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Matching leadership to circumstances? A vignette study of leadership behavior adaptation in an ambiguous context

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ABSTRACT

Public organizations are often characterized by contextual ambiguity, which creates extra demands on leaders. Yet to what extent leaders adapt their behavior to the ambiguity remains largely unknown. Drawing on the concept of requisite variety, we hypothesize that more ambiguous situations require more complex leadership behavior. Furthermore, it is hypothesized that formal authority moderates such adaptation. Data were collected in a 2x2x2 vignette interview study with leaders in Dutch universities ($n_{\text{observations}} = 240$, $n_{\text{participants}} = 30$), organizations particularly prone to ambiguity. The within-person experimental design enables analyzing how contextual variations elicit different choices by the same participant, controlled for between-person differences. Multilevel analyses show that, contrary to expectations, fewer leadership behaviors are used in situations with more contextual ambiguity, while formal authority increases the number of leadership behaviors. The results suggest that leaders in ambiguous contexts narrow the range of their actions, and a lack of authority in particular constrains the available repertoire.

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Introduction

Characteristics of the context in which leaders are embedded pose challenges for leadership. This is particularly salient in public organizations where leaders often need to balance competing values (Hood 1991; Quinn and Rohrbaugh 1981) and cope with diffused structures of authority (Groeneveld and Van de Walle 2011; Shamir 1999). Working with multiple goals, diverse tasks, and a range of stakeholders confronts leaders with a multitude of demands, which puts them in ambiguous situations (Boyne 2002; Chun and Rainey 2005; Dixit 2002; Murphy et al. 2017). A number of studies have analyzed leadership behavior in the unique public context, such as in a collaborative governance setting (Crosby and Bryson 2005), politico-administrative setting (Tummers and Knies 2016; Vogel, Reuber, and Vogel 2020), or a managerial setting (Jensen et al. 2019). The studies show that public leaders enact a wide range of different behaviors, but less is known about when or why leaders behave in a certain way.

To navigate ambiguity and address the various demands from their context, leaders have to adapt their leadership behavior to match the situation (Denison, Hooijberg, and Quinn 1995). Nonetheless, whether and how leaders do so remains largely unknown. Explicitly accounting for the context in which leadership takes shape has been scarce in previous research, but its

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importance has been emphasized both in public management and generic leadership literature (e.g., O'Toole and Meier 2015; Ospina 2017; Porter and McLaughlin 2006; Vandenabeele, Andersen, and Leisink 2014; Wright 2015). Recently, some studies have begun to take up this challenge and provide empirical evidence of the context having impact on leadership and managerial behavior (George, Van de Walle, and Hammerschmid 2019; Hansen and Villadsen 2010; Nielsen and Cleal 2011; Schmidt and Groeneveld 2021; Stoker, Garretsen, and Soudis 2019). Nevertheless, the primary focus of current research in public management seems to be on leadership outcomes (Vogel and Masal 2015). In contrast, the question of how leadership itself is shaped requires further study.

In this article, we define leadership as “the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives” (Yukl 2008, 8). Fitting with our central idea that leadership adapts to changing circumstances, this definition emphasizes the continuous and relational character of leadership. It accommodates the view of a leadership behavior repertoire that consists of a wide range of behaviors necessary to match the circumstances (Denison et al. 1995; Hooijberg 1996). Since contextual ambiguity disturbs organizational goal pursuit, leadership can be an essential factor to temper this effect (Shamir 1999). Leaders' ability to adapt their behavior to the needs of the context deserves therefore more attention.

Taking up this issue, our study contributes to the leadership and public management literature by investigating leadership behavior adaptation to context. In particular, we set out to answer the question: Do leaders adapt their leadership behavior to varying levels of contextual ambiguity? We used a novel within-person vignette interview design that combines advantages of quantitative and qualitative methods. The vignette experiment allows for controlled hypothesis testing, while an additional layer of insights to interpret those findings is gained through the interview data collection procedure. Presenting a sample of leaders in Dutch universities with a series of vignettes ($n_{\text{participants}} = 30$, $n_{\text{observations}} = 240$) allowed us to examine behavioral variation between situations for the same participant. Hypotheses on the relationship between leadership context and leadership behavior are tested. Drawing on the concept of requisite variety (Ashby 1952) it is hypothesized that more ambiguous situations require more complex leadership behavior, meaning that leaders use more different types of leadership behavior from their repertoire. Furthermore, it is hypothesized that such adaptation may be constrained by the leader's level of formal authority. Lack of formal authority may create a necessity for detours, and thereby stimulate leaders to exert more types of behavior.

The study aims to contribute to the literature on leadership in public organizations in several ways. From a theoretical perspective, unlike other studies in the field, this article treats leadership behavior as the dependent variable. Studies that evaluate the effect of various leadership behaviors on organizational outcomes tend to treat leadership as exogenous. Yet it is important to understand what determines the use of one or another behavior in a specific context. Moreover, our study examines empirically the extent to which leaders adapt their behavior to contextual variation – a claim that is often assumed, but not empirically tested. Methodologically, our study introduces a novel experimental, within-person design to leadership research, which allows isolating the effect of one specific contextual factor in a rigorous manner. Furthermore, the combination of experimental treatment and interviewing offers simultaneously the rigor of hypothesis-testing as well as further insights from the qualitative interpretation of respondents' answers. Finally, practitioners can take away that being aware of their leadership adaptation patterns, making tradeoffs insightful, and ordering priorities could help avoid sidelining important organizational interests. Our findings also show that formal authority enables leaders to use more types of leadership behavior to address organizational dilemmas, reminding that the organizational structure matters.

The article continues with a theoretical framework that discusses the study's key concepts and hypotheses. The next section addresses the research design, followed by a presentation of analyses. Finally, the findings and their implications are discussed and conclusions are drawn.

Theoretical framework

Leadership adaptation in an ambiguous context

Given the complex and dynamic nature of the set of demands leaders in public organizations are facing (Boyne 2002; Dixit 2002; Head 2010; Hood 1991; Murphy et al. 2017), leaders need a repertoire of behaviors from which they can choose various options (Bryman and Lilley 2009; Carmeli and Halevi 2009; Denison et al. 1995; Havermans et al. 2015). Denison et al. (1995) distinguish eight roles of leaders that vary on their strategic orientation and direction: innovator, broker, producer, director, coordinator, monitor, facilitator, and mentor (see Table 1). Each role in the repertoire is characterized by a number of leadership behaviors. A leadership behavior repertoire can then be seen as a range of behavioral options, connected to different roles, from which a leader can choose. It thereby captures the notion of “requisite variety” (Ashby 1952): to be able to address a diversity of problems, leaders need to respond with a similar diversity in leadership behaviors. Since each option has its benefits, leaders must be able to switch among approaches and combine them to address and balance various needs in the situation at hand.¹ Prior research shows that effective leaders use more types of leadership behavior (Denison et al. 1995) and different stakeholders characterize leaders’ leadership behavior differently, indicating that leaders adapt their approach to the type of stakeholder (Hooijberg 1996).

The leadership situations that leaders are confronted with present a variety of demands and thereby create contextual ambiguity. A leadership situation is ambiguous when concurrent demands are vague and/or potentially conflicting, thereby giving leeway for multiple interpretations (Chun and Rainey 2005; Feldman 1989). Such “indirect goal conflict” leaves leaders in a state of equivocal decision making (Christensen et al. 2018, 199). Ambiguity arises because the various demands are all important, and how they have to be prioritized, balanced, and realized is not clear-cut. After all, leaders cannot isolate these demands, but have to consider them in coherence (Denison et al. 1995). The extent of competition for resources between demands affects the level of ambiguity in the leadership situation (Chun and Rainey 2005). When objectives are more aligned, the situation is less ambiguous and it is easier to find a way to cope with the demands in combination. When objectives are less aligned, the competition creates more pressure, making the situation more ambiguous and more difficult to cope with.

