

# The Impact of Public Service Motivation: Does it really matter?

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Lotte Bøgh Andersen, Thomas Pallesen, Aarhus University, Denmark & Heidi Houlberg Salomonsen, Aalborg University, Denmark.

## Abstract

Although PSM-theory is well into its adolescence, the empirical evidence concerning the impact of PSM on behavior is limited. This paper addresses this limitation by investigating how PSM affects 90 university professors' grading behavior at two Danish political science departments for seven years. We find that individuals with a high level of PSM behave in ways which can be interpreted as protecting the common good (in this context, the grading scale and the reputation of all political science graduates). In contrast, professors with a high level of user orientation have higher grade point averages, lower failure rates and less variation in their grades. Another important finding is that organizational institutions affect grading as well as moderate the relationship between PSM and behavior. This implies that an institutional approach to PSM is very relevant, although more empirical studies of the relationship between PSM, institutions and behavior are warranted.

## Introduction

The concept of "Public Service Motivation" (PSM) has been around for more than two decades. A great deal of the scholarly debate has focused on the definition and dimensions of PSM (Perry 1996). Another prominent theme in the literature has been the discussion of whether PSM is necessarily higher in the public sector than in the private sector (Perry & Hondeghem, 2008). What has received much less attention is whether PSM has any impact on behavior and ultimately on organizational performance. The literature tends to take for granted that PSM affects behavior and that more PSM also increases performance in the provision of public service (Perry and Wise, 1990). But the impact of PSM on individual behavior and organizational performance has only to a modest extent been investigated (Brewer, 2008).

This paper addresses this challenge and investigates how PSM affects the grading behavior of Danish university professors. Following the literature, we expect that higher levels of PSM have an impact on the grades given by university professors. We hypothesize that classical PSM (directed towards collective entities) may affect grading behavior differently from motivation linked to doing good for the individual user of public services. Following the recent

institutional trend in the PSM literature (e.g. Vandenabeele, 2007), we include organizational institutions both as moderators of the relationship between PSM and behavior and as alternative determinants of behavior. The paper is organized as follows: We start out by briefly outlining the concept of PSM and its dimensions, take stock of the impact of PSM on individual behavior and discuss the role of institutions. Second, we outline how we investigate PSM, institutions and grading at Danish universities and present the results of this investigation. The conclusion includes a summary of the general empirical findings and a discussion of the theoretical implications suggested by our findings concerning the relation between PSM, institutions and behavior.

### **Public Service Motivation's Impact on Behavior**

A number of definitions of Public Service Motivation are present in the literature. Rainey and Steinbauer define PSM as a 'general, altruistic motivation to serve the interest of a community of people, a state, a nation or humankind' (1999:23), and there seems to be general agreement about the altruism part of the conceptualization. Earlier, Perry and Wise noted that PSM refers to 'an individual's predisposition to respond to motives grounded primarily or uniquely in public institutions and organizations' (1990: 368). The conceptual differences reflect one of the controversies in the PSM literature regarding whether public service motivation is exclusively connected to public institutions and public organizations. Recently, it has become a central point in the PSM literature that public service motivation may be a matter of service rather than sector (Perry & Hondeghem, 2008). In a similar vein, Brewer and Seldon point out that PSM is a wish to serve the public that cuts across the public and private sector, notably in not-for-profit voluntary organizations (Brewer & Selden, 1998). Steinhaus and Perry also find that industry better than sector explains the variation in PSM.

Notwithstanding the discussion about whether PSM is solely found in the public sector or not, most definitions share the view that PSM is directed towards a collective body beyond the individual. Thus, for example Vandenabeele defines PSM as: "the belief, values and attitudes that go beyond self-interest and organizational interest that concern the interest of a larger political entity and that motivate individuals to act accordingly whenever appropriate" (Vandenabeele, 2007: 547). Still, Hondeghem and Perry (2009: 6) include the possibility that the recipients may be individuals when they define PSM as 'an individual's orientation to delivering service to people with the purpose of doing good for others and society'. This relates to the dimensions of the concept. Perry and Wise (1990) suggested that PSM derives from three kinds of motives, namely affective, normative and rational motives, but Perry (1996) found four dimensions empirically: attraction to policy making, commitment to public interest, compassion and self-sacrifice. However, the two dimensions public interest and self-sacrifice are highly correlated, indicating that classical PSM may be a three-dimensional concept

(Coursey & Pandey, 2007). Recently, Vandenabeele (2008) suggested an additional dimension that taps in to the possibility that the target of PSM behavior may be another individual and not necessary a collective. Thus, it is suggested that the target of the behavior may be a more or less generalized other; that is the society in a larger sense or the individual client or user. In this study, we differentiate between classical PSM and user oriented altruistic motivation in the delivery of public services.

