Different Domains of Area-level Deprivation Predict Individual Differences in System Justification and Collective Action Support

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Research on area-level deprivation has yet to illuminate how the macro-level context affects individual-level measures of ideologies that justify inequality. The current study addressed this oversight by investigating the associations different forms of area-level deprivation have with system-justifying beliefs and whether these associations, in turn, predict support for (or opposition to) collective action. Using a nationwide random sample of New Zealand adults (N = 45,354), results reveal that area-level deprivation in Employment, Income and Housing correlated negatively, whereas area-level deprivation in Education and Access correlated positively, with individual-level measures of system justification. Moreover, these different domains of area-level deprivation had indirect effects on collective action support via system justification. The implications of these results for understanding how and when people respond to macro-level inequality are discussed.

Keywords: *Area-level deprivation, System justification, Collective action support, Responses to Inequality*

INTRODUCTION

In an age of rising inequality and poverty, the association between deprivation and poor health and social outcomes is unequivocal (Adams et al., 2009; Atkinson et al., 2014; Osborne et al., 2022; Pickett & Wilkinson, 2010). Notably, while the income gap between the rich and the poor has widened considerably in the last few decades (Saez & Zucman, 2016), inequality has also resulted in stark differences in the availability of resources for deprived (relative to affluent) neighbourhoods (Chen et al., 2012). This *area*-level deprivation—that is, levels of disadvantage relative to the local community and/or wider society—has significant, negative impacts on mortality (Jaffe et al., 2005), mental health (Abas et al., 2006; Skapinakis et al., 2005), physical health (Adams et al., 2009), and general quality of life (Breeze et al., 2005). These effects are independent of individual levels of deprivation or socioeconomic status (e.g., Adams et al., 2009). The recent pandemic provides a particularly poignant example of the deleterious consequences of area-level deprivation, as deprived communities are more likely than their affluent counterparts to contract, as well as die from, COVID-19 (Lewis et al., 2020; Madhav et al., 2020).

Although the consequences of area-level deprivation for health and well-being are well-established, less is understood about the effect area-level deprivation has on individual beliefs and ideologies. Indeed, while research at the individual-level of analysis has begun to investigate the effects of deprivation on individual beliefs and social behaviours (e.g., see Abrams & Grant, 2012), the impacts of *societal*-level indicators of deprivation on individual beliefs remain unexplored. Specifically, research has yet to investigate the impact of area-level deprivation on beliefs about society's fairness, despite these system-justifying beliefs being pivotal to how people respond to either real or perceived inequalities (Jost, 2019; Jost & Banaji, 1994).

The current study addresses this oversight by investigating the relationship between area-level deprivation and individual endorsement of system justification—that is, beliefs that society is fair and 'just' (Jost, 2019). Using a nationwide random sample of New Zealand adults, we examine the associations between seven unique 'domains' of deprivation at the area level (i.e., employment, income, crime, housing, health, education, and access; see Table 1) and personal endorsement of system justification. In doing so, we aim to determine whether particular domains of deprivation at the area-level correlate with individual-level endorsement of system-justifying beliefs. Moreover, we aim to determine whether these distinct domains of neighbourhood-level inequality have indirect effects on individual-level support for collective action via system justification. As such, we increase understanding in both area-level deprivation and system-justification research by providing novel insights into the relationships between macro-level inequality and individual beliefs, and by illuminating the macro-level conditions that may promote (or impede) social change.

Defining and Measuring Area-level Deprivation

Area-level deprivation research over the past 50 years stems from a theoretical distinction between objective 'poverty' and deprivation. In the 1980s, Townsend (1987) defined deprivation as a palpable disadvantage *relative* to the local community or wider society to which an individual (or group) belongs. Indeed, while inequality is often defined as the distribution of income *within* a certain area, area-level deprivation refers to disadvantage *between* different areas or communities (see Townsend, 1987). As such, area-level deprivation is a particular *form* of inequality

whereby different neighbourhoods have, on average, differential access to essential resources, including employment, education, and housing. Townsend also noted that deprivation comprises both material and social deprivation, and, as such, individuals can experience *multiple* forms of deprivation which may have cumulative effects (Exeter et al., 2017; Townsend, 1987). Townsend used these definitions to develop an index of deprivation in the United Kingdom, utilising four Census-derived indicators with the theoretical ability to measure both material and social deprivation. The aforementioned Townsend Index informed subsequent area-level deprivation indices, with more recent research considering the effects of multiple indicators of neighbourhood-level deprivation on individual-level health and social outcomes (e.g., Exeter et al., 2017).

Indices of multiple distinct forms of area-level deprivation are pivotal to current health and advocacy research, with countries including the United Kingdom (Herbert, 1975), the United States (Andrews et al., 2020), Canada (Bell & Hayes, 2012), and New Zealand (Atkinson et al., 2014; Exeter et al., 2017) utilising census data to 'map' the deprivation of different neighbourhoods. Although the Townsend Index utilises only four deprivation indicators, recent research employs multiple additional indicators of deprivation, often categorized into 'domains' that represent unique social and material forms of deprivation (e.g., Atkinson et al., 2014). Examples of these domains include Communication (access to the internet), Transport (car access and ownership), and Housing (homeownership; Atkinson et al., 2014; Bell & Hayes, 2012). That said, many census-based indices of deprivation assume that particular variables represent deprivation in consistent, tangible ways. Car ownership, for example, is less indicative of deprivation in areas with reliable access (vs. unreliable or no access) to public transport (Christie & Fone, 2003; Salmond et al., 2007). As such, many area-level deprivation measures are not always indicative of deprivation across variable contexts (e.g., rural versus urban environments), limiting the scope of area-level deprivation research.

