

Participants in the moderate disparity condition (M = 4.26, SD = 1.38) rated the described disparity in graduation rates as significantly less extreme compared to participants in the high disparity condition (M = 2.35, SD = 1.31), t(590) = 17.3, p < .001. Thus, the manipulation of disparity effectively shifted perceptions of disparity as intended among participants.

#### 3.4.2 | Predicting policy fairness perceptions

We conducted a linear regression analysis predicting policy fairness perceptions from 11 predictor variables: mean-centred system justification (S), disparity condition (D), two dummy coded variables capturing the three allocation strategies (E1 and E2), the second-order interaction terms (SxE1, SxE2, SxD, DxE1, DxE2) and the higher order interaction terms (SxDxE1, SxD2, SxD, DxE1, DxE2) and the higher order interaction terms (SxDxE1, SxDxE2).<sup>5</sup> We primarily coded the allocation strategy variables such that the *equality* condition was the reference category (coded 0). However, to provide all potential comparisons, we additionally created two other coding schemas: one in which the *equity* condition was the reference category, and one in which the *need* condition was the reference category. The overall model, regardless of which policy solution was coded as the reference category, explained a significant portion of the variance in policy fairness perceptions,  $R^2 = .045$ , F(11, 581) = 2.501, p = .004.

The three-way interaction between system justification beliefs, disparity condition and the comparison between the equality-based and need-based policy on policy fairness perceptions was marginally significant  $\beta = .115$ , t(581) = 1.885, p = .06. The three-way interaction in which equality-based policy was compared to equity-based policy was not significant (p > .05).

Simple effects of system justification, disparity and resource allocation. In the equality-based policy condition, simple effects analyses indicated no main effects of system justification and disparity condition. High and low system justifiers did not differ in their overall perceptions of fairness of equality-based policy. However, high system justifiers rated the equality-based policy as fairer under moderate disparity than under high disparity,  $\beta = .238$ , t(581) = 2.324, p = .02.

In the equity-based policy condition, simple effects analyses revealed a non-significant effect of system justification on the perception of fairness in the moderate disparity condition. However, in the high disparity condition, there was a positive association between system justification attitudes and fairness perceptions,  $\beta = .194$ , t(581) = -2.074, p = .038. Taken together, low system justifiers did not significantly differ in their perceptions of fairness of equity-based

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policy, across the two disparity conditions nor did high system justifiers. However, only when disparity was high, high system justifiers perceived the equity-based policy to be fairer than did low justifiers.

Examining the need-based policy condition, simple effects analyses indicated no significant association of system justification and fairness perceptions in either condition (p > .05). Under high disparity, low system justifiers perceived the need to be significantly fairer than equality (p = .05) but not significantly fairer than equity, while there was no significant difference in fairness between equality and equity. High system justifiers in the high disparity condition, on the other hand, rated need, p < .001, and equity, p = .002, significantly fairer than equality, though there was no significant difference between fairness perceptions of equity and need.

#### 3.4.3 | Predicting policy support

We used the same model described above to predict policy support. The overall model, regardless of which policy solution was coded as the reference category, explained a significant portion of the variance of policy support,  $R^2 = .038$ , F(11, 581) = 2.105, p = .018.

When equality was the reference category, the three-way interaction between system justification, disparity condition and the comparison between the equality-based and need-based policy on support was significant  $\beta = .128$ , t(581) = 2.085, p = .038 (see Figures 2a,b). However, the three-way interaction including the comparison between equality- and equity-based policy was not significant.

Simple effects of system justification, disparity and resource allocation. In the equality condition, simple effects analyses revealed no significant effects of system justification and disparity condition. High system justifiers and low system justifiers did not differ in their support for the equality-based policy. Additionally, across disparity conditions support for equality did not change.

Focusing next on the equity condition, simple effects analyses again revealed that high system justifiers and low system justifiers did not differ in their support for equity-based policy nor did equity-based policy support change across disparity conditions.

Examining the need condition, analyses indicated a significant negative association of policy support and system justification  $\beta = -.257$ , t(581) = -2.33, p = .02 under moderate disparity such that low system justifiers were more likely to support need-based policies than high system justifiers. Further, across disparity conditions, low system justifiers did not significantly differ in their support for need-based policy. However, high system justifiers supported need-based policy significantly more under high rather than moderate disparity,  $\beta = -.318$ , t(581) = -3.083, p = .002. These results imply that while those low system justifiers remain stable in their support for need-based policy regardless of the disparity context, high system justifiers are more likely to support need-based policy under conditions of high, but not moderate, disparity.

