

Modeling Public Decision Preferences Using Context-Specific Value Hierarchies

American Review of Public Administration
2015, Vol. 45(1) 86–105
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DOI: 10.1177/0275074014536603
arp.sagepub.com



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Abstract

Although a universal hierarchy of public values has proven elusive, the literature in individual-level values suggests that decision makers do organize their personal values into hierarchies based on context. Through analysis of public values and public decision preferences gathered in a pilot study of city-level public administrators ($n = 182$), we use an empirical approach to identify context-relevant public values for five different decision contexts. We then demonstrate multiple possible approaches to modeling individual- and community-level policy preferences based on value hierarchies derived from the individual-level data. We find that the predictions based on value hierarchies are better than would be predicted in the absence of such hierarchies, and that these differences are statistically significant. These findings suggest that while creating a universal hierarchy of values remains challenging, context-relevant public value hierarchies at smaller units of analysis may be useful in describing, predicting, and explaining the decisions of public administrators.

Keywords

public values, value hierarchy, decision making

Introduction

Since at least the time of Plato, the discussion of value-driven actions taken by government actors has been a central issue in public administration (Rutgers, 2008; van der Wal & van Hout, 2009). Despite significant attention to this area of inquiry (Van der Wal, Nabatchi, & de Graaf, 2013), there exists a serious dichotomy in the study of public values. On one hand, efforts to identify a universal hierarchy of public values have been relatively unsuccessful. Instead, scholars and philosophers have coalesced around the idea of a constellation of unordered public values (Davis & West, 2009; Jørgensen & Bozeman, 2007; Rutgers, 2012). Much of the broad values literature suggests that these more general, non-hierarchical approaches are both appropriate and descriptive of the reality of universal values (Rokeach, 1973; Schwartz et al., 2001). On the other hand, psychological research in value-based behavior has demonstrated that individuals do, in fact, create ordered hierarchies of values when making individual decisions (Kelly, 1991; Tetlock,

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1986, 2000). This suggests that at some point, hierarchical ordering of values is both possible and necessary for decision making.

The study of public values thus exists at the nexus of a broad constellation of unordered public values (such as those identified by Jørgensen & Bozeman, 2007; Nabatchi, 2012; Van Wart, 1996, 1998) and the need of public servants to invoke and order specific subsets of those values when making specific decisions (Simon, 1972, 1976, 1985; Stone, 2002). In light of this apparent conflict in our understanding of the very nature of values and how they interact in the public sphere, this article examines the possibility of creating subsets of public values that can be (a) derived from the broader constellation of values, (b) identified as relevant to specific decision contexts, (c) usefully ordered into context-relevant hierarchies, and (d) used to identify or predict specific individual and collective decision preferences. Our intent is to determine whether it might be fruitful to examine individual- and community-level hierarchies of values when trying to model and predict the policy decisions of public administrators, contrary to the consistent conclusion of public values scholars that the very nature of public values is “at odds with the ‘classic’ theory of classification” (Rutgers, 2008, p. 102).

First, we use regression analysis to identify which of 24 values correlate with respondents’ preferences in five different decision contexts. We define these values as “context relevant.” We also use respondents’ collective answers to all 24 value questions to create hierarchies of values using different methods of aggregation. We then test the utility of the various value hierarchy approaches to determine which most favorably aid the prediction of individual- and collective-level policy preferences.

We report on modest success in applying context-relevant value hierarchies to the prediction of policy preferences (particularly at the individual level), discuss conclusions and implications of these findings, and suggest future avenues of research in context-relevant value hierarchies. The implication is that whereas defining an empirical universal hierarchy of values is challenging because value preferences are dependent on context, hierarchies of public values can be identified at smaller units of analysis that can be used to predict specific policy preferences and public administrator decisions.

Values-Based Decision Making in the Public Sphere

We agree with Schreurs (2005) and Rutgers (2008, 2012) that there continues to be a substantial lack of clarity about the definition of values in the field of public administration.¹ Parallel research agendas examine both the value (i.e., objective or subjective worth) of public outcomes (e.g., Moore, 1995) and the values (i.e., personal moral preferences) that drive decisions in the public service. We define values after the manner of Schwartz and Bilsky: Values are “(a) concepts or beliefs, (b) about desirable end states or behaviors (c) that transcend specific situations, (d) guide selection or evaluation of behavior and events, and (e) are ordered by relative importance” (Schwartz & Bilsky, 1987, p. 551). We are particularly concerned with the intersection of psychological public value constructs and their application to decisions made by public servants in the context of their work.

Decisions in the public sector are particularly wrought with conflicts between important and cherished values. Frequently, these value conflicts render decision-making processes somewhat intractable because the trade-offs in the decision are not between “good” and “bad” alternatives, but rather alternatives that would result in equally justifiable—but fundamentally different and often mutually exclusive—actions (de Graaf & van der Wal, 2010; Keeney & Raiffa, 1993; Kernaghan, 2000; Stone, 2002; Tetlock, 2000; van der Wal & van Hout, 2009). Although some public decisions can be made through democratic “majority rule” approaches like referenda, many such decisions are left to public administrators who are afforded significant professional discretion (Pinkele & Louthan, 1985). Public servants who make such decisions are generally

faced with the need to balance majority interests with other important values, including protection of minorities, long-term sustainability of policies, and other public values (Reich, 1985; Riker, 1980).

Rohr (1978) suggests that public administrators should appeal to the values of the polity when applying their administrative discretion on the public's behalf—and even goes so far as to suggest that this practice is an ethical obligation of public servants. In their discussion of the concept of “administrative evil,” Adams and Balfour (2009) suggest that making appeals to broader sets of communitarian, societal values may prevent administrators from myopically supporting adverse social outcomes by inappropriately adhering to administrative efficiency above all else. Like Rohr, Adams and Balfour suggest that it is the moral obligation of public administrators to appeal to broad sets of public values when exercising administrative discretion. Indeed, an appeal to a breadth of values that extend beyond the administrative couplet of efficiency and effectiveness has been the call of public administration ethicists and resides at the center of the definition of the very field of public administration (Frederickson, 1997; Van Wart, 1996, 1998).