Although the demands producing contextual ambiguity for leaders have numerous aspects, two dimensions are particularly relevant for this article. One dimension concerns objectives to ensure an organization’s longer term viability, yet involves a classic democracy–bureaucracy tension for leadership in public organizations. On the one hand, stability and continuity are needed

Table 1. Leadership behavior categories (Denison et al. 1995, 527–528).

Role	Description
Innovator	The innovator is creative and envisions, encourages, and facilitates change.
Broker	The broker is politically astute, acquires resources and maintains the unit’s external legitimacy through the development, scanning, and maintenance of a network of external contacts.
Producer	The producer is the task-oriented, work-focused role. The producer seeks closure, and motivates those behaviors that will result in the completion of the group’s task.
Director	The director engages in goal setting and role clarification, sets objectives, and establishes clear expectations.
Coordinator	The coordinator maintains structure, does the scheduling, coordinating, and problem solving, and sees that rules and standards are met.
Monitor	The monitor collects and distributes information, checks on performance, and provides a sense of continuity and stability.
Facilitator	The facilitator encourages the expression of opinions, seeks consensus, and negotiates compromise.
Mentor	The mentor is aware of individual needs, listens actively, is fair, supports legitimate requests, and attempts to facilitate the development of individuals.

to provide certainty and confidence for organizational performance. This need is mainly linked to daily operations and has a shorter-term character. On the other hand, organizations have to adapt and innovate to remain relevant and capable to deal with challenges. This need is more strategic and has a longer-term orientation. The literature on ambidexterity discusses that both shorter-term and longer-term needs have to be satisfied in order to secure the organization's future. Since achieving such ambidexterity draws on the same resources for different needs simultaneously, tension and ambiguity are prevalent (March 1991; O'Reilly and Tushman 2013; Raisch and Birkinshaw 2008; Turner, Swart, and Maylor 2013).

A second dimension involves the distinction between domains at which leadership is directed. Referred to as "leadership in organizations" (Dubin 1979; Hunt and Ropo 1995), leaders have a role as supervisors at the level of individual employees. Demands on leaders stem from individual organizational members and largely involve face-to-face interaction and operational and tactical leadership. Much public management research on leadership has examined leadership in this dyadic relationship between leaders and subordinates (Ospina 2017; Vandenabeele et al. 2014; Vogel and Masal 2015). Additionally, leaders have a role in handling issues at the organizational (unit) level: "leadership of organizations" (Dubin 1979; Hunt and Ropo 1995). Demands on leaders then originate with organizational interests that transcend individual employees and leadership is more strategic. Middle managers face both types of demands –coming from below and above– that are not always aligned.

When the needs to which a leader has to attend are more compatible, there is less contextual ambiguity, and it is arguably clearer for a leader how to proceed. In contrast, in a more ambiguous context, in which demands are more competing, leaders would have less straightforward paths to manage the issues at stake. For leadership adaptation to such circumstances, we could apply the principle of "requisite variety" (Ashby 1952), as discussed above.

This leads to the expectation that leaders would use a more varied behavioral response, that consists of more different leadership behaviors to navigate and cope with the ambiguous situations. In sum, leaders would respond to more ambiguous contexts by using more options from their behavioral repertoire in terms of the types of leadership behavior.

***Hypothesis 1:** Leaders employ more types of leadership behavior when contextual ambiguity is higher.*

Structural impact on leadership adaptation

The task context of leaders in many public organizations is not only ambiguous, it is also embedded within complex structures with leadership roles of different degrees of authority. What leaders can do in such contexts may therefore be limited by these structural factors (Johns 2006; Pedersen et al. 2019; Perrow 1970). Since devolution and decentralization are a common part of New Public Management (NPM) reforms and the rise of post-bureaucratic organizations² (Groeneveld and Van de Walle 2011), formal authority is increasingly distributed, blurring the traditional lines of authority. This has consequences for leadership (Shamir 1999).

Responsibilities regarding the management of increasing boundary-crossing cooperation (Groeneveld and Van de Walle 2011) –applicable to regular tasks as well as more special projects– are divided between and delegated to multiple organizational members lower in the hierarchy, often without granting them the formal authority to fulfill their responsibilities independently (Getha-Taylor et al. 2011; Gronn 2002; Shamir 1999). Leadership tasks are then distributed through a "segmentation of authority" (Gronn 2002, 440-441), creating a "pluralistic domain" (Denis, Lamothe, and Langley 2001, 809) in which multiple actors represent various interests and objectives that are overlapping or competing to varying extents. The interdependencies thus created limit what leaders can do on their own. To achieve their objectives, leaders need to coordinate with others possessing needed authority. In organizations in which authority is

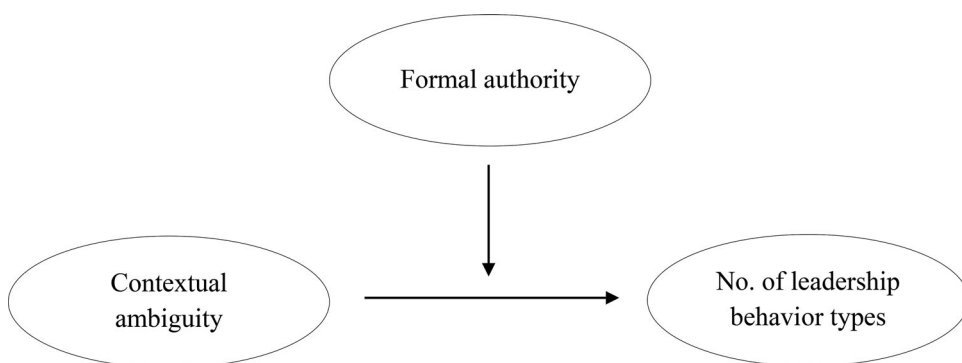


Figure 1. Conceptual model.

more dispersed, interdependencies are greater, more coordination is required, and leadership is also more distributed (Gronn 2002).

The shared nature of authority has implications for leadership behavior. Following a logic of availability, the possession of formal authority would provide more opportunities for leaders to use more different types of leadership behavior to address contextual ambiguity, since they have the position to do so (Johns 2006; Hansen and Villadsen 2010). At the same time, formal authority would free the way for leaders to provide a quicker fix comprising fewer behaviors to tackle ambiguous situations, since they could make final decisions regarding resources at their disposal. Similarly, a moderating effect of a lack of formal authority on the association between contextual ambiguity and leadership behavior can also be argued in both directions. Lack of formal authority would put a limit on the number of types of behavior at one's disposal, since one has not been granted the right to take particular actions while facing ambiguous demands (Johns 2006; Shamir 1999). On the other hand, following a logic of necessity, the (inter)dependence on others in such a constellation might require a leader to work around this obstacle and try multiple routes in parallel, involving more types of behavior, to match the contextual ambiguity (Gronn 2002; Shamir 1999). It is therefore hypothesized that the level of formal authority connected to a position moderates the relationship between contextual ambiguity and leadership behavior, with two competing hypotheses regarding the direction of this effect.

Hypothesis 2a: *The relationship between contextual ambiguity and leadership behavior is stronger for leaders with a higher level of formal authority.*

Hypothesis 2b: *The relationship between contextual ambiguity and leadership behavior is stronger for leaders with a lower level of formal authority.*

The conceptual model in Figure 1 visualizes the hypothesized relationships.