Few significant differences among allocation conditions emerged. There were no significant preferences for allocation strategy in the moderate disparity condition (p > .05). Under high disparity, there

<sup>&</sup>lt;sup>5</sup> Income was used as a covariate in this data analysis which did not affect the regression model significantly nor altered the effects of the other variables so results without the covariate are presented below. Political ideology was not used as a covariate because of how highly correlated it is with system justification beliefs (e.g., Jost et al. 2017).

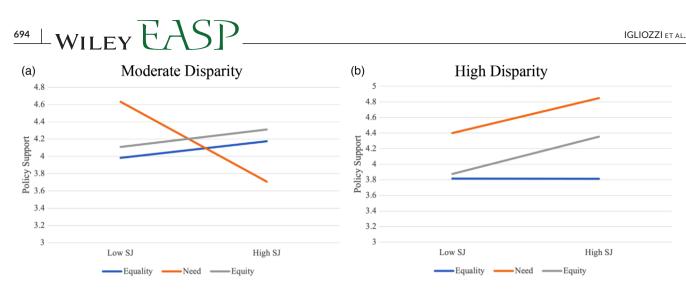


FIGURE 2 Policy support as a function of system justification for those in the (a) moderate disparity condition and (b) high disparity condition.

was no significant difference in support for allocation strategy among low system justifiers. However, among high system justifiers, support for need-based policy was rated higher than support for equality, p < .001; no significant difference in support between need and equity nor equity and equality emerged. (Refer to Supporting information Appendix A for complete regression tables for all data analyses.)

#### 3.4.4 Predicting behavioural intentions

Using the same linear regression model to predict behavioural intentions, none of the three-way interactions were significant (p > .05). These results suggest that the same processes that predict perceptions of and support for policies may not extend to willingness to act.

#### 3.5 | Discussion

Overall, results indicated that of the three allocation strategies, support for and perceived fairness of need-based allocation is the least consistent across levels of disparity and individual differences in system justification. Additionally, as system justification attitudes increase, so too does the malleability of attitudes when considering need-based policy within the education domain. That is, those high in defence of the status quo are less likely to support need-based policies in education when the salient disparity in society directly related to the policy is moderate but could be shifted to express more support when made aware of high disparity. This implies that highlighting societal disparity is one way to garner support among those high in system-justifying attitudes when proposing a need-based policy in the education domain. Conversely, those low in system justification remain steadfast in their support for need-based policy in education regardless of disparity.

Many of the results were not significant. It is possible that we were underpowered to detect the full effect of the manipulations. To test this, we conducted a sensitivity analysis for a fixed model linear multiple regression and found that we would be powered to find an effect of 0.029. Having calculated the full models' effect size on both policy support ( $\eta^2 = .039$ ) and fairness perceptions ( $\eta^2 = .046$ ), we believe that the experiment was sufficiently powered.

Some of these findings deviated from expectations based on the literature. First, there was not a main effect of system justification across all three dependent variables; only perceptions of fairness (not policy support or behavioural intention) showed a main effect of system justification. This is not entirely surprising. There is research that examines the diminishing strength of convictions as distributive justice moves from thought to speech to action. That is, as distributive strategies are concretized, they garner less support than when they are in the form of more abstract thought and discussion (Jasso, 2015). Further, while there was a positive relationship between system-justifying attitudes and support in the equity condition, there was no relationship within the need and equality conditions. Past research suggests that both fairness and policy support are closely related (e.g., Banducci & Karp, 1999). However, in our results, we found a slightly different pattern: under high disparity, system justification was more positively associated with support for need-based policy than equity-based policy, yet there was no difference between need and equity when considering fairness as a dependent variable. This suggests that while those low in system-justifying beliefs show aligned cognitions regarding fairness and support of policies, among those high in system justification, fairness may not be a primary component considered in determining support.

Interestingly, while system justification, disparity and allocation method interacted to predict policy support in education, they did not predict behavioural intentions in support of the policy. It may be that while people acknowledge unfairness and theoretically support change, it may take stronger contextual influences for them to actively involve themselves. Such motivating contexts may include a sense of injustice or a close association with the community affected by the perceived disparity (Mannarini et al., 2009). Additionally, it is possible we found no effects predicting behavioural outcomes in Study 1 because of the sheer fact that the government was proposing a strategy suggested that action was being taken and obviated the need for individual effort.