The use of values in decision making is both an empirical reality and normative practice (Bell, Raiffa, & Tversky, 1988). In the administrative state, it is often the role of public managers to consider the will and needs of multiple stakeholder groups and arbitrate substantive and significant value conflicts (Bryson, 2004; Gregory & Keeney, 1994; Thomas, 1995). As different stakeholder groups frequently frame policy preferences in terms of different values, public decisions involve the simultaneous consideration of both the facts of a decision context and the values associated with them (Etzioni, 1967, 1988; Fry & Raadschelders, 2008; Lindblom, 1959, 1979; Rutgers, 2008; Simon, 1976; Stone, 2002).

Identifying the values that are relevant to public sector decision making has been an important first step in identifying a way forward in the face of such untenable public sector value conflicts. Research in the field of public values has made strides in defining how *public* values might differ from values in general (see, for example, Bozeman, 2007; Jørgensen & Bozeman, 2007; Rutgers, 2008; Schreurs, 2005; Van Wart, 1998). Scholars have also operationalized these definitions by surveying both research and practice to identify prominent values (Jørgensen & Bozeman, 2007) and common value conflicts (e.g., Stone, 2002; Tetlock, 1986, 2000).

Despite our progress in this arena, several authors observe that to use these values in predicting or prescribing decisions, some form of values hierarchy must be identified (Andersen, Beck Jørgensen, Kjeldsen, Pedersen, & Vrangbæk, 2012; Dillman & Christenson, 1974; Jørgensen & Bozeman, 2007). A values hierarchy in a universal sense would identify an ordering of values that consistently identifies which values should be preeminent in making public sector decisions. Such a hierarchy would allow practitioners to identify which value, of two or more values in conflict, should prevail in a normative sense. A public value hierarchy is one way among many (Jørgensen, 2006; Rutgers, 2008) to provide a systematic, values-based approach to making difficult value-laden decisions. Current research suggests that the holy grail of a universal value hierarchy has been replaced with descriptions of public value constellations, pantheons, or similar metaphorical—but distinctly non-hierarchical—representations (Jørgensen & Bozeman, 2007; Nabatchi, 2012; Rutgers, 2012; Witesman & Walters, 2013).

Identifying Values Hierarchies: The Problems of Context and Structure

In addition to identifying key values that are relevant to action in the public sector (e.g., efficiency, effectiveness, transparency), there have been various efforts to order these values into hierarchies, thereby identifying the value or values most central to positive outcomes for society (Rutgers, 2008). Value hierarchies are attractive because they suggest a normative element to the practice of decision making, particularly when treasured values are in conflict. If two values are

in conflict, with each value justifying a different decision or action, then a theory of value hierarchy would suggest that we should take whichever action corresponds to the highest ranking value. Thus, identification of a hierarchy of values could provide a key or template for making difficult decisions.

However, this effort to identify hierarchies of values generally devolves into discussions of “networks” of values or “constellations” of values because the relevance and application of values is so context specific as to prevent more concrete hierarchical arrangements. In general, we agree with the criticisms levied against the general public value hierarchy approach by Arrow (1990) and others: Two values may be ranked in one order in one context, but that same value ranking may result in perverse decisions in an alternative context.

There are two fundamental problems with the establishment of a universal public value hierarchy. The first is that values are sensitive to context. In this article, we operationalize “context” in a manner explicitly similar to Tetlock (1986) in which a “context” is synonymous with a “policy domain.” In our empirical study, we express these policy domain contexts in much the same way as Tetlock does in his studies. We acknowledge that this operational definition of the concept of “context” is limited. The necessary and sufficient conditions necessary for adequately defining a full context in situ and for identifying the specific components of context that affect the relevance of different value sets is yet to be explored or defined. Like Tetlock, we seek here primarily to determine whether such future study is warranted, and what shape such future study might take.

We embrace definitions of the term “value” that identify values as rationalizations for action (e.g., Rescher, 1969; Schwartz & Bilsky, 1987). The very fact that values motivate context-specific action suggests that values are inextricably linked to the contexts in which the action is to be taken. This theory regarding the context dependence of values has been supported by the empirical work of scholars from various disciplines (Jones, 1995; Kelly, 1991; Mellers & Birnbaum, 1982; Stanley, 2000; Tetlock, 1986). In short, it is difficult to develop a single set or hierarchy of universal values given the infinite variety of decision contexts in which values may be invoked. For any context in which most citizens would agree that *value a* should take precedence over *value b*, there is an equivalent scenario in which they believe that *value b* should take precedence over *value a*. Value hierarchies can be observed to shift depending on the decision context at hand, even when the same values are at play and even among the same groups of people (Witesman & Walters, 2013).

It is also important to note that not all values are relevant in all contexts. Some decisions involve multiple value constructs and require integratively complex reasoning to accommodate multiple values and perspectives (Tetlock, 1986, 2000; Van der Wal & Van Hout, 2009). Other contexts more clearly embody conflicts between just a few—or even as few as two—opposing values. In addition to identifying the range of possible values that might influence public servants’ decisions generally, it is important to have a mechanism for identifying the specific values actually relevant to a particular decision context (Kelly, 1991; Tetlock, 1986).

The second major problem with generating a hierarchy of values stems from the nature of human values themselves. A rich empirical literature suggests that values are not structurally arranged in a linear fashion (i.e., along only one dimension) as might be conducive to development of a hierarchy. If this were the case, we could identify values that had “more” or “less” of some characteristic and define our hierarchy in terms of that one dimension (Jørgensen & Bozeman, 2007; Rutgers, 2008; Schwartz, 2001).

Instead, values appear to be arranged spatially in at least three dimensions (personal values, organizational values, and societal values) that appear to exist on different planes in the value space (Lyons, Higgins, & Duxbury, 2010). Within each plane, values can be mapped into a two-dimensional value space. There is some evidence that even though scholars define the axes differently based on their own constructs, some values map consistently—relative to the other

values on the map—from study to study (Lyons et al., 2010; Schwartz, 2001; Witesman & Walters, 2013). Culture, context, and other variables, however, do impact the arrangement of values in this two-dimensional space (Schwartz, 2001).