More recently, researchers developed the New Zealand Indices of Multiple Deprivation (IMD; Exeter et al., 2017), which employs 28 unique—albeit nationally relevant—indicators of deprivation across seven domains: Employment (the number of unemployed working-age people), Income (the amount of financial assistance provided by the State to those with insufficient income), Crime (the victimisation rates of seven major offences), Housing (the proportion of the population living in overcrowded or rental households), Health (the amount of ill health and mortality), Education (the number of people without formal qualifications), and Access (the availability of essential amenities including grocery stores; see Table 1). These seven domains are measured at the Data Zone level—a specifically constructed geographical unit used to analyse neighbourhood-level deprivation in New Zealand (see Zhao & Exeter, 2016, for construction). Critically, the IMD is underpinned by Townsend's original definition of multiple deprivation, albeit with a key extension; 'multiple' deprivation is not a specific form of deprivation in and of itself, but rather, the *consequence* of both the cumulative and independent effects of several forms of deprivation (Exeter et al., 2017; Noble et al., 2006). In other words, the IMD aims to allow for specific domains of deprivation to be used to investigate their unique *and* cumulative effects on different health and social outcomes.

By distinguishing between distinct domains of deprivation, the IMD addresses several limitations of previous area-level deprivation research. As mentioned, previous measurements have relied on measures from Census data that quickly become outdated (e.g., access to the internet) or are variably related to deprivation based on location (e.g., car ownership). In contrast, the IMD provides a 'standard' of deprivation at a national level that facilitates valid comparisons between neighbourhoods and isolates the domains of deprivation that may be more (or less) indicative of poor health outcomes. For example, Exeter and colleagues (2017) demonstrated the validity of the IMD by testing its association with the ranked proportion of smokers in a particular Data Zone. They found a strong correlation between overall IMD scores and smoking rates, as well as strong, independent associations between smoking rates and the Education, Income, and Employment domains of deprivation (Exeter et al., 2017). The authors also found unique associations between the IMD and the number of households living in poverty, although Education, Income, and Employment were more strongly associated with the number of households living in poverty than were the remaining domains (thus, demonstrating the discriminant validity of the IMD). The different domains of the IMD also have unique effects on dental outcomes (Shackleton et al., 2018) and childhood obesity (Exeter et al., 2019), highlighting that multiple forms of area-level deprivation can have independent, as well as cumulative, effects on health and well-being.

Given the strong associations between the IMD and health and well-being, the IMD may similarly impact social psychological outcomes. Indeed, the IMD was designed to assess the geography of deprivation and its association with health *and* social outcomes (Exeter et al., 2017). Although some research has investigated the relationship between area-level deprivation and social outcomes such as religiosity (e.g., Hoverd et al., 2013), research has yet to thoroughly examine the associations between different area-level forms of deprivation and social processes. Thus, while individual- and group-level research has found a significant association between deprivation and individual ideology (e.g., Jost et al., 2003), the relationship(s) between area-level deprivation and individual social outcomes is relatively unexplored.

System Justification Theory

One way area-level deprivation may impact social outcomes is by fostering system justifying beliefs; that is, beliefs that society is fair and 'just' (Jost & Banaji, 1994). System justifying beliefs motivate people to defend, justify, and bolster the *status quo*, even when doing so conflicts with their self-interests (Harding & Sibley, 2013; Jost, 2019). Indeed, although system justifying beliefs further the self-interests of high-status

individuals, system justification theory argues that the motivation to defend the status quo may, at least under some conditions, ironically be *stronger* amongst the disadvantaged (Henry & Saul, 2006; Jost & Hunyady, 2005; Jost et al., 2003). These considerations build upon, but somewhat contrast with, social identity theory (SIT; Tajfel & Turner, 1979). While SIT argues that disadvantaged people will be more *accepting* of their disadvantaged status when social systems are perceived as legitimate or stable, system justification theory argues that disadvantaged people *endorse* the status quo because they *want* to perceive the system they are a part of as legitimate or stable (Jost & Burgess, 2000).

The tendency for the disadvantaged to sometimes support the status quo is due, in part, to the palliative nature of system justification. Specifically, system justification makes people feel better about the nature of the status quo and, in turn, reduces the impact of inequality on well-being (e.g., Bahamondes et al., 2019; Harding & Sibley, 2013; Jost, 2019). One explanation for why this may be especially true for disadvantaged people stems from 'hybrid' explorations of cognitive dissonance and system justification theories (see Jost et al., 2003). Indeed, cognitive dissonance theory argues that people respond to inconsistencies amongst their thoughts, feelings, and behaviours by engaging in psychological 'work' to reduce the inconsistency (Festinger, 1957). This usually results in greater support for the cognition that is most resistant to change (Harmon-Jones & Harmon-Jones, 2007). In the case of social inequality, people might resolve inconsistencies between their disadvantaged status and knowledge of the stability of the status quo by justifying the existing systems and authorities (Jost et al., 2003; Sengupta et al., 2017; Sengupta et al., 2015). As such, in the absence of a direct challenge to the social system, disadvantaged individuals may rationalise their own suffering (e.g., see Jost, 2019). While this has a short-term palliative effect on well-being, system-justifying ideologies prevent people who suffer most in current systems from challenging or changing them and, as such, work against their self-interest in the long-term (Osborne et al., 2019).

