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**R.I.C.E. – An Integrated Model of
Welfare Deservingness Perceptions**

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Abstract

Research on deservingness perceptions is currently one of the most vibrant areas in the field of welfare state analysis. In this manuscript, we critically assess the state-of-the-art in this field of research and, in particular, the two dominant theoretical approaches, the C.A.R.I.N. framework and the ‘deservingness heuristics’ model. In doing so, we identify some important problems, including conceptual ambiguities and an insufficient explicit integration of the two theoretical models. We suggest a revised and integrated theoretical framework, which we believe provides a way to resolve these issues. Our model suggests four criteria to inform deservingness perceptions: Reciprocity, Identity, Control, and Effort (R.I.C.E.). We provide evidence for our model in the form of vignette experiments administered to online panels in the US and Germany.

Keywords

Welfare state, attitudes, deservingness heuristic, C.A.R.I.N

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1 Introduction

Research on deservingness perceptions – perceptions of who is deserving of receiving aid through social protection programs and who is not – is currently one of the most vibrant areas in the wider field of welfare state research. This is hardly surprising. The now decades long situation of permanent austerity (Pierson 2001), in combination with the emergence of new distributive struggles, particularly in connection with recent waves of immigration (Alesina, Miano, and Stantcheva 2018; Eger 2010), forces societies to make difficult choices about the allocation of public funds, and there is hence an obvious need to understand how societies collectively decide who should be helped and who should be excluded from redistributive arrangements. This, in turn, gives popular deservingness perceptions clear relevance as one basis for such decision-making.

The importance of studying deservingness perceptions is further underscored by the recent electoral successes of populist parties and movements in Europe and beyond. The fact that their often extremely simplistic “us versus them” discourses appeal to large sections of electorates across very different contexts suggests that these discourses resonate with deeply held beliefs concerning who deserves to be included in a community and who does not (Petersen 2012). Deservingness perceptions are important for political mobilization, and many political actors have understood this.

Political scientists and psychologists on the one hand and sociologists on the other hand have developed two related but nevertheless distinct approaches to explain the formation of deservingness perceptions. The currently most influential theoretical approach to deservingness perceptions in the fields of comparative sociology and welfare state research is the C.A.R.I.N. framework developed by Wim van Oorschot (2000). This framework suggests a set of five criteria along which people are thought to evaluate the deservingness of others. These criteria include the extent to which someone is responsible for their situation (Control); whether they display gratefulness and docility (Attitude); whether they have ‘earned’ the support of others by having contributed to social protection systems in the past or are making efforts to contribute in the future (Reciprocity); whether they are seen as ‘similar’ or as belonging to the same social group (Identity); and the extent to which they seem to be genuinely dependent on support (Need). Persons are seen as more deserving of support the more they fulfill the five C.A.R.I.N. criteria. The most deserving groups, it follows, are those that are least in control of their situation, exhibit the most grateful and docile attitude, have done the most to ‘earn’ their benefits, have the most similar social identity, and cannot conceivably rely on other means. Research (relatively) reliably finds that it is the elderly who are seen as the most deserving, followed by the sick and disabled, then the unemployed, and lastly immigrants (Laenen and Meuleman 2017; van Oorschot 2006). Testifying to the model’s explanatory power, it has been successfully applied to a number of research problems, such as the variation in people’s attitudes toward the treatment of the unemployed (Buss, Ebbinghaus, and Naumann 2017; Larsen 2008b), attitudes toward health care policies (Van Der Aa et al. 2017), attitudes toward granting immigrants access to welfare states (Kootstra 2016; van Oorschot 2008), or the variation in welfare state attitudes more generally (Larsen 2008a). A number of studies have also extended the model by identifying important moderators of deservingness perceptions, such as ideology, self-interest, the macroeconomic context or the institutional design of welfare states (Jeene, van Oorschot, and Uunk 2014; Larsen 2008a; Meuleman, Roosma, and van Oorschot 2017).

Among political scientists and psychologists, the related ‘deservingness heuristics’ (DH) model (e.g., Petersen 2012; Petersen et al. 2010, 2012) has been more influential. This model, which is derived from a more general evolutionary psychology theory about how human cognition is adapted to facilitate social exchange (Cosmides and Tooby 1992; see also Cosmides, Barrett, and Tooby 2010), suggests that humans have evolved mental programs that facilitate resource sharing within communities of nonrelatives while avoiding falling prey to cheating and defection.¹ Where humans are faced with others who are in a situation of need due to circumstances outside of their control but are making efforts to contribute to the community at least in the future, the emotion of compassion is triggered and sharing ensues. Where, however, a person has negligently or deliberately induced a situation of need to exploit others’ compassion and makes no effort to reciprocate for the aid given, anger is triggered and no resources are shared. These mechanisms evolved in early hunter-gatherer societies, but they exist to this day and guide attitudes toward deservingness of social protection, the modern-day equivalent to social exchange arrangements in ancient human communities. The main implication of the DH model is that two criteria, corresponding to Control and Reciprocity in the C.A.R.I.N. framework, should guide deservingness perceptions. Evidence for the relevance of the two criteria and the proposed cognitive mechanisms have been provided in a number of recent studies (e.g., Aarøe and Petersen 2014; Petersen et al. 2010).