Some researchers have begun to link the value maps of groups and individuals with the identification of salient or relevant values in specific decision contexts (Kelly, 1991; Tetlock, 1986, 2000; Witesman & Walters, 2013). This research suggests that even though individuals may have rich and complex personal value structures that encompass a wide variety of values from various sources (e.g., personal, organizational, societal), people tend to identify only a few salient values from this overall structure when making actual decisions. In other words, when people are making decisions, they select subsets of values based on the context in which they are operating. People do not consider the value implications of every decision based on every possible value dimension; rather, they identify the values most relevant, in that particular context, to the decision at hand (Kelly, 1991).

The state of research in values suggests that (a) value sets differ by level of aggregation, suggesting different value map structures for personal values, organizational values, and social values; (b) within each value set, two-dimensional value maps can be constructed to describe the values of both individuals and groups; and (c) context-specific subsets of these values are at play for any given decision. However, we continue to be faced with the problems that (a) idiosyncratic contexts determine which values from the value maps are invoked in any context, making it impossible to identify values that should be preeminent across *all* values and (b) the multidimensionality in the inherent structure of values makes it difficult to predict which values will be preeminent in any given decision context.

Identifying Collective Context-Relevant Values

Researchers have proposed a variety of quantitative and qualitative methods for eliciting values, ranging from quantitative survey-based methodologies to much more qualitative methods (Bryson, 2004; Keeney, Von Winterfeldt, & Eppel, 1990; Rutgers, 2008). Several studies use value instrumentation developed by psychologists like Rokeach (1973) and Schwartz (2001) to study values in the public sector, but using personal value constructs in public value research has been problematic because unique and foundational *public* values do not appear in these instruments (Jørgensen & Bozeman, 2007). In addition, while individuals can construct context-specific value hierarchies for themselves based on individual preference and experience (Connor & Becker, 2003; Kelly, 1991), public value decision making in the service context differs because servants are likely to consider the values and preferences of their constituencies in addition to their own.

Assuming that an appropriate set of context-relevant values can be identified, these values are associated—either positively or negatively—with each of the decision alternatives available to the decision maker. Although values are general justifications that may be invoked in defense of various different actions, decision preferences are specific desirable courses of action in a given context. Scholarship in decision making suggests that frequently, only two decisions are considered at any one time, and that even in the presence of larger sets of alternatives, pairwise comparisons can and should be used to deal with larger sets of alternatives (Arrow, 1990; Etzioni, 1967, 1988; Lindblom, 1959, 1979; Saaty, 2008; Simon, 1976; Tetlock, 1986). By selecting a course of action, decision makers simultaneously demonstrate a preference for a particular value or set of values (Lindblom, 1959, 1979; Rutgers, 2008).

An instrument for the study of public service values (PSV) has recently been tested and validated for the elicitation of both individual-level values and decision preferences (Witesman & Walters, 2013). The PSV approach and similar studies have thus far been used to identify the structural nature of public value systems and to identify values that are relevant to specific value

conflict decision scenarios (Andersen et al., 2012; Keeney & Raiffa, 1993; Tetlock, 1986, 2000; Van der Wal & van Hout, 2009). The PSV approach is a survey-based methodology for eliciting both individual value preferences and individual decision preferences. The decision preferences are then regressed on the value preferences to identify relevant subsets of values that support each decision alternative. This approach has two main advantages. First, it collects information about respondents' individual-level public values (similar to the personal value inventories published by others). Second, it collects information about individuals' policy preferences in several decision scenarios after the manner of Tetlock (1986, 2000). We administer the survey and use the resulting data to create context-relevant hierarchies of PSV at both the collective (i.e., data set) level and the individual (i.e., respondent) levels.

Pilot Study: Data and Method

The values examined in this study are drawn from the PSV questionnaire developed by Witesman & Walters (2013). This instrument is administered to a pool of local government employees from 27 cities in the United States (smallest city population: 1,657; largest city population: 1,373,668) in seven states (California, Colorado, Ohio, Oregon, Texas, Utah, Washington). Our interest in gathering these data was to pilot-test values-based decision modeling using actual public employees. To this end, we generated a convenience sample of city-level employees by identifying city managers within our professional network and inviting them to forward the survey to other city-level employees. Because of this snowball sampling method, we are unsure how many employees actually received the invitation to participate in the study and thus cannot report response rate.

Of the 182 respondents who provided complete and useable responses to our survey, 69.8% are male, 97.8% White, and most are Republican-leaning (reporting a mean score of 4.7 on a 7-point scale from *strong democrat* to *strong republican*). The mean respondent age in our sample is 46 years and the average reported number of years of experience in public service is 18 years. Ten percent of the respondents in our sample report holding executive-level positions in their city governments ("making decisions for the entire local government"), and 47.3% report serving in a supervisory capacity ("making decisions for a unit or part of the local government"). The median education level is a bachelor's degree, and the median level of income is in the US\$50,000 to US\$74,999 range. About half of the respondents (50.55%) indicate that interacting directly with members of the public comprises less than half of their jobs.

To identify context-relevant collective values, we first administer the PSV Questionnaire, which identifies respondents' affinity for specific values using a methodology based on the work of Schwartz (Schwartz et al., 2001) but values derived from public values literature and administrative codes of conduct (e.g., Jørgensen & Bozeman, 2007; see Witesman & Walters, 2013). We also elicit individual decision preferences on the topic(s) of interest using decision scenarios that ask each respondent to make a choice between two mutually exclusive decision alternatives (phrased as dichotomous yes or no questions; Tetlock, 1986).

The 24 values used in the final instrument are identified in Table 1 (the pairwise correlation matrix for these values is presented in the Appendix). Each value on the instrument is elicited in a manner consistent with Schwartz (2001). Parallel structure is used to avoid aberrations in the data based on phrasing and to clearly identify both the value and its operational definition. The question prompt is phrased,

Each of the following statements indicates a value that is often associated with the role of a public servant. Imagine a public official who is guided by the value indicated in their role as a public employee. Please indicate how much that public servant is like you.

Table 1. Hierarchy of Elicited Values From Study of City Employees ($n = 182$).

