RISK IN PUBLIC PRIVATE PARTNERSHIPS: BEHAVIORAL EXPERIMENTS ON RISK PREFERENCE, RISK PERCEPTION, AND RISK PARTICIPATION

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"If there were no limits to human rationality administrative theory would be barren."

(Herbert A. Simon, 1945: 240)

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Life is full of making risky choices and taking on academia as a profession is about as uncertain as it gets. I believe that deep in my heart, I'm a risk-averse person. I like to calculate stuff, I like things that you can count, and I plan everything out months ahead; and then life kicks in and I suddenly just do whatever my gut-feeling tells me – I'm sure, Gerd Gigerenzer would be proud. I've always been intrigued by how the human mind deals with risk and uncertainty and a considerable part of this book is driven by my personal interest in making sense of people's (including my own) curious behavior.

In hindsight, but certainly before nostalgia kicks in, I can honestly say that daring to pursue this research project was one of the best decisions of my life. I'm looking back at three amazing years filled to the brim with blood, sweat, and tears but also with innumerable fantastic experiences, with fascinating intellectual challenges, and with finding new friends among the most extraordinary people from all over the world who inspire me to go farther, dig deeper, and venture out of my comfort zone each and every day.

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Kristina S. Weißmüller
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LIST OF ABBREVIATIONS

[1] ..... Study [1]
I_i ..... Index of main effects models
I_{ii} ..... Index of models with interaction effects
[2] ..... Study [2]
[3] ..... Study [3]
[4] ..... Study [4]

[A] ..... Pre-study [A]
α ..... Cronbach's α
α ..... First order error
A_i ..... Monetary amount of reward
A_{Di} ..... Monetary amount of reward (delayed)
A_{Ii} ..... Monetary amount of reward (immediate)
A_{Pi} ..... Monetary amount of reward (under risk)
A_{Si} ..... Monetary amount of reward (at certainty)
AIC ..... Akaike information criterion
AoM ..... Academy of Management
APM ..... Attraction to policy making
ASA ..... Attraction-Selection-Attrition (model)

[B] ..... Pre-study [B]
b ..... b-coefficient
β ..... Beta-coefficient (standardized)
BAWL-r ..... Berlin Affective Word List Reloaded
BEL ..... Belgium
BIC ..... Bayesian information criterion
BIS ..... Barratt's Impulsiveness Scale
BPA ..... Behavioral public administration

c_t ..... Cake size in negotiation round *t*
C1 ..... Treatment cluster 1: neutral & negative vignette
C2 ..... Treatment cluster 2: negative & positive vignette
C3 ..... Treatment cluster 3: neutral & positive vignette
C73 ..... *Stochastic and Dynamic Games; Evolutionary Games; Repeated Games* (JEL)
C78 ..... *Bargaining Theory; Matching Theory* (JEL)
Chi² ..... Bartlett's or Wald's *Chi²*
CI ..... Confidence interval
COM ..... Compassion
CPI ..... Commitment to the public interest

D_i ..... Delay

D81 ..... *Criteria for Decision-Making under Risk and Uncertainty* (JEL)
D91 ..... *Role and Effect of Psychological, Emotional, Social, and Cognitive factors in Decision making* (JEL)
DD ..... Delay discounting
d ..... Cohen's *d*
df ..... Degrees of freedom

ECPR ..... European Consortium for Political Research
EGPA ..... European Group for Public Administration
ERP ..... Explicit risk preference
η^2 ..... Effect size; (uncorrected) correlation ratio
EURAM ..... European Academy of Management

F ..... F-statistic
f ..... Frequency

GER ..... Germany

h_i ..... Probability discounting parameter
$H1_i$ ..... Hypothesis 1_i
$H2_i$ ..... Hypothesis 2_i
$H3_i$ ..... Hypothesis 3_i
$H4_i$ ..... Hypothesis 4_i
H83 ..... *Public Administration; Public Sector Accounting and Audits* (JEL)
HRM ..... Human resource management

IASIA ..... International Association of Schools and Institutions of Administration
IAT ..... Implicit Association Test
ICC ..... Interclass correlation coefficient
IIAS ..... International Institute of Administrative Sciences
IF ..... Impact factor
IPSA ..... International Political Science Association
IRSPM ..... International Research Society on Public Management

JEL ..... Journal of Economic Literature (classification)

k_i ..... Delay discounting parameter
KMO ..... Kaiser-Meyer-Olkin (criterium)
KNAW ..... Dutch Royal Academy of Arts and Sciences

M ..... Mean

M_i ..... Magnitude of reward
max. ..... Maximum
min. ..... Minimum

N ..... Number of respondents
n ..... Number of responses
NL ..... The Netherlands
n.s. ..... Non-significant

Obs. ..... Observations
ÖPP ..... Öffentlich-private Partnerschaften
OLS ..... Ordinary least squares

p ..... p-value
p_i ..... Probability of obtaining the reward
PA ..... Public administration
PD ..... Probability discounting
PDQ ..... Probability Discounting Questionnaire
PM ..... Public management
PPP(s) ..... Public-private partnership(s)
PSG ..... Permanent study group
PSM ..... Public service motivation

r_t ..... Residual of cake c_t in negotiation round t
RCT ..... Randomized controlled trial
R^2 ..... Coefficient of determination
ρ ..... Rank-based correlation coefficient

SD ..... Standard deviation
SE ..... Standard error
$\sum$ ..... Sum
SIR ..... Stimulus-Intention-Response (model)
SMP ..... Semantic Misattribution Procedure
SRB ..... (Pro-)social rule-breaking
SS ..... Self-sacrifice

t ..... t-statistic
t ..... Negotiation round t
T ..... Absolute number of negotiation rounds

Θ ..... Odds against obtaining the reward

U ..... Uniqueness

V_{Di} ..... Subjective expected value (delayed)
V_{Ii} ..... Subjective expected value (immediate)
V_{Pi} ..... Subjective expected value (under risk)
V_{Si} ..... Subjective expected value (at certainty)
var ..... variance
VHB ..... German Academic Association for Business Research
VHB JOURQUAL ..... VHB Journal Ranking
VIF ..... Variance inflation factor

W (n) ..... Shapiro-Wilk test
WiSo ..... Faculty of Business, Economics and Social Sciences
WiSo PromO ..... WiSo Doctoral degree regulations

x_t ..... Proposer's individual demand in round *t*

$y_t(x_t)$ ..... Respondent's individual demand in round *t*

Overview of studies and declaration of contribution

Journal	Status	Ranking[1]		Contribution[2]	Conference Presentations
		IF	VHB		
Study [1]: 'PUBLICNESS AND MICRO-LEVEL RISK BEHAVIOUR – Experimental evidence on stereotypical discounting behaviour' by Weißmüller, K. S.					
Public Management Review.	under review	3.394	B	100 %	• *20th International Research Society on Public Management (IRSPM) Annual Conference 2016*, nominated for the IRSPM Young Researcher Award, 13.-25.04.2016, Hong Kong, People's Republic of China. • *24th World Congress of Political Sciences, International Political Science Association (IPSA)*, 23.-28.07.2016, Poznan, Poland. • *European Group for Public Administration (EGPA) Annual Conference 2016*, nominated for Best Paper Award of PSG XXII (BPA), 22.-26.08.2016, Utrecht, The Netherlands. • *2016 IIAS-IASIA Joint Congress*, 20.-23.09.2016, Chengdu, PR China. • *Academy Colloquium "Behavioral Public Administration" at the Dutch Royal Academy of Arts and Sciences (KNAW)*, 03.-05.11.2016, Amsterdam, The Netherlands.
Study [2]: 'TRUST IN PPPS – A behavioral framing experiment on the paradoxical effect of 'publicness' on strategic behavior in PPPs' by Weißmüller, K. S. & Vogel, R.					
Journal of Public Administration and Research.	revise & resubmit	4.409	A	75 %	• *European Group for Public Administration (EGPA) Annual Conference 2017*, 30.08.-01.09.2017, Milan, Italy. • *22nd International Research Society on Public Management (IRSPM) Annual Conference 2018*, 11.-13.04.2018, Edinburgh, United Kingdom.
Study [3]: 'NEGOTIATION IN PUBLIC-PRIVATE PARTNERSHIPS – A laboratory experiment on context, domain, and PSM' by Weißmüller, K. S., Bouwman, R. & Vogel, R.					
Journal of Public Administration and Research.	under review	4.409	A	80 %	• *21st International Research Society on Public Management (IRSPM) Annual Conference 2017, 19.-21.04.2017*, Budapest, Hungary. • *European Group for Public Administration (EGPA) Annual Conference 2018*, 05.-07.09.2018, Lausanne, Switzerland.
Study [4]: 'PUBLIC SERVICE MOTIVATION AND PRO-SOCIAL RULE-BREAKING – An international vignettes study in Belgium, Germany and the Netherlands' by Weißmüller, K. S., De Waele, L., & van Witteloostuijn, A.					
Academy of Management Proceedings 2018 (1).	published	.	.	50 %	• *European Academy of Management (EURAM) 2018 Conference*, SIG PNPM Best Paper Award, 20.-23.06.2018, Reykjavik, Iceland. • *78th Annual Meeting of the Academy of Management (AoM)*, 10.-14.08.2018, Chicago, US. doi.org/10.5465/AMBPP.2018.12966abstract • *European Consortium for Political Research (ECPR) 2018 General Conference*, Section S73 "The Politics of Bureaucracy", 22.-25.08.2018, Hamburg, Germany.
Public Administration.	under review	3.035	B		

[1] IF: Impact factor (3-yr.) 2017; VHB: VHB-JOURQUAL 3.

