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The Effects of Public Service Motivation on Collaborative Behaviour: Evidence from Three Experimental Games

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Abstract

Although research on the antecedents of collaboration is vast, no study has examined the effects of public service motivation (PSM). The current study relates PSM to decisions on whether or not to collaborate, while controlling for the Big Six personality traits. Empirical evidence is gathered by means of an experimental design based on three different prisoner's dilemma games. Results indicate that PSM affects collaboration when the individual decides to collaborate or not as a first mover, before knowing what the counterpart decides, and as a second player provided that the counterpart has decided not to collaborate.

INTRODUCTION

Collaboration between organisations is a core part of contemporary arrangements for public service provision (O’Leary and Vij 2012). Policymakers rely on a wide range of inter-organisational collaborations to respond to the growing complexities of their agendas. Within this context, O’Leary and Blomgren (2009) claim that public managers frequently find themselves working across agency boundaries to respond to societal needs. Similarly, Thomson and Perry (2006) emphasize that inter-organisational collaborations are imperative for public managers.

Wood and Gray (1991) distinguish three main issues regarding collaboration: antecedents, processes and outcomes. Public administration scholars have developed extensive research on the last two aspects, focusing on how to develop collaborations (Ansell and Gash 2008), and how to successfully manage collaborative ventures (Page 2003). Although less developed, a few studies have examined the antecedents of collaboration in the public arena (Krueathep, Riccucci, and Suwanmala 2010; McGuire and Silvia 2010; Thomson and Perry 2006). These studies aim to examine the role of variables such as resource dependency, task complexity and problem severity. Yet, little research has been done on the role of personal characteristics of decision-makers in affecting collaboration in public administration. Recently, Esteve et al. (2013) analysed 228 chief executives of public agencies in Catalonia to assess the effect that individual characteristics had on collaboration. These authors report that certain individual characteristics of managers had a strong influence on the level of collaboration of their

organisations. More specifically, they report that collaboration is positively affected by their educational qualifications and their concern for self-development, and negatively by their age.

So, Esteve et al. (2013) determined that individual characteristics affect collaboration. Following their findings, the present article aims to understand how personal characteristics of individuals affect their collaborative behaviour. To do so, we employ an experimental design. We evaluate the impact of personality on a series of specific decisions as to whether to collaborate or not. In other academic disciplines, such as business, economics and psychology, the relation between personality and collaboration has been already addressed (Boone, De Brabander, and van Witteloostuijn 1999; Chatman and Barsade 1995). We seek to add knowledge on this topic by considering the role of a fundamental individual characteristic that is central to public administration literature: Public Service Motivation (PSM). Vandenabeele defines PSM as a set of beliefs, values and attitudes that “go beyond self-interest and organisational interest, that concern the interest of a larger political entity and which induce through public interaction motivation for targeted action” (Vandenabeele 2007, 547). We explore the relationship between PSM and collaboration, while controlling for the impact of core personality traits of the decision-maker that were already explored in earlier psychological work.

The behavioural implications of PSM have been discussed in earlier public administration work. For example, a few studies have linked PSM with altruistic behavior

(Houston 2006; Clerkin, Paynter, and Taylor 2009), arguing that high-PSM individuals tend to engage in altruistic actions to a higher degree than their low-PSM counterparts. Moreover, other studies have identified PSM as one of the antecedents of volunteering activities (Coursey et al. 2011; Lee 2012). However, to the best of our knowledge, the influence of PSM on collaboration has not yet been evaluated, neither in isolation nor in combination with the impact of personality.

We address this gap in the literature by examining a specific collaborative decision by applying an experimental design based on three different prisoner's dilemma games. By taking this setting as our steppingstone, we conduct an exploratory test of PSM as a potential antecedent of collaboration. In so doing, our study introduces a novel method in public administration for explaining collaboration, and addresses recent calls to provide experimental evidence on core public management topics (Margetts 2011), especially on the behavioural impact of PSM (Wright and Grant 2010).

INDIVIDUAL ANTECEDENTS OF COLLABORATION

Most research on the antecedents of collaboration in the public sector has focused on environmental and institutional variables (Lundin 2007; Mullin and Daley 2010).

Although less attention has been given to the effects of individual characteristics of the people involved in inter-organisational collaboration, a few studies have acknowledged the importance of the role of managers when deciding to engage in inter-organisational collaborations (McGuire and Silvia 2010; Krueathep, Riccucci, and Suwanmala 2010; Esteve et al. 2013). These studies have accounted for several individual characteristics of

public managers to assess how such attributes influence collaboration.

