

COOPERATION AND COMPETITION IN PUBLIC SECTOR NEGOTIATIONS,
A LABORATORY EXPERIMENT

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Abstract

Negotiating is a core activity in the public and private sector. Because of varying public service motivation (PSM) between public- and private sector employees, we expect them to behave differently in negotiations. Moreover, one-shot negotiation settings are often studied while many negotiations in practice are repeated negotiations. We use a repeated linear public goods game in a laboratory experiment to test the link between PSM and the level of cooperation, using a sample of graduate and undergraduate students.

The results show that high-PSM participants indeed contributed more over the entire experiment and therefore, acted more cooperative in a repeated negotiation. Matching negotiators to opponents with high-PSM, low-PSM did not alter the level of cooperation in negotiation. Based on this we conclude that cooperation in repeated negotiations is not conditional on the PSM of opponents. We conclude with implications for theory and practice.

Key words: negotiation, laboratory experiment, public- private sector differences.

INTRODUCTION

Negotiation is a central activity of employees in both public and private sector organizations. In the public-sector, employees negotiate over scarce resources such as budgets or coordinate policy problems. Negotiation outcomes are often influenced by individual behaviour and negotiator motives such as value orientation and professional norms (Lewicki, Saunders, & Barry, 2015, p. 452), fairness ideals (Reuben & Riedl, 2013) and gender (Van Vugt & Iredale, 2013).

In the public sector, the rise of New Public Management (NPM) has led to an increase in negotiations by public sector employees such as negotiations between civil servants and politicians (Hood & Lodge, 2006). Other examples are performance agreements, concessions and contracts with quasi-autonomous organisations and state owned companies (SOE's), outsourcing and tendering (eg. Lawther, 2006). Corporate Social Responsibility practices in the private sector have placed an emphasis on contributing to the public good (Holme & Watts, 1999). Thus, both NPM and CSR have made the public and private sector more alike in terms of practices.

While the public and private sector increasingly alike, there is empirical evidence that public-sector and private-sector employees are dissimilar in motives (Baarspul & Wilderom, 2011; Esteve, van Witteloostuijn, & Boyne, 2015), risk propensity (Bozeman & Kingsley, 1998; Wildavsky & Dake, 1990) and in trust (Tepe, 2016). One distinguishing characteristic between public and private sector employees is captured in public service motivation (Perry, 1996; Vandenabeele, 2007). Public service motivation (PSM) consists of four dimensions: interest in politics, contributing to the common good, self-sacrifice and compassion that could directly impact the process of negotiations carried out by public sector employees (Vandenabeele 2007). Although negotiation context matters, we presume that a compassionate negotiator will act more cooperatively under equal contexts, equal circumstances and equal payoffs.

If indeed public-sector employees act more cooperatively in a number of settings, public negotiators may get less ‘mileage’ out of public means as public sector employees ‘give more than they take’. In more complex or multidimensional negotiations, public sector negotiators could be more efficient negotiators by arriving at agreement faster with less friction by focusing on cooperation. Moreover, cooperation could lead to higher joint outcomes that are beneficial for society as a whole. Competitive negotiators on the other hand, are more likely to use bluffing or unethical tactics and they are more likely to lie (Robinson, Lewicki, & Donahue, 2000; Ross & Robertson, 2000). On top of that, Steinel and de Dreu (2004) found that cooperative negotiators faced with competitive negotiators overresponded by using even more deceptive tactics. In other words, when public managers represent public organizations their competitive or cooperative behaviour may influence the probability of agreement to a large degree which in turn may have societal consequences.

In a recent study using three prisoner dilemma games, Esteve et al. (2015) found that individuals with high PSM scores acted cooperatively, even when they knew this was not in their personal interest in one of the games. Another study used a quasi-experimental approach, with single-shot interactions (Esteve, Urbig, van Witteloostuijn, & Boyne, 2016). Our study extends the work of Esteve et al. (2015) by focusing on cooperation in a repeated negotiation game. Repeated interactions in negotiation is important as this forces negotiators to act more honestly, more cooperative and negotiators are more concerned about their reputation (Raiffa, Richardson, & Metcalfe, 2002, p. 90). Many negotiations, in the public- and private sector are repetitive. Repeated negotiations are for example found in service contracting (Ahadzi & Bowles, 2004), in public sector reform and cutback management (Bouckaert, Peters, & Verhoest, 2016), in international diplomacy, EU policy implementation or enlargement negotiations (Brücker, Schröder, & Weise, 2004) and in public private partnerships when private companies and municipalities negotiate practical implementation in infrastructural projects (Osborne, 2000).

Negotiation studies in public management research are scarce, while characteristics of public sector workers are not considered in the negotiation literature. Moreover, repeated negotiations are common in practice but scholars have focused on single shot interactions. In this paper, we aim to fill this gap by focussing on negotiation behaviour in a repeated negotiation game. We focus on the differences in à priori motives between public- and private sector employees. For this, we use a sample of graduate and undergraduate students. The main research question of this study is: *Do people with high public service motivation behave more cooperatively than people with low public service motivation in repeated negotiations?*

Our study contributes in two ways to the public management literature. First, we study behaviour in a repeated negotiation which differs from single shot interactions that have been studied earlier in relation to cooperative behaviour (Esteve et al., 2015). Repeated negotiations are more realistic in terms of expectations for negotiators. The expectation to meet again alters strategies of negotiators and for example trust in opponents (Lewicki et al., 2015).