Value	SNR ^a	Operational definition ^{b,c}
Efficiency ($M = 6.48, SD = 0.57$)	11.35	She is personally committed to making good use of resources.
Innovation ($M = 6.48, SD = 0.60$)	10.75	She is personally committed to finding new ways to do her job better.
Following rules ($M = 6.50, SD = 0.65$)	10.04	She is personally committed to following rules, laws, and procedures even when no one is watching.
National security ($M = 6.52, SD = 0.74$)	8.81	She believes that government should ensure that the country is safe from threats from within and without.
Objectivity ($M = 6.36, SD = 0.78$)	8.19	She is personally committed to making fair and unbiased decisions.
Self-reliance ($M = 6.28, SD = 0.83$)	7.58	She believes that government and society should reward individuals for taking initiative and working hard.
Collaboration ($M = 6.05, SD = 0.90$)	6.75	She is personally committed to working together both inside and outside of her organization.
Process ($M = 5.97, SD = 0.89$)	6.74	She believes that government should carefully consider the processes it uses to get things done.
Citizen involvement ($M = 5.90, SD = 0.92$)	6.40	She believes that government should ensure that the people affected by a public policy can influence how that policy is made and implemented.
Government innovation ($M = 5.90, SD = 0.96$)	6.13	She believes that government should use the newest and best approaches to getting the job done.
Transparency ($M = 6.06, SD = 0.99$)	6.12	She is personally committed to providing information to the public in ways that are complete, clear, and easy to understand.
Government impact ($M = 6.00, SD = 1.09$)	5.51	She believes that government actions should make a positive difference in society.
Altruism ($M = 5.84, SD = 1.07$)	5.45	She is personally committed to serving others and putting the needs of others before her own needs.
Sustainability ($M = 5.93, SD = 1.10$)	5.37	She believes that government action taken now should continue to prove beneficial to society in the future.
Public interest ($M = 5.83, SD = 1.22$)	4.79	She believes that government should contribute to the well-being of society.
Political neutrality ($M = 5.80, SD = 1.37$)	4.22	She is personally committed to conducting official acts without taking sides in elections or political disputes.
Independence ($M = 5.76, SD = 1.38$)	4.17	She is personally committed to thinking and acting for herself.
Customs ($M = 5.25, SD = 1.29$)	4.06	She believes that government should uphold the traditional beliefs and practices of society.
Resiliency ($M = 5.46, SD = 1.38$)	3.96	She believes that government should keep society running smoothly when challenges arise.
Social justice ($M = 5.67, SD = 1.56$)	3.63	She is personally committed to seeking justice for everybody, even for people she doesn't know.
Influence ($M = 5.17, SD = 1.46$)	3.53	She believes that public servants should be able to affect organizational outcomes.
Protection of minorities ($M = 4.74, SD = 1.61$)	2.94	She believes that government should consider and protect the rights of those who do not have the greatest voice in society.
Regime loyalty ($M = 4.46, SD = 1.61$)	2.77	She is personally committed to supporting the political system and implementing the policies of those in political authority.
Government leadership ($M = 4.29, SD = 1.77$)	2.43	She believes that government should lead the way in setting rules and solving social problems.

Note. SNR = signal-to-noise ratio.

^aSNR is the mean divided by standard deviation.

^bThe statements in the survey instrument were adapted to reflect the gender of each respondent.

^cThe full statements included an introductory sentence that read, "She thinks that X is important," where "X" is the value being operationalized (see column 1).

The value statements follow, and each value item on the Public Service Values Questionnaire (PSVQ) uses the following format:

He/she feels that [value] is important. He/she believes that [operational definition of value].

To use national security as an example, we used the following phrasing:

She feels that national security is important. She believes that government should ensure that the country is safe from threats from within and without.

Respondents answer these questions on a 7-point scale ranging from 1 (*not at all like me*) to 7 (*exactly like me*). The central option 4 is designated as *neutral*. The gender of the pronouns used in the question phrasing is programmed to match the reported gender of each respondent.

The purpose of a hierarchy of values is to assist in making decisions in value-trade-off scenarios. The context-relevant values hierarchy approach elicits simulated decisions in value-trade-off scenarios in a manner consistent with the work of Tetlock (1986). Following Tetlock, each value conflict scenario identifies a topic relevant to the public administrator in his or her role as public servant and identifies implicit rationales that could justify each of two opposing decisions within the scenario.

The decision contexts for this study consist of five different decision scenarios, which are listed in column 1 of Table 2. These decisions relate to (a) prohibition of racial profiling by law enforcement officials, (b) revealing department-level illegal behavior, (c) advance adoption of citizen-driven planning processes, (d) closing a local public recreation center, and (e) investing public funds to attract a retail superstore. The scenarios were selected based on previous research for both comparability with previous studies and variation in responses. For each scenario, respondents indicated either a “yes” or “no” in response to the decision question. The final column of Table 2, labeled “majority rule,” indicates the modal response to each scenario and the percent of individual respondents (ranging from 57.1% to 69.2%) favoring that response.

We identify the relevant value subsets for each decision scenario by using each decision as the binary dependent variable (1 = yes, 0 = no) in a stepwise regression model (inclusion level: .05, exclusion level: .10) including all of the responses to the value statements as regressors. Values that were statistically significant at the $\alpha = .1$ level were included as relevant values for each respective decision scenario. The sign of the slope coefficient for each statistically significant value variable indicated support for either the yes (positive) or no (negative) decision preferences. The raw regression results are presented in Table 3.

This regression captures those values which, across all respondents, have the most correlation with the decision outcomes of interest. We define the set of values resulting from each of these regression models as the set of collective-level context-relevant values for the specific decision context. The values identified through this approach for each of the decision scenarios are listed in the “values” columns of Table 2.

For the first decision scenario, which asks whether a city should agree in advance to support the results from a collaborative planning process, two values were statistically significant predictors of the decision: “protect minorities,” which supported a “yes” decision, and “sustainability,” which supported a “no” decision. Each of the other decision scenarios had at least two context-relevant values for both the yes and no positions, as identified in Table 2.

To create individual-level context-relevant value hierarchies for each scenario, we first narrowed the values in consideration to only those identified by the regression models described above. Thus, for each scenario, we considered only those values identified by the regression models in Table 3. Next, at the individual respondent level, we averaged the scores for all relevant “yes” values and for all relevant “no” values. We compared the average scores for these two value groups to predict² which decision they would support. The decision supported by the higher averaging collection of relevant values (i.e., either the “yes” value or the “no” values) is the decision predicted for that individual for that context. When a preference could not be determined because there was a tie in values (much more prevalent in individual value hierarchies than in collective ones due to the ordinality of the data), we excluded the observation from the analysis.