First, McGuire and Silvia (2010) find that highly-educated managers are more likely to collaborate, since they have the skills to address the complexities of collaborative ventures. Second, managerial attitudes toward the role of public organisations influence the strategic decision as to whether or not to engage in collaboration: In their study of Thailand local municipalities, Krueathep, Riccuci, and Swanmala (2010) found that those politicians who believed in the expansion of public organisations are more collaborative than those who hold more conservative attitudes toward the role of public organisations. Third, Esteve et al. (2013), surveying top chief executives of Catalan public agencies, report that those organisations lead by public managers who are more concerned with their self-development and who attend courses outside their organisations, are more likely to engage in collaboration. Additionally, they report that the age of the chief executive is negatively related to the degree of collaboration, suggesting that younger managers are more collaborative.

However, all these studies use rather distant proxy variables to examine the effects of individual characteristics on collaboration. In this context, Hambrick (2007) warns that despite the fact that demographic characteristics are valid proxies when addressing the issue as to how individuals develop strategic decisions, they have proven to be incomplete when the aim is to really understand the underlying fundamental mechanisms and processes: “granted, the use of demographic indicators leaves us at a loss as to the real psychological and social processes that are driving executive behaviour” (Hambrick

2007, 335). To be able to do this, a turn to deep-level individual characteristics, such as personality traits, is needed (see, e.g., Boone, van Olfen, and van Witteloostuijn 2005). Personality traits have been widely used to understand the relation between individuals and the political arena (see, e.g., Gerber et al., 2011). Despite this, public administration research has not yet considered the effects of personality on collaboration.

To better understand how personality traits may affect collaborative behavior, we draw upon studies published in the business, economics and psychology disciplines. Pruitt and Kimmel (1977) is an early review of experimental studies that highlight the impact that personality can have on decision-making, including collaboration. Since then, many studies provided further empirical evidence on the relation between personality and collaboration. An example is Boone, De Brabander, and van Witteloostuijn (1999). In the context of a series of prisoner's dilemma games with business and economics students, they report that personality has a strong effect on collaborative behavior. Specifically, they reveal that locus-of-control internality, high self-monitoring and high sensation-seeking are positively related with collaboration. Similarly, Hirsh, and Peterson (2009) introduce the Big Five personality traits to explain individual collaborative behaviour within a prisoner's dilemma game. They show how extraversion and neuroticism are linked positively to collaboration, arguing that those individuals featuring high neuroticism collaborate because they are afraid of the consequences of a defeat strategy – this personality trait has been related with fear and insecurity (Hirsh, Deyoung, and Peterson 2009). Furthermore, those featuring high extraversion have been found to

behave more collaboratively since they are more sensitive to rewards (Depue and Collins 1999).

Overall, the literature reveals that personality does influence collaborative behaviour in several ways. Focusing on core personality traits, the current study provides evidence regarding the relationship between individual attributes and collaboration. Our argument is in line with the main thesis of the cognitive view of the firm, as developed by the Carnegie School (March and Simon 1958; Cyert and March 1963). Their main argument is that when managers engage in strategic decision-making they do not rely solely on environmental or institutional characteristics, as would be suggested by a perfect rationality logic. Instead, their personality influences how they assess the pros and cons of each decision. Because of that, core personality traits need to be considered when assessing strategic decisions, including those regarding collaboration.

PSM AND COLLABORATION

PSM was originally defined as “an individual’s predisposition to respond to motives grounded primarily or uniquely in public institutions and organizations” (Perry and Wise 1990, 368). This original definition was shaped by the findings that PSM is a construct that does not only affect public employees, but any individual. As Brewer and Selden explain, PSM is a “dynamic behavioral concept anchored in the types of behavior people exhibit rather than in the sectors in which they work” (Brewer and Selden 1998, 416). Thus, the desire to serve the public interest can motivate private sector employees or students as well. In PSM research, the precise definition of the construct varies, but the

main focus is on an individual's motives for engaging in behavior to the benefit of public interest.