Research design

Data collection

Data were collected in a vignette study from April through June 2019. A vignette study can be used to test relationships between variables in a quasi-experimental fashion (Aguinis and Bradley 2014). Since the key variables are manipulated by the researcher, this research method is particularly strong in terms of internal validity. To be able to assess whether leaders adapt their behavior to context, a within-person design is employed. Each participant is presented with multiple vignettes, to see how different aspects of context lead to different choices by the same participant (Aguinis and Bradley 2014; Atzmüller and Steiner 2010). This within-person design then allows us directly to test behavioral adaptation among situations, while controlling for individual

characteristics between participants. We administered the vignettes in an interview setting to complement the experiment's hypothesis testing with additional qualitative insights. This helped us to understand the quantitative results better, because interviews offer room to elaborate responses and probe for considerations (Barter and Renold 1999; Jenkins et al. 2010).

Vignettes were designed by drawing on cases brought up in interviews (Van der Hoek, Groeneveld, and Beerkens, under review) with leaders in the same type of positions as those participating in this study. Dilemmas that were recurrently brought up by interview participants in that prior study were selected to create scenarios that would closely resemble the practice of the participants in this study. In this way, scenarios easily activate participants to engage with the scenario and obtain a realistic behavioral response. This "actual derived cases" approach enhances the scenarios' realism, contributing to internal and external validity (Aguinis and Bradley 2014; Barter and Renold 1999; Shepherd and Zacharakis 1999). This was supported during the vignette interviews by participants' comments about the topicality of issues covered in the scenarios and the examples from their own practice they shared. The vignettes were tested in six cognitive interviews with participants from the research population. A logbook was kept to track decisions to change the vignettes. The translated vignette materials can be reviewed below (see Measurement).

Sample

Vignette interviews were conducted in Dutch universities. This empirical setting is suitable for our research goals for several reasons. First, universities are organizations particularly prone to ambiguity: "goals that are unclear, technologies that are imperfectly understood, histories that are difficult to interpret, and participants who wander in and out" (March and Olsen 1979, 8). They have parallel goals and tasks in research, education, and societal outreach, which have to be managed with limited resources. Thereby they have to deal with a range of stakeholders with diverse interests, including employees, students, and external stakeholders such as government departments or partner organizations (Enders 2012). Indeed, Bryman and Lilley (2009) indicate that leaders within universities are confronted with various demands from these stakeholders that often compete. In combination, this creates conditions where ambiguity emerges, allowing various interpretations of priorities and desirable courses of action.

Second, dispersed formal authority involving shared responsibilities and competences is common in universities. In universities, the formal authority of organizational members in administrative roles is limited and often shared with others in different formal positions in a system of shared governance. At the same time, professionals enjoy and expect much autonomy (Bolden, Petrov, and Gosling 2009; Pearce, Wassenaar, and Wood 2018; Seeber et al. 2015). In combination with the rotating *primus-inter-pares* system, this limits authority attributed to the formal leadership position ("titular authority") (Bess and Goldman 2001, 421). The omnipresence of ambiguity and the distribution of authority makes the university a typical case (Gerring 2006) to investigate leadership adaptation to ambiguity.

As participants we selected acting chairs, directors, and board members of departments, institutes, and teaching programs from a variety of disciplinary backgrounds from two research universities in The Netherlands. All participants are active academics fulfilling such a formal leadership position,³ varying in level of formal authority, for a specific term, not professional administrators. Participants were randomly selected using a fixed interval for sampling from a list of all academic formal leaders within the schools participating in this study. Those selected were invited by email and reminded once. Out of 63 invitees, 32 agreed to participate (of whom one did not show up at the interview and one never confirmed the appointment), 13 declined due to a lack of time and one due to sick leave, and 17 did not respond to the invitations. This resulted in a sample of 30 participants. The sample's composition is balanced in terms of gender (16

male, 14 female participants) and type of position (17 educational, 13 non-educational), with an average experience in administrative/management positions of 9.42 years ($SD = 6.327$) and is equivalent for participants and non-participants.⁴

Procedure

Participants were presented with a case featuring a fictional university department about which they had to respond to a series of eight scenarios, introducing different contextual manipulations. An information sheet provided background information of the department (educational programs, number of staff and students, institutional arrangements). For each scenario, respondents were asked what they would do in this situation and which actors they would engage if applicable, comparable to verbally answering an open-ended survey question. After completing the vignettes, the interview continued in a semi-structured fashion to discuss how participants interpreted the scenarios and came to their responses. Sharing examples from their own experience was encouraged. These data can illustrate and provide additional insights in the mechanisms underlying the findings.

Measurement

Dependent variable

To test behavioral adaptation, we measured *number of intended leadership behavior types* in response to the scenarios. Specifically, participants were asked: Which actions would you undertake, and if applicable, which stakeholders would you involve? Types of leadership behavior were coded using the eight leadership roles matching various leadership behaviors from the model by Denison et al. (1995), creating a 9-point scale ranging from no intended leadership behaviors to eight different types of intended leadership behavior. Descriptions and example statements of these categories are presented in the Appendix.

Independent variables

Contextual ambiguity is operationalized as the level of tension between simultaneous demands present in situations in which leaders have to act. To incorporate such tension, situations described in the scenarios always presented two issues to be dealt with, which vary on similarity or difference between interests at stake. Based on the conceptualization of contextual ambiguity in this article, manipulations of contextual ambiguity consisted of variations on a) the timeline and b) the source of the demands leaders are dealing with. Regarding timeline ambiguity, the scenarios involve issues with shorter-term interests (staffing shortage and immediate additional teacher absence) and longer-term interests (program future viability and strategic career choice). Regarding source ambiguity, variation is based on the issues' main interest for the organization as a whole (keeping program staffed and ensuring program future viability) and for individual organizational members (employees' burnout and sabbatical, and employee's strategic career choice). More ambiguity is present when the two demands are more different on a dimension, since it could be argued that it is harder to combine more different demands, making the situation more ambiguous to deal with. Table 2 shows how the different combinations of issues are linked to the scenarios.

Formal authority is operationalized as the level of decision-making authority residing in formal leadership roles. In the vignettes this takes on the values of presence (scenarios 1-4) or absence (scenarios 5-8) of formal authority regarding financial, personnel, and policy decisions for the leader in the vignette, as presented to the respondent via role descriptions.

The three variables combined form two sets of four scenarios (a 2x2x2 design), which is visualized in Table 2. Operationalization of all independent variables in the vignette materials is

Table 2. Operationalization formal authority and dimensions contextual ambiguity in scenarios.

Contextual ambiguity: Source	More formal authority (1)		Less formal authority (0)	
	Contextual ambiguity: Timeline		Contextual ambiguity: Timeline	
	Less ambiguous (0)	More ambiguous (1)	Less ambiguous (0)	More ambiguous (1)
	Less ambiguous (0)	Scenario 2 Issue 1: Short term + department Issue 2: Long term + department	Scenario 5 Issue 1: Short term + department Issue 2: Short term + department	Scenario 6 Issue 1: Short term + department Issue 2: Long term + department
	More ambiguous (1)	Scenario 4 Issue 1: Short term + department Issue 2: Long term + employee	Scenario 7 Issue 1: Short term + department Issue 2: Short term + employee	Scenario 8 Issue 1: Short term + department Issue 2: Long term + employee
		Scenario 3 Issue 1: Short term + department Issue 2: Short term + employee		

presented in [Box 1](#) below. For clarity, the two simultaneous demands are separated as Issue 1 and Issue 2 in line with [Table 2](#).