Although people have a fundamental need to justify the system, system justification theory does not argue that people *invariably* perceive the status quo as fair and just, nor does it argue that dissonance reduction is the sole mechanism behind such beliefs (see Jost, 2019). Rather, Jost argues that the strength of system justification endorsement varies by both dispositional and situational factors. For example, dispositional factors such as death anxiety and a need to share reality predict a greater endorsement of politically conservative and system-justifying beliefs (Cheung et al., 2011; Hennes et al., 2012). As for situational factors, system justification varies by how reliant people are on a particular system. For instance, individuals are often highly dependent on educational, political, and legal systems, resulting in greater deference to, and support for, these particular authorities (van der Toorn et al., 2011).

Whether an individual within an area of high deprivation endorses system justification also likely depends on whether their self-interests *outweigh* the general ideological motive to bolster the status quo (Jost et al., 2004). Indeed, endorsing system justification directly conflicts with the self-interests of those disadvantaged by the system (i.e., by preventing social change) and has long-term, negative consequences for disadvantaged people (e.g., Harding & Sibley, 2013). As such, there may be forms of area-level deprivation whereby the adverse effects of experiencing neighbourhood-level inequality *surpass* the palliative benefits of endorsing the status quo. At the individual level, Sears and Funk (1990) note that self-interest is most relevant to decision-making when (a) the costs and benefits of a particular position are clear, (b) the stakes of the position are high, and (c) the outcome is (nearly) certain. At the macro-level, particular forms of area-level deprivation with more immediate and severe social consequences may result in individuals endorsing *lower* levels of system justification. In short, individual endorsement of system justification should vary both by the *degree* of area-level disadvantage and the *form* (or domain) of that disadvantage.

In the context of the current study, area-level deprivation should be associated with personal endorsement of system justifying beliefs. This relationship should, however, vary between individuals clustered within different domains of area-level deprivation. Indeed, research suggests that differences in the dependency an individual and their neighbourhood has on a particular system may also translate into variations in system-justifying beliefs (van der Toorn et al., 2011). Given this, one would expect different domains of area-level deprivation to be differentially associated with system justification. For example, neighbourhoods with high area-level deprivation in Employment or Education may be more financially and socially dependent on government support. As such, this may promote individual endorsement of the status quo. However, the social *consequences* of different domains of area-level deprivation may have variable immediacy and severity and, as such, may result in individuals who experience distinct forms of area-level deprivation endorsing different levels of system justification. If the severity and immediacy of an outcome(s) in a particular domain of deprivation is apparent *and* substantive enough to counteract the desire to justify the status quo, then we may see a lower endorsement of system justification. However, to our knowledge, research has yet to investigate whether different domains of area-level deprivation are more strongly associated with the endorsement of system justification.

Overview of the Current Study

The current study addresses these oversights by elucidating the relationships between different domains of area-level deprivation and individual-level endorsement of system justification. We also investigate whether distinct forms of neighbourhood-level inequality have indirect effects on support for collective action via system justification. In examining these questions, we address a significant gap in the area-level deprivation and the system justification literature. To our knowledge, research has yet to investigate the relationship(s) between societal-level inequality and individual endorsement of system justification, despite the latter

being a significant predictor of how people respond to inequality (Jost et al., 2017; Osborne & Sibley, 2013). Similarly, research has yet to elucidate whether different domains of deprivation have differential associations with personal endorsement of system justification, despite system justification theory arguing for specific conditions in which people may be more (less) likely to endorse such beliefs (e.g., Jost, 2019). Finally, research has yet to investigate whether the relationship between these constructs is, in turn, associated with greater support for social change. Thus, the current study provides novel contributions to the literature by uncovering the 'geography' of system justification—namely, the specific conditions of macro-level inequality that are more (or less) associated with the endorsement of system justifying beliefs amongst individuals, and, in turn, differing support for social change.

Using a nationally representative sample of New Zealand adults, we investigate the associations between the seven domains of the IMD, individual endorsement of system justification, and individual collective action support. Specifically, we utilise three distinct system justification measures (general, ethnic, and gender system justification) to examine whether the effects of area-level deprivation are consistent across different forms of endorsement of the status quo. While system justification theory suggests that deprivation may sometimes foster the endorsement of system-justifying beliefs (Jost, 2019; Jost & Hunyady, 2003; Jost et al., 2003), research has yet to discern whether particular forms of societal-level inequality have different effects on people's motivation to justify the status quo. As such, certain macro-level conditions may decrease people's motivation to justify the system, even when confronted with substantial objective amounts of neighbourhood-level disadvantage.

To these ends, we expect distinct domains of area-level deprivation to have distinct associations with system justification. For example, while research at the individual level suggests that people highly dependent on government systems may be more likely to endorse them (see van der Toorn et al., 2011), individuals in neighbourhoods affected by inequalities with more immediate social consequences (e.g., Employment or Income deprivation) should be less likely to endorse system justifying beliefs. As such, whether someone supports the systems that disadvantage them should vary by a) how dependent individuals are on these social systems and b) the severity and likelihood of consequences of different forms of neighbourhood inequality. We also expect the different domains of area-level deprivation to indirectly predict collective action support via system justification. Specifically, domains of area-level deprivation associated with higher individual endorsement of system justification should lead to *reduced* support for collective action (see Jost et al., 2017). Conversely, we expect domains of area-level deprivation associated with lower endorsement of system justification to predict greater collective action support.

Given the current socio-political climate of rising rates of inequality, it is becoming increasingly important to examine the effects of area-level deprivation on individual-level perceptions of fairness. Indeed, in an age of increasing inequality, both within New Zealand and internationally (Sibley et al., 2011; Yen, 2009), there is a growing need for research that considers the relationship between the social context and individual ideology. Understanding the particular forms of deprivation that promote (or impede) system justifying beliefs allows for a more nuanced understanding of why we only see responses to inequality under *certain circumstances* (see Osborne & Sibley, 2013). As such, investigating these associations provides critical insights into not only the social consequences of different forms of deprivation but also the specific conditions in which individuals are more likely to support—or oppose—social change.