[2] Statement of author's individual contribution according to § 6 (3) of WiSo PromO, version of 18th January 2017; more detail in Appendix B.

CHAPTER 1: SYNOPSIS

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1. Introduction

This dissertation explores individuals' micro-level risk behavior in sector-specific contexts and public-private partnerships (PPPs). Following the emerging perspective of behavioral public administration (BPA), it presents quantitative evidence derived from four independent (quasi-)experimental studies that test causal hypotheses on the interaction of strategic behavior with *economic risk*, *behavioral uncertainty*, sectoral *partner heterogeneity*, *conflicting incentives*, and *incongruent motives* that are typical for the complex choice environments of PPPs. Based on Herbert Simon's (1945) classical work on bounded rationality in *Administrative Behavior* as well as insights and methods derived from social psychology and behavioral economics, this dissertation contributes to the theoretical foundations of micro-level risk behavior in PPPs, specifically focusing on decision makers' *risk preferences*, *risk perception*, and *risk participation*.

PPPs are formalized long-term oriented cross-sectoral arrangements in which public and private sector agents collaborate for mutual benefit, bundling and sharing risks to realize large-scale projects or create organizations in a synergetic manner (Hodge & Greve 2007; Reynaers & De Graaf 2014; Villani *et al.* 2017). Although PPPs have become essential for the provision of public goods and services worldwide (Wang *et al.* 2018), many PPPs lack performance because partners often fail to sustain mutually beneficial partnerships and tend to recur to self-serving strategies that, ultimately, lead to partnership failure (Klijn & Teisman 2003; Kee & Forrer 2012; Hodge & Greve 2017). This is problematic because PPP failure results in dramatic losses for the public partners who absorb the negative consequences for the general public while private partners may ride free (Klijn & Teisman 2003; Hodge 2004; Edelenbos & Klijn 2007; Hodge & Greve 2007; Bryson *et al.* 2015).

Prior macro-level research indicates that PPPs are more likely to suffer from coordination problems and lack of effective risk-sharing among partners than *regular* (i.e. non-cross-sectoral) strategic partnerships (Klijn & Teisman 2003; Iossa & Martimort 2015; Nachbagauer & Schirl-Boeck 2019). *Why is partnering and sharing risks across sectoral boundaries so hard?*

Recent streams of behavioral research on the idiosyncrasies of strategic risk behavior in cross-sectoral contexts (Zou & Kumaraswamy 2009; Bouwman *et al.* 2019), on cognitive and

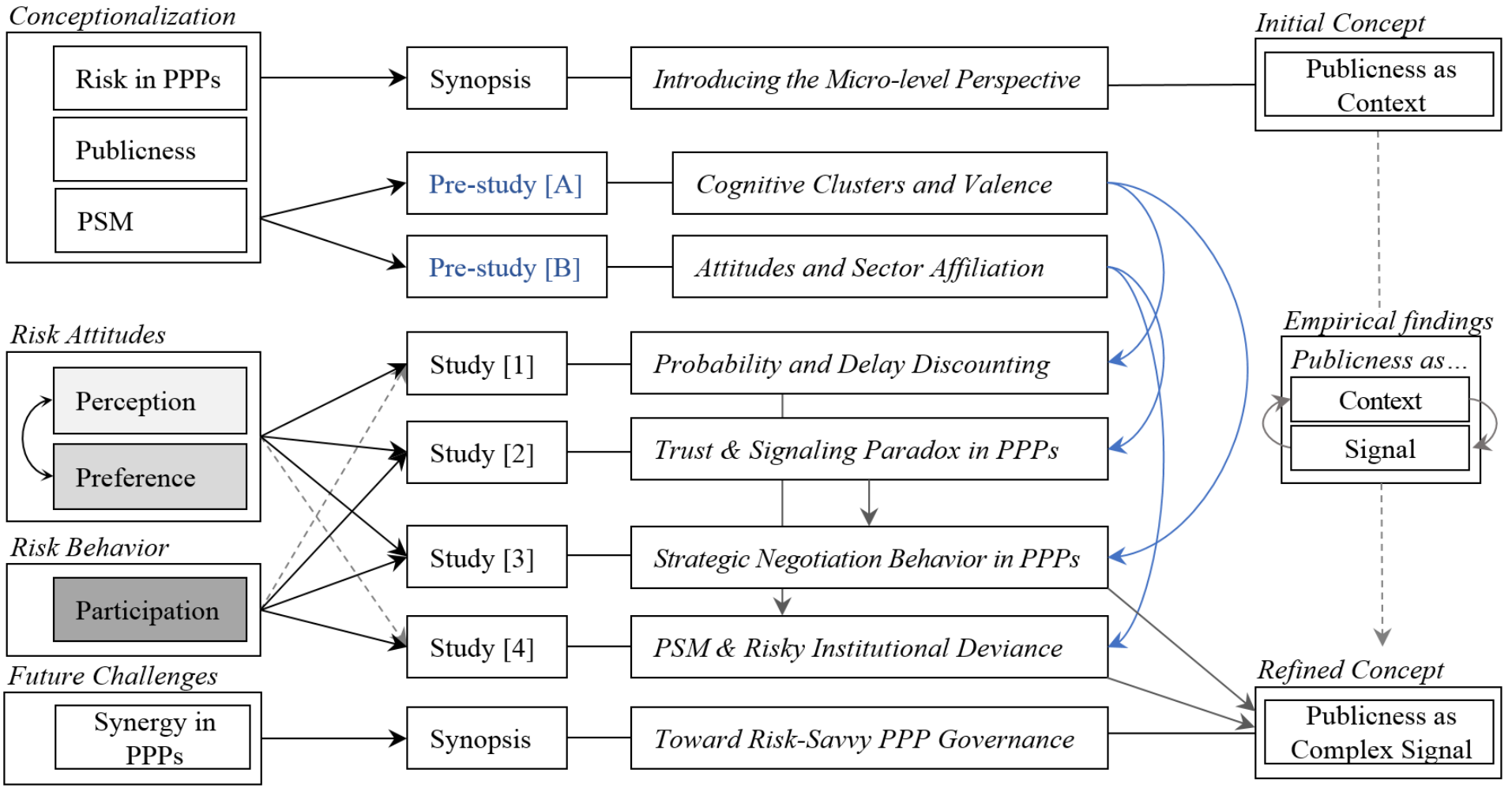
affective biases related to the public sector (Barry & Oliver 1996; Bazerman *et al.* 2000; Tsay & Bazerman 2009; Marvel 2015), and on institutional dissimilarities between the sectors (Simon 1945; Fottler 1981; Ghere 2001; Pesch 2008; Gulati *et al.* 2012; Saz-Carrenza & Longo 2012) suggest that PPPs essentially create *dysfunctional negotiation spaces* that incorporate incentive problems on the micro-level of behavior by design, ultimately incentivizing defection (Albanese & Fleet 1985; Güth *et al.* 1997; Connelly *et al.* 2001), impeding coordination efficacy, and leading to partnership failure despite potentially synergetic prospects (Hodge & Greve 2009; Malatesta 2011; Kee & Forrer 2012).

To extent and test this idea, we designed a consecutive research agenda (Figure 1) and conducted four independent experimental studies that together illuminate four dimensions that might bias decision makers' risk behavior in and increase their motivation to defect from functional PPPs, namely: their *discounting behavior* (regarding probability and delay) under risk [study 1], their propensity to *trust in partners* under behavioral uncertainty [study 2], their *strategic negotiation behavior* in PPPs [study 3], and the relation of *public service motivation* (PSM) with institutional deviance [study 4], thus heeding to explicit calls for micro-level experimental exploration of the effect and emergence of risk in PPPs (Medda 2007; Hodge & Greve 2009; Bouwman 2018; Bouwman *et al.* 2019). The research agenda implements the dual perspective of BPA by combining theory, methods, and insights from social psychology and behavioral economics.[1]

Although not central to its theoretical contributions, this research project advances the methodological toolbox of BPA by introducing four novel experimental designs and procedures to the field of public administration (PA) and public management (PM) research. Specifically, it is the first project conducting a centipede game (Rosenthal 1981) and a bargaining game with dynamic dominance (Crawford 1997) in the context of PPPs, heeding calls by Jilke *et al.* (2016), van Witteloostuijn (2015), Bouwman (2018), and Walker *et al.* (2017). Furthermore, it introduces two indirect measures based on economic trade-off tasks to reveal implicit risk (Madden 2009) and delay discounting (Kirby *et al.* 1999), and it develops an innovative mixed-methods approach to decipher implicit associative affect from explicit sectoral associations (Võ

[1] A call that resonates from Herbert Simon's (1945) vision of a *dual science of public administration*: One that he called "*social*" – in the sense that this scholarship should be concerned with deriving (normative) theory on how individuals make decisions in the social environment of public sector organizations – and a second administrative science that Simon referred to as "*practical*" in the sense of making economic predictions related to organizational behavior. The former idea developed into the micro-level perspective of *behavioral public administration*, while the latter manifests in the meso and macro perspectives of public economics and public transaction-cost theory.