While the definitions and dimensions of PSM have been lively debated, the potential impact of PSM on behavior and performance has been more neglected. Perry and Wise (1990) expect that PSM enhances individual performance because motivated employees tend to outperform less motivated colleagues, but a relatively modest number of studies actually investigate the impact of PSM on individual behavior and organizational performance (Alonso & Lewis, 2001). Vandenabeele (2009) investigates the impact of Belgian civil servants' PSM on their performance, and he finds that the public interest dimension spur individual performance positively. Also, Leisink and Steijn (2009) report that higher scores on the public interest dimension seem to increase individual performance. The lessons of the study of Naff and Crum (1999) seem on the other hand to be more inconclusive (Brewer, 2008). The merits of these studies are that the 'taken-for-granted' impact of PSM on behavior and performance is empirical investigated and to some extent supported. Moreover, the studies confirm that the dimensioning of the concept of PSM may be profitable because all dimensions of PSM are not equally likely to enhance different kind of behavior, in this case performance. The drawback of these studies is that they are based on self-reported behavior. Because public service motivation and perhaps especially public service performance have a positive ring, it may be problematic to rely on self-reported behavior.

In this study, we try to avoid this pitfall by investigating objectively measured behavior, namely university professors' grading of students. Although grading of students ideally is an objective measure of the students' abilities, it often involves an element of discretion. Our main hypothesis is that public service motivation affects university professors' grading. Further, we suggest that the traditional society-oriented PSM affects university professor's grading differently than the newer individual or user orientated dimension. We hypothesize that professors with a high level of classical PSM tend to grade students with lower average scores and more deviating scores compared to professors with higher user orientation. The argument is that professors with high society-oriented PSM, being primarily loyal to 'the community', prefer "tough and fair" grading in order to treat the students just and equal and secure the informational value of the grades to the broader society. Thus, graders primarily motivated by traditional PSM are expected to use the "full scale" more than user-oriented professors. User-oriented professors are expected to be "softer" than their society-oriented colleagues and hand out higher grades. In sum, we expect professors primarily motivated by

user-orientation to grade higher and to fail students to a lesser extent than traditionally public service motivated professors.

Assessing the impact of PSM on grading practices, it is highly relevant to take account of organizational institutions. So far, the PSM literature has primarily seen institutions (societal and organizational) as antecedents of PSM. Several studies have investigated how institutions affect individuals' general level of PSM as well as their scores on the dimensions of PSM (Perry 1997; 2000; Perry & Vandenabeele 2008; Moynihan & Pandey 2007; Vandenabeele 2007). Regarding societal institutions, the argument is that 'the public' per se reflects an institutional logic, which emphasises the normative aspect of the public as entailing an idea of community and thus a normative expectation that public servants act on behalf of the community as opposed to acting on behalf of their own interest (Perry & Vandenabeele 2008:59). The literature has also discussed how organizational institutions foster PSM (Moynihan & Pandey 2007), shape 'the basic attitudes' of public servants (Moynihan & Pandey 2007:41), and transmit a 'public institutional logic' (Brewer 2008:149). Organizational institutions may strengthen PSM (Wise 2000:351-52, quoted in Perry, Hondeghem & Wise 2009:24), because they act as mediators of the societal institutions causing PSM. This indicates that PSM might mediate the effect of institutions on behaviour, but in specific studies of behaviour, the potential moderating and explanatory effects of institutions should also be taken into account. By influencing the individual room for manoeuvre, institutions may determine how individual motivation can affect behaviour, and institutions may also directly affect behaviour by defining which actions are required, prohibited or permitted in a specific situation (Ostrom 1986: 4). In this study, we therefore include organizational institutions both as alternative determinants of behaviour and as moderators of the effect of PSM in our analyses of grading behaviour.