Table 2. Decision Scenario Results ($n = 182$).

Decision scenario	Values that correlate with a "yes" decision ^a		Values that correlate with a "no" decision ^a		Predicted decision outcomes			
	Values	AVG SNR ^b	Values	AVG SNR	Value preemptive ^c	Value weighted ^d	Individual values ^{e,f}	Majority rules ^g
(1) Should a city agree in advance to support the outcome of a citizen-driven collaborative planning process even if the resulting plan might require the city to change its funding priorities?	Protect minorities ^{**}	2.94	Sustainability ^{**}	5.37	No (sustainability)	No	No (83.8%)	No (65.4%)
(2) Should a financially strapped city close its recreation center to save money even if many citizens cannot afford the private fitness facilities in the area?	Government innovation [*] Objectivity [*]	7.16	Social justice ^{**} Resiliency ^{***} Independence ^{**}	3.92	Yes (objectivity)	Yes	Yes (74.3%)	Yes (57.7%)
(3) Should a mid-level public manager publicly reveal previously overlooked illegal behavior in his department even if doing so will reduce the effectiveness of his department's efforts to serve the public?	Protect minorities [*] Transparency ^{***}	6.15	Regime loyalty ^{**} Process [*] Objectivity [*]	7.54	No (objectivity)	No	No (53.4%)	Yes (69.2%)
(4) Should a city invest public funds to attract a new retail superstore even if the new outlet will directly compete with existing businesses?	Regime loyalty ^{**} Altruism ^{**}	4.53	Transparency [*] Self-reliance ^{***} Sustainability ^{**}	5.90	No (self-reliance)	No	No (87.7%)	Yes (57.1%)
(5) Should the use of racial or ethnic characteristics by law enforcement officials be prohibited even if it reduces crime overall?	Innovation [*] Regime loyalty ^{**} Following rules ^{**} Social justice ^{**} Collaboration ^{**} Protect minorities ^{**}	4.11	Citizen involvement ^{***} National security ^{***} Self-reliance ^{**} Objectivity ^{***} Process ^{***}	6.36	Yes (innovation)	No	No (83.4%)	No (61.0%)

Note. SNR = signal-to-noise ratio.

^aAVG SNR denotes the mean signal-to-noise ratio among the values supporting a particular decision preference. Where only one value correlates with a decision preference, the average SNR is the SNR for that one value.

^bSee Table 3 for regression results.

^cDecision predicted by identifying the single relevant value with the highest SNR.

^dDecision predicted by identifying the alternative with the highest average SNR among all relevant values (see columns 3 and 5).

^eDecision predicted by identifying predicted individual-level decision preferences based on the highest average value score for relevant values, and aggregating predicted decision preferences across individuals. Sample size varies. See Table 4.

^fActual expressed policy preferences, aggregated based on binary responses to scenario questions.

^g $\alpha = .1$. ^{**} $\alpha = .05$. ^{***} $\alpha = .01$ significance level for coefficient values from stepwise logistic regression model with scenario policy preference as the dependent variable.

Table 3. Results From Stepwise Binary Logistic Regression of Decision Scenarios on Value Statements ($n = 182$).

	Collaboration (1)			Recreation center (2)			Reveal illegal (3)			Superstore (4)			Racial profiling (5)			
	z	p	e ^b	z	p	e ^b	z	p	e ^b	z	p	e ^b	z	p	e ^b	
Citizen involvement																
Transparency							2.700	.007	1.78	-1.689	.091	0.73	-3.019	.003	0.46	
Regime loyalty							-2.698	.007	0.71	2.417	.016	1.29	2.198	.028	1.35	
Following rules													2.188	.029	2.19	
Social justice				-2.109	.035	0.73							2.003	.045	1.42	
Objectivity				1.784	.074	1.54	-1.697	.090	0.61				-3.872	.000	0.22	
Protect minorities	2.051	.040	1.28				1.749	.080	1.23				2.070	.038	1.38	
National security													-2.826	.005	0.46	
Resiliency				-2.852	.004	0.68										
Innovation													1.891	.059	1.85	
Self-reliance										-2.793	.005	0.60	-2.438	.015	0.62	
Altruism										2.115	.034	1.42				
Collaboration													2.977	.003	2.26	
Sustainability	-2.521	.012	0.68							-1.984	.047	0.73				
Government innovation				1.827	.068	1.39										
Process																
Efficiency							-1.829	.067	0.67							
Independence				-2.080	.037	0.74										
Pseudo R ²	.036			.088			.100			.085			.228			

Note. The values Customs, Government Work, Political Neutrality, Influence, Leadership, Public Interest, and Government Impact were included in the full model specifications but were removed through the stepwise procedure for all models. Stepwise inclusion criterion: .05. Stepwise exclusion criterion: .10.

Table 4. Predicted Decision Preferences Based on Personal Context-Relevant Values Hierarchy.

	Sample size (n)	% respondents indicating "yes"	% predicted "yes" responses based on individuals' preferred value	% of predictions correct (z)
1. Should a city agree in advance to support the outcome of a citizen-driven collaborative planning process even if the resulting plan might require the city to change its funding priorities?	136	33.1	16.2	72.8**** (z = 5.317)
2. Should a financially strapped city close its recreation center to save money even if many citizens cannot afford the private fitness facilities in the area?	172	60.8	74.3	64.3**** (z = 3.747)
3. Should a mid-level public manager publicly reveal previously overlooked illegal behavior in his department even if doing so will reduce the effectiveness of his department's efforts to serve the public?	178	69.1	46.6	56.2** (z = 1.649)
4. Should a city invest public funds to attract a new retail superstore even if the new outlet will directly compete with existing businesses?	187	57.8	12.3	49.2 (z = -.2194)
5. Should the use of racial or ethnic characteristics by law enforcement officials be prohibited even if it reduces crime overall?	193	38.3	16.6	66.84**** (z = 4.679)

** $\alpha = .05$. **** $\alpha = .001$ for a one-sided one-sample proportion test ($H_0 = .5$).

The percent of correctly predicted individual-level policy preferences ranged from 49.2% (worse but not significantly different than we would expect if we were just randomly guessing at policy preferences, $\alpha = .1$) to 72.8% (much better than we would expect based on randomness). We used a one-sided one-sample proportion test to determine the effectiveness of this procedure by testing the proportion of correctly predicted policy preferences against the hypothesized proportion of .5. The results of this exercise are presented in Table 4. In general, the policy preference predictions made by hierarchically ordering context-relevant values at the individual level were significantly higher than we would expect based on randomness. Three of the five scenarios (Scenarios 1, 2, and 5) had a roughly two thirds success rate or higher in using values to predict individuals' policy preferences. However, effective prediction of the fourth scenario—investment of public funds to attract a retail superstore—remained illusive, even when appealing to individual-level values.