Secondly, we contribute to the upcoming field of behavioural public administration by using theoretical insights from social psychology and experimental economics in the realm of public servants (Grimmelikhuijsen, Jilke, Olsen, & Tummers, 2017). Also, we carry out a laboratory experiment, reducing the risk of confounding effects while enabling us to study the causal effect of public service motivation on negotiation behaviour and outcomes.

THEORY AND HYPOTHESES

In the coming sections, we discuss negotiation literature, competitive and cooperative behaviour and motives of public sector employees in order to arrive at the main hypotheses. Next, the experimental design of this study is revealed in the methods section before we discuss the results and discuss the findings.

Negotiations

Negotiation is: 'the process of back-and-forth communication aimed at reaching agreement with others when some of your interests are shared and some are opposed' (Ury, 1993). All negotiation situations share a number of common characteristics (Lewicki et al., 2015). Negotiation consists of two or more actors. There is a conflict of (perceived) needs and desires between the two or more actors. Actors negotiate by choice. A give and take process is expected. Actors prefer to negotiate and search for alternatives (opposed to struggle or fight publicly).

The process of negotiation has tangible outcomes like prices and intangible outcomes like the need to win or avoid loss or the need to obtain or keep a good reputation. Negotiators are interdependent and the outcomes are influenced by the interdependence of parties' goals (Raiffa et al., 2002). Generally, two types of negotiations are distinguished: constant/zero-sum games or distributive bargaining (where achieving one party's goals blocks the other one's goals) and variable/non-zero-sum games or integrative bargaining (where both parties achieve gains without blocking each other's goals). Most negotiation settings are somewhere in between the two, which is called mixed scanning. Both claiming a part from a fixed pie and creating value by bringing issues on the table can coexist in the same negotiation setting, and in varying degrees (Lewicki et al., 2015).

In public management literature, negotiation research has focussed on power and conflicts (Perry & Levine, 1976), negotiation in networks (Klijn & Koppenjan, 2012) and for example in European Union negotiations (Tallberg, 2008). Similarly, cooperation literatures in public management focus primarily on organizations while fewer studies consider the individual negotiator (Eg., Thomson and Perry 2006).

Cooperation and competition in negotiations

Negotiators may choose to compete over a shared set of resources or to cooperate with their opponents in finding a solution (Lewicki et al., 2015). Cooperation may lead to greater mutual

benefit than competition (Fehr & Gächter, 1999). In reality, more options other than cooperation and defecting may be available to negotiators such as avoiding and compromising. These can arguably be seen as a degree of cooperation or competition (Rahim & Magner, 1995; Shell, 1974). For instance, in prisoner-dilemma games, players choose between cooperation and defecting (Esteve et al., 2015; Raiffa et al., 2002; Schelling, 1980).

In simple negotiation settings, individuals with high self-interest are thought to employ a *competing* style since this maximizes the individual pay-off at the cost of the pay-off of others. *Cooperation* is used when individuals consider the gains of others as well (Antonioni, 1998). Since individuals often pursue not only rational self-interest, but also other goals like joint outcomes or a fair distribution of resources it seems that their attitude towards goals will affect the selection of negotiation style (De Dreu & Boles, 1998; Van Lange, 1999).

One-shot and repeated negotiations

In game theory, repeated and one-shot interactions are studied. In one-shot games, negotiators are concerned with short term payoffs as there are no potential repercussions (Carmichael, 2005). In repeated games, negotiators consider their own reputation, the shadow of the future and retaliation opportunities (Raiffa et al., 2002). For example Selten and Stoecker (1986) found that in a finite repeated game, players started with mutual cooperation, followed by an initial defection, and then mutual defection. More repetitions in general seem to induce more cooperative behavior and defection later (Kreps, Milgrom, Roberts, & Wilson, 1982) while reputation effects reduces cooperation (Camerer, Loewenstein, & Rabin, 2003, p. 450). In other words, players do not always play the dominant strategy for the period (cf. Aumann, Maschler, & Stearns, 1995).

In games in which players create a public good together, the contributions and cooperation of players usually start high and decline with time (Fehr & Gächter, 1999). The introduction of strong punishments – negative consequences – will also lead players to

cooperate (Ibid.). Public sector negotiations are frequently iterative and repetitive. Individuals have negotiated in the past, and expect to do so in the future. For instance public-private-partnerships require many moments of coordination and negotiation (Edelenbos & Teisman, 2008; Schaeffer & Loveridge, 2002; Skelcher, 2005). Moreover, these types of negotiations are typically cross-sectoral and deal with issues at more than one level like practical implementation and finances. During these repeated negotiations, individual negotiators may choose to cooperate or to compete.

Public Service Motivation

One distinguishing element between public sector employees and private sector employees, is public service motivation (PSM) (Perry, 1996). Public service motivation is a set of beliefs, values and attitudes that ‘go beyond self-interest and organizational interest, that concern the interest of a larger political entity and which induces through public interaction motivation for targeted action’ (Vandenabeele, 2007, p. 547). Earlier work has connected public service motivation to increased odds of whistle blowing in the public service (Brewer & Selden, 1998), self-selection into the public service (Delfgaauw & Dur, 2010; Tepe, 2016) and to ethical leadership (Wright, Hassan, & Park, 2016).