METHOD

Sampling Procedure

The current study analysed data from Time 10 of the New Zealand Attitudes and Values Study (NZAVS)—a nation-wide longitudinal panel study of New Zealand adults that began in 2009. Sampling for Time 10 occurred on six occasions. In 2009 (Time 1), random sampling from the electoral roll yielded 6,518 participants (response rate = 16.6%). By 2011, 3,914 participants remained in the study (retention rate = 60%). To account for sample attrition, a non-random booster sample was recruited from the website of a national newspaper, yielding a further 2,970 participants and increasing the sample size at Time 3 to 6,884 participants.

Four additional booster samples were conducted by randomly sampling the electoral roll (without replacement). In 2012 (Time 4), 5,108 new participants were recruited (response rate = 10.0%). The second sampling occasion in 2013 (Time 5) recruited a further 7,581 participants (response rate = 10.6%). The third sampling occasion occurred in 2016 (Time 8) and recruited 7,669 new participants into the study (response rate = 9.5%), bringing the sample size to 21,936 participants. By 2017 (Time 9), 17,072 participants remained in the study (retention rate from Time 8 = 77.8%). A fourth sampling occasion occurred in 2018 (Time 10), recruiting a further 29,293 participants into the study (response rate = 9.2%). In total, 61,535 participants completed at least one wave of the study. We focus on data from Time 10 because it provides the biggest cross-sectional sample of the study to date, which ensures that we have a sufficient sample size within nesting factors to estimate our multi-level models.

Participants

A total of 45,354 participants provided partial or complete responses to our variables of interest at Time 10 (M_{age} = 48.69, *SD* = 13.84) and were nested within 5,717 Data Zones (average cluster size = 7.93). Of these participants, 62.6% were women, and most identified either as New Zealand European (80.3%) or Māori (9.9%). A small percentage of the sample identified as Asian (4.9%) or Pacific Islander (1.8%). The rest of the sample (3.1%) identified as another ethnic group or failed to indicate their ethnicity.

Measures

Time 10 of the NZAVS included the following measures relevant to this study: (i) system justification,

(ii) ethnic system justification, (iii) gender system justification, (iv) area-level deprivation, and (v) collective action support. Unless otherwise specified, items were rated on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*), with higher scores reflecting higher levels of the given variable.

Within-Level Variables

System Justification: The following four items adapted from Kay and Jost (2003) were used to assess general system justification: (i) "Everyone has a fair shot of wealth and happiness in New Zealand"; (ii) "In general, I find New Zealand society to be fair"; (iii) "In general, the New Zealand political system operates as it should."; and (iv) "Most of New Zealand's policies serve the greater good". These items were averaged to assess the endorsement of system justifying beliefs ($\alpha = .65$).

Ethnic System Justification: The following two items were used to assess endorsement of ethnicity-based system justification: (i) "Everyone in New Zealand has a fair shot at wealth and happiness, regardless of ethnicity or race"; and (ii) "In general, relations between different ethnic groups in New Zealand are fair". These items were averaged to assess endorsement of ethnic system-justifying beliefs ($\alpha = .51$).

Gender System Justification: The following two items were used to assess endorsement of gender-based system justification: (i) "In general, relations between men and women in New Zealand are fair"; and (ii) "Men and women both have a fair shot at wealth and happiness in New Zealand". These items were averaged to assess endorsement of gender system justification ($\alpha = .65$).

Collective action support: Collective action support was measured using three items from Cronin and colleagues (2012): (a) "I have considered voting in terms of what is good for my particular ethnic group"; (b) "I have considered participating in demonstrations on behalf of my ethnic group."; and (c) "I have considered signing petitions on behalf of my ethnic group" ($\alpha = .76$).

Between-Level Variables

Area-level Deprivation: The current study used the New Zealand IMD (Exeter et al., 2017) to measure the distinct forms of deprivation in participants' neighbourhoods. To these ends, the IMD divides the country into 5,958 unique Data Zones (DZs), with an average population of 712 (see Zhao & Exeter, 2016). These DZs are ranked in ascending order of deprivation using 28 indicators of area-level deprivation across the following seven domains (in weighted order; see Table 1): Employment, Income, Health, Education, Housing, Crime, and Access. These ranks are categorized further into quantiles and deciles to facilitate the use of the IMD in research, ranging from Decile 1 (least deprived) to Decile 10 (most deprived). Most importantly, the construction of the IMD facilitates research on the effects of *both* the overall IMD and its separate domains on different health and social outcomes, allowing us to examine the unique effects of the seven domains of deprivation on our variables of interest.

Data Analysis

Given that the current study aimed to investigate a) the effects of area-level deprivation on individual-level endorsement of system-justifying beliefs, and b) whether distinct forms of area-level deprivation had indirect effects on collective action support via system justification, we estimated a Bayesian multilevel model whereby participants (n = 45,354) were nested within ranked Data Zones (k = 5,717).

RESULTS

Table 2 displays the descriptive statistics for, and bivariate associations between, our variables of interest and participants' demographic information. Our multilevel model examined the extent to which seven domains of area-based deprivation uniquely correlate with individual-level endorsement of system-justifying beliefs and collective action support. To these ends, individual endorsement of system justification, ethnic system justification, and gender-based system justification were regressed onto the seven unique domains of the IMD. Furthermore, we regressed collective action support onto the seven domains of the IMD and the three measures of system justification to conduct our mediation analyses.