Box 1. Vignette materials

Introduction role 1

In the next four scenarios, you are **head of department** of Political Science. Together with the director of education and supported by the financial manager you make up the board, with whom you have weekly meetings. In your position, you are responsible for the day-to-day wellbeing and the strategy of the department and you are responsible for the budget. **In your position, you have the capacity to decide about hiring personnel and you have the last say in policy decisions of your department.**

Scenario 1

Issue 1: The bachelor programs of your department will grow more than expected in the coming academic year, but the budget will not yet grow along accordingly. It becomes very difficult to arrange the allocation of staff for all teaching tasks.

Issue 2: At the same time you are preparing the visitation of the educational programs, which has to be reaccredited in the coming months. You also need your staff to prepare all documents and meetings. You need your teaching staff for various matters, but time is limited and work pressure high.

Scenario 2

Issue 1: The bachelor programs of your department will grow more than expected in the coming academic year, but the budget will not yet grow along accordingly. It becomes very difficult to arrange the allocation of staff for all teaching tasks.

Issue 2: At the same time, you are working on the development of additional interdisciplinary elements in your educational programs, to secure future viability. To be able to receive structural financial funding from the school, you have to materialize these developments in the coming months. Then you will be able to use them to promote your programs among potential future students from next year onwards.

Scenario 3

Issue 1: The bachelor programs of your department will grow more than expected in the coming academic year, but the budget will not yet grow along accordingly. It becomes very difficult to arrange the allocation of staff for all teaching tasks.

Issue 2: Your teaching staff already experience high work pressure, two coordinating teachers are on sick leave due to burnout. It has proven to be difficult to find new teachers to fill up the teaching hours and unburden other teaching staff. A third coordinating teacher has given you notice that she has been invited by an excellent research institute in the United States to spend a sabbatical during the second semester. Her teaching tasks would have to be reallocated to someone else.

Scenario 4

Issue 1: The bachelor programs of your department will grow more than expected in the coming academic year, but the budget will not yet grow along accordingly. It becomes very difficult to arrange the allocation of staff for all teaching tasks.

Issue 2: At these times of scarcity and high work pressure, a coordinating teacher in your bachelor program has told you that he has been offered the opportunity to make a television show on social science and research. This would generate a lot of positive attention for himself and his career. He would also be less available for teaching, although he teaches a core module in the program.

Introduction role 2

In the next four scenarios, you are **program director of bachelor studies** of Political Science. In your position, you are responsible for quality of the Dutch bachelor program. Besides you are the direct contact person for teaching staff. **In your position, you do not have the capacity to decide about hiring personnel, the board of the department decides upon those issues.**

Scenario 5

Issue 1: The bachelor programs of your department will grow more than expected in the coming academic year, but the budget will not yet grow along accordingly. It becomes very difficult to arrange the allocation of staff for all teaching tasks.

Issue 2: At the same time you are preparing the visitation of the educational programs, which has to be reaccredited in the coming months. You also need your staff to prepare all documents and meetings. You need your teaching staff for various matters, but time is limited and work pressure high.

Scenario 6

Issue 1: The bachelor programs of your department will grow more than expected in the coming academic year, but the budget will not yet grow along accordingly. It becomes very difficult to arrange the allocation of staff for all teaching tasks.

Issue 2: At the same time, you are working on the development of additional interdisciplinary elements in your educational programs, to secure future viability. To be able to receive structural financial funding from the school, you have to materialize these developments in the coming months. Then you will be able to use them to promote your programs among potential future students from next year onwards.

Scenario 7

Issue 1: The bachelor programs of your department will grow more than expected in the coming academic year, but the budget will not yet grow along accordingly. It becomes very difficult to arrange the allocation of staff for all teaching tasks.

Issue 2: Your teaching staff already experience high work pressure, two coordinating teachers are on sick leave due to burnout. It has proven to be difficult to find new teachers to fill up the teaching hours and unburden other teaching staff. A third coordinating teacher has given you notice that she has been invited by an excellent research institute in the United States to spend a sabbatical during the second semester. Her teaching tasks would have to be reallocated to someone else.

Scenario 8

Issue 1: The bachelor programs of your department will grow more than expected in the coming academic year, but the budget will not yet grow along accordingly. It becomes very difficult to arrange the allocation of staff for all teaching tasks.

Issue 2: At these times of scarcity and high work pressure, a coordinating teacher in your bachelor program has told you that he has been offered the opportunity to make a television show on social science and research. This would generate a lot of positive attention for himself and his career. He would also be less available for teaching, although he teaches a core module in the program.

Analysis

The recorded interviews were transcribed and responses to each scenario were systematically coded for leadership behavior. The coding procedure had a deductive character, drawing on the definitions and descriptions of Denison et al. (1995) to code answers per scenario. At the start of the coding process, several transcripts were read to get a gist of concrete examples of each code. With this additional coding information, all observations were coded according to the eight categories of Denison et al. (1995) and received a numerical value corresponding to the number of different coded categories. A coding memo was kept to record and track decisions on how to code particular types of answers to ensure consistency throughout the process.

We tested for reliability by evaluating the intra-coder reliability with an interval of roughly a year so coding the data was without prior knowledge of the original coding, while the same coding procedure could be followed. We selected at random 30 observations, covering responses from interviews early, half-way, and at the end of data collection and original coding. In line with the measure used as the study's dependent variable, the reliability test focused on the number of types of behaviors as coded in the original coding and in the recoding. Reliability is higher when there is more overlap between the number of coded behaviors per observation in both rounds. The result of this test is intra-class correlation (ICC) = 0.868 (95% CI 0.726–0.937). This indicates that coding is consistent and we can have confidence in the reliability of the dependent variable's coding.

The within-person design creates a multilevel data structure, with observations ($n = 240$) nested in persons ($n = 30$). Multilevel modeling provides the opportunity to test how variations in context elicit different choices by the same participant, controlled for between-person differences. Multilevel linear regression models were estimated in HLM 8. Fixed-effects models were estimated, since the hypotheses only focus on within-person variance and between-person unexplained variance is controlled for (Snijders and Bosker 1999). Due to the relatively small number of participants, model parameters were estimated using restricted maximum likelihood (RML) estimation to extract reliable variance estimates and additionally robust standard errors were used (Hox, Moerbeek, and Van de Schoot 2018; Maas and Hox 2004).

Results**Descriptive statistics**

The dataset consists of 240 observations (8 observations each for 30 participants). In total, a leadership behavior category was coded 635 times. Participants' responses per scenario involved

multiple leadership behavior categories, with a mean of 2.65 (SD = 1.098) per scenario. Participants would respond to scenario 3 with the highest average number of leadership behavior categories (mean = 3.50; SD = 1.225), to scenario 8 with the lowest average number of categories (mean = 1.93; SD = 0.907) (Table 3).⁵ In only one observation, no leadership behavior was present in the participant's response (scenario 1). Two or three types combined was most common, in respectively 75 (31.3%) and 81 (33.8%) observations (Table 4). Behaviors matching the innovator and producer categories were present least often, whereas monitor and facilitator behaviors were very common and coordinator behaviors were the most predominant (Table 5).

Multilevel analyses

Table 6 presents the multilevel models. A baseline model (not displayed) including only a random intercept was estimated to calculate the ICC. The ICC-value of 0.210 indicates that 21% of the total variance can be attributed to level 2 (the participant and his/her characteristics). The baseline model shows that intercepts vary between participants, since level-2 variance of 0.255 ($p < 0.01$) is highly significant. Gender and years of experience in administrative/management positions are not significant to explain the variance and do not affect the estimates of scenario-level variables. Since the within-person design also controls for between-person variation, these variables are not included in the models below.

Table 3. Descriptive statistics number of leadership behavior categories by scenario ($n = 240$).