Recent empirical applications of the models have produced many important new insights into how people think about social solidarity and its boundaries. Nevertheless, we believe that current research on deservingness perceptions could still be improved in three important respects. First, concerning the C.A.R.I.N. framework specifically and the research that builds on it, we find that this framework is insufficiently theoretically underpinned, having been derived from a synthesis of findings from earlier studies (for details see van Oorschot 2000) rather than a dedicated theory. As a result, it is not entirely clear why the five C.A.R.I.N. criteria should matter rather than a proper subset thereof or other criteria. More importantly, we also find that the five criteria are to a critical extent conceptually ambiguous, a problem that manifests itself in widely varying operationalizations – and thus lacking comparability – in existing research.

Second, while these conceptual problems are in our view less pressing in the case of the DH model, we still note that this model, by emphasizing only the role of reciprocating or defecting behavior as determinants of deservingness perceptions, cannot account for an important empirical pattern, the routinely found lower deservingness of groups with somehow ‘foreign’ or ‘distant social identities, which today affects primarily immigrants (Reeskens and van der Meer 2019). It seems therefore that the DH model would have to be extended to allow it to explain patterns such as welfare chauvinism. Finally, we also do not see attempts to bridge and integrate the C.A.R.I.N. and DH models. Many studies have built on both models to generate hypotheses, but no study (to our knowledge) has tried to explicitly link the two models.

Against this background, our objective is twofold: First, we provide a critical assessment of the state-of-the-art of deservingness research. Second, we put forward a revised framework we believe is conceptually clearer; the framework comprises four criteria that should matter for deservingness perceptions: Reciprocity, Identity, Control and Effort (R.I.C.E.).

¹ A related approach in economics is the *homo reciprocans* model of human behavior (Bowles and Gintis 2000; Fong, Bowles, and Gintis 2006; see also Vohs, Baumeister, and Chin 2007).

We provide empirical evidence for our framework in the form of original vignette experiments administered on a) a non-representative US-based online panel and b) two representative online panels in the US and Germany. Our analyses provide support for the relevance of the R.I.C.E. criteria and indicate that our model is preferred over several alternative specifications.

The remainder of this paper is structured as follows: The next section discusses in more detail what we see as issues in the literature on deservingness perceptions. The third section presents our own R.I.C.E. framework, the fourth section describes our vignette experiment and reports the results, and the final section concludes.

2 Issues Affecting Current Research on Deservingness Perceptions

We identify three issues in the current literature on deservingness perceptions: First, we find that the C.A.R.I.N.-framework suffers from an insufficiently crisp conceptualization of its deservingness criteria. Second, whereas C.A.R.I.N. is perhaps too fuzzy, we find that the DH model is arguably too parsimonious and brackets out important empirical deviations from the model's image of humans as 'color-blind' reciprocators. Third, although a closer integration of both approaches might remedy those problems, this has not been attempted.

With regard to the first issue, the five C.A.R.I.N. criteria are the framework's central concepts and therefore the building blocks that tell us how the formation of deservingness perceptions in the human mind should work in theory and the aspects that empirical operationalizations are supposed to capture as accurately as possible. It goes without saying that for all this to work, these concepts need to be defined as clearly and distinctly as possible – or, to use more technical language, all concepts need to be clearly bounded and differentiable from other concepts, and all concepts need to be internally coherent (see e.g., Gerring 1999). Unfortunately, we find C.A.R.I.N. to suffer from important weaknesses in these respects.

Take, for a start, the two criteria of Control and Need. At first sight, both are distinct attributes of benefit claimants, with Control relating to the question of whether their current situation is a result of the claimants own deliberate actions or is due to external circumstances and Need relating to their access to other resources such as savings and their financial commitments (e.g., to children). However, it is difficult to see the two criteria as completely distinct. Rather, it seems that lacking control over one's circumstances is a necessary (although not sufficient) condition for need. 'Lazy' or 'choosy' unemployed persons who could find work but deliberately choose not to, for example, are clearly in control of their situation. Moreover, since they always have the option to become self-sufficient through work, they are also not truly in need of social support. In other words, we think that the presence of Control directly implies the absence of Need and, although the reverse is not true, this blurs the boundaries between the criteria.

A similar problem affects the criteria of Attitude and Reciprocity. It is again clear that the two criteria are not entirely congruent: Reciprocity is a form of behavior, whereas Attitude is a point of view or state of mind, which can but does not have to be followed by actions, and the two are not always correlated. One can, for instance, fulfill the Reciprocity criterion by working, paying taxes and contributing for a long time prior to claiming benefits and, precisely because of this, have a

strong sense of entitlement rather than an attitude of docility or gratefulness. Nevertheless, the distinction is not always clear-cut, especially when as van Oorschot and Roosma (2017) suggest, one sees the act of trying to remedy one's situation (e.g., by looking for work) as a way to fulfill the Reciprocity criterion. The act of looking for work is obviously a behavior, but it is difficult to distinguish it from the attitude that is behind it. Again, while it is possible to reciprocate without having the 'right attitude', there are cases where having the right attitude directly implies attempts to reciprocate. This, in turn, creates an overlap between the two criteria.

With respect to the Reciprocity criterion, we also note that there are problems of insufficient internal coherence. In the C.A.R.I.N. literature, Reciprocity can be fulfilled via two types of behaviors: First, one can have contributed in the *past*, but one can also expend effort to try to end the current situation of need and contribute in the *future* (e.g., by actively looking for work). Again, van Oorschot and Roosma make this explicit, when they argue the Reciprocity criterion is fulfilled by those who have contributed in the past and that "[i]n the contemporary context, reciprocity can also be interpreted as the willingness to 'do something in return' for a benefit or to be actively looking for a job" (van Oorschot and Roosma 2017, 7). We do see that the two types of behavior are clearly related in that both serve to signal good intentions to others, but we also think that they nevertheless are distinct behaviors and should truly be considered as such. An unemployed worker, for instance, can have contributed for a long time but may not be inclined to return to work again. Conversely, a young unemployed worker will usually have contributed little but may be eager to do so in the future. Given this potential variation, we think that there is no clear reason that contributions made in the past and future-oriented effort should not be treated as acts to fulfill two separate criteria.