Figure 1: Research agenda and contextualization of studies



et al. 2009). This innovative methodology comes with a number of crucial advantages. First, by opting for rigorous (quasi-)experimental[1] research designs, we identify causal mechanisms based on systematic and balanced variation of randomized treatments, systematically controlling for response bias (e.g. magnitude effects) and boundary conditions by conducting multiple replications, as well as combining explicit and implicit measures to encounter the issue of endogeneity and self-report bias (van Witteloostuijn 2015; Jilke *et al.* 2016; Grimmelikhuijsen *et al.* 2017; Walker *et al.* 2017; Vandenabeele *et al.* 2018). Second, by contextualizing our experiments with both semantic priming and vignette-based scenarios, we implement recommendations by Aguines and Bradley (2014), Hvidman and Andersen (2016), and Schacter and Graf (1986) to elicit sector-specific behavior by contextual framing treatments and elaborate cognitive processing.

The remainder of this synopsis is structured as follows: the subsequent section shortly introduces the theoretical key concepts of our research agenda – i.e. *micro-level risk in PPPs*, *publicness*, and *PSM* – to specify the conceptual perspective of this thesis as well as its core assumptions. The next section summarizes the contribution of the four main studies and presents the procedures and results of two pieces of preliminary research. After synthesizing the overall contributions in context, this synopsis concludes with avenues for future research.

2. Theory

2.1. Risk in PPPs

In archetypical dyadic PPPs – that is their simplest form comprising only one public and one private agent – two factors essentially drive micro-level risk behavior: *Context* and *choice* (Barry & Oliver 1996).

Risk is the pervasive factor of economic activity. The term *known risks* refers to risks that can be estimated and predicted statistically because the probabilities of their occurrence are precisely identifiable (i.e. *knowable*). In contrast, *unknown risks* are called '*uncertainty*'. Classic Knightian (1921) uncertainty describes choice environments in which individual decision makers can neither determine the full set of possible outcomes of their choice nor can they ascertain the likelihood of said outcomes a priori (Knight 1921; van Asselt & Renn 2011;

[1] Study [4] does not qualify as a full experimental design because its dependent variable (PSM) is a character trait latently nested in the individual respondent and does, therefore, not allow external control and systematic variation by the experimenter, hence the "*quasi-*" (Grant & Wall 2008).

Winch & Maytorena 2012). Rational decision making under known risks requires logical thinking based on goal specification, cost-benefit estimation, and subsequent action. Unfortunately, uncertainty inhibits *homo oeconomicus*'s rational calculus and instead requires heuristic decision-making practices to achieve sufficient outcomes (Gigerenzer & Selten 2001; Gigerenzer & Gaissmaier 2011).

PPPs typically contain both forms of risk on the operational level of partnering – e.g. the tangible risks related to construction costs or human resource management in large scale PPP projects – as well as on the strategic level. For instance, uncertainties persist *within* the PPP regarding partners' hidden characteristics, hidden agendas, their likelihood and potential motives to defect, and their collaboration efficacy (Bing *et al.* 2005; Klijn & Teisman 2005) but uncertainty also intrudes PPPs from the *outside* (i.e. their external organizational environment) e.g. in the form of obstacles that emerge from changes in regulations affecting the PPP (Klijn & Teisman 2003).

In order to make risk-savvy choices under uncertainty, decision-makers in PPPs need to rely on rational heuristics. Rational heuristics are cognitive shortcuts – rules of thumb – based on learned behavior, attitudes, and associations developed from prior experience.[1] Activated by internal or external cues, heuristics reduce choice complexity by priming and streamlining the cognitive process of decision making by activating psychological and behavioral patterns, which have resulted in *sufficient* solutions to similar choice problems in the past (Fazio *et al.* 1986; Gigerenzer & Goldstein 1996; Kahneman 2003; Petty *et al.* 2007). In multi-agent choice problems, this process results in satisfying outcomes with most problems of coordination and negotiation but only as long as everyone involved in solving the choice problem has learned *similar* heuristics (Calanni *et al.* 2014). This premise is not met in PPPs: public and private agents experience substantial heterogeneity between partners, especially regarding the fundamental logics (Fottler 1981; Saz-Carranza & Longo 2012), motives and subjective non-partnership related goal dimensions that direct partners' behavior and perception. Public and private sector agents are typically equipped with cognitive frames and behavioral strategies that

[1] *Attitudes* are one of the most important constructs in the field of social psychology as they represent the centerpiece of social evaluation (Petty *et al.* 2007; Ferguson & Fukukura 2012). Greenwald and Banaji (1995) define attitudes as relatively stable dispositions toward social objects – such as individuals, groups, organizations, or sectors – which facilitate decision making by decreasing cognitive load (Madhavaram & Appen 2010). To serve this purpose, attitudes function as learned heuristics to regularly act positively or negatively toward said social objects. Based on both the social context of an evaluative situation and on former experiences stored in memory, attitudes are activated automatically and are associated with positive or negative affect to guide behavior through approach and avoidance (Fazio *et al.* 1986; Bazerman *et al.* 2000; Ajzen 2001).

result in sufficient outcomes in their original sectors. However, these frames and strategies might not necessary match the particular requirements of similar choice problem within the partnership and might not be adequate in their partners' sector (Simon 1945; Scharle 2002; Kanner 2005).

Consequently, PPPs also carry a momentum of inter-individual uncertainty regarding the degree to which public partners can anticipate their private partners' strategic behavior and vice-versa. Prior research shows that individual and group-related heterogeneity ("*otherness*") creates tension in strategic partnerships, erodes partners' trust in each other, and increases the likelihood of defection (Gurevitch 1988; Klijn and Teisman 2003; Hodge and Greve 2007; Bryson *et al.* 2015) especially if incentives to pursue subjective goals parallel or opposed to the objectives of the PPP emerge (Fottler 1981; Laffont & Martimort 2002; Kee & Forrer 2012).[1]

Prior studies by Van Ham and Koppenjan (2001), Bing *et al.* (2005) and Hodge and Greve (2009) point out that sectoral differences regarding institutional logics, values, and managerial practices manifest in higher costs of initiating, monitoring, and successfully completing PPPs – compared with non-cross-sectoral partnerships – especially if individual accountability is low. These adverse effects of group-related heterogeneity become accelerated by the mostly negative stereotypes (e.g. risk aversion, red tape, underperformance) associated with the public sector (James & Moseley 2014; Marvel 2015; Olsen 2015; Marvel 2016; del Pino *et al.* 2016). Kanner (2005) suggests that individuals' perception and evaluation of partnership-related risks, strategies, and behaviors are likely to be biased by these common stereotypes (Greenwald & Banaji 1995; Rojas2016), and that they might eventually lead to coordination failure because (negative) assumptions about partners' will or capacity to collaborate can have detrimental effects on agents' own strategic behavior under risk, ultimately resulting in partnership collapse or defection (Güth *et al.* 1997; Gulati *et al.* 2012; Bryson *et al.* 2015). It follows that

Assumption 1: Partner heterogeneity compromises strategic risk behavior in PPPs

in the sense that agents with strong negative attitudes regarding their partners' sector will be less likely to trust their partner(s), and they will be more likely to exhibit self-serving behavior in the context of the PPP, increasing their own likelihood to defect.

[1] This effect is based on behavioral homophily, i.e. the tendency to prefer to collaborate with agents that are similar to one's own group, because decision makers find it easier to anticipate the behavior of partners who are more alike to themselves (Calanni *et al.* 2014; Kets & Sandroni 2014).

2.2. Publicness: Bounded rationality in context

Publicness is one of the core concepts of PA and PM research and yet scholarship has struggled for decades to find a clear definition of this peculiar concept (e.g. Rainey *et al.* 1976; Perry & Rainey 1988; Coursey & Bozeman 1990; Bozeman & Bretschneider 1994; Scott & Falcone 1998; Rainey & Bozeman 2000; Pesch 2008; Andrews *et al.* 2011). Publicness may function as an *attribute* associated with individual or organizational agents but it can also relate to the definition, framing, or specification of the specific *context* of behavior. The concept itself appears vague because scholars originating from different administrative traditions tend to either argue that there are immense differences between public and non-public organizations – i.e. the *economist core* approach (Simon 1945; Rainey *et al.* 1976; Pesch 2008) – or argue that there are hardly any difference at all, i.e. the *generic* approach (Rainey *et al.* 1976; Fottler 1981; Coursey & Bozeman 1990).[1] This thesis follows the economist core approach, recognizing that – due to their essentially public welfare oriented occupation – public organizations differ profoundly from private organizations regarding their values, management styles (Fottler 1981; Nartisa *et al.* 2012), the personnel they attract (Kjeldsen & Jacobsen 2012), and their institutional logics (Saz-Carranza & Longo 2012), which shape and constrain their strategic room for maneuver by setting tangible and intangible choice boundaries. These boundaries suggest that

> *Assumption 2: Individuals pursue dissimilar risk strategies in a public vs. a private sector context.*

2.3. Maximizing and Satisficing

In his perennial work '*Administrative Behavior'*, Herbert Simon (1945) points out that human decision making and economic rationality are fundamentally bounded by their context and their agency, in the sense that people have to settle with *satisfactory* decisions when being *framed* and, consequently, *restricted* by the organizational constraints that set their room for maneuver (Simon 1945: XXV): "Human rationality operates […] within the limits of a

[1] In contrast, scholars applying the *political core* and the *normative concept* argue that public and non-public organizations are hardly comparable at all because of the close amalgamation of PA with policy making and implementation (Appleby 1945; Lambright 1971; Pesch 2008). The *dimensional* approach (Wamsley & Zald 1973; Bozeman 1987; Bozeman *et al.* 1992) argues that real-life organizations defy conventional and inherently simplistic classifications and that an organization's level of publicness should be defined with a multi-dimensional spectrum incorporating its degree of politicization and authority, its economic and political autonomy, its commitment to the public interest and public values, and its formal legal status (Bozeman & Bretschneider 1994; Scott & Falcone 1998).

psychological environment. This environment imposes on the individual as 'givens' a selection of factors upon which he must base his decisions" (Simon 1945: 108). These 'givens' translate into tangible and intangible frames and systems – i.e. institutional logics, organizational cultures, paradigms, values, attitudes, and objectives – against which any strategic decision is evaluated against to determine its *adequacy in context*. Unsurprisingly, these frames differ fundamentally between the realm of the public and the private sector (Fottler 1981; Gigerenzer and Gaissmaier 2011; Nabatchi 2018) and prior empirical research revealed substantial differences in risk behavior across sectors (Bozeman & Bretschneider 1994; Nutt, 2005; Chen & Bozeman 2012; Eshuis & van Buuren 2014).