Public service motivation consists of four dimensions: interest in politics, contributing to the common good, self-sacrifice and compassion (Perry, 1996; Vandenabeele, 2007). Compared to private sector employees, public sector employees are more attached to politics and policy, are interested in working for a public cause, and have higher levels of compassion and self-sacrifice (Brewer & Selden, 1998; Perry, 1996; Vandenabeele, 2007). As public-sector employees have a higher PSM score than private sector employees, they are on average more interested in politics, more compassionate and more likely to display self-sacrificial behaviour. Moreover, they are motivated to work for a public cause, essentially, creating a public good. These differences between public servants and private sector professionals are

often attributed to self-sorting into either the public or private sector, meaning that people with a set of social norms and motives are attracted to particular organizations that fit with their motives (Tepe, 2016). We argue that these characteristics are important in negotiations as they will affect negotiation behaviour. Similarly, these norms and motivations – public service motivation - will also make public and private sector employees behave dissimilar when forced to choose between cooperation and competition as these appeal to different *à priori* motives. For example compassion has been linked to the desire to engage in future negotiations and the willingness to achieve joint gains (Allred, Mallozzi, Matsui, & Raia, 1997). The potential to achieve future gains are non-existent in a one-shot negotiation. In repeated interactions however, this may lead to more cooperation. Put differently, repeated negotiations may strengthen the effect of public service motivation on cooperation. Similarly, sacrificial behaviour is central to the process of negotiations. When negotiators engage in the ‘dance of concessions’, they engage in making small sacrifices in order to reach an agreement. Low PSM individuals will feel less need to make sacrifices in order to achieve agreement in single-shot negotiations. At the individual level, this could be beneficial. In repeated interactions, not making sacrifices may lead to repercussions and punishments.

H₁: In a repeated negotiation, high-PSM negotiators behave more cooperatively than low-PSM negotiators regardless of their opponent.

If we insist that cooperation is the opposite of competition (Rahim, 2011; Raiffa et al., 2002; see for example Shell, 1974), this implies that private sector employees will behave more competitively in negotiations. When two public sector employees negotiate, they will both behave more cooperatively. When two private sector employees are matched, they will behave less cooperatively. Negotiations between public sector employees and one private sector

employees will lead to behaviour in between of cooperation and competition. This leads to two additional hypotheses in which cooperation is conditional on the opponent.

H₂: In a repeated negotiation, high-PSM negotiators matched to high-PSM negotiators act more cooperatively than low-PSM negotiators matched to low-PSM negotiators.

H₃: In a repeated negotiation, high-PSM negotiators matched to low-PSM negotiators act less cooperatively than high-PSM negotiators matched to high-PSM negotiators, but more cooperatively than low-PSM negotiators matched to low-PSM negotiators.

METHOD AND DATA

In this section, we elaborate on the laboratory experiment we carried out. First, we describe the participants and the overall design and process of the experiment. Next, we get into the experimental conditions, the negotiation game and the stated preferences of our subjects.

In order to examine the relation between negotiator type (public sector employee or private sector employee) and contributions in a negotiation, our subjects were given a low stakes negotiation task (see section on negotiation game). We tested our hypotheses in a cubicle computer laboratory at a Dutch university in a between-subjects design using Z-tree (3.4.2) to administer the experiment (Fischbacher 2007). A total of eight sessions were administered, which took about 75 minutes each. All communication of the participants was done via their computer.

We chose a computerized laboratory experiment as it offers some very specific advantages over other experimental types (Anderson & Edwards, 2015; Charness & Kuhn, 2011; Morton & Williams, 2010). A laboratory experiment enables researchers to study the interactions between individual negotiators. Moreover, a laboratory experiment offers control and reduces potential confounding effects that are not observed (Morton & Williams, 2010).

Also, a laboratory experiment does not rely on narratives or self-reported measures (Tepe & Prokop, 2017). Finally, by sharing the experimental code, computerized experiments can easily be replicated using different samples, and/or different manipulations.

We recruited graduate and undergraduate public administration and business administration students for participation as these students are known to differ in public service motivation (Perry, 1996; Vandenabeele, 2007). These participants have registered for participation in experiments via the university subject-pool. The participants could enrol for the experiment via digital invitations (Greiner, 2015). Participants with more than two no-shows were not invited to participate.

Negotiation game

The participants played a repeated symmetric linear public goods game in 100 rounds (ten times ten decisions). A public goods game enables us to study negotiation by tracing the offers and outcomes of individual negotiators. Moreover, it offers the negotiators an opportunity to choose between competition and cooperation (cf. Hauert, De Monte, Hofbauer, & Sigmund, 2002; Semmann, Krambeck, & Milinski, 2003).

For each decision, the negotiators receive 10 units. From those units, the negotiators simultaneously decide how much they want to invest into a public good. Once the contributions to the public good are made, they are multiplied by 1.5. The total sum is equally divided over the negotiators. The individual payoff of the negotiators is the remainder not invested from the initial 10 units and their profit from the public good. After this step, the process is repeated. Consequently, the individual payoffs are conditional on the contributions of both negotiators.

A competing negotiator would choose to set the contribution as low as possible. When both negotiators do this, a public good is not produced. Negotiators who cooperate will contribute the maximum number of initial units (10 in our game). This is because this will

increase the odds of obtaining a higher group outcome. Thus, contributing more equals cooperation while contributing less comprises a more competitive strategy.¹

The participants were reimbursed for their participation based on individual performance. The exchange rate of experimental units to pay-out was €0.008. The participants received a show-up fee of €3,- and the mean payment was €14,80, which is slightly above minimum wages. The game was identical for all the participants, regardless of the conditions. The participants are aware that they play with the same opponent over the length of the experiment; the game is repeated and there is no re-matching. The subjects are not aware of the identity of their opponent as they are in computer-cubicles.