Grading at universities is circumscribed by a number of institutional rules and norms. Some of these rules and norms are present at the university and departmental level; others are confined to different subsections within each department. In general, behaviour may be affected by both formal rules which regulate and prescribe expedient behaviour as well as by informal rules and norms (Scott 2001:52). Our analyses of the potential effect of organizational institutions at university departments therefore includes both formal rules that regulate grading (formal institutions) and informal rules evolving from colleagues' exchange of their criteria for grading (informal institutions). Additionally, we try to include the rules and norms which are so firmly established and taken for granted, that they are neither questioned nor subject for discussion (tacit institutions).

Two types of formal institutions at the university and departmental level are especially relevant for grading. First, the law prescribes that grading of at least one third of the total course load for university studies is jointly done by a university professor from the

department delivering the course and an external examiner. Second, to guide the teaching of students and the grading of their subsequent performance at exams at Danish universities, it is statutory to formulate explicit goals to be achieved. To supplement these goals, some subsections within the department write grading directions. Such directions stipulate what is required to obtain a certain grade either in terms of the percentage of right answers needed or in terms of less quantified descriptions of what is expected for each grade. It is voluntary to formulate grading directions at the subsection/course level, but once they are in place, they are as binding as statutory rules. Even so, formal rules may not be followed, and if they are ignored, they are not expected to affect behaviour (March, Schulz & Zhou 2000:21). Therefore, we not only map the existence of formal rules, but also aim to tap into the extent to which university professors actually use these rules.

Informal norms and standards of grading evolve when colleagues meet, discuss and exchange views before or/and after having performed the grading. Informal rules may, however, also develop during more unstructured regular discussions in the course of grading. We also aim to detect the presence of these informal norms and standards of grading (colleague institutions).

The presence of tacit rules expresses the level of general institutionalization, and to explore this concept, we look into how often university professors are in doubt when they grade by themselves and whether they tend to disagree with a colleague when they grade jointly. Finally, as noted by Selznick (1949; 1957), organizations per se become institutionalized entities reflecting certain values and institutional rules distinct for the individual organization. To account for this, grading behavior is explored in two different departments.

## **Data and methods**

This section first discusses the research design followed by a discussion of our measures of the different variables. Finally, we discuss the used regression models.

We investigate grading decisions at two political science departments in Denmark. This enables us to compare grading behavior across two rather similar organizational contexts; both departments are responsible for political science education and research. The similarities reduce generalizability, but it ensures comparability and (if the results apply to both departments) it indicates that the findings are not due to ideographic factors at the departments. As argued, the departments may per se, as organizations, represent institutions which may affect the measured institutional variables and the level of PSM and user orientation. To make sure that differences in grading are not only caused by random differences between departments, all final analyses include a dummy variable measuring which department the relevant university teacher belongs to. The study is a pilot investigation of grading behavior, and the results cannot be generalized statistically beyond the investigated

departments. The findings can, however, be taken as a guideline in terms of the potential for analyzing grading behavior in other educational organizations and – more generally – in terms of the potential for finding empirical associations between PSM, user orientation, institutions, behavior and performance.

We analyze university teachers' grading decisions for bachelor level courses between 2003 and 2009. If a teacher evaluated two bachelor courses in one term (which few do) it counts as two observations. All the investigated institutional variables are related to the course that is being evaluated. Given that we only investigate bachelor courses, the teacher normally has no personal relation to the student (the teaching is mostly lectures with as much as 300 students). Most of the investigated courses (75 % of the observations) are blind (the teacher does not know who the student is).

The dependent variable is grading behavior, and we investigate three operationalization of this concept: Each teacher's (1) grade point average for a given course in a given year, (2) the corresponding grading failure rate and (3) the standard deviation in grading (again for a given course in a given year). In September 2007, the Danish grading scale was changed to obtain an internationally convertible scale (see table 1). To be able to use observations from the whole period (2003-2009), we transformed the old scale, using the official transformation of grade point averages. Concerning each teacher's standard deviation, we standardized the distributions of standard deviations before and after the change (mean=0, std. dev. =1), before we combined data from the two periods. The grading failure rate could easily be compared by taking the proportions of failures relative to the total number of graded examinations. For grade point average and standard deviation, we only included teachers who graded at least five students in the given exam (to avoid extreme observations due to small n aggregations). Table 1 shows the Danish grading scale and the corresponding international grades.