Table 3 displays the direct associations between our variables of interest. We focus predominantly on the unstandardised beta coefficients in our model. The Bayesian b coefficients in Table 3 can be interpreted similarly to unstandardised coefficients in a fixed-effects multiple regression whereby the coefficient signifies the extent to which one-unit change in the predictor variable (i.e., domains of area deprivation) corresponds to an x-unit change in the outcome variable (i.e., system justification or collective action support). Critically, the model provides the independent associations between each IMD domain, system justification, and collective action support while controlling for all other predictors in the model.

Table 3 reveals that the area-level deprivation in Crime and Health were unreliably associated with system justification. However, the remaining domains of the IMD were reliably associated with the endorsement of system justification. Specifically, area-level deprivation in Employment ($b = -0.016$, $SD = 0.003$, $p < 0.001$), Income ($b = -0.016$, $SD = 0.004$, $p < 0.001$), and Housing ($b = -0.008$, $SD = 0.003$, $p = 0.003$) were negatively associated with system justification. These results indicate that, as area-level income, employment, and housing deprivation increased, the individual-level endorsement of system justification decreased. Conversely, area-level deprivation in Education was positively associated with system justification ($b = 0.019$, $SD = 0.003$, $p < 0.001$), indicating that participants living in areas with high (relative to low) levels of education deprivation had higher levels of system justification.

In terms of ethnic system justification, Table 3 also shows that area-level deprivation in Employment was negatively associated with endorsement of ethnic system-justifying beliefs ($b = -0.039$, $SD = 0.005$, $p < 0.001$). That is, the greater the area-level employment deprivation, the less individuals living within these communities endorsed ethnic system justification. Conversely, area-level deprivation in both Education ($b = 0.066$, $SD = 0.005$, $p < 0.001$) and Access ($b = 0.017$, $SD = 0.003$, $p < 0.001$) correlated positively with indivi-

Table 1. Domains, indicators, and weights of the Index of Multiple Deprivation (IMD).

Domain	Indicators	Domain weights
Employment[a]	• The working age population receiving the Unemployment Benefit • The working age population receiving the Sickness Benefit	28%
Income[a]	• Working For Families payments (weekly, $ per 1000 population) • Income related benefit payments (weekly, $ per 1000 population)	28%
Crime[a]	Victimisation rates for: • Homicide and related offences • Assault • Sexual assault • Abduction and kidnapping • Robbery, extortion and related offences • Unlawful entry with intent/Burglary • Theft and related offences	5%
Housing[a]	• The number of persons in households which are rented • The number of persons in households which are overcrowded	9%
Health[b]	• Registrations for cancers (with a social gradient) • Standardised Mortality Ratio (SMR) • Acute hospitalisations related to infectious diseases (with a social gradient) • Acute hospitalisations related to respiratory diseases (with a social gradient) • Emergency admissions to hospital	14%
Education[b]	• School leavers not transitioning to tertiary studies • Youth not in education, employment, or training • School leavers younger than 17 years old • Working age people 15-64 with no qualifications • School leavers with less than NCEA Level 2	14%
Access[b]	Distance to the three nearest: • Early Childhood Education Centres • Schools for years 1 to 8 • Supermarkets • Petrol stations • GPs or Accident and Emergency clinics	2%

Note. [a]Indicators were summed and divided by the population denominator to create the domain score. [b]Indicators were ranked, transformed to a normal distribution and then combined using weights generated by factor analysis to create the domain score. Source: Exeter et al. (2017).

-dual level endorsement of ethnic system justification. In other words, the greater the area-level deprivation in education and access, the more residents within these neighbourhoods endorsed ethnic system justification.

Similar patterns emerged for gender-based system justification; area-level deprivation in Employment (b = −0.036, SD = 0.004, p < 0.001), Income (b = −0.018, SD = 0.006, p < 0.001), and Housing (b = −0.009, SD = 0.004, p = 0.008) correlated negatively with individual-level endorsement of gender system justification. Additionally, area-level deprivation in both Education (b = 0.056, SD = 0.004, p < 0.001) and Access (b = 0.017, SD = 0.003, p < 0.001) correlated positively with gender system justification. That is, as area-level employment, income, and housing deprivation increased, individual-level endorsement of gender-based system justification decreased. Conversely, as area-level deprivation in education and access increased, individual-level endorsement of gender-based system justification also increased.

Finally, in terms of collective action support, Employment, Income, Crime, Health, and Access deprivation were unreliably associated with collective action support. Rather, only Housing (b = 0.032, SD = 0.005, p < 0.001) and Education (b = 0.027, SD = 0.010, p < 0.001) deprivation were directly associated with collective action support. As area-level deprivation in Housing and Education increased, so too did support for collective action. That said, all three measures of system justification were reliably associated with collective action support. Specifically, system justification and gender-based system justification were negatively associated with support for collective action (b = −0.911, SD = 0.203, p < 0.001 and b = −0.237, SD = 0.104, p < 0.001, respectively). Conversely, ethnic system justification was *positively* associated with collective action support (b = 0.706, SD = 0.094, p < 0.001). That is, as ethnic system justification *increased*, collective action support also increased.