Moreover, the players are monolithic in the sense that they do not have to deal with constituencies. The negotiators have full information on the range of potential agreements and payoffs but are unaware of the actions of their opponent until the outcome is calculated after each contribution is made.

Process

Paper-based instructions were handed out and read out aloud by the researcher (see figure 1). Then, the participants received an on-screen pre-test questionnaire containing generic questions (i.e. what is your year of birth and in what type of study program are you enrolled?). Based on the answers to the study question in the pre-test questionnaire, the participants were matched by the computer in such a manner that three experimental conditions could be observed: a high-PSM subject plays against a high-PSM subject, a low-PSM subjects plays against a low-PSM subject and finally, a high-PSM subject plays against a low-PSM subject (See table 2). As participants are either public administration or business administration

¹ The participants (N) receive an endowment of $y > 0$ units. The participants invest $0 \leq x_i \leq y$ to the public good. The invested amount is multiplied by α_0 and divided over the participants in the group. For individual participants, this yields a payoff function of: $U_i(x_1, \dots, x_N) = y - x_i + \alpha(x_1, \dots, x_N)$ where $\alpha = \frac{\alpha_0}{N}$ (cf. Capraro, 2013).

students, the matching in our experiment is stratified. Within the strata, the matching to negotiation opponents is random.

The three experimental conditions will allow us to observe the differences between individuals with high and low public service motivation (hypothesis 1) as well as the combinations between formed dyads by focusing on the group level (hypothesis 2).

Table 1: Allocation of participants during the negotiation game.

Group 1	Group 2	Group 2
High-PSM	Low-PSM	High-PSM
↕	↕	↕
High-PSM	Low-PSM	Low-PSM

Following the experiment, the participants received a post-test questionnaire. Upon finishing the questionnaire, the participants were debriefed and reimbursed based on their in-game performance. The order of events during the experiment is presented in figure 1.

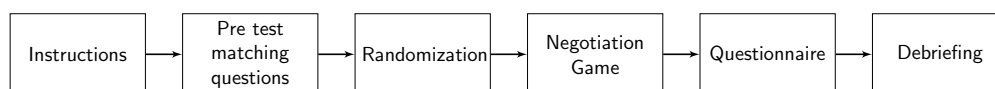


Figure 1 : process during the experiment.

A pilot session with N=12 participants was administered prior to the experiment. The pilot session has led to improvement of the positioning of items on screen and text size of the post-test questionnaire.

The statistical power ($1 - \beta$) of this particular study is .72 (3 groups, $n=104$, $\alpha=.05$, $df=17$, $f=.282$). The tests of the three hypotheses were conducted using Bonferroni adjusted alpha level of 0.016 per test ($0.05/3$).

Post experimental questionnaire

In the post-test questionnaire, we administered a number of relevant background and demographical characteristics of the subjects. To check the theoretical differences between individuals in the public administration- and the business administration programmes, we measured public service motivation using the 18-question version of the questionnaire (Vandenabeele, 2008).

As self-efficacy impacts negotiator performance, we measured negotiation beliefs by using the standardized 7 question scale (Elfenbein, Curhan, Eisenkraft, Shirako, & Baccaro, 2008; Kray & Haselhuhn, 2007). The original English version was translated back-and-forth by two researchers independently.

In order to measure stated negotiation style, the Rahim Organizational Conflict Instrument II (ROCI-II) was used (Rahim & Magner, 1995). The ROCI-II measure contains 28 questions which generate percentile scores on five theoretically distinct modes of negotiations, including competition and cooperation. The inclusion of this instrument enables us to see to what extent behaviour in our negotiation matches to self-reported styles.

We measured Social Value Orientation by means of a decomposed game in which respondents choose to split a given amount over the 'self' and a fictive 'other' (Van Lange, 1999). The Social Value Orientation reveals patterns of preferences of a priori outcomes for the 'self' and 'others' (Ibid.) Based on this, people can be categorized to be either pro-self or pro-social. Pro-social motivation has been linked to public service motivation (Grant, 2007). We use social value orientation to check whether contributions are conditional and happen only when others contribute or unconditional (Frey & Meier, 2004).

RESULTS

Our main expectation is that public- and business administration students differ in public service motivation which in turn leads to degrees of cooperation conditional on matching. In our sample, public service motivation scores differ for public administration students ($M=3.44$, $SD=0.33$) compared to business administration students ($M=3.25$, $SD=0.34$) ($t=-2.84$, $p=0.005$). This entails that public administration students and business administration students differ in motives with regard to interest in politics, working for a public cause, compassion and self-sacrifice.

The distribution of gender, age, negotiation beliefs and social value orientation did not differ significantly over the experimental conditions (see table 2). This confirms that we have three experimental conditions with high-PSM dyads, mixed-PSM dyads and low-PSM dyads while the other background variables are stable and homogenous over the experimental conditions. This means that any effect of the negotiation dyads must be attributed to the matching based on PSM. Finally, the participants in the 'mixed' condition seem to have a lower preference for cooperation based on the ROCI-II questionnaire (Rahim & Magner, 1995). In further analysis, we will add this self-reported variable as a control.