Gradually, PSM's conception shifted from being seen as an attitude toward serving the public interest to a predisposition to help other individuals and to look after the wellbeing of society (Perry 2000; Rainey and Steinbauer 1999). Accordingly, recent studies define 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 which induce through public interaction motivation for targeted action" (Vandenabeele 2007, 547). According to the PSM concept, certain individuals show higher concern for the public good and the welfare of their societies (Brewer and Selden, 1998). Not surprisingly, when reviewing the evidence accumulated in PSM research over two decades, Perry et al. (2010) conclude that PSM is closely linked to pro-social and altruistic values. PSM has been described as a formative construct with four main subscales: Attraction to Policy Making, Commitment to the Public Interest, Compassion and Self-Sacrifice (Kim, 2009). Interestingly, Wright, Christensen and Pandey (2013) note that PSM is conceptualized and measured in different ways across the existing literature. However, as the authors conclude, regardless of the measurement used to assess the levels of PSM, all of them capture what is considered to be a unique predisposition toward the common good and the public interest.

Pursuing this line of reasoning, PSM has been empirically associated with pro-social behavior. A first example of the behavioural consequences of PSM can be found in

the study of Brewer and Selden (1998), showing how high-PSM federal US employees are more likely to engage in whistle-blowing behaviour. In the same vein, PSM has been linked to civic activities toward the benefit of society (Clerkin, Paynter, and Taylor 2009; Brewer 2003). A clear example of this is provided by Houston (2006), who found that PSM is positively associated with self-reported gifts of time, blood and money to charitable organisations.

Building on such work, the main theoretical argument that we propose here is that PSM will be positively associated with collaborative behavior when people are faced with the decision to collaborate or to compete (or cheat) in interaction with another individual. We believe this will be the case, because PSM is argued to accommodate the wellbeing of society versus that of the individual (Perry, Hondeghem, and Wise 2010). Indeed, earlier work has provided empirical evidence as to the positive relation of PSM with several pro-social attitudes (Coursey et al. 2011; Lee 2012). Additionally, PSM has been shown to be a determinant of altruistic behaviour (Houston 2006; Clerkin, Paynter, and Taylor 2009). We argue that high-PSM individuals are likely to prefer to collaborate rather than to compete (or cheat). In line with this general argument, we present a series of hypotheses as to the effects of PSM on collaborative behaviour in the context of a number of different so-called mixed-motives dilemmas, taking the prisoner's dilemma as the ideal-typical example of such games. In mixed-motives settings, the dilemma resides in behaviour favouring individual versus that promoting collective interests.

EXPERIMENTAL SETTING AND HYPOTHESES

We frame the mixed-motives tension in the context of three versions of a two-person prisoner's dilemma. In a prisoner's dilemma context, the decision-maker faces a fundamental decision: to compete (or cheat) or to collaborate. Non-collaborative behaviour is the strategy associated with maximizing individual self-interest, whilst collaboration is geared toward maximizing the collective's wellbeing (Dawes 1980). Thus, this framework reflects the key tension between individualistic (free-riding) strategies, on the one hand, and those oriented toward the collective interest, on the other hand. As Krueger and Acebedo state "in the prisoner's dilemma, self-interest clashes with collective interest" (2007, 593). Indeed, in our experimental games, both players will maximize the joint payoff by collaborating. By designing three different prisoner's dilemmas, we vary the nature of the information available to each decision-maker.

Specifically, the experimental setting is framed as a two-player Bertrand oligopoly, played over four rounds. Participants submit their decisions contingent on the scenario offered. Participants are asked to act as the chief executives of their organisation, and to determine the pricing strategy that their organisation will follow during a whole year. In order to do so, participants decide if they want to opt for a low-price strategy (competition) or a high-price strategy (collaboration) four times in a row – representing four quarters of one year. Table 1 provides the different payoff combinations showed to the participants during the experiment.

In Table 1, organisation A is run by individual i , and organisation B by individual j . Imagine the case, for example, in which individual i decides to collaborate by selecting

a high-price strategy. If individual j decides to collaborate, too, both i and j will benefit by earning two hundred thousand Euros for that quarter. However, if individual j decides to compete, organisation A (and hence individual i) will face a loss of six hundred thousand Euros whilst organisation B (and hence individual j) will receive a profit of six hundred thousand Euros. Table 1's payoffs do reflect the classical payoff matrix proposed for this sort of prisoner's dilemma games (Kuhlman and Marshello 1975).