The conceptual issues we just discussed have real implications for applied empirical research, as conceptual ambiguity about what exactly the nature of each of the criteria is and where their mutual borders produce considerable ambiguity with regard to their measurement. To illustrate that this is, in fact, a problem in applied research, we present a review of current research that draws on the C.A.R.I.N. framework. In conducting this review, we aimed to cover the relevant literature as exhaustively as possible. To do so, we first started with established publications on the topic, including the various related articles by van Oorschot and the recent volume on deservingness perceptions by van Oorschot et al. (2017). Second, we conducted an online search using a set of defined search terms.² Third, we included additional studies when these were cited as relevant in the studies we reviewed. We excluded works that applied the scheme globally to explain some type of attitude or behavior rather than testing the relevance of the individual deservingness criteria. The corpus of publications on which our analysis is based is presented in Supplement A, which lists each of the studies we reviewed and how each of the criteria was operationalized.

The conceptual ambiguity of the C.A.R.I.N. criteria is evident in the wide variation in operationalizing the five criteria across studies. Control, for instance, in some studies, is operationalized as the reason for the claimants' current situation (e.g., whether unemployment was self-induced or not or whether lifestyle choices contributed to poor health outcomes). However,

² We used Google Scholar and searched for 'deservingness AND CARIN'. We included only articles published in peer-reviewed scholarly journals and books and book chapters published by academic publishing houses, and we excluded all works that clearly had no connection to deservingness perceptions or welfare state research. Not all the studies we reviewed can be clearly categorized as applying the C.A.R.I.N. framework and many draws on other approaches as well, at least to an extent.

there are also cases where Control is operationalized in very different ways, including via claimants' efforts to find new work (e.g., Kootstra 2016).

There are also cases where criteria operationalizations overlap *within* individual studies. Reeskens and van der Meer (2017), for instance, operationalize both the Reciprocity and Attitude criteria as to whether claimants are currently engaged in volunteering activities.³ A related example is the study by Buss (2019), who argues that claimants' age should be associated with the degree to which they fulfill both the Control and Reciprocity criteria. He argues further that being a parent should raise both the perceived Need of a claimant as well as the perceived degree to which claimants reciprocate. Finally, in their study of attitudes toward health care recipients, van der Aa et al. (2017), measure the claimants' fulfillment of the criteria of Control and Attitude jointly via claimants' lifestyle choices prior to their illness and their compliance with treatment.

We find it problematic that the operationalizations of the criteria overlap to such a degree and in so many studies, and we think that this is a clear indication of the conceptual ambiguities we highlighted above. If the criteria were clearly and distinctly defined, overlapping operationalizations would not occur, at least not to this extent. We believe furthermore that this conceptual ambiguity stems from the theoretical ambiguity of the cognitive process that guides the formation of deservingness perceptions. As we mentioned before, a foundational theory is absent from the C.A.R.I.N. framework, as it is based on a synthesis of previous empirical findings. Since concept formation and theory building are, after all, linked (Gerring 1999, 364–65), it follows that the absence of a dedicated theory produces conceptual ambiguity.

The DH model has a clear advantage over the C.A.R.I.N. framework in this respect, given that it is derived from a theory about the psychology of social exchange and its evolution. We do note, however, that empirical applications of the DH have also operationalized the Reciprocity criterion variably as future-oriented activities such as looking for work and past contributions (see, e.g., Aarøe and Petersen (2014), Jensen and Petersen (2017), or Petersen et al. (2010)).

The greater coherence and parsimony of the DH model come at a cost, however. As it is now, the model suggests an image of humans as color-blind reciprocators: All that matters for cooperation and sharing is whether others can be expected to reciprocate or exploit, regardless of the color of their skin, their creed, their gender, and other criteria. While this is certainly normatively appealing, it runs counter to the fact that deservingness perceptions are routinely found to hinge on whether others are seen as somehow 'distant' or 'different'. The unemployed and social assistance claimants are, for instance, often seen as distant from mainstream society and therefore as less deserving than other groups (e.g., Achterberg, Veen, and Raven 2014), but this pattern is arguably most pronounced in regard to immigrants and the persistent 'deservingness gap' between them and natives or, relatedly, the pervasive presence of welfare chauvinism (Eger 2010; Eger and Breznau 2017; Reeskens and van der Meer 2019). For the DH model to be able to account for this, an extension is required.

Integrating the C.A.R.I.N. framework, particularly its Identity criterion, into the DH model would seem like a way to attune the DH model to welfare chauvinism. To our knowledge, this has not

³ They also operationalize Reciprocity additionally as whether claimants are actively looking for work.

been undertaken, however, and such an integration of the two approaches is not straightforward. Given that C.A.R.I.N. lacks a dedicated theoretical foundation, it is not clear how, or if at all, it could be linked with the evolutionary psychology theory behind the DH model.

This discussion should not be taken to mean that we believe the findings in existing research on deservingness perceptions are flawed or that the respective studies and their results should be discarded. However, we do think that the problems we highlight should not be ignored, and our suggestion for how to improve the status quo is to formulate a model for deservingness perceptions that combines the conceptual and theoretical clarity of the DH model with the greater empirical generality of the C.A.R.I.N. framework. We make an attempt of our own in the following section.