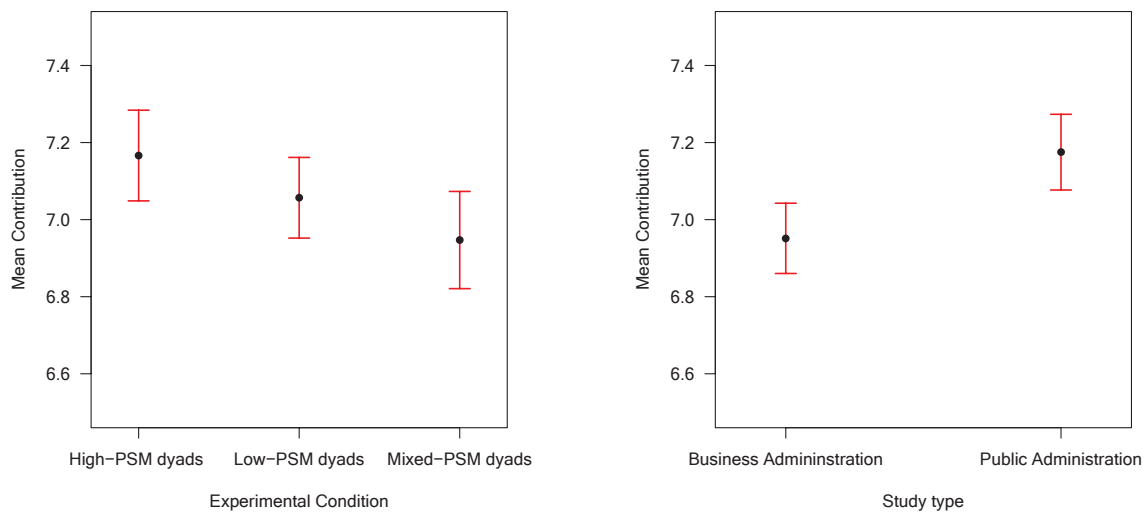
Table 2: Descriptive statistics, by experimental condition.

	High-PSM - High- PSM	Low-PSM - Low- PSM	High-PSM - Low-PSM	Total	Test Statistic
N	30 (29%)	40 (38%)	34 (33%)	104 (100%)	Chi Square X ² = 1.46 p = .481
Female	13 (43%)	20 (50%)	13 (38%)	46 (44%)	Chi Square X ² = 1.04 p = .593
Age (SD)	20.73 (2.44)	21.18 (1.66)	21.52 (2.69)	21.16 (2.27)	ANOVA F = 0.978 p = .338
PSM (SD) Reliability = .72	3.54 (0.31)	3.30 (0.33)	3.19 (0.31)	3.33 (0.35)	ANOVA F = 9.76 p = 0.00***
Negotiation Beliefs (SD) Reliability = .76	2.80 (0.58)	2.69 (0.53)	2.58 (0.60)	2.69 (0.57)	ANOVA F = 1.18 p = 0.309
ROCI-II Cooperation ² Reliability = .74	4.06 (0.33)	4.09 (0.36)	3.88 (0.40)	4.01 (0.37)	ANOVA F = 3.40 p = 0.037*
ROCI-II Competition Reliability = .82	3.2 (0.79)	3.1 (0.77)	3.3 (0.71)	3.91 (0.75)	ANOVA F = 0.635 p = 0.532
Pro-Social	2 (15.4%)	6 (46.15)	5 (38.36%)	13 (100%)	Chi Square X ² = 2 p = .367
Pro-Self	23 (28.75%)	31 (38.75%)	26 (32.5%)	80 (100%)	Chi Square X ² = 1.22 p = .542
Neither Pro-Social or Pro-Self	5 (45,45%)	3 (27.27%)	3 (27.27%)	11 (100%)	Chi Square X ² = .727 p = .695

The first hypothesis: ‘*In a repeated negotiation, high-PSM negotiators behave more cooperatively than low-PSM negotiators regardless of their opponent*’ is supported by the data. Indeed, over the experiment and across conditions, public administration students contributed more on average (M=7.17, SD=3.34) than business administration students (M=6.95, SD=3.51) (t=3.27, p=.001). This is also evident from figure 2 (right-hand side).

² Note that the ROCI-II inventory includes compromising, obliging and avoiding styles also (Rahim & Magner 1995). No significant differences between business administration- and public administration participants were found on these negotiation styles.

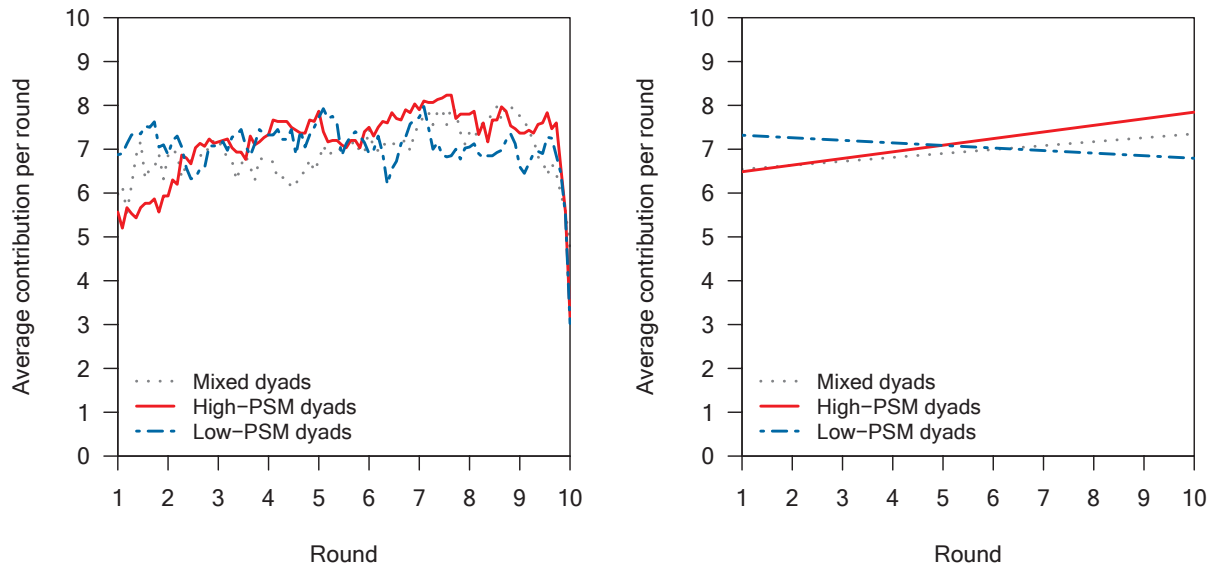
Figure 2: Contributions by experimental condition (left side), and by study type (right side).