In this study, three versions of the game are implemented. The first version, referred to as Game I, is a simultaneous game in which participants do not know the choices of their counterpart. In this case, each participant has to make four decisions (one for each quarter of the year) without any knowledge of the other player's (non-) collaborative behaviour. Games II and III are two sequential games with the participant as a first and second mover, respectively. When the participant is the second mover, s/he is presented with both possible choices made by her or his partner: the counterpart has opted to either collaborate (Game II) or to compete (Game III) throughout all rounds of the game. Hence, in these sequential versions, each subject has to select, again, four decisions per year for all 16 possible decisions of the first mover. Thus, this experimental design does not consider collaboration as a binary choice – to collaborate or not to collaborate – from the second mover's perspective, but instead offers participants the option to decide on the degree of (non-) collaboration. In so doing, we follow previous studies showing how the information about the partner's behaviour gears decision-making toward collaboration or competition (see, for instance, Rand et al. 2009).

THREE HYPOTHESES

Our first hypothesis considers those cases in which individuals decide whether to collaborate or compete without knowing the decision of their counterparts (Game I). Hence, the focal decision-maker does not know whether or not her or his counterpart will collaborate or compete. When discussing the effects of PSM, Perry and Hondeghem (2008, 3) claim that high-PSM individuals will aim “to do good for others and shape the well-being of the society.” Accordingly, we hypothesize that high-PSM individuals are more likely to display collaborative rather than non-collaborative behaviour. After all, when they choose to collaborate, they signal to the other individual that s/he can profitably decide to collaborate, too. In that case, both parties will benefit from the decision. By collaborating, they bring benefit to the collective, instead of maximizing their individual benefit. Thus, we hypothesise that individuals with high levels of PSM will opt for collaborative behaviour even if they do not know what the other players will opt for.

Hypothesis 1: PSM is positively associated with collaborative behaviour when the decision-maker does not know whether her or his counterpart will decide to collaborate or not.

The second hypothesis deals with Game II in which we frame the decision to collaborate or compete by informing individuals that their partner has already opted for the collaboration option. Then, participants know that if they decide not to collaborate, they will maximize their individual payoffs, whilst their counterparts will receive a negative payoff. If, instead, they opt for collaboration, both will receive a positive payoff, albeit

smaller than the self-interested maximum. In this scenario, individuals have a clear setting for maximizing their benefits at the expenses of the other's, or deciding to collaborate with their counterparts to share all the benefits. This mirrors, in a nutshell, the option to maximize individual self-interest vis-à-vis the collective's wellbeing. The latter option reflects a main characteristic of PSM: The individual's motive to give back to the society (Perry and Wise 1990). Arguably, high-PSM individuals are expected to opt for giving part of their resources to other parties. Therefore, we hypothesize that when a high-PSM individual sees that her or his partner has decided to collaborate, s/he will mimic the collaboration decision, and show collaborative behaviour, too, in order to ensure that both parties will obtain positive benefits.

Hypothesis 2: PSM is positively associated with collaborative behaviour when the decision-maker interacts with a counterpart who has revealed her or his willingness to collaborate.

The third and final hypothesis relates to Game III in which individuals have to make their decision to compete or collaborate knowing that their partner has chosen not to collaborate. Again, they are presented with the option to either collaborate or compete. If they chose to compete, both parties will receive a negative payoff. In contrast, if they opt for collaboration, they will lose a substantial sum whilst their partners will receive a large positive payoff. This implies that individuals can decide to display behaviour that they may consider to be a morally desirable option – i.e., to collaborate – at the expense of their self-interest. Alternatively, they may decide against this in order to minimize their losses. Previous research on prisoner's dilemma games has revealed that individuals may

indeed prefer to support their self-image of morality by choosing to collaborate (Krueger and Acevedo 2007). Since PSM has strong links with altruism (Rainey and Steinbauer 1999; Coursey et al. 2011), and also with moral behaviours such as donating blood, time and money to others (Houston, 2006), we argue that high-PSM individuals might show their willingness to collaborate even in the face of counterparts revealing self-interested non-collaborative behaviour. Thus, by collaborating, high-PSM individuals give more importance to their morality than to the wish to minimize their losses.

Hypothesis 3: PSM is positively associated with collaborative behaviour when the decision-maker interacts with a counterpart who has revealed an unwillingness to collaborate.