Table 1: The Danish grading scale since 2007

Danish scale	International ECTS scale	US Grad	Definition (ECTS and Danish)
12	A	A	EXCELLENT - outstanding performance with only minor errors
10	B	B+	VERY GOOD - above the average standard but with some errors
7	C	B	GOOD - generally sound work with a number of notable errors
4	D	C	SATISFACTORY- fair but with significant shortcomings
2	E	C	SUFFICIENT - performance meets the minimum criteria
0	Fx	F	FAIL - some more work required before the credit can be awarded
-3	F	F	FAIL - considerable further work is required

Public service motivation was measured using Likert format questions inspired by Perry (1996), Vandenabeele (2008) and Kim and Vandenabeele (2010). Appendix A shows how we measured public interest (table A1), compassion (table A2) and willingness to self-sacrifice (table A3). We did not include attraction to policy making. The three dimensions are combined in a simple additive, formative index for public service motivation. As shown in table A4, we also used Likert format question to measure user orientation. For all the four reflective motivational indexes, we calculated Cronbach's alpha, and it was above 0.6 for them all (exact statistics are in the appendix).

The items used to measure the institutional variables can also be seen in appendix A (formal regulation in table A5, general institutionalization in table A6 and Colleague institutions in table A7). The two first-mentioned measures are reflective constructs and the appendix also reports factor loadings and Cronbach's alpha values which are generally unproblematic. It is, however, noteworthy that formal regulation can be seen as having either one or two dimensions (course goals and grading directives, respectively). We have chosen not to differentiate between the dimensions, and the loadings for the first component in table A5 (an unrotated principal component analysis) indicate that this is unproblematic.

The analyses are a series of random effects panel regressions and tobit panel regressions. The tobit model is relevant for failure rate, because this variable can be seen as observed only over a certain interval (between 0 and 1), that is, the sample is censored (Cameron and Trivedi, 2009: 521-24). In principle, the variable is both right- and left-censored, but there are no right-censored observations (no teacher has a 100 percent failure rate).

We tested models with crossproduct interaction terms between on one hand the motivational variables (PSM and user orientation) and on the other hand the institutional variables included in the tables. Only one interaction term contributed significantly to the models: The interaction between PSM and colleague institutions. As we tested four interaction terms for three specifications of the dependent variable (12 analyses), this might be due to chance, but as we will discuss in the next section, the interaction is as should be expected, and substantially contributes to explain variation in grading. We therefore include a model with this interaction term, while the other interaction models are not shown. Crossproduct interaction terms may be highly correlated with the corresponding independent variables in the regression equation, creating problems with assessing the relative importance of main effects and interaction effects (due to multicollinearity), so we tested whether the interaction terms significantly improved the models and constructed Excel charts to show the substantial importance of the interaction terms. Only the included interaction terms contributed significantly and substantially.

## Results

This section presents the analyses of how PSM, user orientation and institutions affect grading behavior in the following order: Failure rate, grade point average and standard deviation. Formal regulation did not have any significant effects for any of the dependent variables and is accordingly not included in the models.

Deciding whether a student should pass or fail an exam is the most fundamental decision in grading. We investigated this dimension of grading behavior by analyzing the proportion of failed student exams for each teacher in the investigated terms. Table 2 shows tobit panel regressions of the university teachers' failure rate. It shows that the teachers' user orientation, as expected, seems to reduce the failure rates, whereas PSM leads to higher failure rates. Older teachers have higher failure rates (note that this is not due to inferior teaching; many other teachers than the one who taught a given course are grading the papers). Age has a direct positive effect in model T3, but it seems to be mediated by the institutional variables in model T4 and T5 (other analyses show that it affects the general institutionalization positively). Females might have a higher failure rate, but this coefficient is not significant in model T5 which controls for department. In sum, the most important findings are the positive effect of user orientation and the negative effect of public service motivation on university teachers' failure rates.

Table 2: Tobit panel regressions of university teachers' grading failure rates. Unstandardized regression coefficients (p-values in parentheses). 2003-2009.