Our second hypothesis, ‘*In a repeated negotiation, high-PSM negotiators matched to high-PSM negotiators act more cooperatively than low-PSM negotiators matched to low-PSM negotiators*’, is not supported by the data. We have tested this hypothesis in two ways. First, the contributions did not differ statistically significantly over the conditions for the entire experiment (pooled data) (See figure 2).

Secondly, we calculated a hierarchical tobit-model in which the negotiation dyads were allowed to differ from each other (See table 3). In our experiment, many negotiators contributed the maximum possible amount which resulted in truncated data. A tobit-model is able to handle this truncated data (Tobin, 1958). Moreover, a hierarchical model corrects for dynamics between subjects that were matched together in dyads (cf. Honoré, 1992). From figure 3 we learn that the slopes differ across the conditions. Finally, a hierarchical model enables us to focus on negotiation decisions made instead of dyad level data or condition level data. The model was built in successive steps. For this, we used the *xttobit* package for random effects in Stata 12.1. The experimental conditions were recoded to dummies with the mixed (Low-PSM - High-PSM) category as reference category.

Figure 3: Development of contributions over time during the experiment (left = raw data, right=smoothing applied)



In model I and II (table 3) the results for the second hypothesis are insignificant. Matching in our experiment does not have an effect on contributions and cooperation during the experiment. A time dummy (period) shows that contributions slowly increase over the experiment and a gender dummy shows that male negotiators contributed more than female negotiators on average. Gender also has a positive significant effect on the height of the contributions during the negotiation.

In the fourth model, we found an association between the contributions during the experiment and the self-reported competitive negotiation style. A higher score on competition was significantly associated with lower contributions during the experiment. While there is a statistically significant correlation between cooperation and competition ($r=-0.26$, $n=104$, $p=0.007$), there is no statistical association between cooperation and the negotiation contributions in the experiment.

Table 3: Hierarchical tobit estimates on contributions during the experiment. SE's in parentheses. Negotiation dyads as random effects.

	Model 1 Conditions (Mixed as reference)	Model 2 Period and gender	Model 3 Study type	Model 4 ROCI
Fixed Effects				
Intercept	9.373*** (6.84)	8.045*** (5.90)	9.327*** (11.77)	10.624*** (9.54)
Study dummy (1=PA)			0.784*** (5.56)	
High-PSM – High- PSM dummy	-0.048 (-0.02)	-0.005 (-0.00)		
Low-PSM – Low- PSM dummy	0.857 (0.46)	0.909 (0.49)		
Period		0.180*** (12.56)		
Male dummy		0.595*** (4.82)		
ROCI Cooperation				0.049 (0.31)
ROCI Competition				-0.355*** (-4.21)
Random effects				
σ^2 Negotiation dyads	5.589*** (9.55)	5.549*** (9.55)	5.622*** (9.54)	5.630*** (9.54)
σ^2 Residuals	3.503*** (98.38)	3.485*** (98.43)	3.494*** (98.39)	3.497*** (98.38)
Wald X ² (df)	0.30 (2)	181.34 (4)	30.95 (1)	19.46 (2)
Log Likelihood	-16777.20	-16685.35	-16761.87	- 16767.624
AIC	33564.406	33384.699	33531.743	33545.495
BIC	33600.654	33435.446	33560.741	33581.491
N	10400	10400	10400	10400
N-truncated (right)	4853	4853	4853	4853

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$;

Also, over the length of the experiment (figure 3), the average contribution develops differently across the experimental conditions. The group with business administration students has a

slightly negative slope, whereas the public administration group has a positive slope, while all starting between 6.5 and 7.5 for the contributions. The slope of the mixed group lies in between of these lines.

The third hypothesis: *'In a repeated negotiation, high-PSM negotiators matched to low-PSM negotiators act less cooperatively than high-PSM negotiators matched to high-PSM negotiators, but more cooperatively than low-PSM negotiators matched to low-PSM negotiators'* is not confirmed by the data. There are differences between the conditions, but these are not statistically significant. This is evident if we inspect the contributions during the negotiation visually (figures 2 and 3). The level of cooperation can also be seen in model I and II which are corrected for time, gender and matching in dyads. Model I and II also disconfirm this hypothesis.

DISCUSSION AND CONCLUSION

In this section, we discuss some limitations before turning to the conclusions to be drawn from our study. The findings of our study have some limitations which we have tried to alleviate as much as possible.