3 R.I.C.E.: An Integrated Model for the Formation of Deservingness Perceptions

Our argument takes the DH model of Petersen and his collaborators (Aarøe and Petersen 2014; Jensen and Petersen 2017; 2012; Petersen et al. 2010, 2012) as a starting point. To briefly recapitulate, the DH model suggests that humans have developed mental programs to engage in mutually beneficial resource sharing while also guarding themselves against being cheated. Where others are in situations of need due to external circumstances and despite making efforts to help themselves, compassion is triggered, and sharing ensues. Where, however, others have induced their need negligently or even deliberately and are not making efforts to help themselves, the response is anger, and no sharing takes place. Two criteria should, therefore, inform deservingness perceptions: the degree of control others have over their situations and the efforts they are making to reciprocate and help themselves. Based on this, we suggest Control, defined as the extent to which a situation of need is deliberately or negligently self-induced, as a first criterion.

Both the DH and C.A.R.I.N. models would now suggest the degree to which others reciprocate, i.e., Reciprocity, as a second criterion, but we depart from this somewhat and suggest instead two related but nevertheless distinct criteria. Building on the discussion in the previous section, we suggest that it is necessary to distinguish the future-oriented effort someone expends to remedy their situation from past reciprocal actions for three reasons. For one, both types of behaviors should convey separate but relevant information about the likelihood to which someone is intent on cooperating or cheating: Among two persons who are currently making equal efforts, the one who has done more to reciprocate in the past who is more likely to continue to do so, and among two persons who have made equal contributions in the past, the one who is currently putting in greater effort is more likely to be a cooperator than a cheater.

Second, these types of behaviors do not always coincide. Some people may, for instance, not have had a chance to reciprocate in the past, say because they were too young, but are making efforts to contribute in the future. Others may have contributed in the past but may have no intention to continue to do so in the future. Crucially, a cognitive mechanism that relies only on one type of behavior as a global indicator for others' intent to reciprocate would therefore likely overlook a great deal of relevant information.

As a final consideration, we suggest that, logically, if there is a shared norm of reciprocal cooperation, then currently needy beneficiaries face an obligation to expend effort to remedy their

situation and those who have contributed and shared in the past can expect to be helped should they ever become needy. To put this differently, where the Effort criterion represents the obligations of beneficiaries to their benefactors, Reciprocity represents the obligation of current benefactors to those who have been benefactors in the past. All else equal, those who have provided resources and contributed in the past should be seen as more deserving of support than those who have never done so.

On the basis of these considerations, we suggest that a model of deservingness perceptions should include the criteria of Reciprocity, Effort, and Control. We understand Reciprocity in a narrow sense, referring to past actions and contributions of beneficiaries only, while Effort involves future-oriented actions. Control relates to the reason for the current situation of need, in particular, whether it is due to negligence or even deliberate action on the claimants' part or external circumstances.

Thus far, our model considerably resembles the DH model, including with respect to its color blindness. To be able to account for the apparent relevance of a foreign or 'distant' identity, we extend our model. We do so by drawing on theories of the evolutionary origins of ethnocentrism and in-group preference from political science (Hammond and Axelrod 2006) and social psychology (Brewer 1999, 2007), which we believe can be added to the existing model in a quite organic way. These theories suggest, akin to the DH framework, that while cooperation as a strategy is generally beneficial if not even necessary for survival, indiscriminate cooperation is not because it is vulnerable to cheating. Cues are thus necessary to determine whether others are likely to reciprocate or whether they should be considered (potential) cheaters.

The twist added by models of in-group preference is the argument that observing relevant cues, such as others' effort and policing compliance with norms of reciprocity, becomes increasingly difficult and costly as groups grow in size and group boundaries become fuzzy. This implies, for better or worse, that social solidarity and the mutual trust on which it is founded can be maintained more easily in groups that do not exceed certain size limits, that have reasonably clearly defined boundaries, and where fellow group members will be treated more favorably than non-members.

In-group favoritism can be graduated and take the form of 'concentric loyalties' (Allport 1954), where individuals feel they belong to both larger and more inclusive groups such as nations, religions, and cultures and at the same time to smaller and more exclusive groups that are contained within the larger ones such as clans, families, or professions. Loyalties and feelings of trust will be stronger for smaller and exclusive groups and weaker for larger and more inclusive groups, creating a hierarchy of trust perceptions and ultimately deservingness. Research on perceived ethnic hierarchies, for instance, finds a general preference for individuals stemming from Northern Europe, then for those from Southern and then Eastern Europe. Lower on the perceived distance hierarchy are individuals from the Middle East or Africa (Hagendoorn 1993).

It is important to add as well that these theories are general in the sense that they not only imply favoritism based on ethnicity, race, or nationality (although these are, as mentioned, currently highly salient dimensions) but also apply to other factors that differentiate humans, such as religion, social class or profession. As also mentioned above, certain socio-economic groups such as the unemployed or social assistance claimants are often perceived as distant, even if they belong to the

dominant ethnicity or nationality in a given country (Achterberg, Veen, and Raven 2014). Different dimensions of ‘distance’ can finally also interact. Social class, for instance, can interact with immigration status whereby immigrants from lower social classes are perceived as more distant and thus less deserving (Naumann, Stoetzer, and Pietrantuono 2018; see also Auer et al. 2019). In other words, while precise distance perception needs to be determined on a case-by-case basis, it is clear that Identity matters for the definition of who should be part of the in-group and thus benefit from welfare support.