METHOD

Experiments

To examine the effect of PSM on collaborative behaviour, we implemented an experimental design based on three different versions of Table 1's multi-round – no-feedback prisoner's dilemma setting (Boone, De Brabander, and van Witteloostuijn 1999). As Rand et al. (2009) state, this game illustrates the tension between private and common interests, by letting participants decide to collaborate or compete (defect) in the context of a series of pre-designed scenarios. The prisoner's dilemma is a standard experimental protocol that captures the nature of mixed-motives or social dilemmas to explore the antecedents of collaboration. As Weber et al. (2004) observe, social dilemmas are omnipresent in everyday life, where people need to make decisions that imply either individual or collective utility maximization. Hence, the prisoner's dilemma setting is

viewed as an ideal scenario to examine collaborative behaviour in a controlled setting, which can in later research be extrapolated to the organisational realm (Arend 2009).

For each of the three experimental games, participants are told to act as the CEO of an organisation that has to set the prices for the four quarters of the next season. The first experimental game (Game I) represents the most used version of the prisoner's dilemma setting. First the payoff matrix was shown and explained. Participants have to decide about their choices without knowing what their counterparts will opt for. In the second and third game (Games II and III), participants were presented with information regarding the moves of their counterparts. In Game II, participants had to decide if they wanted to collaborate or not, knowing that their counterpart had opted to collaborate. Finally, in Game III, participants had to decide whether to collaborate or not, given that their counterpart had chosen not to collaborate. Following the recommended practices for this sort of experimental design (see Frank, Gilovich, and Regan, 1993), after each game, participants were asked to answer several questions and to solve a payoff example to ensure that all had fully understood the characteristics of each setting.

Prior to the experiment, participants were informed that their earnings would be equal to the final profit of their organisations in Euros divided by 10,000, resulting in monetary prizes ranging from 10 to 490 Euros. Written instructions informed subjects on each aspect of the games, and the associated reward structure. After the experiment, twelve students were randomly selected to receive prizes. With the intention of avoiding negative total earnings, each organisation had an initial endowment of 2,500,000 Euros.

The three experiments were run during class-tutorial meetings with first-year bachelor students in Business and Economics at a major university in the Netherlands in 2011. In order to prevent possible biases due to the sequence of the three experiments, the order in which the three games were presented was randomised. In each of the experiments, at least two lecturers / researchers monitored the session to ensure that the experimental instructions were followed concisely.

In addition, two weeks before running the experiments, an email survey questionnaire was sent to the target sample to collect data on demographic variables and psychological traits, including PSM. As part of the questionnaire, participants were asked to generate a unique code that could identify each participant individually in order to match the survey data with the experimental choices whilst ensuring anonymity. In the end, 320 participants completed the survey and participated in the experiment.

Measurements

PSM was measured by adapting the scale proposed by Kim (2011) in order to apply the items to the context of bachelor students. Specifically, Kim's (2011) PSM scale has 12 items aimed to measure four factors: (1) attraction to policy-making (APM); (2) commitment to public interest (CPI); (3) compassion (COM); and (4) self-sacrifice (SS). However, earlier PSM work among bachelor students found difficulties in recognizing the COM and SS dimensions (Vandenabeele 2008). For instance, Vandenabeele (2008) opted to collapse both into a single dimension, since bachelor students are unlikely to have experience in the public services domain. Consequently, we decided not to consider

the SS construct separately. Rather, PSM is measured as a revised eight-item scale that differentiates between three factors: APM, CPI and COM. All items have a seven-point Likert-type answer scale, anchored from 1, “I strongly disagree”, to 7, “I strongly agree”. The reliability coefficient (Cronbach’s α) of the PSM scale is .65, which is similar to previous research applying this PSM measurement (see, for example, Kim 2009).

We measure collaborative behaviour as the ratio of the number of binary choices to collaborate versus those to compete over all rounds of the prisoner’s dilemma experiment. When the individual decided to set a high price, this was considered as opting for a collaborative choice, in which the other party had also the option to decide for a high price such that both individuals would be able to make a profit. On the contrary, when the individual opted for a low-price strategy, this was considered as a non-collaborative option, since this implies that his or her organisation seeks to maximise own profits at the expenses of the other’s. Specifically, we have three different dependent variables addressing the (non-) collaborative behaviour of respondents, one for each version of the game. The first dependent variable, *Collab_1*, is the ratio for the sequential Game I in which the focal player moves first. The other two variables address the games in which participants were the second movers, and had to make their decisions knowing the decision of their counterparts. The second variable, *Collab_2_C*, involves Game II’s ratio, given that the other partner collaborates. Finally, the third variable, *Collab_2_D*, refers to Game III – i.e., to those cases in which the counterpart decided to compete (or defect from collaboration – hence the D).