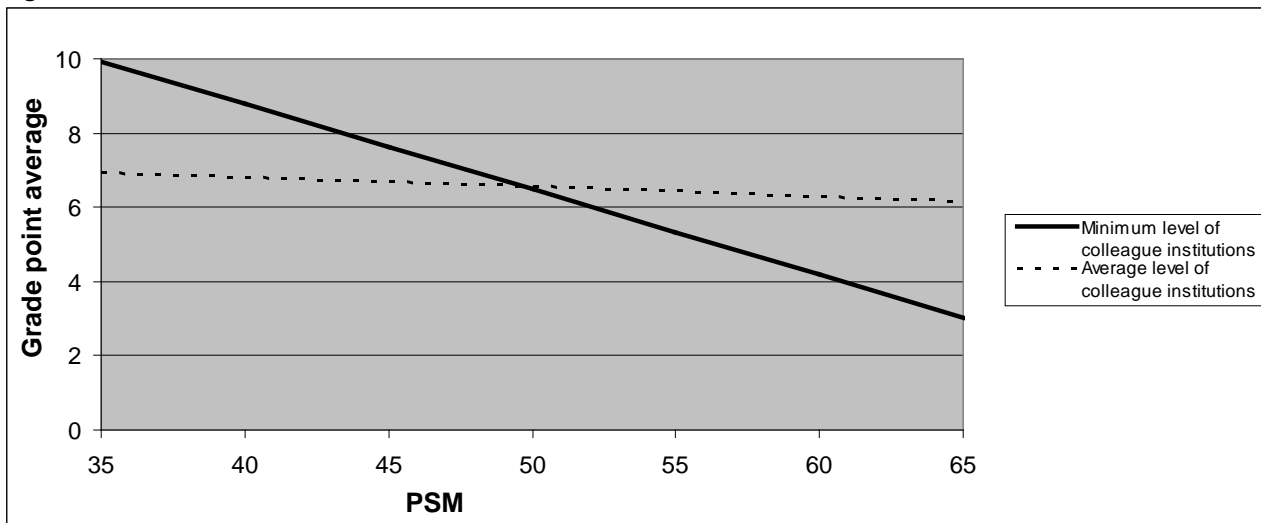
	Model T1	Model T2	Model T3	Model T4	Model T5
User orientation	-0.015* (0.02)		-0.023*** (0.00)	-0.030*** (0.00)	-0.020* (0.01)
Public service motivation		0.008** (0.01)	0.004 (0.14)	0.009** (0.00)	0.006* (0.04)
Age			0.004** (0.01)	0.001 (0.61)	0.002 (0.35)
Gender (1=female)			0.111** (0.01)	0.117** (0.00)	0.069 (0.10)
General institutionalization				0.020 (0.06)	-0.011 (0.14)
Colleague institutions				-0.013 (0.10)	0.008 (0.46)
External examiner				0.032 (0.34)	0.045 (0.15)
Department					0.089* (0.03)
_cons	0.189 (0.05)	-0.450** (0.00)	-0.132 (0.43)	-0.246 (0.20)	-0.193 (0.30)
N	295	237	214	164	164
sigma_e	0.147	0.133	0.140	0.151	0.149
sigma_u	0.139	0.114	0.082	0.025	0.000
rho	0.471	0.421	0.255	0.026	0.000

Table 3 shows random effect regressions of university teachers' grade point averages. It shows that user orientation, as expected, consistently leads to higher grades (this is also true if we calculate the grade point average for passed examinations alone, analyses not shown). The association between PSM and grade point average is only statistically significant when we include an interaction term between colleague institutions and PSM (model G5). Figure 1 below illustrates this interaction effect: For researchers experiencing a minimal level of colleague institutions, PSM and grade point average are negative associated (higher PSM, lower grades), but given a more ordinary level of colleague institutions, PSM has no effect on the grade point average (only on the failure rates as shown above). An interpretation might be that if individuals with high PSM are not constrained by the institutions, individuals with high PSM try to uphold the grading scale due to societal considerations, while other types of motivation (such as user orientation) prevail for individuals with low PSM. Finally, it is noteworthy that institutionalization generally seems to decrease grade point averages, especially external censorship (it decreases the average by half a grade to have an external examiner).