Mediation Analyses

After identifying the different domains of the IMD that uniquely predict individual endorsement of system justification, we sought to investigate the possible indirect effects of the seven domains of the IMD on collective action support via our three measures of area-

Table 2. Descriptive statistics and bivariate correlations between the variables included in our analyses, and relevant demographic information.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Age	---														
Gender[a]	.083**	---													
Income	-.052**	.069**	---												
Minority[b]	-.116**	-.025**	-.059**	---											
System Justification (SJ)	.125**	.123**	.066**	-.028**	---										
Ethnic SJ	.106**	.160**	.000	.008	.585**	---									
Gender SJ	.096**	.203**	.029**	-.027**	.535**	.584**	---								
Collective Action Support	.016**	-.028**	-.088**	.413**	-.029**	.028**	-.023**	---							
IMD Employment	-.007	-.019**	-.201**	.127**	-.056**	-.015**	-.038**	.108**	---						
IMD Income	-.026**	-.023**	-.245**	.157**	-.053**	.008	-.021**	.134**	.794**	---					
IMD Crime	-.019**	-.002	-.094**	.091**	-.035**	-.011*	-.026**	.069**	.451**	.461**	---				
IMD Housing	-.119**	-.010*	-.118**	.206**	-.056**	-.028**	-.053**	.115**	.525**	.613**	.475**	---			
IMD Health	-.035**	-.019**	.134**	.128**	-.037**	.008	-.010*	.095**	.479**	.575**	.280**	.468**	---		
IMD Education	.040**	-.021**	-.259**	.099**	-.015**	.068**	.044**	.130**	.637**	.740**	.325**	.326**	.455**	---	
IMD Access	.107**	.000	-.032**	-.100**	.040**	.067**	.076**	-.027**	-.175**	-.217**	-.321**	-.498**	-.213**	.128**	---
$\bar{x}$	49.2	0.37	1.15	0.17	4.41	3.94	4.57	2.29	5.10	4.92	5.09	4.87	4.96	4.93	5.71
SD	13.84	0.48	0.96	0.38	1.06	1.50	1.41	1.41	2.73	2.71	2.81	2.69	2.75	2.76	2.90
α	---	---	---	---	.65	.51	.65	.76	---	---	---	---	---	---	---
n	45,353	45,244	41,803	43,966	44,297	45,339	45,281	45,285	45,354	45,354	45,354	45,354	45,354	45,354	45,354

Note. [a]Gender was dummy-coded (0 = women, 1 = men); [b]Minority was dummy-coded (0 = NZ European/Pākehā, 1 = Minority); $^{*}p < .05$; $^{**}p < .01$

Table 3. Multilevel Bayesian model examining the relationships between seven domains of area-level deprivation, individual endorsement of system-justifying beliefs, and individual collective action support.

			95% C.I.			
	b	*SD(b)*	Lower 2.5%	Upper 2.5%	*β*	*SD(β)*
Within Level:						
System Justification	1.115***	0.007	1.048	1.076	1.000	0.000
Ethnic System Justification	2.176***	0.014	2.048	2.105	1.000	0.000
Gender System Justification	1.932***	0.012	1.828	1.873	1.000	0.000
Collective Action Support	1.911***	0.013	1.885	1.938	1.000	0.000
Between Level:						
System Justification ON						
Employment	-0.016***	0.003	-0.022	-0.010	-0.371***	0.073
Income	-0.016***	0.004	-0.024	-0.008	-0.363***	0.099
Crime	-0.001	0.002	-0.005	0.004	-0.014	0.052
Housing	-0.008**	0.003	-0.013	-0.002	-0.157**	0.055
Health	-0.003	0.002	-0.007	0.002	-0.059	0.053
Education	0.019***	0.003	0.013	0.026	0.449***	0.083
Access	0.002	0.002	-0.002	0.006	0.043	0.050
Ethnic System Justification ON						
Employment	-0.039***	0.005	-0.048	-0.030	-0.421***	0.053
Income	-0.012	0.006	-0.024	0.000	-0.125	0.066
Crime	0.001	0.003	-0.006	0.007	0.008	0.033
Housing	0.000	0.004	-0.009	0.018	-0.003	0.040
Health	0.004	0.003	-0.003	0.010	0.039	0.035
Education	0.066***	0.005	0.057	0.076	0.720***	0.055
Access	0.017***	0.003	0.011	0.024	0.183***	0.035
Gender System Justification ON						
Employment	-0.036***	0.004	-0.044	-0.027	-0.430***	0.053
Income	-0.018***	0.006	-0.029	-0.007	-0.211***	0.068
Crime	0.001	0.003	-0.005	0.007	0.010	0.034
Housing	-0.009**	0.004	-0.017	-0.002	-0.098**	0.042
Health	0.003	0.003	-0.003	0.010	0.042	0.039
Education	0.056***	0.004	0.047	0.064	0.675***	0.057
Access	0.017***	0.003	0.011	0.023	0.199***	0.036
Collective Action Support ON						
Employment	-0.001	0.007	-0.015	0.014	-0.006	0.069
Income	0.007	0.008	-0.008	0.022	0.063	0.074
Crime	-0.003	0.004	-0.013	0.004	-0.024	0.038
Housing	0.032***	0.005	0.021	0.041	0.267***	0.044
Health	0.003	0.004	-0.005	0.009	0.026	0.034
Education	0.027***	0.010	0.007	0.042	0.258***	0.097
Access	-0.005	0.004	-0.014	0.004	-0.048	0.041
System Justification	-0.911***	0.203	-1.222	-0.419	-0.376***	0.083
Ethnic System Justification	0.706***	0.094	0.561	0.912	0.626***	0.059
Gender System Justification	-0.237***	0.104	-0.382	-0.017	-0.188***	0.082

Note. $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$. CI 95% Credible Interval.

Table 4. Indirect effects of the seven domains of area-level deprivation on collective action support via individual endorsement of general, ethnic, and gender-based system justification.