The psychological literature has produced a great number of measures to assess an individual's personality. Traditionally, the one used most has been the Big Five personality trait scale (see, for a review, De Raad and Kokkonen 2000). In the current study, we opt for an update of this scale known as HEXACO, which is a six-dimensional personality trait model, being based on substantial new evidence (Ashton and Lee 2007; Ashton and Lee 2001). Thus, personality is measured by the 60-item HEXACO personality inventory (Ashton and Lee 2009). This scale includes 10 items for each of the following six personality traits: honesty-humility, emotionality, extraversion, agreeableness (versus anger), conscientiousness, and openness to experience. All items use a five-point Likert-type of scale, with response categories varying from 1 ("strongly disagree") to 5 ("strongly agree").

Table 2 provides the descriptive statistics and the correlation matrix. Overall, we can conclude that the bivariate correlations between the explanatory variables are low or moderate. Multicollinearity is negligible, too, as all variance inflation factors (VIFs) are below 1.5 (Hair et al. 2006).

EVIDENCE AND DISCUSSION

In order to test our hypotheses, we estimate a multiple equation model using seemingly unrelated regression techniques because the error terms of each regression could be correlated with the errors from the others (Zellner 1962). Table 3 reports the estimated model to determine how the explanatory variables affect each of the three dependent variables.

Overall, the variables considered in the analysis explain a small percentage of the variation in collaborative behaviour ($R^2 = 6.2\%$ for Collab_1; $R^2 = 2.8\%$ for Collab_2_C; and $R^2 = 5.4\%$ for Collab_2_D). This is in line with earlier work relating individual attributes and cooperative behaviour in a prisoner's dilemma setting (Boone, Brabander, and van Witteloostuijn 1999). Despite the low level of explained variance, Models 1 and 3 are associated with significant estimates of individual coefficients, lending support to the main argument of this article that PSM and personality traits may influence collaboration.

Regarding the effects of the included personality variables, we see results that are consistent with previous literature addressing the relation between HEXACO and collaboration. The honesty-humility dimension does not achieve significance in any of the models. At first sight, this is surprising as this trait is defined as an inclination to "cooperate with others even when one might exploit them without suffering retaliation" (Ashton and Lee 2007, 156). However, our finding is in line with other studies that have recently related the honesty-humility dimension to real pro-social decisions such as favouring environmental actions without finding significant effects (Markowitz et al. 2012). Emotionality and extraversion reveal very similar effects on collaboration. Both are insignificant in the first two games, but both are positively correlated with collaboration in the third game. Hence, more emotional and extravert individuals are more likely to collaborate when their counterparts have shown non-collaborative behaviour.

Agreeableness has a positive effect on collaboration when the individual does not know what the actions of their counterpart will be. As an example of how to interpret the coefficients, the result for this dimension shows that, all else being equal, each increase of a unit in the measure of agreeableness gives a .1 higher likelihood that this individual decides to collaborate at .01 significance. This fits with earlier studies revealing that persons with high agreeableness tend to exhibit more pro-social values and tend to behave more collaboratively (Volk, Thöni, and Ruigrok 2011). The literature stresses that individuals with high agreeableness tend to forgo self-interest in favour of the group's (Buss 1991). Indeed, our findings indicate that this is the case when individuals perceive their counterparts as collaborative. Consciousness and openness to experience both have little effect on collaboration. The only exception is that individuals very open to experiences show to be slightly less collaborative with counterparts who had decided not to collaborate ($\beta = -.03, p = .09$).

Overall, Table 3 shows that high-PSM individuals are more likely to collaborate, although the findings vary slightly across the three different games. Results for Game I reveal that PSM positively affects collaboration when individuals do not know what their counterparts will decide to do. In this case, a PSM increment of 1 is associated with an increase of .051 in the dependent variable Collab_1. This lends support to our first hypothesis. This result aligns well with previous studies suggesting that PSM is positively associated with the concern for the well-being of society (Perry and Wise 1990). High-PSM individuals having to choose between collaborating and competing

prefer to opt for the first strategy. By doing so, both participants will obtain positive monetary benefits.