Table 3: Random effects regressions of university teachers' grade point average. Unstandardized regression coefficients (p-values in parentheses). 2003-2009

	Model G1	Model G2	Model G3	Model G4	Model G5	Model G6
User orientation	0.111* (0.01)		0.176*** (0.00)	0.195*** (0.00)	0.201*** (0.00)	0.152** (0.00)
Public service motivation		-0.020 (0.27)	0.001 (0.95)	-0.018 (0.39)	-0.323** (0.01)	-0.330** (0.01)
Age			-0.021* (0.04)	-0.003 (0.79)	0.001 (0.92)	-0.001 (0.95)
Gender (1=female)			-0.534* (0.05)	-0.535* (0.04)	-0.645* (0.01)	-0.357 (0.22)
General institutionalization				0.118* (0.04)	-1.538* (0.02)	-1.679** (0.01)
Colleague institutions				-0.150* (0.03)	-0.144* (0.03)	-0.092 (0.19)
External examiner				-0.436* (0.02)	-0.422* (0.02)	-0.500** (0.01)
Interaction PSM* institutionalization					0.031* (0.01)	0.033** (0.01)
Department						-0.548 (0.06)
_cons	4.376*** (0.00)	7.253*** (0.00)	4.559*** (0.00)	5.296*** (0.00)	21.300*** (0.00)	2.169*** (0.00)
r2_o	0.023	0.015	0.105	0.296	0.328	0.351
r2_b	0.049	0.008	0.194	0.375	0.426	0.456
r2_w	0.000	0.000	0.000	0.005	0.005	0.006
N	281	229	206	158	158	158
sigma_e	0.776	0.768	0.782	0.881	0.881	0.881
sigma_u	1.120	0.950	0.864	0.613	0.563	0.522
rho	0.676	0.605	0.550	0.326	0.290	0.260

Figure 1: Illustration of interaction effect



User orientation also seems to affect the grade dispersion. In table 4, we analyze the effects of PSM, user orientation and institution on university teachers' standard deviation in grading, and it shows that user orientation, as expected, is associated with a lower dispersion. The direct association is, however, weakened by control for department, and it is just over the limit for being classified as statistically significant (the p-value is 0.06). User orientation thus seems to mediate some of the influence of the department (this variable is not statistically significant). In model S3, higher age is associated with higher standard deviations, but this becomes insignificant when controlling for the institutional variables.

Table 4: Random effects regressions of university teachers' standard deviation in grading. Unstandardized regression coefficients (p-values in parentheses). 2003-2009

	Model S1	Model S2	Model S3	Model S4	Model S5
User orientation	-0.058 (0.06)		-0.091** (0.01)	-0.132** (0.00)	-0.092 (0.06)
Public service motivation		0.013 (0.35)	-0.005 (0.72)	0.033 (0.08)	0.020 (0.32)
Age			0.024** (0.00)	0.014 (0.22)	0.016 (0.16)
Gender (1=female)			0.327 (0.11)	0.375 (0.10)	0.121 (0.65)
General institutionalization				0.050 (0.42)	-0.052 (0.32)
Colleague institutions				-0.068 (0.19)	0.011 (0.86)
External examiner				-0.082 (0.56)	-0.036 (0.80)
Department					0.451 (0.09)
_cons	0.820 (0.08)	-0.903 (0.24)	0.319 (0.73)	-0.583 (0.64)	-0.374 (0.76)
r2_o	0.024	0.031	0.139	0.259	0.286
r2_b	0.023	0.002	0.141	0.250	0.275
r2_w	0.000	0.000	.	0.001	0.002
N	281	229	206	158	158
sigma_e	0.703	0.609	0.616	0.623	0.623
sigma_u	0.698	0.696	0.631	0.630	0.620
rho	0.496	0.566	0.512	0.506	0.498

In sum, the findings are as follows: High public service motivation seems to increase the failure rate and if firm colleague institutions are absent, it decreases the grade point average. User orientation apparently increases the grade point average, decreases the failure rate and decreases the dispersion. The institutional variables are seemingly most important for the grade point average; all other things equal, deep institutionalization appears to decrease the grading point average.

### Discussion and conclusion

In this section, we revisit our general hypothesis and summarize the general findings as well as discuss the theoretical implications suggested by the empirical findings concerning the relation between PSM, institutions and behavior in the present study.

The main ambition of this paper was to shed light on the effects of PSM on behavior in public organizations. Specifically, we investigated how PSM affects the grading behavior of Danish university professors. Our main finding was that PSM seemingly *does* affect behavior; higher levels of the traditional society-oriented PSM seem to lead to a higher failure rate and (in the absence of colleague institutions) lower grades. User orientation has the

opposite effect: Lower failure rates, higher grades and also less variation in the grades. The results suggest that society-oriented PSM and user-orientation are more relevant than organizational formal and informal institutions when explaining grading behavior of the university professors. None of the institutional variables significantly affects failure rate or grade variation, but they are relevant for the grade point average. Having an external examiner (a formal institution) and a high degree of tacit rules (reflecting a high degree of institutionalization) thus reduce grade point average, and informal colleague institutions constrain the impact of PSM on grade point average. The main result still is, however, that PSM and user-orientation affect behaviour, especially if the individuals are not constrained by the institutions.