Scenario	Mean	SD	Min	Max	N
1	2.93	.980	0	5	30
2	3.03	1.273	1	6	30
3	3.50	1.225	1	6	30
4	2.27	.868	1	4	30
5	2.60	1.003	1	5	30
6	2.77	.817	1	5	30
7	2.20	.847	1	4	30
8	1.93	.907	1	4	30
Total	2.65	1.098	0	6	240

Table 4. Number of leadership behavior categories in responses per observation ($n = 240$).

No. of leadership behavior categories	Frequency	% of observations
0	1	.4
1	34	14.2
2	75	31.3
3	81	33.8
4	38	15.8
5	8	3.3
6	3	1.3
Total	240	100

Table 5. Leadership behavior categories mentioned ($n = 240$).

Leadership behavior category	Frequency	% of observations
Innovator	26	10.8
Broker	80	33.3
Producer	18	7.5
Director	78	32.5
Coordinator	162	67.5
Monitor	99	41.3
Facilitator	114	47.5
Mentor	58	24.2
Total	635	100

Table 6. Multilevel linear regression models with number of leadership behavior categories as a dependent variable ($n_{\text{observations}} = 240$, $n_{\text{participants}} = 30$).

FIXED	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6			Model 7		
	B	SE		B	SE		B	SE		B	SE		B	SE		B	SE		B	SE	
Mean/intercept	2.808**	.125		2.529**	.126		2.400**	.134		2.833**	.127		2.554**	.128		2.683**	.138		2.600**	.180	
Timeline ambiguity	-.308**	.101		-.308**	.101		-.050	.092											.167	.177	
Source ambiguity										-.358*	.140		-.358*	.140		-.617**	.164		-.400*	.198	
Formal authority				.558**	.122		.817**	.161					.558**	.122		.300†	.168		.333†	.185	
Interactions																					
Timeline ambiguity *Formal authority							-.517**	.164											-.067	.258	
Source ambiguity *Formal authority																.517**	.171		.967**	.191	
Timeline ambiguity *Source ambiguity																			-.433	.270	
3-way interaction																			-.900**	.360	
RANDOM																					
VAR(e_{ij})	σ^2	.936	SD	σ^2	.851	SD	σ^2	.836	SD	σ^2	.927	SD	σ^2	.841	SD	σ^2	.826	SD	σ^2	.722	SD
VAR(u_{0j})		.258**			.268**			.270**			.259**			.270**			.271**			.284**	
Model fit	Fit		par	Fit		par	Fit		par	Fit		par	Fit		par	Fit		par	Fit		par
Deviance	703.0		2	682.6		2	680.8		2	700.9		2	680.3		2	678.4		2	651.2		2
Explained variance	R^2	.024	R^2_{seeb}	R^2	.113	R^2_{seeb}	R^2	.128	R^2_{seeb}	R^2	.033	R^2_{seeb}	R^2	.123	R^2_{seeb}	R^2	.139	R^2_{seeb}	R^2	.247	R^2_{seeb}
R^2 within-person			.016			.078			.089						.085				.247		.171
R^2 between-person		-.011			-.051			-.059	.001		-.016			-.059	-.001		-.063		-.114		.002
R^2 total		.016			.078			.089			.023			.085			.096		.171		

† $p < .10$; * $p < .05$; ** $p < .01$

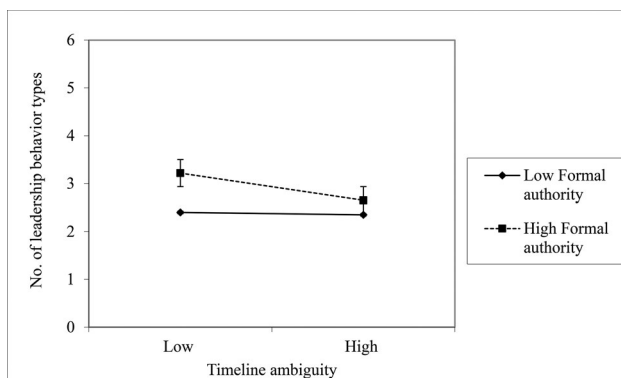


Figure 2. Predicted number of leadership behavior types conditional on timeline ambiguity and formal authority.

To test the hypotheses, three models have been estimated for each ambiguity variable. Models 1 and 4 test hypothesis 1, including only either timeline ambiguity or source ambiguity, respectively; models 2 and 5 add the direct effect of formal authority; and lastly models 3 and 6 include the interaction terms to test hypothesis 2. Finally, model 7 includes all independent variables, the interaction terms, and a three-way interaction to assess the combined effect.

Timeline ambiguity

In model 1, timeline ambiguity has indeed a significant but negative effect on the number of leadership behaviors mentioned by participants ($B = -0.308$, $SE = 0.101$, $p < 0.01$). When the demands on a leader are more different and include both shorter-term and longer-term interests (more ambiguity), leaders use fewer types of leadership behavior. When controlling for formal authority (model 2), timeline ambiguity retains its negative effect. The direct effect of formal authority is positive and significant, indicating that the number of leadership behaviors are 0.558 higher in scenarios with more formal authority ($SE = 0.122$, $p < 0.01$). Model 3 includes the interaction of timeline ambiguity with formal authority to test hypothesis 2. As hypothesized, there is a significant moderating effect of formal authority on the effect of ambiguity ($B = -0.517$, $SE = 0.164$, $p < 0.01$). In scenarios with more ambiguity, fewer types of leadership behavior are used, but only when leaders have more formal authority (-0.050 when formal authority is 0, -0.567 when formal authority is 1). In other words, leaders with formal authority demonstrate more types of leadership behavior but in the context of ambiguity their repertoire narrows significantly (Figure 2).

Source ambiguity

Model 4 presents a second test for hypothesis 1, involving the effect of source ambiguity such as competing demands from the organization and individual employees. As in model 1, an ambiguous context significantly lowers the number of leadership behaviors ($B = -0.358$, $SE = 0.140$, $p < 0.05$). Again, formal authority has a positive significant effect ($B = 0.558$, $SE = 0.122$, $p < 0.01$) on the number of leadership behaviors (model 5). A significant interaction between formal authority on the effect of ambiguity ($B = 0.517$, $SE = 0.171$, $p < 0.01$) is again found (model 6), but the interaction is in this case positive. The effect size of ambiguity is then -0.617 when formal authority is 0, but -0.100 when formal authority is 1. As Figure 3 also shows, having more formal authority buffers the negative effect of ambiguity on the number of leadership behaviors.

Model 7 adds the interaction between both ambiguity dimensions and the three-way interaction between all independent variables. This combined effect has a significant negative coefficient ($B = -0.900$, $SE = 0.360$, $p < 0.01$). To facilitate interpretation, Figure 4 plots the three-way

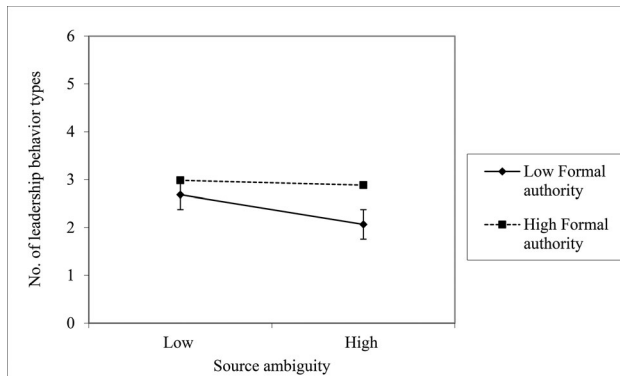


Figure 3. Predicted number of leadership behavior types conditional on source ambiguity and formal authority.