Predicting Collective Policy Preferences

We are interested in whether an appeal to the collected values of a group can effectively predict their collective policy preferences, as represented by a majority rule opinion. In other words, is it possible for public administrators to make specific policy preferences on behalf of the public if the public's value preferences are known, but their specific policy preferences are not?

To create a collective-level hierarchical order for the PSV, we used the signal-to-noise ratio (SNR)—mean divided by standard deviation—to rank values into a hierarchy for the whole respondent pool. The mean for each value identifies its relevance to the respondents (with higher mean values being more relevant to the respondents). The standard deviation provides a measure of consensus about the value ranking across the entire respondent pool. The higher the standard deviation, the lower the level of consensus about the relevance of a particular value. The SNR

produces lower rankings for values with high standard deviations, thus giving dissenting minority groups an opportunity to affect the ordering of collective values in a way not possible with mean-ranked or majority-rule methodologies. A hierarchical listing of values from our study using SNR is presented in Table 1.

To use the collective-level hierarchy in selecting between decision alternatives in the decision scenarios, we used two methods. In the value preemptive model, we identified the highest ranking value among all the relevant values in the model and selected the decision alternative associated with that single, preeminent value. In the value-weighted model, we selected the decision alternative associated with the highest average SNR across all relevant values. The results are presented in columns 6 and 7 of Table 2.

For the value preemptive model, we predicted collective decisions by identifying which of the context-relevant values was the highest ranking value, and predicted the policy preference based on this value alone. The results of this procedure are listed in the column of Table 2 labeled “value preemptive,” including both the preeminent value and the collective policy preference predicted by this procedure. For example, in the first decision scenario, “sustainability” and “protect minorities” were the only statistically significant values in a model predicting preferences on the collaborative planning process scenario. “Sustainability” supported the “no” decision and “protect minorities” supported the “yes” decision. We then looked at the SNR values associated with each of these values, and as “sustainability” ranked higher than “protect minorities,” we predicted a collective preference of “no” for this scenario. In Scenario 2 (closing the recreation center), five values were identified as context-relevant, but as “objectivity” was the highest ranking value, we predicted the policy preference supported by only this value, or a “yes” decision.

Because it is reasonable to believe that combinations of values—and not just single values—may be used in decision heuristics, we also calculated separate average SNR scores for all “yes” and “no” context-relevant values for each scenario. We then compared the average SNR scores to predict an overall collective policy preference. The predicted preferences resulting from this procedure are listed in the column of Table 2 labeled “value weighted.” The table also reports the average SNR values for each context-relevant value set.

As a final approach to aggregating individual value preferences into a collective-level policy preference, we ignored the collective hierarchy of public values and instead aggregated the individual-level predictions from the individual context-relevant value hierarchies into a third and final set of predictions about policy preferences. These results are presented in the column labeled “individual values” in Table 2.

It is important to note that in the models identified above, we focused on those values that were statistically significant correlates of the decision scenario-dependent variables. Thus, there are two types of values that would not appear in these lists of relevant values. These are (a) values that are not relevant to the context at all and thus do not correlate with the decision scenario questions, or (b) values that are invoked by some to justify a “yes” decision and by some to justify a “no” decision. Such values, while arguably context-relevant, would not correlate with a particular decision preference and thus would be deemed irrelevant by the models as constructed. Using this correlation-based value selection method essentially handles Stone’s (2002) paradox of the same value justifying opposing options by removing the dually applicable value from the calculus.

For the first and second decision scenarios, all three values-based approaches successfully predicted the collective policy preference as expressed through the majority rule for each decision scenario. However, in the remaining three scenarios, the policy predictions made based on collective values did not match the majority rule preferences of the collective respondent pool. The successes in the first two decision scenarios notwithstanding, we do not

find support for the use of collective values hierarchies as a proxy for actual communal policy preferences.

It should be particularly noted that “majority rule” is only one way to operationalize the collective policy preference of the collective respondent pool. It is possible that the predictions made by an appeal to collective values—rather than the policy preferences of the majority—might yield more accurate predictions of public administrators’ specific decisions in a real context. Furthermore, there may be room to debate which policy choice—majority rule or collective value-based—would be more “correct” in a normative sense.

The analysis suggests several substantive points. First, individual-level context-relevant value hierarchies add statistically significant value in the prediction of individual policy preferences. In some cases, this also translates to a substantively improved ability to predict the policy preferences of a larger collective group, as in Scenarios 1, 2, 3, and 5. Second, this appeal to individual hierarchies appears to correspond with the predictions made by a value-weighted approach to a collective-level context-relevant value hierarchy, as the conclusions of these two approaches regarding the policy preferences of the majority are the same across all five scenarios. Third, the value-preemptive model for predicting collective-level policy preferences does not appear to be as effective as the value-weighted approach, based on its inability to accurately predict the correct preference in Scenario 5 (when the other value hierarchy approaches were successful).

Finally, some scenarios appear to be difficult to predict based on appeals to values—whether collective-level or individual-level values. Scenarios 3 (publicly revealing illegal behavior) and 4 (investing public funds to attract a superstore) were not correctly predicted by any of the appeals to value hierarchy. Although this suggests that an appeal to communal values is not a good way to predict majority rule policy preferences in either of these scenarios, it does not necessarily mean that these value-based prediction procedures would be ineffective at predicting the decisions of individual public servants. Because public servants are not merely accountable to the majority, this approach may yet prove a valuable way to predict administrators’ decisions. That said, this respondent pool is comprised only of public servants, so the majority preferences expressed here suggest a reasonable proxy for the expected value of public administrators’ decisions.