Organizations' 'givens' restrict micro-level behavior more strongly in the public compared to the private sector: Simon (1945: 69) argues that "in private organizations [decision-making] is much simpler than in public agencies. The private organization is expected to take into consideration only those consequences of the decision which affect it, while the public agency [and its agents] must weigh the decision in terms of some comprehensive system of public or community values" (Simon, 1945: 69). (Stereo-)typically, private agents are supposed to follow strategies that maximize their individual or their organization's subjective utility, implicitly aligning their strategic behavior closely with the predictions of classic theories economic behavior (von Neumann & Morgenstern 1944; Simon 1945: 69). In contrast, public agents' decision space and freedom in strategic maneuver is substantially smaller because they are supposed to take into account not "[…] only those consequences of the decision which affect [s … their own organization but they must also] weigh the decision in terms of some comprehensive system of public or community values" (Simon 1945: 69). Consequently, public agents' negotiation space concerning their strategic choice is more limited than private agents'. It follows that

> *Assumption 3: Public agents pursue utility satisficing – instead of utility maximizing – strategies.*

2.4. Public Service Motivation

Normative choice theory predicts that individuals are mainly motivated by self-interest (von Neumann and Morgenstern 1944; Luce and Raiffa 1957), yet 50 years of research into behavioral economics and social psychology reveals that individuals' strategic behavior under risk and uncertainty frequently and systematically deviates from the theoretical paradigm of maximizing subjective utility. Individuals prefer to contribute to the greater good, share more

than they are obliged to and are generally motivated by values that consider the consequences of their behavior for their social environment (Kuhlman & Marshello 1975; Van Lange & Kuhlmann 1994; Bozeman 2007). This systematic deviation from normative rational choice strategies can be explained by the idea that individuals do not consider themselves as isolated agents. Instead, their behavior is driven by an abstract value-related motivation to serve others and the public interest based on social value orientation, reciprocity, and a preference for fairness and sharing (Bogaert *et al.* 2008; Balliet *et al.* 2009; Nabatchi 2018).

This preferential deviance from normative choice theory is not limited to the private sector but is also evident in public agents. In public sector scholarship, the most prominent concept to explain this motivation to serve others is PSM that is "an individual's predisposition to respond to motives grounded primarily or uniquely in public institutions" (Perry 1996: 6). Vogel and Kroll (2016) found that individuals' level of PSM is relatively stable over time. Consequently, a central claim in the field of PSM research is that high-PSM people exhibit dissimilar behavior than low-PSM people and that high-PSM individuals are specifically likely to self-select into public sector employment (Perry *et al.* 2010; Kjeldsen & Jacobsen 2013). PSM is associated with commitment to the public interest, compassion, self-sacrifice, and attraction to policy making (Coursey & Pandey 2007; Vandenabeele 2008; Esteve *et al.* 2016). Furthermore, PSM is associated with to altruism, social value orientation, and pro-social behavior (Houston 2006; Esteve *et al.* 2015; Esteve *et al.* 2016; van Witteloostuijn *et al.* 2017). Despite all these laudable characteristics, a number of recent studies show that high-levels of PSM may also have negative consequences – both for the individuals and the organizations they are engaged in (Schott & Ritz 2017). For instance, *dark sides* of PSM manifest in the form of a higher likelihood for behavioral deviance, over-attachment (Andersen & Hjortskov 2016), higher levels of stress (Giauque *et al.* 2012), motivated reasoning in evaluation (Keiser 2010), discriminatory behavior (Tummers *et al.* 2015), and institutional deviance by exploitation of de facto discretion when dealing with resource challenges (Tummers *et al.* 2015). This puzzling amalgamation of effects suggests that

Assumption 4: High-PSM agents are less predictable partners in PPPs.

Table 1: Summary of methods and findings

	Research question(s)	Material	Method	Central findings
Pre-study [A]: 'Cognitive Clusters and the Valence of Sector-specific Associations' by Weißmüller, K. S.				
	• Do German citizens distinguish between the cognitive concepts of the public and the private sector?	• *N* = 459 respondents • *Obs*. = 1,470 sector-specific associations	• Online survey • Implicit associative affect with Võ *et al.*'s (2009) BAWL-r	• Respondents distinguish sharply between the cognitive clusters of the public and the private sector. • The public sector is strongly associated with terms that transport negative emotional valence. • 'Publicness' can serve as a valid cue for behavioral experiments in Germany.
Pre-study [B]: 'Connecting Professionals' Sector Affiliation with Sector-specific Attitudes' by Weißmüller, K. S.				
	• Are implicit associations toward the sectors associated with professional sector affiliation? • What is the role of anchoring and order effects in cross-sectoral attitudes research?	• *N* = 382 respondents • Population-based German sample • *Obs*. = 800 attitude responses	• Online survey experiment • Original preference measure • Randomized question order	• Negativity toward the public sector is primarily driven by public sector employees. • Civil servants with tenure are the most negative about the public sector. • Sector-specific evaluations are relative to each other and serve as benchmarks to each other. • Private sector employees are more susceptible for sector-specific information cues but only with regard to their public sector attitudes.
Study [1]: 'PUBLICNESS AND MICRO-LEVEL RISK BEHAVIOUR – Experimental evidence on stereotypical discounting behaviour' by Weißmüller, K. S.				
	• Does 'publicness' as a framing context influence probability and delay discounting behavior? • What is the role of respondents' real-life sector affiliation?	• *N* = 400 respondents • *Obs*. = 22,800 economic choices under risk and delay	• Online survey experiment • Randomized contextual framing treatment • Madden *et al.* (2009) • Kirby *et al.* (1999)	• Framing managerial choices in a public vis-à-vis a private sector context does not automatically bias individual discounting behavior. • Actual public sector employees systematically overestimate economic risk and were more tolerable toward delay compared with the general population. • Results point toward a strong association between public sector employment and biases in risk behavior. Possible explanations are self-selection, risk-averse incentive structures within public organizations, and a dissimilar interpretation of risk and delay related to PSM.
Study [2]: 'TRUST IN PPPS – A behavioral framing experiment on the paradoxical effect of 'publicness' on strategic behavior in PPPs' by Weißmüller, K. S. & Vogel, R.				
	• Does partners' sector-affiliation influence risk strategies in PPPs under uncertainty? • In what way do sector-specific attitudes and associations influence individuals' will to collaborate?	• *N* = 482 respondents • *Obs*. = 3,792 strategic choices	• Online survey experiment • Randomized contextual multi-stage framing treatment • Centipede game (gain domain)	• Partner's sector affiliation is a powerful cue for behavior because it elucidates associations that can have detrimental effects on collaboration efficacy by creating anti-private sector bias. • Collaboration intent is moderated by sector-specific attitudes. • People are more likely to defect in later stages of the PPP life-span. Emotional involvement with the public sector is positive for PPP survival but people with high levels of PSM are more likely to terminate the PPP early.
Study [3]: 'NEGOTIATION IN PUBLIC-PRIVATE PARTNERSHIPS – A laboratory experiment on context, domain, and PSM' by Weißmüller, K. S., Bouwman, R. & Vogel, R.				
	• Does partners' sectoral agency influence negotiation strategies in PPPs? • Does sector affiliation and domain stimulate utility maximizing behavior? • What is the role of implicit affect & PSM?	• *N* = 118 respondents • *Obs*. = 8,368 negotiation offers, counteroffers • *n* = 1,121 contracts	• Z-Tree lab experiment • Randomized contextual framing treatment • Bargaining game with dynamic dominance	• Both public and private sector agents fail to share risks and benefits efficiently when bargaining in a PPP setting, especially in the domain of losses and irrespective of attitudes. • Public agents are less likely to pursue subjective utility maximizing negotiation strategies. • PSM moderates the effect of domain on sectoral agency asymmetrically across magnitudes. • Results indicate that satisficing might be a rational heuristic for public agents with high PSM.
Study [4]: 'PUBLIC SERVICE MOTIVATION AND PRO-SOCIAL RULE-BREAKING – An international vignettes study in Belgium, Germany, and the Netherlands' by Weißmüller, K. S., De Waele, L., & van Witteloostuijn, A.				
	• Are high-PSM people more likely to engage in institutional deviance by abusing their *de-facto* discretion?	• *N* = 624 respondents from GER, BEL, & NL • *Obs*. = 1,239	• Online survey experiment • Randomized vignette treatment, original scale • Three international multi-site replications	• High-PSM decision makers are more likely to engage in pro-social rule breaking thus compromising basic principles of public bureaucracies (bureaucratic paradox). • People willingly seek risks in the prospect of public agency's loss while client benefit was no significant motivation to engage in institutional deviance. • High-PSM decision makers are less predictable decision makers.