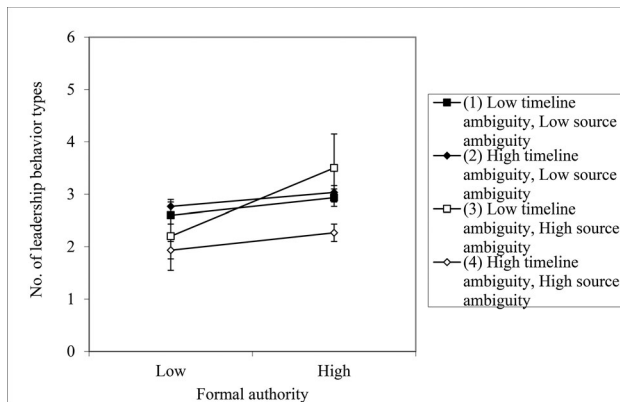


Figure 4. Predicted number of leadership behavior types conditional on timeline ambiguity, source ambiguity, and formal authority.

interaction. It shows the mean number of leadership behavior categories increases when leaders have more formal authority for each level of contextual ambiguity. The moderating effect is strongest when timeline ambiguity is low and source ambiguity is high (line 3); for the other levels of ambiguity the moderator has largely the same effect. High levels of both ambiguity variables elicit the fewest leadership behaviors in both low and high formal authority conditions (line 4), consistent with the findings of the analyses for the two ambiguity dimensions separately. Only line 3 does not fit the pattern perfectly, as more formal authority stimulates more different types of behavior in the high source ambiguity condition as compared to the low source ambiguity condition. In general, however, the picture that more ambiguity reduces the number of leadership behavior types is repeated and the result appears robust throughout the models. The sizes of the effects of the three independent variables are relatively small: between one-third (for timeline and source ambiguity) and one-half (for formal authority) point change on the 9-point scale of leadership behavior categories, which amounts to about a one-third to half a standard deviation change in this outcome variable. In the models with interactions, the effect (size) of one variable depends on the value of the other variable. Again, effect sizes are mostly small (one-third standard deviation change in the outcome variable) to moderate (three-fourth standard deviation change).

Based on these analyses it can be concluded that in more ambiguous situations, leaders use fewer types of leadership behavior. For both dimensions of ambiguity, a significant effect on leadership behavior was found, but in the opposite direction of the hypothesis. Hypothesis 1 is therefore not supported. Looking at the bivariate correlations between the ambiguity variables and number of leadership behaviors, we can derive indications in which way the repertoire narrows.

When timeline ambiguity is high, the likelihood increases that the broker ($r=-0.159$, $p<0.05$), coordinator ($r=-0.356$, $p<0.01$), and monitor ($r=-0.212$, $p<0.01$) behaviors are used significantly less often. The types of leadership behavior that are more likely to occur less frequently in source-ambiguous situations are again broker ($r=-0.318$, $p<0.01$) and monitor ($r=-0.212$, $p<0.01$), as well as director ($r=-0.196$, $p<0.01$) and innovator ($r=-0.241$, $p<0.01$).

Leaders with formal authority demonstrate more types of leadership behavior. Furthermore, the extent to which leaders' behavior adapts to the context is influenced by the level of formal authority. Therefore, hypothesis 2a is supported – being aware that the relationships specified under hypothesis 1 have the reverse direction. There is a significant difference between the two dimensions of ambiguity, namely how they affect behavior depending on leaders' level of authority. In the case of timeline ambiguity, ambiguity reduces the number of behaviors for leaders with formal authority; while in the case of source ambiguity, the ambiguity narrows the behavior for leaders with less authority. This requires a deeper look into the connection between the context variables and leadership behavior. Looking at bivariate correlations, we can indeed observe that certain types of behavior are somewhat more common in case of formal authority, such as broker ($r=0.247$, $p<0.01$), director ($r=0.178$, $p<0.05$), and mentor ($r=0.156$, $p<0.05$), but the correlation is far from exclusive.

It thus seems that the source and timeline ambiguity offer different challenges and offer a different context for leaders' choices. The qualitative interview data can shed some light on why this would happen. As illustrated below, in the case of more ambiguity leaders may be distancing themselves from certain issues, and thereby reducing the overall number of different types of leadership behavior.

Interview data

Since the data point in the opposite direction of hypothesis 1, questions arise regarding the perception of contextual ambiguity by leaders. After having completed all vignettes, participants gave varying answers to a manipulation check question asking which scenario they experienced as the most difficult. While explaining what makes some scenarios and similar situations in their own organizations difficult to handle, many participants referred to uncertainty as to how competing demands should be prioritized. When an issue is clearly more central to the organization's strategy, it becomes easier to make decisions, because such an overarching principle provides guidance in dealing with competing demands and reduces uncertainty of interpretation and, hence, ambiguity. Yet, consistent with the presented results, no significant correlation existed between the scenario that participants evaluated as most difficult and the scenario for which most behavior types were reported.

A related issue stems from the pressure of having to satisfy multiple needs with limited resources. Instead of a combination of issues involving varying interests, more of the same type of interests in concurrent demands could cause more pressure, leading to uncertainty concerning how to solve the puzzle. Especially when the pressure is high due to formal requirements that limit room to maneuver and additional pressure on resources accumulates, simply prioritizing by consulting the organization's strategy is often not feasible. Under such circumstances, deciding upon dropping some demands is not possible. This pressure from a perceived lack of leeway coincided with the low ambiguity conditions. Confirming the experimental data, the semi-structured interview data illustrate that leaders sometimes experience that there is no choice but to pursue both simultaneous demands, which causes more pressure to make it work somehow and try through multiple types of action.

On the other hand, in the scenarios that had a longer-term issue combined with a non-negotiable shorter-term issue, leaders considered the longer-term interests as important, but they also argued these issues could be postponed or not performed. Similarly, a demand of an

individual employee competing with an organizational issue was easier to sacrifice than another organizational demand – although many participants commented on the importance of providing opportunities for employees to develop themselves, for both the individual and the organization. Nevertheless, participants interpreted the dilemma situations in the scenarios as such, making the degree of choice a consideration in making sense of a way out of the ambiguity. Saying no or not taking action, as a consequence, results in fewer types of leadership behavior and provides further explanation of the findings.

Discussion

Many recent studies examine the effect of leadership behavior on organizational outcomes, while considerably less attention has been paid to the issue of what shapes leadership behavior in the first place. This article reported on a within-person vignette study testing hypotheses about leadership behavior adaptation to contextual ambiguity. The analyses show that leaders adapt their leadership behavior to changing circumstances, such that they use fewer types of leadership behavior in more ambiguous situations. This goes against the theoretical expectations. Based on participants' considerations in responding to the vignettes, this finding can be explained by how leaders interpret ambiguous situations with competing demands: in light of high pressure on scarce resources, leaders seem to prioritize among these demands. Several theoretical as well as practical implications follow from this finding.

What unfolds can be understood as a simplification process: to make a complex reality manageable, leaders focus their efforts on limited demands that are deemed most important at that moment. Much research on leadership puts a form of simplification central to leadership by means of focusing on transformational leadership. Developing, sharing, and sustaining a vision are central to leadership in this line of research (e.g., Jensen et al. 2019; Wright, Moynihan, and Pandey 2012). A vision presents an image and understanding of a future that is strived for through the organization's goals, thereby providing direction to organizational members. It could be argued that the simplification by leaders in our study to some extent has an aim at providing direction to others around them, since several leaders stated that their staff members look at them for decisions on difficult issues. Given that our research focuses on how leaders deal with ambiguous situations, however, the simplification that showed in our findings refers mainly to the parallel aim of making a situation more manageable for the leaders themselves.