It is important to note that neither of these scenarios appears more integratively complex than other scenarios based on the number of relevant values (both Scenarios 2 and 5 had more competing values). Even the pseudo- R^2 values for the models identifying context-relevant values (reported in Table 3) do not suggest that the policy preferences in these scenarios are any more difficult to predict than those in the other models. It is therefore unclear why the relevant values and policy preferences in these models do not align at the collective respondent level. Although other variations in individual respondent characteristics may play a role in the discrepancy, we think it is more likely that there are specific characteristics of decision scenarios and values themselves that interact to make decision scenarios more or less predictable.

Hierarchies of Public Values: Impacts on Decisions

At the individual level, this study supports previous research that suggests that value hierarchies may be useful tools for predicting the decisions and policy preferences of individuals. In other words, the way that individuals reason about values and their relative ranking can provide insight to individual policy preferences. Further research is needed to refine these principles and examine the value dynamics at play for individual-level public servants. In addition to the types of relevant public value dynamics identified by Jørgensen & Vrangbæk (2011), we suggest that inquiries regarding the interplay of individual-level PSV, collective PSV, and majority-rule PSV

in the decision making of individual public servants might be a fruitful line of inquiry. In other words, future research should examine how public servants distinguish and reason between (a) their own public value preferences, (b) the public value preferences of the majority, and (c) integrated communal public values (including the voice of the minority) when making decisions on behalf of the public.

Table 2 demonstrates the results of collective-level value hierarchy decision predictions in comparison with decisions made by majority rule. Each scenario provides a unique example of how the values-based decision models may justify or conflict with majority opinion. In two scenarios, there is consensus across methodologies regarding the preferred decision alternative. In two scenarios, the value-based methods are internally consistent but conflict with the majority opinion. In the final scenario, the value-weighted, collected individual value, and majority rule decisions coincide, but the value-preemptive approach suggests preference for a different alternative.

The final scenario demonstrates that the value-preemptive and value-weighted procedures may indeed yield conflicting results. In this scenario, which asks whether racial profiling should be prohibited, both the majority rule and value-weighted procedures suggest a “no” response—in favor of racial profiling. The value-preemptive procedure, however, identifies innovation (“finding new ways to do [the] job better”) as the prime value and thereby favors a “yes” response in favor of prohibiting profiling.

Limitations of the Study

Several limitations of the present study limit its generalizability and constrain the nature and breadth of its conclusions. First, the size and nature of the sample limit its generalizability. The survey was administered exclusively to city-level public servants, who may reason differently about policy decisions and PSV than members of the general public or public servants who work in different contexts or capacities. Although we believe that this respondent pool gives us unique insight to the reasoning of public servants about public service decisions, it does limit our ability to draw conclusions about the general public and their policy decision preferences.

Second, some issues of policy preference measurement may hinder our ability to draw clear conclusions. In the collective-level value hierarchy, we have operationalized collective policy preferences as binary phenomena (i.e., a “yes” or “no” decision), when they might better be considered on a scale with more variation. Furthermore, the decision scenarios in this study were included for research purposes only. Although the scenarios focus on city-level concerns that are topical and current for many city administrators, they may not accurately represent scenarios in which the respondents have current and active interests. Because of this, responses to the scenario questions may inaccurately represent the preferences these same respondents might have in actual, fully specified decision scenarios.

Third, the identification of context-relevant values relied heavily on the logistic regression models to select the set of values for each scenario that appeared to have most impact on policy preferences. However, these models may suffer from specification errors that could result in faulty identification of appropriate context-relevant values. In addition, the regression model approach would remove from consideration any value that could be used in support of either policy preference. For example, it could be that people prefer a “yes” decision in a scenario explicitly because of *value a*, and others could prefer a “no” decision also explicitly because of a belief in *value a*. Because *value a* does not distinguish between a preference for “yes” and “no,” the regression model would exclude it from the list of significant context-relevant values, even though that value was central to individual-level decision processes. Relatedly, it is also unclear what decision an individual would make in the event of a tie between two (sets of)

context-relevant values. In our analysis, we sidestepped this issue by simply removing such cases from consideration.

In addition to limitations of this particular pilot study, we observe several general cautions that should be observed in the application of this approach. First, due largely to respondent fatigue and the breadth of the field, it is impossible to effectively elicit all possible public values through this procedure. Although we relied on the work of previous research to identify an instrument that captured a set of public values that we deem to be reasonably encompassing and potentially relevant, we acknowledge that inclusion of additional values might yield different results. We caution others who replicate this study to take care in the inclusion and exclusion of values from the list of values to be considered. Researchers and practitioners should include more, rather than fewer, values that might be relevant to a particular scenario to avoid missing potentially important perspectives in the decision-making process.

Second, it is mathematically possible to observe virtual or actual ties in the hierarchical rank of values using the SNR. It is thus possible that two values might be invoked to justify opposing decision alternatives yet be hierarchically indistinguishable, rendering the technique impotent. Recognize that for this to be the case, the values must (a) have the same SNR, (b) both be statistically relevant to the decision scenario, (c) be invoked in support of opposing decision alternatives, and (d) be the highest ranking relevant values. Although this scenario is possible, it is improbable.

Third, it is important to recognize that while this approach may be useful in decision modeling, it requires significant quantitative data. The sample size associated with application of this method should be large enough that statistically significant correlations between decision preferences and values can be effectively made. Similarly, the model relies on representation from all interested parties to generate a hierarchy of communal values and to identify values that may be relevant to multiple stakeholders. Engaging stakeholders in this type of data collection effort may be challenging in practice.

Finally, we expect this approach to be sensitive to variations in (a) phrasing of decision scenarios and value statements, (b) statistical cutoffs for identification of scenario-relevant values, (c) the particular preferences and dynamics of the respondent set, (d) regression model specification, (e) values selected for inclusion or exclusion in the study overall, and (f) alternative value ranking methodologies. Further study is needed for the refinement and validation of the particular specifications of the method. These sensitivities notwithstanding, we believe that this approach is a unique and promising avenue for modeling value-trade-off decisions and that it merits additional development and scrutiny.