3. Summary of contributions

This section summarizes each studies' method, theory, results, and overall contribution to the main research question of what drives partners' *risk preferences*, *risk perception*, and *risk participation* in PPPs (see Table 1). As a primer, methods and results of two pilot studies are presented as pre-study [A] and pre-study [B]. These two studies were conducted as necessary preparatory work by pretesting the baseline premises of the subsequent studies [1] to [4].[1] Figure 1 presents the research agenda.

3.1.Pre-study [A]: Cognitive clusters

"Cognitive Clusters and the Valence of Sector-specific Associations" (Weißmüller, K. S.)

The research agenda of this thesis relies heavily on the assumption that people implicitly or explicitly differentiate between the public and the private sector and, hence, adapt their risk behavior in PPPs accordingly. This is not a weak assumption at all and since empirical evidence on the psychological distinctiveness of the sectors is scarce, baseline standards of scientific rigor demand that such normative assumptions be pretested before building elaborate theory and experimental designs upon them (van Witteloostuijn 2016).

Because all forms of cue-based evaluation rely on learned concepts stored in a complex network of associations (Fazio 2007; Nosek & Hansen 2008; Dolan & Sharot 2012), it is possible to estimate the degree of associative differentiation between the abstract cognitive concepts of "*public*" and "*private*" by evaluating the emotional valence of the terms immediately associated with these concepts. Asking people to freely indicate what they spontaneously associate with the two sectors allows for testing whether the conceptual distinction between the public and the private sector – as discussed and questioned for decades by PA/PM scholars (see e.g. Barton & Waldron 1978; Perry & Rainey 1988; Bozeman & Bretschneider 1994; Nutt 1999; Rainey & Bozeman 2000; Chen & Bozeman 2012) – actually resonates with people's cognition. This pre-study is explorative in nature and functions as base-line preliminary research to determine the ecological validity of more elaborate behavioral studies using publicness-based stimuli to investigate sectoral context effects on risk behavior in PPPs.

[1] The four main studies are currently under review in international peer-review scientific journals and they were previously presented at international conferences. Please refer to the overview of studies and contributions on page XIII for more detail.

To test the presumed distinctiveness of the cognitive clusters of "*publicness*" and "*privateness*" a short online-survey was implemented with *N*=459 German citizens drawn from the same panel population as the respondents of studies [2] to [4]. Randomly split into two subsamples, respondents were asked to spontaneously and explicitly indicate three or more associations that immediately came to their minds when thinking about the public or the private sector, respectively. This short survey resulted in a list of *Obs.*=628 individual terms for the public and *Obs.*=742 terms for the private sector. After clearing the raw result lists of associations for spelling-errors, they were systematically synthesized by iterative coding to create a rank order of the most central items (balanced for latent clusters resulting from the option of multiple responses). Ranked by relative item frequency, the survey results in a concise list of attributes that are most often associated with the two sectors by the majority of participants in the experiments presented in this dissertation (see Table 2 for an English translation, original German item list in Appendix A).

Table 2: Explicit sector-specific associations (English translation)

				Valence					*Valence*	
	Public sector	*n*	f_i [b]	*M* [a]	*SD*	**Private sector**	*n*	f_i [b]	*M* [a]	*SD*
1	bureaucratic	110	14.8	-0.70	0.68	profit-oriented	180	28.7	0.50	1.64
2	responsible	88	11.9	1.32	1.07	egoistic	56	8.9	1.10	1.37
3	conscientious	72	9.7	0.70	1.06	efficient	46	7.3	0.97	0.87
4	respectable	69	9.3	1.40	0.75	opportunistic	39	6.2	1.10	1.37
5	Public welfare-oriented	51	6.9	0.94	1.10	determined	33	5.3	2.00	1.05
6	slow	44	5.9	-1.50	1.08	liable	31	4.9	-0.90	0.32
7	inefficient	35	4.7	0.65	1.15	risk-affine	31	4.9	1.10	0.57
8	risk-averse	29	3.9	-0.85	1.02	capable	25	4.0	1.62	0.88
9	inflexible	26	3.5	-0.70	0.48	rational	23	3.7	1.50	1.08
10	long-term oriented	22	3.0	2.20	0.79	self-confident	21	3.3	1.80	0.63
11	permanently tenured	18	2.4	-1.41	1.10	competitive	19	3.0	-1.06	1.12
12	law-abiding	17	2.3	-0.90	1.37	innovative	13	2.1	1.03	0.97
	Sub-total	581	78.3				517	82.3		
	other terms [c]	161	21.7			other terms [c]	111	17.7		
	Total	742	100.0				628	100.0		

Notes: [a] Mean emotional valence range: *min.* = -3.0, *max.* = 3.0; [b] Frequencies in %; [c] all other items f_i < 2.0%.

Following the Pareto principle (Wilkinson 2006), the cut-off threshold for in-depth analysis was set to a relative item frequency of 2.0% resulting in a list of twelve explicit associations per sector. These twelve most frequently named associations represent 78.3% of all stated items for the public sector and 82.3% for the private sector, respectively. In a second step, the final lists of associated items were matched with Võ *et al.*'s (2009) BAWL-r (*Berlin Affective Word List reloaded*), a large and systematically validated inventory of the most common words in the German language featuring ratings regarding the emotional arousal and psychological valence of all word items.

Results provide robust evidence for a high degree of psychological distinctiveness between the cognitive associative networks related to the public and the private sector: There is no overlap among these 24 most frequently named terms. Furthermore, these sector-specific item clusters are loaded with very dissimilar emotional valence. When normalized for relative item frequency and latent response clusters on the level of the individual respondent, mean comparison reveals that respondents typically associate terms that transport more negative emotional valence with the public sector (n=581, M=12.98, SD=1.88) compared with substantially more positive terms associated with the private sector (n=517, M=34.78, SD=2.28); t=-7.384, p<0.000; d=-10.501. The findings of this pre-study are in line with prior research in other countries that provide evidence for often unconditional negativity toward the public sector (Van Ryzin 2011; Marvel 2015; Olsen 2015; del Pino *et al.* 2016; Hvidman & Andersen 2016; Rojas 2016) but these results are novel both regarding their methodological mixed-methods approach and because they are the first results for a German population of respondents.

This pre-study reveals that the German citizens in this sample do distinguish sharply between the public and the private sector. This means that – at least in explicit cognition – people associate substantially more negative attributes with the public compared with the private sector indicating that using '*publicness*' as a behavioral stimulus is a valid and very promising approach for micro-level research on PPPs using experimental designs that employ the psychological distinctiveness of this concept to systematically manipulate the context of choice (public vs. private). Furthermore, it is a direct call for research scrutinizing the effects of the negativity primarily associated with the public sector while providing additional support for the ecological validity of the empirical strategy employed in the studies of this dissertational research project.

3.2. Pre-study [B]: Sector affiliation and attitudes

"Connecting Professionals' Sector Affiliation with Sector-specific Attitudes"
(Weißmüller, K. S.)

Pre-study [2] reports findings on two critical issues: First, it employs a 2×2 randomized controlled trial (RCT) online survey-experiment with situational sector-specific framing stimuli to investigate whether respondents' real-life sector affiliation is associated with individuals' (negative or positive) attitudes about the public and the private sector. Second, the experimental survey data shows that – although the sectors are associated with distinct

cognitive clusters (see pre-study [A]) – *explicitly voiced* attitudes toward the sectors are in fact not independent from each other. Both findings are essential for the main research presented in this thesis because they provide *evidence that prior work experience substantially affects sector-specific attitudes*, indicating that anti-public attitudes are not distributed equally among the general population and should, hence be controlled for. This is an important issue for researching strategic risk behavior in PPPs on the micro-level because it strongly supports the premise that publicness functions as a complex signal that is interpreted *relatively* to a decision maker's prior experiences with and attitudes about the sectors. Thirdly, this pre-study is the first experimental evidence of its kind for a German population from which the majority of samples in this dissertational research project were drawn, thus serving as a reliability check for the sample populations used in the consecutive main studies ([1] to [4]).

The sample of pre-study [B] is representative for the German working population and consists of in total *N*=382 anonymous German citizens who have work experience in either the public or in the private sector (see Appendix B.1 for sample characteristics). In a vignette-based framing treatment, respondents were randomly assigned to either the role of a public or a private sector agent. In this contextual frame, they were asked to complete a dummy task requiring them to make a repetitive series of abstract financial decisions – based on Kirby *et al.* (1999) and Madden *et al.* (2009) – on behalf of said public or private organization. The scenario was purposefully designed in a simplistic way to reduce noise following suggestions by Hvidman and Andersen (2016) who point out that the anti-public bias could be so prevalent in people's minds that simply switching terms from *private* to *public* sector could result in substantial priming-based evaluative bias in the absence of further information. During the dummy task, which took on average twelve minutes to completion, respondents received constant sector-specific semantic stimuli to reinforce the treatment effect and elicit (latent) sector specific associations. Sufficient manipulation and attention checks were conducted (Schacter & Graf 1986; Olson & Fazio 2001; Payne & Lundberg 2014).

After a short socio-demographic questionnaire, participants were asked to indicate their general attitudes toward public and private sector organizations on two single-item ordinal measures asking e.g. '*If you think about the public sector in general your thoughts are…*' (Likert-type, ranging from 1='very negative' to 7='very positive') the order of which was randomized between subjects to inhibit priming effects. These two items function as the main dependent variables of this pre-study.