#### 4 | STUDY 2

To build upon Study 1 and account for methodological limitations, we chose to run a simplified version of Study 1. While much of the design of Study 2 was similar, we primarily (1) removed the disparity awareness manipulation, holding disparity constant and (2) used a within-participants design. Study 2 predictions, methods and proposed analyses were pre-registered with OSF before data collection commenced (see https://osf.io/kg4zc/?view only=52a727d465354e5eba6f169173f5b2cb). Additionally, Study 2's data are publicly available via OSF through the following link: https:// osf.io/xvwr9/?view only=0fb34c7e1bb844c9a9aa8a7acabcb658. We chose to hold disparity constant using our high disparity condition from Study 1, both because that seemed to be the context under which the greatest variability emerged, and because it would allow us to isolate and elaborate on the relationship between system justification and perceived fairness and support of differing allocation strategies. Further, it is more ecologically valid to presume that policy solutions would be put forward to address more critical problems - as with situations of higher disparity.

Further, in Study 1, we used a between-subjects design as an intentional method of fostering ecological validity. When policies are put forth, citizens are rarely offered a choice other than the binary of support or oppose (e.g., voting either 'Yes' or 'No' on a specific ballot measure). However, it is possible that even while such options are not explicitly presented, people may privately consider other possibilities and perform comparisons; or they may even be comparing to past proposals or alternative suggestions raised in political discourse. A within-subjects design would mimic that experience of direct comparison of policy preferences.

Further, a within-participants design provides more statistical power to add control variables. In this study, we included measures of subjective SES, objective SES and political orientation. There is evidence that all three of these constructs correlate with system justification (Feygina et al., 2010; Li et al., 2020; Valdes et al., 2022).

#### 4.1 | Hypotheses

We hypothesized that system justification would positively predict fairness perceptions and level of support in the equality and equity conditions. Additionally, we hypothesized that system justification would negatively predict fairness perceptions and level of support in the need condition.

#### 4.2 | Study 2 methods

#### 4.2.1 | Power analysis

We conducted an a priori power analysis to identify the number of participants needed for a power of 0.80. The statistical test used was a fixed model linear multiple regression, and the number of tested predictors was nine – system justification attitudes, the two dummy code variables for the three allocation conditions, the interaction between system justification and allocation condition, subjective SES, objective SES, political orientation, education and age. Power analyses indicated that anticipating an effect size of around 0.04 (based on the sensitivity analysis we conducted for Study 1) would require a sample of 383 participants.

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#### 4.2.2 | Participants and procedure

We recruited survey participants (N = 383) from the survey site Prolific in the winter of 2023 ( $M_{age} = 37.24$ ,  $SD_{age} = 13.82$ ;  $M_{SysJust} = 5.61$ ,  $SD_{SysJust} = 1.07$ ;  $M_{politicalO} = 4.41$ ,  $SD_{politicalO} = 2.67$ ). In exchange for \$2.25, participants completed a 10-min survey. Participants were told that the purpose of the study was to evaluate proposed policy solutions to an ongoing issue they would read about. Participants were given policies representing all three allocation strategies, in random order, and asked to evaluate the fairness of and their support for each policy. Participants then indicated their system justification, political orientation, objective and subjective measures of SES and several demographic questions.

#### 4.2.3 | Manipulations

*Resource allocation strategy*: Unlike Study 1, we presented all three resource allocation strategies to each participant and asked them to evaluate each. All participants first read the introduction: 'Country Z wants to create a magnet school system that would add one new high school per district. Magnet schools are schools that offer special courses and programs not necessarily offered in other schools, and within Country Z are proven to deliver a higher quality learning experience than the pre-existing schools. Each magnet school has an enrollment capacity of 50% of the total children in each district'. Then, we presented each participant with the three education policies described in Study 1 in a randomized order. As an attention check, participants reported (1) the policy domain (education) and (2) the name of the country discussed in the text (Z).

#### 4.2.4 | Dependent measures

Perceived fairness and support. Participants were asked to what extent they believed the policy they were presented with was fair (1 = not fair at all, 7 = extremely fair) and indicated how likely they would be to support the policy (1 = not at all likely, 7 = extremely likely).