The paper does, of course, have its limitations. The argument was only tested in two organizations, and the fact that the institutional and motivational variables were only measured at one point in time limits the analytical possibilities despite our panel data on the dependent variable. Furthermore, university departments are rather special organizations (highly specialized and highly professionalized), and studies of other types of public organizations would be the next step to improve generalizability. Despite these limitations, this result raises two questions: How do we understand the two types of altruistic motivation related to public service provision (user orientation and traditional, society-oriented PSM), and how should future research develop the institutional perspective on the relationship between PSM and behavior?

Concerning the relationship between traditional PSM and user-orientation, the results suggest that it is highly relevant to include other types of altruistic motivation than the traditional understanding of PSM in future research. Specifically, the different types of altruistic motivation in this case have opposite effects. Individuals with a high level of PSM behave in ways which can be interpreted as protecting the common good (in this context, the grading scale and the reputation of all political science graduates). In contrast, professors with a high level of user orientation have higher grade point averages, lower failure rates and less variation in their grades. This indicates that the PSM literature could fruitfully be inspired by other theoretical perspectives on motivation, for example the economic literature on pro-social motivation (Benabou & Tirole, 2003 & 2006). This literature discusses all types of other-regarding preferences (and not only altruism linked to public service production for the good of a collective entity).

As mentioned, the relationship between PSM and institutions is already thematised in the literature, and the major challenge involved in investigating the effects of societal and organizational institutions on PSM is to establish the direction of the causal relation. This is especially the case when we investigate the effect of informal organizational institutions on PSM, as informal institutions are results of individuals' routine behavior and

decisions within the organizational contexts. Hence, individuals' PSM may over time have affected the organizational rules and norms and vice versa. For these reasons, it is very difficult to investigate the causality between PSM and institutions. In this paper, we have had the more modest, but in our view still very relevant, ambition to analyze the effects of and interaction between PSM and organizational institutions on behavior in public organizations. Organizational institutions may on the one hand prevent individuals from pursuing interests, values and norms which contrasts with the ones reflected in the organizational institutional rules. On the other hand, they may reinforce attributes, values etc. held by individuals or provide rules and norms to individual organizational members and therefore reduce individuals' uncertainty regarding how to behave in a given situation. Our results suggest that both PSM and organizational institutions are relevant in relation to explaining behavior, and their interaction effects should also be included in future analyses of behavior in public organizations. Consequently, we recommend that future studies of behavior will consider PSM and organizational institutions as complementary and connected explanations of variations in individual behavior in public organizations. Further empirical analyses should establish when and how organizational institutions and PSM interact and affect behavior, but this paper shows the potential for future research within the institutional approach to public service motivation.

## Appendix A: Principal component analyses

Table A1: Items in the reflective index measuring Public Interest. Wording and loadings.

English version	Danish version	Loadings in principal component analysis
It is important for me to contribute to the common good	Det er vigtigt for mig at bidrage til det fælles bedste	0.738
I would prefer seeing public officials do what is best for the whole community, even if it harmed my interests	Jeg ser helst, at offentligt ansatte gør det, der er bedst for samfundet som helhed, selvom det skulle gå ud over mine egne interesser	0.736
Serving the public interest is more important than helping a single individual	Det er vigtigere at bidrage til samfundet som helhed end at hjælpe den enkelte	0.698
Meaningful public service is very important to me	Det er vigtigt for mig, at offentlige ydelser gavner samfundet som helhed	0.678

Cronbach's alpha: 0.67

Table A2: Items in the reflective index measuring Compassion. Wording and loadings.

English version	Danish version	Loadings in principal component analysis
It is difficult for me to contain my feelings when I see people in distress	Jeg bliver følelsesmæssigt berørt, når jeg ser mennesker i nød.	0.831
I feel sympathetic to the plight of the underprivileged	Jeg føler sympati over mindre privilegerede menneskers problemer	0.846
I empathize with the difficulties others are facing	Jeg indlever mig i de vanskeligheder, andre står overfor	0.667
I get very upset when I see other people being treated unfairly	Jeg bliver meget berørt, når jeg ser andre mennesker blive behandlet uretfærdigt	0.830
Considering the welfare of others is very important	For mig er hensyntagen til andres velfærd meget vigtig	0.708

Cronbach's alpha: 0.84

Table A3: Items in the reflective index measuring Self-sacrifice. Wording and loadings.