In this sample, civil servants (N=82) report significantly more negative attitudes toward public sector organizations (M =3.37, SD=1.08) compared with private sector employees (N=300; M=3.80, SD=1.09); t=-3.24, p=0.002, d=|0.401|. Asymmetrically, results indicate no significant difference in the attitude toward private sector organizations between public (N=80; M=3.50, SD=1.07) and private sector employees (N=300; M=3.62, SD=1.04); t=-0.882, p=0.380. OLS regression analysis (B.2 in the appendix) based on two robust models that explain a substantial amount of variance (model I: $F(9)$=27.59, p<0.000, *adj*. R^2=0.35, η^2=0.36; model II: $F(10)$=24.50, p<0.000; *adj*. R^2=0.35, η^2=0.36), further reveals that sector-specific attitudes are in fact not independent from each other (β_{I1}=0.59, p<0.000) and that civil servants hold more negative attitudes toward the public sector than the general population (β_{I3}=-0.30, p=0.017), especially if tenured (β_{I4}=-0.42, p=0.058).

Further scrutinizing the interaction of respondents' actual employment sector and treatment (model II) reveals that private sector employees respond positively toward a public sector stimulus and report significantly more positive attitudes toward the public sector ($\beta_{II2=}$0.35, p=0.030), while there is no statistically reliable equivalent effect of a private stimulus on public employees' sector-specific attitudes (β_{II3}=-0.24, p=0.176). However, the latter two findings are to be taken with caution and should be interpreted as indicative for an *asymmetry in signal reception* because the socio-demographic characteristics of the sample resulted in unbalanced subsample sizes and, consequently, the study is underpowered. Other socio-demographic covariates do not explain any relevant amounts of variance. Despite these limitations, this pre-study indicates that, first, anti-public attitudes could mainly be driven by people who work in the public sector, second, that private sector employees are more likely to respond to public-sector information cues than civil servants and, third, that explicit sector-specific attitudes are relative to each other. This means that explicit measures of sector-specific attitudes should be designed in a way that allows both randomizing their order within a survey questionnaire and letting them be separated by filler or dummy tasks to inhibit priming, halo, and carry-over effects.

3.3. Study [1]: Discounting behavior

"PUBLICNESS AND MICRO-LEVEL RISK BEHAVIOUR – Experimental Evidence on Stereotypical Discounting Behaviour" (Weißmüller, K. S.)

Drawing on the classic theory of bounded rationality (Simon 1945; Kahneman & Tversky 1979; Thaler 1981; Kahneman 2003), this study explores the effects of a public vs. a private

sector framing treatment on individuals' revealed choice behavior under risk and delay. At its core lies the perennial question whether individuals perform differently when working in a public compared with a private sector organization and whether certain tasks can be efficiently organized as public-private partnerships (Klijn & Teisman 2003; Alford & Greve 2017).

Prior research provides substantial evidence that anti-public sector stereotypes have a persistently negative influence on citizens' attitudes about and perception of public sector performance (James 2011; Olsen 2015; Hvidman & Andersen 2016; Bækgaard & Serritzlew 2016) and these studies often paint a grim picture on public sector employees as risk averse and inefficient decision makers (Rainey & Bozeman 2000; Baarspul & Wilderom 2011). Hvidman and Andersen (2016) even suggest that the anti-public bias could be so prevalent in people's cognition that simply switching context from *private* to *public* could result in substantial priming-based evaluative bias in the absence of further specific information. Yet, little is known about whether 'publicness' as a context for making economic decisions actually distorts people's economic choice strategies because empirical evidence is extremely scarce.

Study [1] closes this research gap by reporting empirical evidence of a large-scale survey experiment employing elaborate quantitative measures that reveal actual choice preference under risk and delay – Madden *et al.*'s (2009) *Probability Discounting Questionnaire* and Kirby *et al.*'s (1999) *Delay Discounting Scale* – while systematically manipulating the sector-specific context of choice and matching these revealed preferences in context with stated propensities on risk and delay.

The data comprises 22,800 choices of a population-based sample of 400 citizens complemented with a socio-demographic questionnaire to determine whether and if so in which way the behavior of actual public sector employees differs from the behavior of their peers' in private sector employment and how sector context matters for both of these groups. Following calls by Brewer and Brewer (2011), van Witteloostuijn (2016), Grimmelikhuijsen *et al.* (2017), and Walker *et al.* (2017), study [1] employs a rigorous experimental design combining revealed and stated behavior to cross-validate the between-subject treatment effect with a strictly balanced and controlled sampling group design.

Contrary to expectations, this study reveals that decision makers do not automatically behave differently when being framed in a public vs. a private sector context. Yet, actual public sector employees in this sample systematically overestimated economic risk by 44.3% compared with private sector employees. Public sector employees were also more likely to

tolerate substantial delay in utility delivery compared with the general population, especially for large magnitudes of prospective rewards. These findings support prior research on public sector employees' preference toward risk (Bellante & Link 1981; Hartog *et al.* 2002) and delay (Bozeman *et al.* 1992; Bozeman & Bretschneider 1994; Nutt 2005; Eshuis & Van Buuren 2014) and represent the first empirical evidence derived from a population-based sample of the German population.

Study [1] shows that some of the common anti-public stereotypes (Rainey & Bozeman 2000; Baarspul & Wilderom 2011) are actually grounded in more than just anecdotal evidence and suggests that the particularities of the public sector might lead to a strong socialization effect that might bias economic choice and, thus, compromise public sector efficiency (Bellante & Link 1981; Fottler 1981; Bozeman & Kingsley 1998; Gigerenzer 2015).

These findings have important implications for the practice of cross-sectoral risk governance in PPPs and for public sector human resource management in general: Study [1] provides striking evidence that an arbitrary public sector *context* is not as impactful in biasing individual choice behavior as is a public sector *socialization*. Furthermore, the study shows that even though citizens' evaluation of public actors' performance might be systematically biased when they are asked to judge *other people's behavior* based on the signal of '*publicness'* (Marvel 2015; Marvel 2016; Hvidman & Andersen 2016), this very same signal does not have the same biasing effect on individuals' *own behavior*.

Consequentially, study [1] answers Wright's (2015) explicit call for micro-level experimental research into the basic principles of sector-specific choice behavior under risk by revealing that publicness as a socialized trait by affiliation *does* influence individual decision makers' perception of riskiness while publicness as an external context does not. In summary, study [1] supports the theoretical assumptions on behavior in PPPs by adding empirical evidence of the moderating effect of *publicness as socialization* and by discarding the potential moderating effect of *publicness as a context* unconditionally biasing risk perception and behavior.

3.4. Study [2]: Trust

"TRUST IN PPPS – A behavioral framing experiment on the paradoxical effect of 'publicness' on strategic behavior in PPPs" (Weißmüller, K. S. &Vogel, R.)

This study explores cognitive and behavioral mechanisms of partnering across sectors at the micro-level of interaction between public and private sector agents. It shows that explicit role framings of partners as public or private can have adverse signaling effects affecting individuals' intention and likelihood to uphold effective partnerships over time. Furthermore, it reveals that this intent is moderated by sector-specific attitudes.

Tested with a novel dynamic multi-stage behavioral experiment based on the classic centipede game (*N*=482, *Obs.*=4,338), study [2] provides robust evidence that – in the absence of further information – sector affiliation functions as a strong signal directing partners' strategic behavior in PPPs. Furthermore, results reveal that sector-specific associations asymmetrically moderate respondents' will to collaborate. Specifically, this study provides quantitative, experimental evidence for a signaling paradox: We find that partners' sector affiliation functions as a powerful cue guiding decision makers' strategic risk behavior by elucidating associations about their cross-sectoral partner. This effect has detrimental effects on collaboration efficacy by triggering implicit *anti-private sector bias* in the sense that private partners' sector affiliation functions as a cognitive signal strong enough to activate negative assumptions about these partners' intentions to collaborate – even in the light of explicit information indicating that there is no logical reason for partners to defect and despite private partners' continuous and explicit signaling of their willingness to collaborate as the PPP matures.

As a result, public sector agents are revealed as being paradoxically *more* likely to defect and terminate the PPP before its completion; public sector agents follow risk strategies that are a higher threat to PPP survival than private sector actors even if their partner only sends positive signals of his or her willingness to cooperate and even if defection will result in dramatic long-term losses for the general public. Results show that despite positive signals, decision makers are more likely to assume that private sector actors will defect and – hence – defect themselves in advance in order to minimize the immediate (short-term) subjective expected utility losses to public funds. This is paradoxical because public partners were well-informed about the fact that their defection would terminate the PPP and hence *cause* even more dramatic utility losses to the general public.

The anti-private paradox observed in this study resonates loudly with the classic prisoner's dilemma and cannot simply be attributed to a cognitive illusion, numeracy effect, or homophily effects since we do not observe a similar effect in private sector agents (Camerer 1998; Rabin

1998). Rather, it is a *consequential bias* in strategic choice based on an erroneous interpretation of agent's anticipation that private partners will defect even against their own best interest. Our findings are, therefore, fully in line with Simon's (1945) model of bounded yet rational behavior within the specific context of the public sector and illustrate quantitatively how strategic choice in PPPs is bounded by context-dependent heuristics (Gigerenzer & Gaissmaier 2011). These findings contribute to and extend prior empirical research by Calanni *et al.* (2014) and substantiate prior conceptual ideas about the adverse effect of heterogeneity on collaboration efficiency with first quantitative evidence from public sector research (Scharle 2002; Klijn & Teisman 2003; Kets & Sandroni 2014; Bryson, Crosby, & Stone 2015).