#### 4.2.5 | Individual differences and demographics

System justification attitudes. Participants completed an eight-item index designed to measure how strongly they hold system-justifying

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attitudes (1 = strongly disagree, 9 = strongly agree) with questions such as 'In general, you find society to be fair' (Kay & Jost, 2003).<sup>6</sup>

Subjective SES. Following Adler et al. (2000), participants saw a drawing of a ladder with 10 rungs and the following prompt: 'Think of this ladder as representing where people stand in our society. At the top of the ladder are the people who are the best off, those who have the most money, most education and best jobs. At the bottom are the people who are the worst off, those who have the least money, least education and worst jobs or no job'. Subjects were asked to place an X on the rung that best represented where they thought they stood on the ladder.

*Objective SES (income).* Participants indicated their current yearly household income before taxes from the following increments – *less than \$15k, \$15k-25k, 25k-35k, 35k-50k, 50k-75k, 75k-100k, or more than 100k.* 

Education. Participants indicated the highest level of education they received (high school, trade school, some college, associate degree, bachelor's degree, master's degree or doctorate degree (M.D., Ph.D.).

Political orientation. Per Kroh (2007), participants indicated their political ideology generally, as well as on social and economic issues (1 = extremely liberal, 11 = extremely conservative).

#### 4.3 Results

We conducted a multilevel linear regression analysis accounting for the within- and between-subjects nature of our factors. To prepare the data for multilevel modelling, we first stacked the data so there were three rows in the data set per participant with one column for both fairness and support. Per participant, the three rows reflected the index variable of the allocation strategy (index: 1 = equality, 2 = equity, and 3 = need). To compare the three allocation strategy conditions, we created two dummy codes such that equality was our reference category.<sup>7</sup>

We ran two multilevel models, one predicting fairness and the other predicting policy support. Each multilevel model consisted of two levels. Level 1 was our repeated variable: allocation strategy. Level 2 was our subject level. We specified system justification, our two allocation strategy dummy coded variables and the interactions between those variables as our fixed factors and subjective SES, objective SES, education, age and political orientation as covariates. We included the covariates for several reasons. The first reason is these covariates have previously been shown to correlate with support for redistribution (Feygina et al, 2010; Garcia-Sanchez et al., 2018; Li et al, 2020; Reeskens & Van Oorschot, 2013). Second, the covariates control for any confounding variance in our analysis which greatly increases the likelihood that any observed between-subjects effects are due to system justification.

#### 4.3.1 | Perceived fairness

Our results indicate that there was a significant interaction between system justification and resource allocation strategy on perceived fairness when comparing equality to need, b = -0.23, SE = 0.08, t(538) = 2.73, p < .01. There was no interaction when comparing equality to equity. To compare need to equity, we ran a separate multilevel model with need as our reference category. There was a significant interaction effect of system justification and resource allocation strategy on perceived fairness when comparing need to equity, b = 0.28, SE = 0.08, t(544) = 3.66, p < .001. The pattern of results can be seen in Figure 3a.

These results provided evidence for our hypotheses regarding system justification in the equity and equality conditions. Our results indicated a positive relationship between participants' level of system justification and fairness perceptions when presented with either an equality or equity policy – b = 0.21, SE = 0.07, t(409) = 3.10, p < .01 and b = 0.26, SE = 0.06, t(418) = 4.54, p < .001, respectively. As system-justifying attitudes increased, so did the perception that policies based on equity or equality within the domain of education were fair. However, there was no relationship between system-justifying attitudes and fairness perceptions when considering need (p > .05), thus providing no evidence for our hypothesis regarding this relationship. The pattern of results can be seen in Figure 3b.

#### 4.3.2 | Policy support

Our results indicate that there was a significant interaction between system justification and resource allocation strategy on policy support when comparing equality to need, b = -0.20, SE = 0.08, t(539) = 2.46, p < .05. There was no interaction when comparing equality to equity. To compare need to equity, we ran a separate multilevel model with need as our reference category. There was a significant interaction of system justification and resource allocation strategy on policy support when comparing need to equity, b = 0.34, SE = 0.08, t(550) = 4.35, p < .001.

Similar to our fairness measure, these results indicated a positive relationship between participants' level of system justification and their policy support when presented with either an equality or equity policy – b = 0.20, SE = 0.06, t(420) = 3.16, p < .01 and b = 0.34, SE = 0.06, t(417) = 5.70, p < .001, respectively. This provides evidence for our hypothesis regarding the relationship between system justification and policy support in the equality and equity conditions. That is, as system-justifying attitudes increased, so did support for policies based on equity or equality within the domain of education. However, there was no relationship between systemjustifying attitudes and fairness perceptions when considering need (p > .05).<sup>8</sup>

<sup>&</sup>lt;sup>6</sup> Unlike the previous study, we reversed the scale so that strongly disagree was 1 and strongly agree was 9. This is largely because of feedback in which participants commented on how all of the other scales have 'disagree' as the lowest anchor and 'agree' as the highest anchor. <sup>7</sup> We ran analyses with each allocation condition as reference category to get the full results. Tables for those results can be found in the Supporting Information.