When considering Game II, where the individual acts as a second mover responding to a collaborating counterpart, PSM does not achieve significance ($p = .83$). Thus, the second hypothesis is not supported. By choosing to compete and not to collaborate, individuals can ensure maximum personal economic profit. In this case, PSM does not seem to have any effect on the decision to collaborate. Arguably, when economic profit is high, the motivation toward the good of society may simply be dominated by the opportunity to obtain large individual benefit. So, PSM might drive individuals toward working for the benefit of the community only if economic incentives to serve self-interest are not too high. Our finding illustrates how economic incentives can undermine ethical motives (see, for a review, Bowles 2008). In public organisations, this could happen among those chief executives with high rewards linked only to the performance of their organisations, and not to the impact on society.

Finally, the dependent variable in Game III is positively affected by PSM: an increase of one PSM unit increases the likelihood to collaborate with a partner who decided not to collaborate by another unit. This result provides support for the third hypothesis. High-PSM individuals tend to collaborate despite knowing that their counterpart has decided to compete because they prefer to choose what they think is morally right rather than trying to limit their economic losses. In contrast with Game II, now individuals cannot obtain a large economic profit. That is, the cost of doing what they believe is morally right is to

lose more money. But if they decide to decide against their morality, they will suffer mental losses. Apparently, the latter dominates over the former for high-PSM individuals.

To sum up, the statistically significant effects of PSM on Collab_1 and Collab_2_D indicate that high PSM is associated with being more collaborative, as shown in Figure 1. The figure plots the collaborative values for each of the three games by grouping respondents in two categories: those with high levels of PSM (when $PSM > 4.12$) and those with lower levels of PSM (when $PSM < 4.12$). Results in Figure 1 resemble those found in the seemingly unrelated regressions, supporting the first and the third hypothesis. A plausible theoretical explanation is that high-PSM individuals are not highly economically driven, but instead prefer to act according to their desire to serve the public interest (Brewer and Selden 1998; Brewer, Selden, and Facer II 2000). However, the effects of PSM on collaboration are strongly driven by the partner's behaviour, as well as by the economic profit that the individual may obtain as a result of their decision-making. When the economic incentives to opt for competing are high, the effects of PSM vanish. However, when individuals high in PSM are aware that their counterparts opted for a non-collaborative strategy, implying that none of their strategies would result in economic profit, they stick to the option to collaborate despite knowing that they will receive lower economic benefit as a result.

The prisoners' dilemma experimental setting assumes that participants considered the effects toward society only within the experimental setting at hand. Hence, the current prisoners' dilemma setting implies that participants should consider the effects of their

actions and the actions of the other participants (Arend, 2009; Boone, Brabander, and van Witteloostuijn, 1999). However, it can be argued that participants could think beyond the strict experimental setting, and assess the effects that having high prices or low prices could have on potential users. Then, they could imagine a third payoff, affecting these potential product users. If so, we could expect to see that individuals with high levels of PSM are more interested in ensuring that the outcomes of the game at least guarantee that one of the two organisations offers the product at the lowest price, so that the potential users can benefit from this.

The results of this study are consistent with this interpretation of the experimental setting. When participants are aware that their counterparts opted for a low-price strategy or when they do not know what their counterparts will do, PSM-motivated individuals tend to choose a high-price strategy despite knowing that they will themselves receive lower economic benefit as a result.

CONCLUSION

By developing three prisoner's dilemma experiments, we show how both PSM and core personality traits may influence the decision to collaborate. The prisoner's dilemma game has been widely used in the social sciences to deepen our understanding of collaborative behaviour (Arend 2009; Rand et al. 2009; Boone, De Brabander, and van Witteloostuijn 1999). For example, we reveal that when individuals do not know what will be the choice of their counterpart, PSM, emotionality and agreeableness are significantly correlated with collaboration. High-PSM individuals are more inclined to make sacrifices for the

benefit of the other party, so behaving in the service of the common good. However, the importance of the context in which decision-making takes place provides interesting opportunities to further explore these issues. Future studies could test the conditions in which economic incentives can reduce the effects of PSM, whilst controlling for contextual and other individual variables.