	Collective action support			
			95% C.I.	
	Indirect effect	*SE*	Lower 2.5%	Upper 2.5%
System Justification (SJ)				
Employment → SJ	0.014***	0.004	0.006	0.022
Income → SJ	0.014***	0.005	0.005	0.025
Crime → SJ	0.001	0.002	-0.004	0.005
Housing → SJ	0.007**	0.003	0.002	0.013
Health → SJ	0.002	0.002	-0.002	0.007
Education → SJ	-0.017***	0.005	-0.027	-0.007
Access → SJ	-0.002	0.002	-0.006	0.002
Ethnic System Justification (ESJ)				
Employment → ESJ	-0.028***	0.005	-0.039	-0.019
Income → ESJ	-0.008	0.005	-0.018	0.000
Crime → ESJ	0.001	0.002	-0.004	0.005
Housing → ESJ	0.000	0.003	-0.006	0.006
Health → ESJ	0.003	0.002	-0.002	0.007
Education → ESJ	0.047***	0.008	0.036	0.064
Access → ESJ	0.012***	0.003	0.007	0.018
Gender System Justification (GSJ)				
Employment → GSJ	0.008**	0.004	0.001	0.014
Income → GSJ	0.004**	0.002	0.000	0.009
Crime → GSJ	0.000	0.001	-0.002	0.001
Housing → GSJ	0.002*	0.001	0.000	0.005
Health → GSJ	-0.001	0.001	-0.003	0.001
Education → GSJ	-0.013**	0.006	-0.021	-0.001
Access → GSJ	-0.004**	0.002	-0.007	0.000

Note. $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$. CI 95% Credible Interval.

-level deprivation in Employment (b = 0.014, SD = 0.004, p < 0.001), Income (b = 0.014, SD = 0.005, p <0.001), Housing (b = 0.007, SD = 0.003, p = 0.003), and Education (b = −0.017, SD = 0.005, p < 0.001) had specific indirect effects on collective action support via individual-level endorsement of general system justification. That is, these four domains of area-level deprivation were associated with individual-level system justification which, in turn, had a distinct relationship with collective action support.

Turning attention to ethnic-based system justification, area-level deprivation in Employment (b = −0.028, SD = 0.005, p < 0.001), Education (b = 0.047, SD = 0.008, p < 0.001), and Access deprivation (b = 0.012, SD = 0.003, p < 0.001) had specific indirect effects on collective action support via ethnic system justification. In other words, area-level deprivation in Employment, Education, and Access uniquely predicted individual-level endorsement of ethnic-based system justification which, in turn, had a distinct relationship with collective action support.

Finally, area-level deprivation in Employment (b = 0.008, SD = 0.004, p = 0.009), Income (b = 0.004, SD = 0.002, p = 0.009), Housing (b = 0.002, SD = 0.001, p = 0.016), Education (b = −0.013, SD = 0.006, p = 0.009), and Access (b = −0.004, SD = 0.002, p = 0.009) had specific indirect effects on collective action support through gender-based system justification. That is, these distinct domains of area-level deprivation were associated with gender-based system justification which, in turn, was associated with collective action support.

DISCUSSION

Research on area-level deprivation has yet to elucidate its effects on individual-level endorsement of system justification, despite the latter being an important predictor of how people respond to inequality (e.g., see Jost et al., 2017; Osborne & Sibley, 2013). As such, the current study aimed to determine whether different domains of area-level deprivation correlate with three distinct individual-level measures of system justification. While system justification theory argues that individuals in disadvantaged areas may endorse higher levels of system justification (Jost et al., 2003), domains of area-level deprivation with different social consequences may have differential associations with individual differences in system justification.

As hypothesized, our results indicate that different domains of area-level deprivation are differentially associated with system justification. Specifically, as area-level Employment, Income, and Housing deprivation increased, individual-level endorsement of system justification decreased (although Housing deprivation was only associated with general and gender-based system justification). Conversely, as area-level deprivation in Education and Access increased, so, too, did individual-level endorsement of system justification (although Access deprivation was only reliably associated with ethnic and gender-based system justification). In respect to Employment and Income

deprivation, unemployment and low-income have detrimental, immediate effects on individuals (Rocha et al., 2017; Stafford & Marmot, 2003). Indeed, the most severe forms of area-level deprivation almost always impact the economic resources of individuals (see Exeter et al., 2017; Townsend, 1987). As such, the social consequences of Employment and Income deprivation may be more salient than any palliative benefit potentially received from endorsing the status quo. Likewise, Housing deprivation is associated with fiscal forms of individual and macro-level inequality (e.g., Dewilde, 2022), which may explain why—to some extent—a similar pattern emerges among area-level Employment, Income, and Housing deprivation.

Conversely, the impacts of area-level Education and Access deprivation may be perceived as less immediate or severe. Indeed, although the impacts of education deprivation on mental and physical health outcomes are significant, they are of a smaller magnitude than income or employment deprivation (e.g., Adams et al., 2009). As such, the motivation to justify the *status quo* may be greater than the need to promote social change, particularly given the palliative effects of system justification on well-being (Bahamondes et al., 2021; Bahamondes et al., 2019; Harding & Sibley, 2013) and the dependency individuals have on educational systems (van der Toorn et al., 2011). That said, future research is needed to identify the specific psychological mechanisms that transmit area-level Education and Access deprivation onto the endorsement of system justifying beliefs.

In addition to investigating the effects of area-level deprivation on system-justifying beliefs, we examined the associations between neighbourhood-level inequality and collective action support. Although only two of the seven area-level domains of deprivation (namely, Housing and Education deprivation) had direct associations with collective action support, five of the seven domains had reliable *indirect* effects on collective action support via system justification. Specifically, individuals nested in neighbourhoods with high (vs low) levels of Employment, Income, and Housing deprivation were lower in individual endorsement of system justification which, in turn, was associated with higher collective action support. In contrast, individuals in neighbourhoods with high (vs low) levels of Education deprivation were *higher* in system justification which, in turn, was associated with *lower* support for collective action. Similar patterns emerged for gender-based system justification, although the indirect effect of area-level Access deprivation on collective action support via gender system justification was also significant. In sum, our results not only demonstrate the unique associations between neighbourhood-level inequality and system justification, but also the indirect paths through which neighbourhood-level deprivation impacts support for collective action and social change.