 $<sup>^{8}</sup>$  We ran the same analyses without the covariates and the same pattern of results persists.

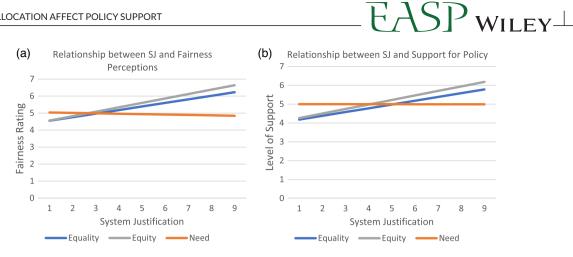


FIGURE 3 (a) Fairness perception as a function of system justification. (b) policy support as a function of system justification.

#### 4.3.3 | Predictive effects of political orientation

Examining our models above, the political orientation covariate was responsible for a significant amount of the variance -b = 0.51, SE = 0.02, t(366) = -2.35, p = .02 and b = -0.07, SE = 0.02, t(364) = -3.05, p = .002, for fairness and support, respectively. The inclusion of political orientation into our model helps differentiate the predictive variance unique to both system justification and political orientation, which are often found to be highly correlated (Feygina et al., 2010; Li et al., 2020). Thus, we tested a model in which we replaced system justification with political orientation, by interacting political orientation with the resource allocation condition using the same covariates as our models described above and including system justification as a covariate as opposed to the main predictor variable. Results demonstrated a different pattern, in which both support and fairness in the equality- and need-based conditions were negatively associated with political orientation while there was no association between political orientation and either fairness or support in the equity condition – on fairness in the equality condition, b = -0.14, SE = 0.04, t(412) = -3.68, p < .001; on support in the equality condition, b = -0.15, SE = 0.04, t(423) = -4.12, p < .001; on fairness in the need condition, b = -0.09, SE = 0.03, t(419) = -2.71, p = .007; on support in the need condition, b = -0.13, SE = 0.42, t(421) = -3.60, p < .001. Thus, the higher a person is in conservatism, the lower in fairness and support they will rate equality and need policies. There was no relationship between conservatism and either fairness or support when considered equity-based policy. This implies a meaningful distinction between the effects of system justification and political ideology between allocation strategies. (Refer to the Supporting Information Appendix A for complete regression tables for all data analyses.)

#### 4.4 Discussion

Our results indicate that system justification has a positive relationship to both support for and perceived fairness of both equality- and equity-based policies within the education domain. That is, as systemjustifying attitudes increase, so too does the level of support and perception of fairness of policies based on equality or equity. Conversely, there is no relationship between system justification and support or fairness when considering need-based policy in the education domain. The results, now replicated from the pilot study, provide evidence for this pattern of relationships between system-justifying attitudes and support between the three allocation strategies of equality, equity and need

Our results support the hypothesis that policies based on both equity and equality are typically seen as more favourable for those who are high system justifiers compared to low system justifiers. This, in turn, implies the allocation rules of equity and equality are seen are more akin to the policies already employed by the status quo and the status quo is more likely to employ policy solutions based on either equity or equality. In addition, we found no effect of system justification on need-based policies. That is, system justification did not predict support for or perceived fairness of need-based policy. Further research is needed to analyse why opinions towards need-based policy appear to be unaffected by system justification. It is possible that needbased policies, since not explicitly used by most governing bodies, may appeal (or fail to appeal) in differing ways to those across the system justification spectrum.

Due to the relationship between system-justifying attitudes and political ideology, it is tempting to claim that any difference in the perception of fairness or support for each policy may be due to an underlying effect of political ideology (Jost et al., 2017). However, we removed that possibility by using political orientation as a covariate. Additionally, we see an entirely different pattern of results when examining political ideology's interaction with allocation strategy within the education domain, providing further evidence of separation of the two constructs.

#### GENERAL DISCUSSION 5

Over the course of three studies, we have provided evidence that there is an interaction of system justification and allocation strategy on evaluations of fairness and support within the education domain. When given all three allocation strategies, we have found a consistent

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interaction pattern across the pilot study and Study 2. However, that pattern was not replicated in Study 1, which suggests that evaluation of resource allocation strategies is influenced by whether someone is presented with side-by-side choices or not.