Our study pioneers an experimental laboratory design in public administration, focusing on three versions of the prisoner's dilemma game. Experimental approaches to gather evidence have been shown to be associated with high internal validity in other disciplines, such as business, economics and psychology (Shadish, Cook, and Campbell 2002). However, these methodological approaches have been largely neglected in public administration research (Margetts 2011). This is certainly the case in the research tradition dealing with PSM, which is one of public administration's main concepts (Wright and Grant, 2010). Hence, our study illustrates the added value of experimental designs in PSM research.

Of course, our study is not without limitations. A first limitation of this study is shared with earlier work exploring similar experimental settings. As Boone, De Brabander, and van Witteloostuijn (1999, 368) warn, "although the Prisoner's Dilemma is widely used to model competitive versus cooperative behaviour, it does not, in itself, allow investigators to understand the underlying motives or reasons of individuals to cooperate or to compete." From this perspective, future studies are needed on the effects of individual attributes and contextual factors by using different types of collaboration scenarios, and

assessing the influence of other potential antecedents of collaborative behaviour.

It should be noted that the prisoners' dilemma game is a widely used experimental setting. In none of the studies reviewed, the argument is made that participants could extrapolate the effects of their actions beyond the strictly defined experimental setting. However, the intuition that some participants might actually think about impact beyond the boundaries of the experimental context is perfectly plausible. Accordingly, the results of this study should be matched with further research considering the effects of PSM on collaborative behaviours oriented toward different third parties, such as customers or citizens. This would allow to develop a deeper understanding of whether the nature of this third party that might benefit from or be harmed by the collaboration affects the relation between PSM and collaboration.

A second limitation of the present study has to do with the overall generalizability of our findings, a known disadvantage of experimental studies in laboratories. While experimental designs have clear benefits in any examination of the relationship between two or more variables, their results cannot be easily extrapolated to different settings, inside or outside the laboratory (Shadish, Cook, and Campbell 2002). Given the fact that our study relies on evidence from university students, the external validity of our findings should be assessed by conducting further research on the PSM – personality – collaboration nexus in a variety of empirical settings, ideally with serving chief executives of public agencies.

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Table 1 Payoff Matrix

		Organisation B	
		Low price	High price
Organisation A	Low price	(A: -200, B: -200)	(A: +600, B: -600)
	High price	(A: -600, B: +600)	(A: +200, B: +200)

Note: Cells indicate profits in thousand Euros: (A: organisation A's profit; B: organisation B's profit).

Table 2 Descriptive Statistics and Correlations for the Variables Considered in the Analysis

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
Honesty-humility	3.04	.57	1.00						
Emotionality	2.90	.62	.23**	1.00					
Extraversion	3.45	.55	-.01	-.26**	1.00				
Agreeableness	3.03	.52	.26**	-.05	-.08	1.00			
Conscientiousness	3.33	.63	.25**	.19**	-.01	-.04	1.00		
Openness to Experience	2.77	.60	-.09	-.00	.02	-.14**	-.00	1.00	
PSM	3.88	.62	.14*	.15**	.05	-.00	-.00	.26**	1.00

Note: *M* = mean; *SD* = standard deviation; * $p \leq .05$; ** $p \leq .01$.

Table 3 Results from Seemingly Unrelated Regression Analysis

	Collab_1			Collab_2_C			Collab_2_D		
	Coef.	Std. Err.	p	Coef.	Std. Err.	p	Coef.	Std. Err.	p
<i>Explanatory Variable</i>									
PSM	.051	.026	.049**	-.003	.018	.834	.028	.016	.088*
<i>Control Variables</i>									
Honesty-humility	-.045	.035	.190	.007	.024	.759	-.031	.022	.161
Emotionality	-.064	.031	.040**	.002	.021	.903	.046	.019	.020**
Extraversion	-.016	.035	.636	-.007	.024	.773	.046	.022	.040**
Agreeableness	.100	.037	.007***	.049	.026	.056*	-.008	.023	.719
Conscientiousness	.016	.029	.584	-.029	.020	.154	-.017	.018	.354
Openness to Experience	-.027	.031	.383	.025	.021	.244	-.032	.019	.098*
Constant	-.097	.126	.444	.064	.088	.467	-.164	.080	.041**
R-squared (χ^2)	.062		.017**	.028		.373	.054		.039**

Note: * $p \leq .10$; ** $p \leq .05$; *** $p \leq .01$

Figure 1 Relationship between Collaboration and PSM (Game I, Game II and Game III, respectively)

Note: Values of PSM were considered high (2) when > 4.12 and low (1) when < 4.12.