Furthermore, decision makers were more likely to defect in later stages of the PPP life-span. The patterns of strategic choice observed in this study defy predictions of normative choice theory in potential free-riding scenarios (Albanese & van Fleet 1985; Aumann 1998) but indicate that actors' trust in their partner erodes as incentives to defect grow up to a certain threshold which is typical for behavior in strategic alliances with potentially conflicting interests to defect (Kawagoe & Takizawa 2012; Krockow *et al.* 2015). Emotional involvement with the public sector is related with a higher likelihood of PPP survival but people with high levels of PSM are more likely to terminate the PPP early and defect. These findings indicate that sector-specific attitudes and associations are crucial drivers of strategic choice patterns in PPPs. While private-sector associations have a linear positive effect on the likelihood of PPP survival, the effect of public-sector associations is parabolic. People who are (implicitly) passionless about the public sector are less likely to collaborate until PPP completion, a finding in line with Arora *et al.* (2012). Surprisingly, high-PSM people are also more likely to defect providing further evidence for the dark side consequences of PSM (Schott & Ritz 2018).

In summary, the findings of study [2] contribute to our scientific understanding of the previously unexplored micro-level foundations of strategic choice in PPPs, adding the dimensions of risk and behavioral uncertainty to this perspective on behavior. They substantiate Simon's (1945) perennial argument that public organizations' ability and failure to collaborate effectively across sectoral boundaries lies on the micro-level, i.e. within the *individual* members of an organization, and that PPP survival is affected by individual idiosyncrasies (Zand 1972; Lewis & Weigert 1985; Klijn & Teisman 2010; Calanni *et al.* 2014; Bryson *et al.* 2015). Consequently, the findings of this study call into question basic assumptions that coordination efficiency in cross-sectoral partnerships can be achieved simply by organizational and contractual design and points out that sector-specific associations can

have detrimental effects on the likelihood of PPP survival. Answering explicit calls by Wang *et al.* (2018) and Bouwman (2018), study [2] advances the discourse on rational choice and collaboration efficacy in PPPs by revealing that partners' sector affiliation and high levels of PSM both increase the likelihood of defection, substantially expanding the current discourse on micro-level strategy in PPPs, trust in cross-sectoral partnerships, and the dark sides of PSM on choice behavior.

3.5. Study [3]: Negotiation

"NEGOTIATION IN PUBLIC-PRIVATE PARTNERSHIPS – A laboratory experiment on context, domain, and PSM" (Weißmüller, K. S., Bouwman, R., & Vogel, R.)

Negotiation on and allocation of risks is a central strategic activity in PPPs for both public and private partners. Although PPPs are generally designed in a synergetic way that allows both partners to achieve their subjective goals by sharing risks and returns in a mutually beneficial way, failure to reach agreement about how to allocate risks that emerge during PPP tenure is one of the most common and fundamental threats to the successful implementation of the ultimate objectives of PPP projects (Ghere 2001; Kee & Forrer 2012; Wang *et al.* 2018).

Based on prior research on sector-specific bargaining behavior (Barry & Oliver 1996; Bouwman 2018; Bouwman *et al.* 2019), rational choice (Kahneman & Tversky 1979; Kahneman *et al.* 1986), and game theory (Ochs & Roth 1989; Zou & Kumaraswamy 2009), this study explores the idiosyncrasies of strategic bargaining across sectoral boundaries in PPPs. Study [3] argues that partners' inability to settle emergent disputes efficiently relates to a fundamental incongruence of their underlying sector-specific logics, i.e. private partners' business-like logic of *maximizing* subjective utility by exploiting short-term opportunities in contrast to public partners' *satisficing* logic of achieving adequate subjective utility while ensuring that the long-term objective relevant to the needs of the general public are secured (Simon 1945; Saz-Carranza & Longo 2012; Nabatchi 2018). As a consequence of these incongruent goals and logics, study [3] suggests that PPPs are essentially dysfunctional negotiation spaces that incorporate micro-level incentive problems that motivate public and private partners to follow dissimilar bargaining strategies when negotiating about excess gains and losses in a PPP scenario (Malatesta 2011).

Tested with a strictly controlled laboratory negotiation experiment, study [3] provides tentative behavioral evidence on a linear relationship between public agency and satisficing

(vs. maximizing) negotiation behavior in an archetypical PPP consisting of one public and one private sector agent. The game was designed as a dyadic alternating-offers bargaining game with dynamic dominance and consists of a non-zero-sum gain-leg and a zero-sum loss-leg. Data were raised with *N*=118 participants who were strictly balanced regarding their socio-demographic characteristics. Furthermore, study [3] supplements the game with both explicit and implicit measures of sector-specific attitudes – employing a novel mixed-methods approach to reveal implicit preferences toward the sectors via implicit associated affect coding with Võ et al.'s (2009) *BAWL-r* – as well as controlling for covariates typically assumed to affect bargaining behavior.

Quantitative analysis based on *Obs.*=8,368 offers and counteroffers leading to *n*=1,121 bargaining agreements reveals that public agents are more likely to follow satisficing (in contrast to maximizing) bargaining strategies in the domain of losses. Ceteris paribus, public partners negotiate less dynamically, less aggressively, and are more likely to reach agreement – even to their own disadvantage – by offering relatively higher amounts to their private partners. The effect of sectoral agency on negotiation efficiency is especially large in the domain of losses, irrespective of explicit or revealed preferences toward the sectors. PSM is a surprisingly strong asymmetric moderator on the interactive effect of domain, sectoral agency, magnitude and bargaining outcomes. The peculiar role of PSM is in line with prior research by Kanagaretnam *et al.* (2009), Esteve *et al.* (2015), Tepe (2016), and Bouwman *et al.* (2019), and corroborate the dark and bright sides of PSM (Schott & Ritz 2018) because high-PSM agents' tendency toward *fair* splits – presumably for the sake of maintaining long-term cooperation (Chaudhuri *et al.* 2002) – can be exploited opportunistically by self-serving low-PSM agents.

In contrast to prior studies and normative predictions, negotiation outcomes do not relate to individuals' sector-specific associations and affect (Barry & Oliver 1996; Arora *et al.* 2012), their explicit attitudes (Tsay & Bazerman 2009), risk preferences (Bækgaard 2017), or trusting stance (Das & Teng 2001).

These findings advance our understanding about the micro-foundations of strategic negotiation behavior in PPPs and highlight the complex psychologically effects of individual motivations and *publicness* on bargaining outcomes. Furthermore, the substantial effect of PSM as a corrective remedy for opportunistic behavior on calls for PPP governance that fosters public value-oriented stewardship for all partners involved – both public and private.

3.6. Study [4]: Institutional deviance

"PUBLIC SERVICE MOTIVATION AND PRO-SOCIAL RULE-BREAKING – An international vignettes study in Belgium, Germany, and the Netherlands" (Weißmüller, K.S., De Waele, L., & van Witteloostuijn, A.)

This study demonstrates a fundamental paradox of modern bureaucracies: People with high PSM are especially prone to engage in (pro-)social rule-breaking (SRB) behavior that is adverse to the goals of the public bureaucracy they are engaged in and that ultimately leads to discriminatory practices threatening the very foundation of the bureaucratic principle. SRB is a typical example of an *institutional deviation* by an abuse of *de-facto discretion* of civil servants which means that high-PSM individuals are more likely to deviate from the behavior stipulated by implicit and/or explicit rules of institutions compared with low-PSM individuals.

The ideal-type – and stereotypical – bureaucracy is a non-discriminatory organization populated by non-discriminating bureaucrats applying standardized rules efficiently without any preferential treatment (Merton 1942; Von Mises 1944; Selznick 1943). Its essential strength is the non-discriminatory implementation of policy (Weber 1922; Mills 1970; Olsen 2005). Ever since Perry's (1996) introduction of the Public Service Motivation (PSM) construct, scholarship in PA and PM argues that high-PSM people are attracted to (stay in) the public sector (Perry 1996; Perry & Wise 1990; Bozeman & Su 2015; Vandenabeele & Skelcher 2015). While PSM is argued to having positive effects on individual and organizational performance because high-PSM individuals are assumed to be driven by the intrinsic motivation to help other people and the public interest in general (van Witteloostuijn *et al.* 2017), this care motive can also result in deviant rule-breaking behavior with detrimental effects for organizational and procedural efficiency.

Investigating the connection between PSM and the likelihood of engaging in deviant behavior, this study uses the example of social rule-breaking to show that public sector agents – typically associated with high levels of PSM – tend to follow decision strategies that maximize individual (subjectively expected) hedonic utility by breaking institutional rules that are incongruent with their individual pro-social motivation in contrast to maximizing their organizations' utility by abiding strictly to explicit bureaucratic rules if they are given the opportunity to do so. This is an essential topic for research on risk behavior in PPPs because it illustrates how micro-level decision making in public partner organizations can be seriously confounded by the conflict between organizational goals and individuals' values in a public

sector context. Contributing substantially to prior research on the dark sides of PSM, the phenomenon explored in this study is idiosyncratic to public sector agents and is very likely to cause tension in PPPs. These findings relate to Simon's classic paradigm of administrative behavior as being essentially context dependent because they illustrate how "decision making in private organizations is much simpler than in public agencies. The private organization is expected to take into consideration only those consequences of the decision which affect it, while the public agency must weigh the decision in terms of some comprehensive system of public or community values" (Simon 1945: 69). These values are present in individual motives such as the perception of procedural fairness, the need to help others even to the extent of self-sacrifice, and in a strong commitment to what actors personally define as 'the public interest' (Nabatchi 2018). All of these motives are reflected in the underlying dimensions of PSM and – despite being noble causes – they are, at the same time, prone to individual interpretation, which can result in severe disutility for agents' organizations and confound micro-level choice under risk in public organizations.