Conclusions and Implications

This study suggests promise in the use of context-relevant individual- and collective-level PSV hierarchies for helping to model decision processes in the public sector. Although a universal hierarchy of values remains illusive, this “middle road” approach to public values hierarchy may provide some traction in the ordering of values and use of values-based reasoning in predicting the decisions of public managers.

Although the overall method and approach suggested here shows promise, the results of this study suggest cautionary tales about the potential for conflict between communal values and majority preferences. This has several important implications for public sector decision making. First, if public administrators try to guess the policy preferences of the public based on an appeal to values, they should ensure that they have identified a reasonably full set of relevant values, as an appeal to just one preemptive value appears particularly flawed. Second, even an appeal to a full set of context-relevant values may yield predicted policy preferences that do

not match the will of the majority. This raises the third and final point: Policies that are preferred by the majority may not be consistent with community values. This may be true whether values are identified and aggregated at the individual level or the community level. Thus, public administrators may be faced with yet another conundrum: Which policy choice is better, one that appeals to the majority or one that appeals to the relevant community values across all citizens?

The success of context-relevant value hierarchies in predicting some policy preferences at the individual level and not others suggests that additional factors should be considered. We suggest that in addition to examining personal factors that might influence individuals' decisions, further study is needed to examine the characteristics of contexts and values themselves that may influence the way value-based reasoning is carried out. It may be that certain characteristics of scenario context interact with both values and the characteristics of individuals to mediate and/or moderate values-based decision making. It is also unclear from this study how reliably the decision scenarios represent "context" for the respondents. Future work on the nature of context and its impact on values-based decision making is warranted.

More work is needed to develop critical tests that will evaluate how individual public administrators make decisions. However, the empirical results presented here suggest that incorporation of collective-level community values is a viable component of administrator decision making that should be explored. This possibility invokes new and important questions in the study of values and public sector decision making. Specifically, (a) in what contexts do administrators invoke their own personal values, in what contexts do they mirror the policy preferences of the majority, and in what contexts do they appeal to a sense of community values? (b) In cases when public administrators appeal to community values, how do they aggregate these values—are they aggregated at a national, subnational, local, or sublocal level? Does this differ by issue? (c) How are community values elicited and perceived by public administrators in practice? (d) Which of the collective value aggregation methods best describes community value-based decisions—the value-preemptive model, the value-weighted model, or some other alternative? These questions are important to our understanding of how public servants use their discretion on behalf of the public they serve.

This study should be regarded as a pilot study on a decision modeling procedure only; the purpose here is not to recommend decisions or to outline a definitive universal hierarchy of values. Rather, this study is intended to contribute to discussions about methodologies for modeling value trade-off decisions in a complex values environment. We are encouraged by the performance of the context-relevant value hierarchy approach in this study and expect it to be useful as we work toward ever more sophisticated approaches to modeling complex decisions in the public sector. In particular, this approach appears to usefully isolate context-relevant values from a larger set of values, and provides a means for incorporating minority views into the collective value equation.

Appendix

Pairwise Correlation Coefficient Matrix for Values Variables ($n = 182$)

	Citizen involvement	Transparency	Regime loyalty	Following rules	Social justice	Objectivity	Protect minorities	National security	Resiliency	Innovation	Self-reliance	Altruism	Collaboration	Sustainability	Government innovation	Process	Efficiency
Transparency	.1697*	I															
Regime loyalty	-.0149	.1521*	I														
Following rules	.0587	.3561*	.2376*	I													
Social justice	.1514*	.0313	.1475*	.1024	I												
Objectivity	.2017*	.1879*	.1642*	.3876*	.1463*	I											
Protect minorities	.2476*	.0477	.2661*	.1031	.3715*	.2360*	I										
National security	.1746*	.0595	.1951*	.2272*	.1112	.1564*	.0267	I									
Resiliency	.1551*	.3034*	.1001	.1519*	.2901*	.2950*	.2838*	.1368	I								
Innovation	.124	.0504	.084	.2684*	-.031	.2877*	-.0499	.2261*	-.0728	I							
Self-reliance	.2121*	.2431*	.1053	.0894	-.0406	.1413	-.0726	.2393*	.1463*	.2062*	I						
Altruism	.2530*	.3935*	.1884*	.1900*	.1004	.3744*	.1042	.1966*	.1397	.2252*	.2478*	I					
Collaboration	.2016*	.1728*	.0936	.3237*	.1709*	.4822*	.1246	.2867*	.1976	.3354*	.2432*	.4586*	I				
Sustainability	.1173	.1067	.4227*	.2748*	.4094*	.1920*	.2811*	.2346*	.4171*	.1076	-.0326	.1171	.2925*	I			
Government innovation	.1690*	.1067	.1876*	.2159*	.2413*	.1222	.2700*	.1815*	.2669*	.2745*	.0811	.1233	.3109*	.3883*	I		
Process	.2084*	.1494*	.0741	.1382	.2584*	.1680*	.0555	.1995*	.1679*	.4250*	.0888	.0746	.3171*	.2267*	.2508*	I	
Efficiency				.0575	-.0066	.3775*	.0634	.1398	-.011	.4935*	.2821*	.2920*	.3784*	.1303	.1899*	.2739*	I
Independence					.0446	.1905*	.1199	-.0143	-.0263	.1577*	.0858	.0481	.1122	.0268	.2014*	.0676	.1469*

Note. Only the values variables included in the final models from Table 2 are represented in this matrix.

*Statistically significant correlation at $\alpha = .05$.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. The nature of human values includes various matters of significant debate, and many of these matters are far from settled, particularly in fields such as philosophy. As a philosophy of public values may be associated with these larger debates, it is important to acknowledge that the approach taken to the study, measurement, and even definition of values in this article is largely limited to the ways in which other public administration scholars—and to some extent scholars in psychology and sociology—have operationalized them for convenience in measurement and study.
2. As we gather value preferences and decision preferences in the same instrument, the term “predict” is used here in the statistical, not temporal, sense of the word.

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