As a result, we suggest that the criterion of Identity matters in addition to the three other criteria listed above. Our model of deservingness perceptions thus includes the criteria of Reciprocity, Identity, Control, and Effort (R.I.C.E.).

4 Empirical Analysis

We provide evidence for the main empirical implications of our model – that the four criteria of Reciprocity, Identity, Control, and Effort are significantly related to deservingness perceptions and that R.I.C.E. as a whole better fits the data than alternative models – by way of a set of three vignette experiments administered on online panels in the United States and Germany.

We use vignette experiments (also known as factorial surveys) because they allow us to retrieve unconfounded causal effect estimates of the different deservingness criteria on deservingness perceptions (Auspurg and Hinz 2015; Jasso 2006; Wallander 2009). In vignette experiments, respondents are presented with descriptions of fictional persons (“vignettes”) that feature a set of attributes (or “dimensions”) that vary among defined levels, and the respondents are asked to evaluate these fictional persons on a scale of interest. In our case, the vignettes describe fictional unemployment benefit claimants, and the dimensions featured on the vignettes correspond to different deservingness criteria, such as the extent to which claimants have control over their situation. We focus on the case of unemployment benefit claimants because this makes our findings more directly comparable to influential studies (e.g., Kootstra 2016; Reeskens and van der Meer 2019). Respondents were asked to evaluate these fictional claimants with respect to their deservingness to benefits. Specifically, respondents were asked to state for each of the fictional claimants what percentage of their previous salary they should receive as unemployment benefits. Answers could range from 0 to 100 on a sliding scale.

Crucially, in constructing the vignettes, the assignment of levels to vignettes is randomized so that there is no correlation between the values of different dimensions in the entire sample of vignettes. In other words, if we were to present respondents with descriptions of real benefit claimants, then some of the claimants’ characteristics would likely be correlated (e.g., age and prior contribution record), which in turn means that the effect of a longer contribution record would then be correlated with claimants’ age. The randomized construction of fictional vignette persons, in contrast, allows us to interpret the effect associated with a given dimension unconfounded by any other dimension. In addition, the assignment of vignettes to respondents is equally randomized, which ensures that the effects of vignette dimensions on ratings are not confounded by respondent characteristics. Vignette experiments are becoming the “workhorse method” in deservingness research precisely because they offer the possibility of uncovering unconfounded effects of dimensions (see e.g., the various studies in van Oorschot et al. 2017).

Our vignettes featured a set of six claimant attributes, each corresponding to a criterion in the combined set of dimensions implied by the DH, C.A.R.I.N., and R.I.C.E. frameworks: Control,

Attitude, Reciprocity, Identity, Need, and Effort. Each attribute or dimension was varied among a defined number of levels: Control and Attitude were varied among two levels; Reciprocity, Need and Effort among four levels; and Identity among five levels. Table 1 provides an overview of all attributes and their levels.

Table 1: Six attributes corresponding to the C.A.R.I.N. and R.I.C.E. criteria and the dimension level

Dimension	Levels	Description
Control		“Has become unemployed because...”
	1	“...his company had to lay off workers”
	2	“...he resigned voluntarily”
Attitude		“Sees unemployment benefits...”
	1	“...as an entitlement he has earned by paying taxes”
	2	“...as a generous aid he is thankful for”
Reciprocity		“Before becoming unemployed, he has paid social security contributions for X years.”
	1	“one”
	2	“two”
	3	“four”
	4	“eight”
Effort	1	“is not looking for a job currently”
	2	“is looking for a job and is sending out 1-2 applications per week.”
	3	“is looking for a job and is sending out 3-4 applications per week.”
	4	“is looking for a job and is sending out 5-6 applications per week.”
Identity		“Was born in...”
	1	“...the United States”/ “Germany”
	2	“...Canada”/ “Austria”
	3	“...Mexico”/ “Italy”
	4	“...Vietnam”/ “Romania”
	5	“...Pakistan”/ “Morocco”
Need	1	“Is only financially responsible for himself.”
	2	“Is financially responsible for his partner.”
	3	“Is financially responsible for his partner and their common child.”
	4	“Is financially responsible for his partner and three children.”

As in many previous studies, we operationalize the Control criterion as the reason the fictional claimant became unemployed, whether they resigned voluntarily or were dismissed by their employer. In our view, this is the most straightforward way to capture the degree of control claimants have over their predicament without tapping into any other attribute. Reciprocity is measured as the degree to which claimants have paid taxes and contributed in the past. This is also in line with many other studies and, most importantly, it is in line with our theoretical reasoning that Reciprocity should be past-oriented. Additionally, in line with our framework, the future-oriented counterpart to Reciprocity is Effort, which we operationalize as how intensely claimants are looking for new work. In our operationalization of the Identity criterion, we use the claimants' country of birth as an indicator of how ‘similar’ or ‘distant’ a given claimant is to respondents. We chose nationalities that are well represented in the respective resident population. Our chosen countries of

birth are the US, Canada, Mexico, Vietnam, Pakistan, Germany, Austria, Italy, Romania, and Morocco.

We also include a dimension that captures the Attitude criterion as directly as possible. Operationalizing a fictional claimant's attitude – how grateful or docile they are – without also tapping into any of the other attributes (especially Effort and Reciprocity) is not a straightforward task, however, and we aimed to construct a measurement that truly captures only the claimant's perception of themselves as a recipient of benefits and their relation to their benefactors without also measuring any of their actual behavior or other objective attributes. Our solution was to provide information on the claimant's perception of their entitlement to benefits. One alternative portrays a claimant who perceives benefits as a generous aid that they want to rely on as little as possible. This is the case of a 'grateful and docile' claimant. The other claimant type thinks that he or she is genuinely *entitled* to benefits and earned this by paying taxes and making contributions, which corresponds to the case of an 'assertive and unappreciative' claimant. We explicitly use the verb 'view' in the vignette text to convey to the respondents that we are referring to an attitude, not to any actual behavior. Finally, we operationalize the Need criterion as the number of dependents claimants are financially responsible for (similar to Kootstra 2016; Reeskens and van der Meer 2019).