English version	Danish version	Loadings in principal component analysis
Making a difference in society means more to me than personal achievements	Det er vigtigere for mig at gøre en forskel i forhold til samfundet end at opnå personlig vinding.	0.858
I am prepared to make sacrifices for the good of society	Jeg er klar til at lide afsavn for samfundets skyld	0.857
I believe in putting civic duty before self	Jeg sætter samfundsmæssige forpligtigelser over hensynet til mig selv.	0.655
I am willing to risk personal loss to help society	Jeg er villig til at risikere at skulle tilsidesætte mine personlige behov for samfundets skyld.	0.891

Cronbach's alpha: 0.84

Table A4: Items in the reflective index measuring User orientation. Wording and loadings.

English version	Danish version	Loadings in principal component analysis
	Hensynet til den enkelte studerende er for mig altid vigtigere end hensynet til de formelle regler	0.702
	Det giver mig energi at vide, at jeg har medvirket til, at den enkelte studerende lærer noget	0.579
	Det er vigtigt at sætte den enkelte studerende i centrum	0.797
	De studerendes tilfredshed er meget vigtig for, om jeg anser opgaven for at være løst på en god måde	0.605

Cronbach's alpha: 0.60

Table A5: Items in the reflective index measuring formal regulation. Wording and loadings.

English version	Danish version	Loadings in principal component analysis	
There is detailed grading directions to guide the grading	Der er en udførlig rettevejledning til bedømmelsen af opgaverne	0.875	-0.417
I use the grading direction extensively when grading the papers	Jeg anvender i høj grad en rettevejledning, når jeg bedømmer besvarelsene	0.874	-0.403
There is a detailed description of the goals of the course	Der er en udførlig målbeskrivelse for faget	0.575	0.660
I use the description of the goals of the course when grading the papers	Jeg anvender i høj grad målbeskrivelsen for faget, når jeg bedømmer besvarelsene	0.434	0.776

Cronbach's alpha (first dimension): 0.67

Table A6: Items in the reflective index measuring general institutionalization. Wording and loadings.

English version	Danish version	Loadings in principal component analysis	
I am seldom in doubt about which mark to give a paper	Jeg er sjældent i tvivl om, hvilken karakter jeg skal give en besvarelse		0.696
I seldom disagree with the other examiner on which mark to give a paper	Jeg er sjældent uenig med censor om, hvilken karakter vi skal give en besvarelse		0.818
There is a general consensus (agreement) among my colleagues of what characterizes a good paper	Der er stor enighed blandt mine kollegaer om, hvad der kendetegner en god besvarelse		0.842

Cronbachs alpha 0.68.

Table A7: Items in the formative index measuring colleague institutions. Wording and loadings.

	<b>English</b>	<b>Full Danish version</b>	<b>Number of points in the formative index</b>
Formal ex ante colleague discussions	Discussion where the markers have read one or more papers	Der er forcensur, hvor bedømmerne har læst den eller de samme besvarelser	4
	Discussion without having read the same papers	Der er forcensur, hvor bedømmerne diskuterer besvarelserne uden at have læst de samme besvarelser	3
	Another type of ex ante censorship	Der er en anden form for forcensur (skriv hvilken)	2
	No ex ante censorship	Ingen forcensur	1
Formal ex post colleague discussions	As a meeting	Der er eftercensur i form af et møde (evt. efter forudgående e-mail korrespondance)	4
	Mail-correspondence (e.g. on the level of grades, the share of failed papers, the distribution of grades etc.)	Der er eftercensur alene i form af e-mail korrespondance om bedømmelserne (fx karakterniveau, andel af dumpede, spredning mv.)	3
	Another type of ex post censorship	Der er en anden form for eftercensur (skriv hvilken)	2
	No ex post censorship	Der er ikke eftercensur	1
Informal discussions with colleagues	I discuss the papers with colleagues from the course regularly when grading	Jeg diskuterer løbende besvarelserne med undervisere fra kurset i forbindelse med min bedømmelse af besvarelserne.	1-5 depending on level of agreement (5= agree)

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