While delimiting the objects of their leadership and in order to gain control, they narrow the range of their leadership behaviors. In some cases this may mean sacrificing strategic long-term goals. Our interview data prompt the understanding that leaders tend to interpret demands relating to strategic longer-term considerations as less urgent when pressure is high, which have to be postponed to ensure shorter-term continuity. Also the bivariate correlations between ambiguity dimensions and leadership behaviors show a drop in the more strategic longer-term oriented behaviors (innovator, director, broker). Yet attending to both objectives is important and necessary (March 1991; Murphy et al. 2017; O'Reilly and Tushman 2013; Raisch and Birkinshaw 2008; Turner et al. 2013). Strategic development and innovation involves risk-taking, which requires some slack and room for maneuver regarding resources (Van de Walle 2009). If leaders do not experience that they can opt-out of, drop, or postpone a demand, because they have been made obligatory, those issues could take up all resources. Consequently, leadership behavior becomes narrow and moves away from facilitating strategic progress toward management of inertia. In the public sector, the dynamics of democratic legitimation and bureaucracy tend to favor stability over change (Getha-Taylor et al. 2011; Head 2010), driving leaders to take this path. Against this background and in individual cases, such decisions might make sense, but it could produce a perverse and damaging pattern in the long run if strategic development is insufficiently attended to (Smith 2014).

This indicates that the observed simplification does not necessarily bear resemblance to the vision-based simplification of transformational leadership. Yet leaders also indicated that drawing on their organizational strategy helped them to navigate dilemmas. In this light, it is relevant to consider the literature on strategic planning and management (Bryson, Berry, and Yang 2010; George, Walker, and Monster 2019) as it could offer an additional perspective on how leaders can deal with ambiguity and strategic interests. Common practices of this approach to strategy formulation are analyzing the environment, identifying purpose and direction, and setting goals accordingly. On a behavioral level, the director, broker, monitor, and coordinator roles of the leadership behavior repertoire (Denison et al. 1995) link to such strategic managerial practices. Strikingly, those are the types of behaviors that are more likely dropped from the repertoire amid ambiguity, as our data relate.

As an alternative to understanding this as urgency-based prioritizing as mentioned above, this may indicate that leaders fall back on personally preferred styles of leadership behavior when pressure and ambiguity are high. Individual leaders' default options of handling situations may become more dominant at the expense of strategic behavior in the use of the repertoire, as we see a diffuse pattern of how leaders narrow their repertoire of leadership behavior: different leaders fall back on different types of behavior. Preparing a clear and shared strategy in advance could provide leaders with a supportive structure to fall back on when conditions get more difficult and ambiguity increases. Further research is warranted to better understand how leadership behavior can foster strategic interests amid ambiguity.

Although the principle of "requisite variety" (Ashby 1952) does not seem to explain the pattern, the adaptation-to-context hypothesis should not be rejected. Our data show clearly that within-person variation in leadership behavior exists. Public management and leadership theory often assumes contextual effects and situational variation but generally only provides indirect tests based on large between-person samples (e.g., George et al. 2019; Hansen and Villadsen 2010; Hooijberg 1996). Moreover, the principle of "requisite variety" is based on effective behavior and is then prescriptive. Not observing the behavioral complexity as proposed, prompts the question what this means for leadership in ambiguous contexts. We encourage further research employing within-person designs to explore further how leaders adapt their behavior to various contextual factors.

Concerning structural impact of formal authority, our findings show a stimulating, enabling influence on leadership behavior. Leaders with more formal authority have more options at their disposal to engage in different types of leadership behavior. The leadership positions clearly ask of position holders to act in the interest of the organization, whereas financial and human resource responsibilities are not automatically part of their role (Gronn 2002) and constrain their room to act. Since leaders without such authority are regularly confronted with requests by individuals that produce tension with organizational interest, often additional people with the needed authority have to be involved. In organizations where responsibilities and capacities are distributed between multiple organizational members, leaders may be constrained in their ability to address these complex demands.

Implications for research and practice follow. It seems wise to keep in mind who should be able to solve which types of issues independently and which types of issues are better served when more actors are involved to safeguard careful action with appropriate attention for various interests at stake (checks and balances). Deliberate choices based on these considerations can then be translated in the distribution of formal authority among organizational members. At the same time, leaders navigating the complexities of distributed formal authority should be aware of the interdependencies and put energy in fostering collaborative relationships with organizational members with and without additional formal authority. Further research on the interplay between formal authority and distributed leadership should take this into consideration, to provide additional insight in how distributed leadership agency by organizational members is enabled and/or

hindered by dispersing responsibilities and authority (Groeneveld and Van de Walle 2011; Shamir 1999).

Limitations

This study intended to test hypotheses about leadership behavior adaptation to context. Several limitations should be kept in mind. Since with vignettes actual behavioral adaptation is not observed but approximated through statements of intended behavior, conclusions should be treated with caution. How a participant interprets and formulates intended behavior in a vignette interview likely differs from behavior in a situation that requires the participant to act, since the motivational cues involved are not identical (Jenkins et al. 2010). Nevertheless, a vignette study can provide better insight in plausible reactions if scenarios resemble participants' own actual situations. During the interviews, participants referred to their own practice and gave examples about how they had dealt with similar issues as those in the vignette, such as growing educational programs while facing staff shortages due to burn-out or other personal circumstances, or developing new or restructuring existing educational programs. This signals that the measurement provides a realistic indication of how participants would behave in actual situations.

Second, our measurement of contextual ambiguity is limited. Two dimensions of contextual ambiguity were included, although others could be relevant. Keeping some variables constant was necessary, since our methodology thwarts a larger number of scenarios per participant or a much larger sample necessary to cover all possible set combinations and set effects (Atzmüller and Steiner 2010). To be able to assess the effects of the variables included, we decided to restrict the number of factors in the design. Moreover, in line with prior research on goal ambiguity (Chun and Rainey 2005; Jung 2011) contextual ambiguity was approached as an objective characteristic of leadership situations, whereas perceived ambiguity was not measured. These can diverge, as our qualitative data indicate. What could be a tension or dilemma on paper, might not be perceived as such and vice versa. Davis and Stazyk (2015) have also pointed out that ambiguity has multiple faces, producing not only uncertainty and constraints, but also room for maneuver. Differences in how leaders interpret ambiguity have implications for theory. Ambiguity is an elusive concept, which makes it challenging to study. This is further enhanced by the possible divergence of objective and perceived evaluations of the phenomenon. Its omnipresence and challenges for public management, however, encourage further research whereby perceptions should be taken seriously given their potential effects on behavior (James and Jones 1974; Weick, Sutcliffe, and Obstfeld 2005).

Third, our dependent variable focused on the number of different types of leadership behavior. While this adds to the literature by providing a direct test of behavioral adaptation to context, which had been assumed in prior research, it leaves open the question which behaviors are more or less likely in case of increasing contextual ambiguity. The study was designed to capture variety, which was observed. Exploration of correlations between ambiguity and types of behavior showed a mixed inconclusive picture. Follow-up studies could delve deeper into the question of which behaviors are adopted in which type of circumstances, and why.

A final tradeoff concerns the order in which scenarios are presented to participants. Since the number of respondents was limited due to feasibility, the number of combinations in which scenarios could be ordered exceeded the sample size. Randomizing the vignette order would not allow us to control for possible order effects, since not all combinations could be administered and therefore order effects could not be fully checked (see also Raaphorst, Groeneveld, and Van de Walle 2018). Vignette order was therefore kept constant for all participants. Robustness checks were performed by running all models excluding the first and last scenario for each participant to assess whether learning and tiresomeness by participants might affect the results. All models showed coefficients that had the same direction as the models in Table 6. In some models,

variables had the same direction but were not significant, which could be explained by the decrease in statistical power due to the smaller number of observations. Model 7 could not be estimated, due to singularity issues. The results were therefore largely supported and permit the same conclusions.