With six dimensions, two of which have two levels, three of which have four, and one of which has five levels, the entire universe of potential attribute combinations comprises 1280 vignettes. Including all of these in our experiment is impractical and costly, and we, therefore, follow the methodological convention and draw a smaller sample out of the entire vignette universe. To minimize the loss of information that comes with using only a subset of all possible vignettes, we draw a D-efficient sample that orthogonalizes all two-way interactions using the SAS algorithms developed by Kuhfeld (1997, 2010). Our preferred design includes a total of 160 vignettes, which are blocked into 20 decks of 8 vignettes each to ensure that all vignettes are rated by a sufficient number of respondents (Auspurg and Hinz 2015, 38–40).⁴ In addition to the vignettes, the questionnaires included items on the respondents' gender (female, male), age, highest level of education attained, income, and (in the US samples) race or ethnic background.⁵

To obtain a first sense of whether our ideas are supported by the data, we ran our experiment with a sample of US-based participants on the Amazon "Mechanical Turk" (AMT) online platform.⁶ This sample is predominantly male, young, and college-educated and therefore not representative of the overall US population. The results from this experiment (presented in the supplementary materials) were encouraging, however, leading us to administer the experiment to two representative (via

⁴ Our preferred design achieves a D-efficiency of 90.0335 and therefore meets the rule of thumb threshold of D-efficiency values above 90 as formulated by Auspurg and Hinz (2015, 29). We did not identify any illogical combinations of attribute levels in our vignette universe and did hence not exclude these in our sample.

⁵ We also collected data on the respondents' immigration backgrounds in the two representative surveys.

⁶ In the creation of the surveys on Amazon Mechanical Turk, we relied on the *Guidelines for Academic Requesters* (accessible at https://wearedynamo.fandom.com/wiki/Guidelines_for_Academic_Requesters, last accessed on 7 November 2019). Participants ("workers") were eligible if they had already completed more than 1000 tasks on AMT and had an approval rating of their work of at least 97% to ensure a certain response quality. Workers meeting these criteria were presented with a small introductory text when selecting the task and a link to the survey, which was hosted via Qualtrics. They were offered 1.40 USD for participating, which corresponds to an hourly wage of about 12 USD and is a relatively generous remuneration for AMT tasks in the US. Our AMT sample included 334 respondents in total. We dropped 15 respondents who had an overall completion rate of less than 99% and a further six whose responses we judged to be of too low quality (implausible combinations of short response times and little variation in responses). In the end, we retained 313 respondents (corresponding to 2504 vignette ratings) for our analysis.

quotas for gender, age, and education) samples from online panels administered by Qualtrics in the US (N = 360) and in Germany (N = 401).⁷

To estimate the effects of the different deservingness criteria on deservingness perceptions, we constructed a series of hierarchical (since vignette evaluations are nested within respondents) linear random-effects regression models separately on the US sample and the German sample. We report here the results from the full models that include all vignette dimensions as well as the demographic controls as covariates based on the representative US and German samples.

The results are generally in line with our expectations, but we also find some small variation between the samples. The two graphs in Figure 1 show the estimated coefficients for the vignette dimensions, i.e., the different deservingness criteria. What is immediately apparent is that the effects of Control and Effort are not only similar in the two samples but also the most pronounced. Next, we find relatively strong effects for Reciprocity, although there is some variation between the US and German samples regarding the levels' effects. Having paid taxes and contributions for two years instead of one does not significantly raise one's perceived deservingness. A contribution record of four years does not significantly raise deservingness evaluations compared to two or one year in Germany, but it does in the US. A contribution record of eight years produces a clear and pronounced increase in perceived deservingness in both samples. We add that these patterns are very similar in our initial (AMT) sample.

Our data also show a clear negative effect of having an immigrant background, although there is again some variation between different immigrant backgrounds. In Germany, Austrians are not seen as significantly less deserving than Germans, but all others are. In the US, it is Mexicans that are on par with US natives, while all other nationalities (including surprisingly, Canadians) suffer a deservingness penalty. Our non-representative sample shows negative but insignificant effects for foreign identity, which we attribute to the sample composition (as mentioned, the young and university-educated are disproportionately represented).