Investigating specific domains outside of education is one fruitful direction to take this research. Additionally, the personal cost of a policy – that is, the actual implications of a policy on an individual – could be investigated to determine the ego-centric influences on support or opposition to a policy. Research on distributive justice has focused on whether the allocator has a personal stake in the outcome (van der Toorn et al., 2010). Specifically, van der Toorn and colleagues (2010) provided evidence that participants believed scenarios were fairer if they stood to benefit personally. But what about if the outcome requires loss or sacrifice of resources or power? By extending the study design to also include a manipulation of the personal cost to the individual (e.g., higher taxes), we could examine how this factor may change support for and willingness to act in aid of a policy.

As Jasso (2015) notes, an additional factor for consideration is who receives the benefits of the proposed policy. In Studies 1 and 2, the benefactors are young students. However, the benefactors change between allocation conditions. In equality, the benefactors are a random sample of students; in equity, the benefactors are those most proficient in standardized testing; and in need, the benefactors are those least proficient in standardized testing. Our methodology does not necessarily allow us to isolate recipients, and their apparent 'worthiness' of the policy, as a factor. Future research exploring the recipient as a manipulated factor is necessary to understand how this might influence support and the relationship between support and system-justifying attitudes.

#### 5.1 | Limitations

As found in the pilot, participants' support for each of the allocation methods varied by domain. However, the decision to focus on education for Study 1 and Study 2 creates some limitations in terms of generalizability. Further research may disentangle how the social norms of other domains shift perceptions of distributive justice.

Both Study 1 and Study 2 provide specific solutions to some problems of disparity in education with one policy solution for every allocation strategy. However, each of these policies uses a particular type of institution, magnet schools, as the vehicle for the solution to the proposed problem. One limitation of these studies is that our findings may not be completely generalizable to the field of education, but more specifically to perceptions of how students should gain acceptance to magnet schools.

For Study 1, because of the  $2 \times 3 \times 2$  design and sample size, it is possible that we were not able to fully test our hypothesis that the level of disparity would moderate the effect of system justification on support between allocation strategies. Additionally, Study 1 employed a between-participants design in which all participants only assessed a single allocation strategy. It could be argued that this choice does not reflect real-world situations. Typically, we would expect that citizens, when engaged in political thought or action, are given political choices, and asked to choose between the two. For example, when voting, citizens are given two (or more) choices of political candidates with different legislative agendas and asked to compare, contrast, and support one of these two choices. Thus, a within-subjects design may be more appropriate and generalizable to the real world. These limitations were improved upon with Study 2 which was simplified to a  $2 \times 3$  within-participants factorial design. The new design of Study 2 required a simpler analysis as well as fewer participants to achieve the proper power required.

#### 6 | CONCLUSION

In a world in which global inequality is rapidly increasing, it is important to examine both the methods in which a more equitable society can be achieved as well as the attitudes that keep the status quo in place. We provide evidence that, when made aware of high disparity, even the staunchest defenders of the status quo are willing to support a need-based policy that combats disparity. Our research shows that it is possible to ascertain which policy strategies are most likely to appeal to the most people and how to frame policies to engender maximal public support.

#### CONFLICT OF INTEREST STATEMENT

There is no conflict of interest for any of the authors of this paper to declare. The authors confirm the adherence to the APA Code of Conduct's ethical guidelines as well as the national ethics guidelines.

#### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in OSF at https://osf.io/a9s5n/?view\_only= 3eb78319f4374838b1736c357891754b

#### ETHICS STATEMENT

This study was approved by the Loyola University Chicago Institutional Review Board (IRB) for study with human subjects with exemption from IRB oversight requirements according to 45 CFR 46.101. All participants were provided written informed consent prior to the enrolment in the study.

#### TRANSPARENCY STATEMENT

The lead author affirms that this manuscript is an honest, accurate and transparent account of the study being reported; that no aspects of the study have been omitted; and that any deviations from the study as planned have been explained.

#### ORCID

David Igliozzi b https://orcid.org/0000-0001-7431-7770

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#### SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article. How to cite this article: Igliozzi, D., Granot, Y., & Ottati, V. (2024). A fair share: Effects of disparity, allocation strategy and system justification on perceptions of policy support in the education domain. *European Journal of Social Psychology*, 54, 688–700. https://doi.org/10.1002/ejsp.3040