To test the robustness of our findings and overcome some limitations, further research should continue this line of research. We suggest adopting different methods to address the measurement of the dependent and independent variables. Moreover, our study has aimed at theoretical generalizability following a typical-case logic instead of at statistical generalization. Therefore, the external and ecological validity of the relationships should be tested with larger samples from different populations. Although the current empirical setting has contextual ambiguity and distributed authority patterns that are increasingly typical for many other public organizations, and therefore fits the aim of theoretical generalization, its rotating management by professionals is less common. In such a context of contested formal authority and shared governance – a combination that has spurred the notion that managing academics is like herding cats (Brown and Moshavi 2002) – it may take more of a leader to navigate ambiguous decision-making situations. After all, tradeoffs are likely perceived differently among professionals and autonomous decision making on behalf of a *primus-inter-pares* is not very accepted. This could imply that more types of behavior have to be used in comparison with settings where hierarchical position is more accepted as basis of authority and managers are expected to act as strategic leaders. Further research should assess whether this characteristic influences the found relationships.

Conclusion

In many public organizations, ambiguity is widespread and, per this study, not without consequences for leadership. Formal authority can enable leaders to take action when situations are ambiguous – or give them the mandate to prioritize and leave some issues aside. These findings advance our understanding of leadership in ambiguous organizational contexts and raise important questions for future research explaining leadership behavior and implications for public management professionals. Further research to investigate the impact of organizational context is therefore not only of theoretical interest, but also of practical value.

Ethics declarations

We confirm that all the research meets ethical guidelines and adheres to the legal requirements of the study country. At the time of initiating this research, there was no ethical committee at our Faculty of Governance and Global Affairs (Leiden University) and the requirement to obtain approval from such committee. All the subjects have provided appropriate informed consent. At the start of the data collection procedure, subjects were presented with an informed consent form, were given time to read it and ask additional questions, and signed the form before proceeding.

Notes

1. A distinction must be made with situational leadership, which mainly concerns adaptation of leadership to an employee's task maturity rather than to organizational context factors more broadly (Graeff 1997; Thompson and Vecchio 2009; Yukl 2008).
2. Despite the opposite trend of increasing accountability pressure that enhances bureaucracy, which is also linked to NPM-inspired reforms (Diefenbach 2009; Lawton, McKeivitt, and Millar 2000). In the university sector, Bess and Goldman (2001) refer to the increase in managerial logic and bureaucratization, moving away from more loosely coupled systems. We would argue that NPM-inspired bureaucratization implies an accumulation of different steering instruments leading to more complex structures within universities.

3. We recognize that leadership behavior is not reserved for organizational members performing formal roles (Gronn 2002). Academe's tradition of rotating primus-inter-pares leadership, in which administrative roles are taken up by professionals for a limited term rather than by managers (Bess and Goldman 2001; Gronn 2002), further enhances this. To test our hypotheses using hypothetical scenarios, however, it is helpful to recruit participants with experience in the roles in the scenarios, since they will be better able to put themselves in the position of the vignette's protagonist.
4. Out of 63 invitees, 35 were men (55.5%) and 28 had non-educational positions (44.4%). Out of 30 participants, 16 were men (53.3%) and 13 had non-educational positions (43.3%).
5. No correlation existed between the order of scenarios and the number of types of leadership behavior.

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Appendix: operationalization dependent variable: leadership behavior

Question: Which actions would you undertake, and if applicable, which stakeholders would you involve?

Table A1. Leadership behavior categories (Denison et al. 1995, 527–528).

Role	Description	Example
Innovator	The innovator is creative and envisions, encourages, and facilitates change.	<p>"Our organization has an institute specialized in interdisciplinary education. I would talk to those people, and with those teachers. [...] And then see who is into it, so we can motivate people to participate." (#19)</p> <p>"To get it started, I have used the budget cuts to say: 'we have to change now anyway, let's do it properly right away, so it is future proof.'" (#21)</p> <p>"I would say it would be best to do it with a small working-group, like in a pressure cooker, to develop it quickly and to present it to the department and in the team." (#27)</p>
Broker	The broker is politically astute, acquires resources and maintains the unit's external legitimacy through the development, scanning, and maintenance of a network of external contacts.	<p>"I would talk to the dean for sure, saying 'this is my problem, we're being squeezed here. Do you have a creative solution for me? Do you have something to help me relieve my people?'" (#15)</p> <p>"What I would do in any case is to look at the faculty, to find out if I could get budgetary leeway for expansion." (#8)</p> <p>"When you're a bit creative, then you'll have knowledge of what's happening in the departments around you. But if you're not in your room, instead you're walking around, then you'll just see what's happening. I would really confront them." (#11)</p>
Producer	The producer is the task-oriented, work-focused role. The producer seeks closure, and motivates those behaviors that will result in the completion of the group's task.	<p>"I would engage teachers and support them if there's something they could do differently, to help them. [...] just seeing, what does the course coordinator need to get things done? So stand by the teacher." (#5)</p> <p>"I try to do it with my own team and to motivate the team, organizing subject-related events." (#19)</p>

(continued)

Table A1.

Continued

Role	Description	Example
Director	The director engages in goal setting and role clarification, sets objectives, and establishes clear expectations.	<p>"I would communicate clearly that the timeline is not realistic, that it's never a good idea to develop educational elements in a hurry, that that doesn't contribute to quality and that it therefore would be better to choose a longer trajectory for it." (#10)</p> <p>"Prioritizing. Making decisions. What do you give most attention?" (#14)</p>
Coordinator	The coordinator maintains structure, does the scheduling, coordinating, and problem solving, and sees that rules and standards are met.	<p>"See how we can use everyone optimally and what can be done by others. You could propose 'could I have a number of student assistants or a temporary staff member, can we exempt someone at the secretariat or an education coordinator to help preparing the review?' (#9)</p> <p>"That is also something you can make arrangements for, and say 'let's agree for this year that you'll reduce your research time, so teach more, and that you'll be compensated for it next year.'" (#14)</p>
Monitor	The monitor collects and distributes information, checks on performance, and provides a sense of continuity and stability.	<p>"Or scrutinize the ongoing teaching, to see where we can create some air, so that we can use that to develop those interdisciplinary elements." (#2)</p> <p>"And you'll have to organize information meetings to explain to the staff what's going on." (#3)</p>
Facilitator	The facilitator encourages the expression of opinions, seeks consensus, and negotiates compromise.	<p>"And let him also think about solutions himself. And I know most of the university staff as being dedicated. So they'll think along." (#8)</p> <p>"Like how will we make this work together for this year? [...] But at the moment you'll talk to people in the department, saying this is what's going on, then they might come up with completely different ideas. And then it is very important that you're open to that and seriously consider those ideas." (#18)</p> <p>"That's something I would want to discuss with the whole department. This is something to talk about during a staff meeting, how important do we think it is? [...] Collectively. I would ask around with everyone, and if I notice there's support for it, then we'll solve it together." (#1)</p>
Mentor	The mentor is aware of individual needs, listens actively, is fair, supports legitimate requests, and attempts to facilitate the development of individuals.	<p>"I'd encourage people with ambitions in teaching to take courses to develop. So I'd also be proactive in that, seeing which trainings are available, and are they suitable candidates for such courses?" (#29)</p> <p>"I notice that people experience it, despite the high work pressure, as a source of energy and say 'that seems fun to me, if I can do that with this and that colleague'. That gives energy and brings some leeway." (#5)</p>