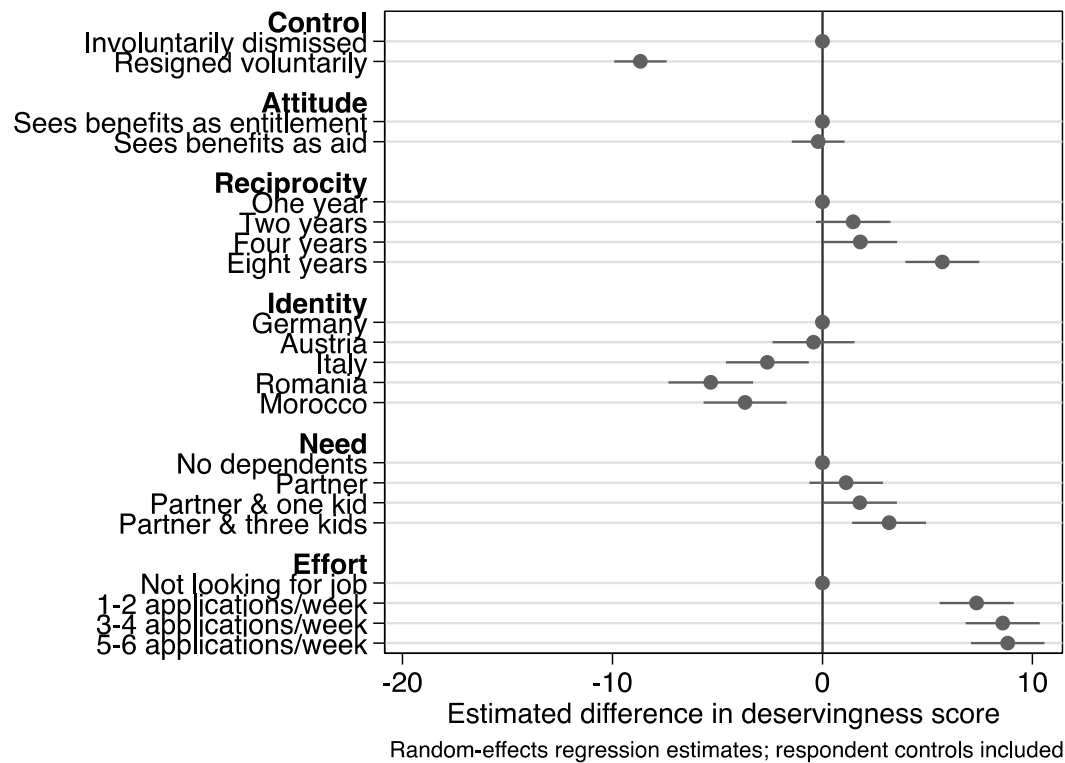
The coefficients for Attitude and Need show variable effects across the different samples. Attitude is significant only in the representative US sample but not the two others, and the effect is also not that strong compared to the effects of Effort and Control. In the case of the Need criterion, it is only those with a dependent partner and three children who are rated as significantly more deserving than the others in our two representative samples (the non-representative sample shows an effect for parents with one child as well). The nevertheless partly significant effect of Need appears to run against our argument, but we have come to think of an alternative interpretation: When reflecting on why it could be that deservingness perceptions increase only in the presence of dependent children yet not where an adult-dependent partner is present, one notices that there is a difference in the degree to which adult partners and children have control over their dependency. Children have obviously virtually none, whereas adult partners can at least partially control their dependence on others. Our results may, and we stress that this is a conjecture at this point, therefore reflect an additional effect of the Control criterion.⁸

⁷ We again dropped some observations that, in our view, had implausibly high incomes (e.g. more than 80.000 EUR per month reported by a German respondent with basic education) or concerning response patterns (very short response times in combination with very little variation in vignette ratings) and ended up with 356 and 396 respondents in the US and Germany, respectively, that we used in our analysis.

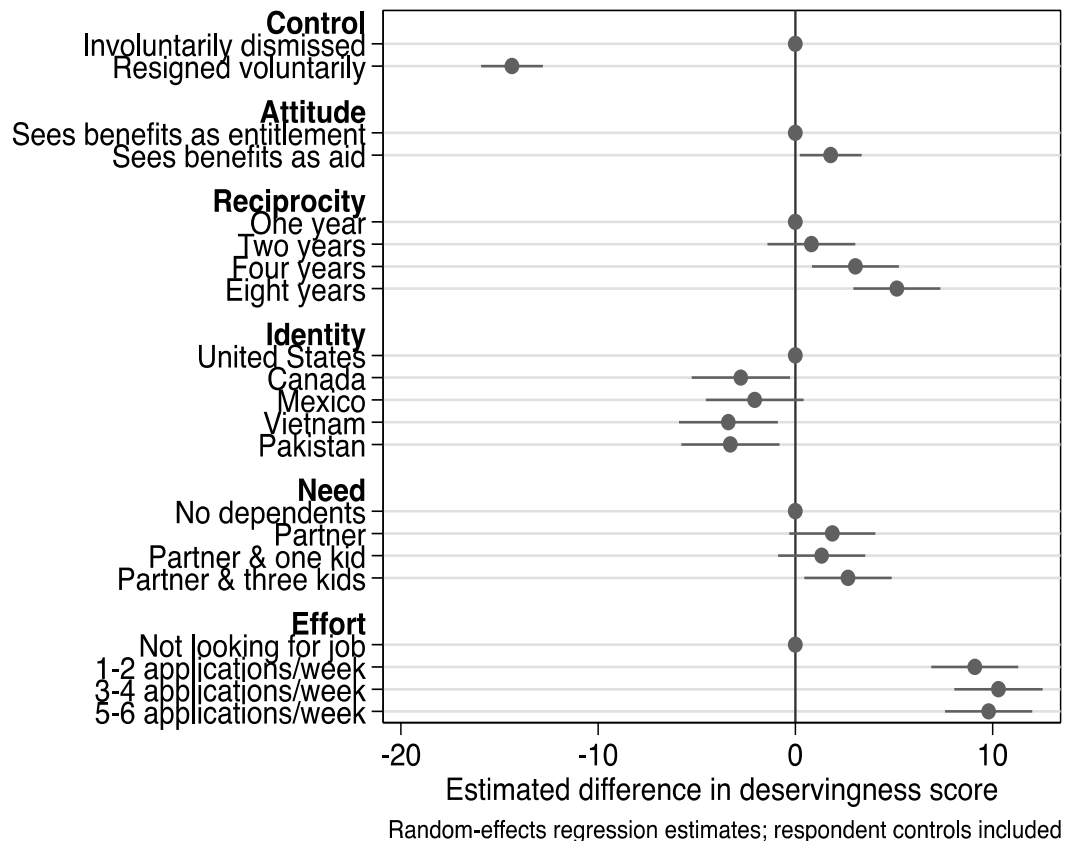
⁸ We are grateful to Anders Lindbom for pointing this out to us.