First of all, we have used students as subjects in our experiment. Students provide a homogenous sample, which makes detecting an effect more straightforward (Calder, Phillips, & Tybout, 1982). The main question remains whether public sector employees and private sector employees would respond similarly to the treatments in our experiment. Moreover, public service motivation can be seen as a relatively stable predisposition (Perry & Hondeghem, 2008), or as a learned social norm (Chen, Hsieh, & Chen, 2014; Tepe, 2016). Compared to students, practitioners may exhibit more or less motivation based on experience and workplace socialization. Studies that compare student samples and practitioners remain inconclusive on this particular question (Eg., Liyanarachchi and Milne 2005). While a substantial part of public

administration experiments employs student samples (see Li & Van Ryzin, 2017), there is no agreement on this matter. Students have been found to behave more rational than a generic population (Belot, Duch, & Miller, 2015). This might imply that practitioners would act less cooperative in a similar negotiation setting. Note that no cooperation is a Nash equilibrium, while cooperation leads to a higher payoff at both individual and group level. Moreover, practitioners are socialized in their respective sectors, which may induce more collaborative behaviour in public managers as a consequence of learned roles and more competition in private sector managers. This limitation and its implications, call for more research, including experimental designs using practitioner samples.

Secondly, the participants in our experiment were financially incentivized. Compared to the situation in practice, individual negotiators, especially those in the public service are not incentivised as public budgets are prioritized and rewards for individual behaviour are uncommon (Verhoest, Roness, Verschuere, Rubecksen, & MacCarthaigh, 2010). Similarly, it could be argued from the view of transaction-cost theory that in high stakes negotiations in practice, negotiators will weigh the consequences of cooperative or competitive behaviour more diligently (Jap, Robertson, Rindfleisch, & Hamilton, 2013). The latter is especially relevant as many professional negotiations are in fact principal-agent settings. We leave to future research how individual public service motivation influences behaviour in these more complex and realistic settings.

Thirdly, a laboratory experiment provides an artificial situation in which our subjects are asked to negotiate. A laboratory experiment offers control to the researcher while it also reduces the risk of confounding effects. In our experiment, liking or body language presents a potential risk in studying negotiations that could distort our findings in a face-to-face experiment (Morton & Williams, 2010). Like in many experimental designs, experimenter demand effects could have an impact on our findings (Orne, 1962; see Zizzo, 2010). Similarly, it is possible that the lower than ideal power in this study has led to false negatives.

Consequently, replication of this study is much needed, preferably with a sample of practitioners.

This study makes a number of contributions to the literature by bringing together literature on negotiation and individual characteristics of future public- and private sector employees. Negotiations at the individual level are seldom studied in public management literature. Our study brings together negotiation literature with public service motivation. We study behaviour in a repeated negotiation which differs from single shot interactions that have been studied earlier in relation to cooperative behaviour (Esteve et al., 2015). We address the generalizability of studies that focus on cooperation in decision-making by extending it to negotiations.

Secondly, we contribute to the field by using an experimental laboratory design that enables us to study behaviour of individuals and dyads of negotiators. Although experimental research designs are common in negotiations research, experimental laboratory designs are upcoming but still relatively rare in public administration (Bouwman & Grimmelikhuijsen, 2016; Li & Van Ryzin, 2017). Experimental designs fit well when there is a focus on behaviour, using micro-level theory with individual decision makers (Grimmelikhuijsen et al., 2017).

We found that overall, High-PSM individuals (public administration students) behave more cooperatively than Low-PSM individuals (business administration students). In general, individuals tend to cooperate in repeated public goods experiments (Fischbacher, Gächter, & Fehr, 2001). Although this game is a low-stakes negotiation setting, preferring a cooperative negotiation style is potentially beneficial at the group level, rather than at the individual level. Recent studies have found that individuals are sometimes conditional co-operators where cooperation heavily depends on the precedent of a collective (Delfgaauw & Dur, 2010; Meyer & Yang, 2013). In our study, the participants could only see how they performed in dyads and

not how others performed. For the public sector this is especially relevant as one of the demands placed on public sector employees is that they behave cooperatively in many circumstances as this facilitates problem solving (McNamara, 2012; O'Leary & Bingham, 2009). Our study shows that high-PSM people also cooperate unconditionally. The latter could be a specific effect of the motivation to contribute to the public good of high-PSM individuals. As negotiations generate public outcomes with real consequences in the public sector, this finding shows that reaching agreement by cooperation seems to be prioritized by high-PSM individuals.

Additionally, in repeated public goods games, the trend of contributions is often found to have a downward slope (Fehr & Gächter, 1999). When players negotiate repeatedly, they tend to punish freeriding behaviour, even if it is costly. In our experiment, the slope is slightly upwards for the high-PSM dyads, implying that they may have punished freeriding behaviour to a lesser degree. This raises the question whether public managers are less likely to punish competitive behaviour in practice, as private sector managers (high-PSM) do (cf. Steinel & De Dreu, 2004). Moreover, it implies that low-PSM individuals use more unethical tactics, regardless of their opponents (eg. Robinson et al., 2000).

In our experiment, the motives of the matched opponents have no significant effect on the contributions in the negotiations. This finding contrast sharply with the social-psychological literature on this matter. For instance Greenhalgh (1985) found that personality directly affects negotiator contributions and outcomes. Building on the similarity-attraction theory, more similar negotiators are found to experience less conflict and also reach agreement faster (Wilson, DeRue, Matta, Howe, & Conlon, 2016). Note that our participants could only communicate by offer and counteroffer, whereas in the experiments of Greenhalgh and Wilson et al., negotiators could also see each other.