Area-level deprivation in Employment, Education and Access also had indirect effects on collective action support via ethnic system justification. Unexpectedly, ethnic-based system justification correlated positively (instead of negatively) with collective action support. That is, individuals in neighbourhoods high in Employment deprivation were lower in ethnic-based system justification which, in turn, was associated with *lower* support for collective action. In contrast, individuals in neighbourhoods high in Education and Access deprivation were higher in ethnic-based system justification, which, in turn, was associated with *higher* collective action support.

That ethnic-based system justification predicted greater support for collective action is somewhat surprising given that system justification often *reduces* support for social change (Jost et al., 2017). However, believing that the system is fair across ethnic groups may promote system-*supporting* forms of collective action (i.e., collective action on behalf of the dominant group, see Osborne et al., 2019). Because our sample was predominately New Zealand European (i.e., 80.3% of participants identified as New Zealand European), our measure of ethnic-based system justification and collective action support may have been tapping into protests that further the interest of the dominant ethnic group in New Zealand. Future research should further investigate the distinct consequences of ethnic-based system justification (relative to other perceptions of fairness) and how this may impact social change.

The current study builds upon prior area-level deprivation and system justification research by identifying how differences in macro-level domains of inequality correlate with individual belief systems. Within both the area-level deprivation and system justification literatures, research argues that different forms of deprivation have differential impacts on how people respond to inequality (Exeter et al., 2017; Jost, 2019). However, area-level deprivation research has predominantly focused on investigating the effects of macro-level inequality on health outcomes, rather than social processes (e.g., Exeter et al., 2019). Additionally, system justification research has largely focused on the impacts of individual- and group-level inequality on the endorsement of system justification, rather than on how macro-level inequality shapes these beliefs. As such, the current study's focus on distinct domains of macro-level inequality fills an important gap in the literature by illustrating how the macro-level environment critically shapes people's personal endorsement (or rejection) of the status quo.

Notably, the current study provides insights into the forms of macro-level inequality that may *promote* the endorsement of system justification. System justification is a significant predictor of how people respond to inequality, as perceptions of fairness within systems predict reduced support for system-challenging collective action and social change (e.g., see Jost, 2019; Jost & Hunyady, 2005). As such, understanding the conditions under which people are more likely to defend the social systems that disadvantage them is essential to understanding when and why individuals do not engage in collective action (Osborne et al., 2019). Importantly, we cannot discount the significance of these findings in the New Zealand context. Indeed, our measures of area-level deprivation were constructed in New Zealand *for* New Zealand and provide crucial insights into the ways New Zealanders experience macro-level inequality (Exeter et al., 2017). While combatting all forms of area-

level deprivation is essential for creating a more equitable society, the current study suggests that living in areas with high levels of Education—and, to some extent, Access—deprivation correlates positively with the endorsement of system justification. In turn, various forms of system justification generally reduce support for progressive social change. These associations suggest that increasing political knowledge and reducing educational and access deficits at the macro-level can help increase engagement in collective responses to inequality that foster more equitable conditions for New Zealanders.

Strengths, Limitations, and Future Directions

In addition to theoretical and practical implications, the current study has high external validity due to our use of a large, nation-wide random sample. Furthermore, the IMD is an objective, weighted measure of area-level deprivation in New Zealand that allows for its seven domains to be used individually to predict health and social outcomes (see Exeter et al., 2017). As such, there is notable confidence in the generalisability of our results. In particular, the distinct relationships between different domains of the IMD and endorsement of multiple measures of system justification highlights the need to consider the distinct forms of macro-level inequality that may promote (or impede) different social processes.

Despite these strengths, it is important to note that, as with all correlational studies, one should be cautious about inferring a causal relationship between our variables of interest. The current study does not claim that individuals in areas of high Education deprivation will always support their social system, nor that individuals in areas of high Employment and Income deprivation will not. Similarly, differences in area-level deprivation only accounted for a small percentage of variation in individual-level endorsement of system justification, highlighting that macro-level inequality is not the only factor shaping individual-levels of system justification and, in turn, support for social change. That said, our results identify the different aspects of area-level deprivation that reliably correlate with the individual-level endorsement of system justification. As such, future research should investigate the nature of these associations by determining the impact *changes* in macro-level inequality have on the endorsement of system justification. Additionally, directly investigating the mediators for this relationship (e.g., dependency on social systems) would help solidify our claims that area-level Education and Access deprivation foster greater endorsement of beliefs that reinforce the status quo.

Conclusion

The current study investigated whether different domains of area-level deprivation were associated with differences in the individual-level endorsement of system justification. Our results suggest that individuals in areas of high (relative to low) Employment, Income, and Housing deprivation endorsed lower levels of system justification. Conversely, individuals in areas of high (relative to low) Education and Access deprivation endorsed higher levels of system justification. Critically, these distinct forms of area-level deprivation were indirectly associated with collective action support via system justification. As such, our results demonstrate how different forms of macro-level inequality can promote (or impede) ideologies that reinforce the status quo. In this respect, the current study provides a novel contribution to both area-level deprivation and system justification research by illustrating how the macro-level environment may foster (or undermine) individual-level psychologies that have a notable impact on social change.

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