Figure 1: The determinants of deservingness perceptions

Graph (a): German sample



Graph (b): US sample



We next move from the analysis of individual coefficient estimates to comparisons of overall model fit. What we want to show here is that our specification, including the four R.I.C. E criteria, but not others, fits the data better than alternative specifications based on either the C.A.R.I.N. or the DH framework.

Table 2a: Model comparisons using likelihood-ratio tests: German sample

Comparison	p-value	Degrees of freedom	Chi-squared
Petersen I (C+E) vs. RICE	0,000	7	107,59
RICE vs. CARINE	0,102	4	7,73
Petersen II (C+R) vs. CARI	0,000	8	54,24
Petersen II (C+R) vs. RICE	0,000	7	179,17

Table 2b: Model comparisons using likelihood-ratio tests: US sample

Comparison	p-value	Degrees of freedom	Chi-squared
Petersen I (C+E) vs. RICE	0,000	7	48,12
RICE vs. CARINE	0,043	4	9,82
Petersen II (C+R) vs. CARI	0,003	8	23,71
Petersen II (C+R) vs. RICE	0,000	7	138,48

In the first step, we re-estimate various models (excluding the respondent-specific controls) and compare nested specifications using likelihood-ratio Wald tests. The results are presented in Tables 2a and 2b. Our first comparison is between the parsimonious specification including only Effort and Control as predictors, which resembles the specifications that have been used by Petersen and his collaborators in several studies, and our R.I.C.E. specification. The tests show, across both samples, that our more relaxed specification produces a significant gain in explanatory power compared to one including only Control and Effort. Next, we compare our specification to one including all C.A.R.I.N. criteria (plus Effort, to produce nested models). In the German sample, adding the C.A.R.I.N. criteria that are not already included in R.I.C.E. does not lead to a better model fit, while in the US it does, but only narrowly. We finally compare the parsimonious specification including Control and Reciprocity (used in Petersen et al. 2010) to the C.A.R.I.N. and our R.I.C.E. specification. In both cases and across both samples, the more general models are preferred, but we note that the Chi-squared statistics are clearly higher in the case of the R.I.C.E. model than in the case of the C.A.R.I.N. model.

The requirement that specifications must be nested prevented a direct comparison of the R.I.C.E. and C.A.R.I.N. models, but we can use model information criteria (Bayesian and Akaike's information criterion) to compare non-nested specifications. Tables 3a and 3b present the results of this comparison. In both samples, the R.I.C.E. specification is preferred to C.A.R.I.N., as indicated by the lower information criteria values. The difference is not massive, we admit, but it is there, and

it is consistent across the two representative samples. We add that both the nested and the non-nested comparisons produce essentially the same results in our non-representative US sample.

Table 3a: Direct model comparisons using information criteria: German sample

	CARIN	RICE
N	3168	3168
AIC	27267,2	27140,3
BIC	27358,1	27225,1

Table 3b: Direct model comparisons using information criteria: US sample

	CARIN	RICE
N	2848	2848
AIC	25395,4	25278,6
BIC	25484,7	25362,0

Taken together, we find that our analysis lends support to our model. We could establish that the criterion of Attitude had no consistent effect on deservingness perceptions and that the effect of Need is at least variable across specifications. We also showed that Reciprocity and Effort are two distinct criteria with independently significant effects, which confirms a key proposition of our model. We finally also show that R.I.C.E. is the preferred model in a series of tests against alternative specifications.

5 Conclusion

Research on deservingness perceptions is currently one of the most important areas of inquiry in the comparative welfare state literature and, given the intuitive relevance of deservingness perceptions to welfare state politics more broadly, is likely to remain important for some time. With this comes the need to continually develop the theoretical frameworks that guide this research.

In this paper, we have provided a critical re-assessment of the two dominant theoretical frameworks in this field of research, highlighted important conceptual weaknesses, and proposed an alternative framework. Our model provides a single framework that bridges the C.A.R.I.N. framework and its closely related counterpart in political science and psychology, the DH model, providing a unified approach to the study of deservingness perceptions.

We also show empirical support for our model by way of vignette experiments administered to online panels in the US and Germany. The results of our analysis are in line with our model in that a) the criteria of Attitude and Need do not (consistently) matter; b) the criteria of Effort and Reciprocity constitute distinct and independently relevant factors, and c) our model is preferred over a range of alternative specifications.

We close by pointing out that our model resonates with other established ways of thinking about how to treat and evaluate others and the criteria on which these decisions rest. We argue, in essence, that people use others' past and current behaviors as well as demographic attributes (immigration background or other attributes of "otherness") to make inferences about latent traits, in our case, the intention to reciprocate. This shares similarities with theories of signaling and statistical discrimination in labor markets, according to which employers use multiple sources of observable information, including education, labor market status, ethnicity, and appearance, to assess candidates' hidden future behavior on the job (Bonoli and Hinrichs 2012; Spence 1973; Weiss 1995). We therefore believe that there is at least a possibility that the mechanisms that guide deservingness perceptions are similar to those mechanisms that guide other decisions in our social lives.

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