The differences between the public and private sector have blurred over the past years as the result of NPM developments in the public sector and CSR developments in the private sector (Bullock, Stritch, & Rainey, 2015). This blurring of sectors also stresses the need for

knowledge on this topic (Antonsen & Jørgensen, 1997). Whether the characteristics and motives of the practitioners in the once distinct sectors are also more alike is unclear. Based on our experiment, high-PSM and low-PSM individuals behaved differently and also reported dissimilar to the standardized ROCI-questionnaire. This finding partly mirrors the findings of Esteve et al. (2015) but in a repetitive negotiation setting.

These findings are of particular relevance for settings where public and private sector workers need to cooperate. For instance, in public-private-partnerships. Because cooperation levels – and thus outcomes – differ for the negotiators from the different sectors, this may put public sector negotiators at a comparative disadvantage in win-lose negotiations. In more complex negotiations, the tendency to cooperate may lubricate negotiations on the other hand. How this works and to what extent this can be understood from the perspective of public service motivation is an important avenue for further research.

Our findings have two important implications for public managers and policymakers. First, it suggests that public managers (high-PSM) will collaborate more unconditionally. This is beneficial in variable-sum negotiations, while it may be harmful in constant or zero-sum negotiations. Secondly, for public managers it may prove difficult to reach agreement in repeated variable sum negotiations with low-PSM negotiators such as private sector negotiators or entrepreneurs.

Future research efforts could be aimed at replicating this study by using different samples such as practitioners and in different contexts. Moreover, a replication using a different multiplier in the public goods game or testing cooperation with payoffs in the domain of losses (Kahneman & Tversky, 1979) seems a good addition. Similarly, it is unclear under what circumstances individuals behave competitively or cooperatively while they report to have no strong preference for a particular style of negotiations. Although we did find a relation between contributions and self-reported competition, more research is needed to find out under what circumstances self-reported measures align with measured behaviour.

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Appendix 1: Correlation table of post-test variables.

	High-PSM dyads	Low-PSM dyads	Mixed dyads	Age	Gender	Study	PSM	Negotiation Beliefs	Prosocial	Pro-self	ROCI Cooperating
High-PSM dyads											
Low-PSM dyads	-.50***										
Mixed dyads	-.44***	-0.55***									
Age	-0.12	0.00	0.11								
Male	0.01	-0.09	0.08	0.04							
Study	0.70***	-0.72***	0.07	-0.22*	0.15						
PSM	0.38***	-0.08	-0.29**	-0.06	0.13	0.27***					
Negotiation Beliefs	0.13	0.00	-0.13	-0.311	-0.11	0.12	0.18				
Prosocial	-0.10	0.05	0.04	-0.06	-0.02	-0.09	-0.02	0.14			
Pro-self	-0.01	0.08	-0.08	0.08	0.02	-0.10	0.03	-0.13	-0.46***		
ROCI Cooperating	0.08	0.17	-0.25*	-0.02	-0.28**	-0.12	0.31***	0.11	-0.01	0.10	
ROCI Competitive	0.00	-0.10	0.10	0.11	0.18	0.06	-0.05	-0.14	-0.08	0.21*	-0.26**

APPENDIX II: Screens in the experimental game

Round N of 100	Remaining time [sec]: 25
Your balance is 10 How much do you want to contribute? <input data-bbox="1263 687 1453 738" type="text" value="1"/>	
<input type="button" value="OK"/>	

Round
N of 100

Remaining time [sec]: 29

Your contribution is	5
The total of group contributions is	5
Your earnings this round are	7.5
Not contributed	5
Not contributed plus your earnings	12.5

Continue

APPENDIX III: negotiator instructions (translated)

Instructions negotiation experiment

In this experiment, you are expected to negotiate. You play with one opponent, and one opponent only during the entire length of this experiment. Both you and your opponent get 10 units per round to use in the negotiation. In dyads, you are asked to contribute to a common goal. From the 10 units received, you can contribute. Your opponent can also contribute from his or her 10 units. Your contribution is deducted from your 10 units.

Both you and your opponents' contributions will be added up and multiplied by 1.5 each round. The sum is then divided over you and your opponent. You will contribute by entering the amount you want to contribute in the box and press OK. You cannot see what your opponent is contributing, nor can he/she see what you are contributing. Only when the payoffs have been calculated, you get to see what your opponent has contributed and what you both have earned.

Your balance is: 10
Your much do you contribute?
<input type="text"/>
<input type="button" value="OK"/>

- Note that every choice you make is of importance for your pay-out at the end of the experiment. One experimental unit translates to €0.008.
- You play against the same opponent during the entire experiment.
- This experiment has 11 rounds, with 10 decisions each. The first round is a practice round and has 10 decisions also.
- In this experiment, you are paid based on your performance.

Example:

You contribute 5 from your 10 units by entering this in the text box. You now have 5 units left yourself and have contributed 5 by pressing OK. Your opponent contributes 6 units. Your common contribution is 11. After multiplication with 1.5 the total sum of contributions is 16.5. As you both will receive 1/2, you both get 8.25. You now have 13.25 units (5+8.25). Your opponent has 12.25 units (4+8.25).

Some final notes

- In each round, you have to make a choice.
- 0 and 10 are also valid choices
- You participate individually to this experiment.
- You are not allowed to speak with the other participants in this room during the experiment
- It is important that you follow the instructions as precise as possible. If you have questions, raise your hand.
- You do not talk about the experiment.