Specifically, this study reports quasi-experimental empirical evidence of a between-subject randomized vignettes quasi-experiment regarding SRB in a public service setting with 1,239 observations from three countries (Germany, Belgium, and the Netherlands) replicating an original randomized vignette-based quasi-experiment in a multi-site setting. Framed within a realistic scenario of street-level bureaucracy with clearly stated procedures, we test whether people who report high-levels of PSM are more likely to break their public agency's rules of conduct and discriminate in favor of clients that they perceive as more in need or as more deserving, i.e. whether high levels of PSM are related with a higher likelihood of organizational deviance under risk.

Furthermore, this study develops and validates a novel multi-item measure to assess SRB intent. *Our findings provide the first behavioral evidence on the linear relationship between PSM and the likelihood of SRB.* The results reveal that the relation between PSM and SRB is moderated asymmetrically by client-based affective information cues: Negative affect cues have a larger negative effect than positive affect cues have a positive effect. This means that high-PSM people are not only more likely to engage in SRB, but that they also discriminate more sharply between clients they heuristically perceive as more deserving than their low-PSM peers. Furthermore, we reveal that respondents abusing their discretion in this way were fully aware of the harmful effect for their organization and its goals while the care motive of helping a client was not a valid predictor of SRB.

In summary, study [4] adds empirical evidence from three countries substantiating the detrimental effect of high levels of PSM on institutional compliance on the micro-level of behavior, calling into question basic assumptions about the rational rule-abiding behavior of bureaucrats. The discriminatory effect of high PSM supports prior research into the dark sides of PSM (Andersen & Serritzlew 2012; Esteve *et al.* 2016; van Witteloostuijn *et al.* 2017; Schott & Ritz 2018), revealing that public agents with high PSM are more likely to deviate from their organizations' strategic goals and are more likely to abuse their discretion, making high-PSM agents less predictable partners in formalized (cross-sectoral) organizational configurations with conflicting interests – of which PPPs are exemplar. Consequently, this study advances the current state of knowledge on the role of context and PSM on institutional deviance.

4. Synthesis of contributions

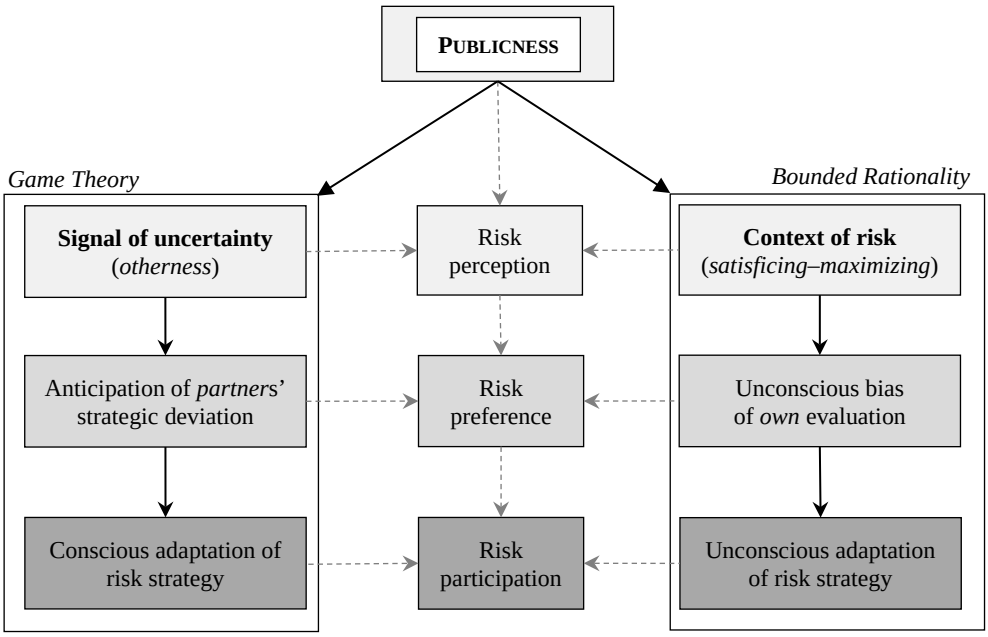
This dissertational project explored the effects of *publicness*, *uncertainty*, and *sector-specific attitudes* and *motives* on micro-level risk behavior in PPPs and sector-specific contexts. As cooperative institutional arrangement between public and private agents, PPPs gained considerable popularity – both with policy makers and scholars worldwide (Hodge & Greve 2007). Over the last two decades, most countries have witnessed a steep increase in the number of PPP projects being implemented in a number of industries ranging from infrastructure, urban development, public services, energy provision, environmental protection, and public health (Wang *et al.* 2018). Based on Herbert Simon's (1945) classical work on the context-dependency of human and especially – administrative – behavior and informed by insights and methods from social psychology and behavioral economics, the studies summarized in the previous section each contribute to the scientific discourse on the micro-foundations of risk behavior in PPPs, both theoretically and methodologically.

Ideally, PPPs' strength is their ability to bundle and share risks and returns *fairly* and effectively amongst partners because PPPs' synergetic qualities absorb mega-project complexity. However, as Greve and Hodge (2009: 33) point out, "the passage of time permits a sober reflection", as do our empirical results on micro-level risk behavior in archetypical PPPs. Integrating the results of our studies allows us to reflect on the significance of the four core assumptions upon which the research agenda of this thesis was built.

Assumption 1: Partner heterogeneity compromises strategic risk behavior in PPPs. The empirical results of all studies – [1] to [4] as well as [A] and [B] – demonstrate that partner

heterogeneity indeed compromises strategic behavior in PPPs. In summary, the quantitative evidence of this thesis refines and advances prior theoretical concepts of micro-level risk behavior in PPPs by integrating the dimensional perspectives of game theory and bounded rationality into one integrative concept of publicness as a stimulus of risk behavior: *publicness as a signal* indicating *uncertainty* and *publicness* as a *context* indicating *riskiness*. This means that risk and uncertainty are, indeed, immanent components of PPPs – not only by default regarding the general challenges of coordination and trust when partnering in potential free-riding scenarios (Albanese & van Fleet 1985; Aumann 1998) – but specifically because partnerships between public and private sector agents introduce *additional* layers of complexity into the interpretation of risks and uncertainties: Publicness has a *signaling function* for unknown risks and the function of a *contextual frame* for the interpretation of known risks. Figure 2 illustrates this dual effect of publicness on risk behavior in public-private interaction.

Figure 2: Dual concept of publicness in PPPs



The combined empirical results of this thesis specify a novel, dual concept of *publicness as a complex behavioral cue*, which – depending on the initial constitution and attitudes of the receiver – has the power to result in a variety of (adverse) effects ranging from unconsciously triggering heuristic evaluations regarding partnership reliability [study 2], to explicit and self-sabotaging deviance from goal-oriented rational choice [study 3].

Assumption 2: Individuals pursue dissimilar risk strategies in a public vs. a private sector context. This assumption does hold true but only with caveats. Pre-study [A] illustrates that respondents distinguish sharply between the realm of the public and the private sector. Pre-study [B] further substantiates [A]'s finding by revealing that these distinct cognitive associated clusters are relative to each other and that sector affiliation strongly influences sector-specific evaluations. This means that the interpretation of sectoral context will not automatically trigger individuals to pursue different risk strategies compared to a situation in which they would face the same choice problem in the context of another sector or in a neutral scenario. The impact of sectoral context on individuals' risk strategies depends on respondents' attitude toward both sectors and their prior work-experience. This is why study [1], which employed two contextualized multistage economic discounting measures to reveal the effect of sector-specific socialization and contextualized risk preferences on *probability* and *delay discounting* under risk – finds context effects only in public sector *employees* – but not in public *agents* who were merely treated with a public role framing vignette. Actual public sector employees discount probabilistic rewards more *steeply* than private sector employees and are more likely to tolerate delay.

Assumption 3: public agents pursue utility satisficing – instead of utility maximizing – strategies. Third, study [3] answers explicit calls by Wright (2015), Bouwman (2018), Bouwman *et al.* (2019), and Wang *et al.* (2018) by exploring the micro-level mechanisms of cross-sectoral negotiation practices in a PPP context. Study [3] provides robust experimental evidence that public and private sector agents pursue very distinct risk strategies in multi-round bargaining games and that, indeed, public agents were more likely to follow satisficing – instead of maximizing – strategies. Public agents with high levels of PSM are especially likely to pursue satisficing strategies, which emphasizes the significance of Simon's (1945) concept of bounded rationality for negotiation behavior in PPPs and it illustrates that strategic choice in PPPs is especially challenging for public agents.

Assumption 4: High-PSM agents are less predictable partners. Studies [2], [3], and [4] reveal that high-PSM individuals indeed exhibit particular choice behavior in sector-specific scenarios. Study [2] illustrates that PSM, risk propensity, and decision makers' propensity to trust others determine partners' likelihood to irrationally defect from effective partnerships (*signaling paradox*), while Study [3] is the first experimental study to reveal that sectoral agency, bargaining domain, and PSM interact in a complex manner, resulting in satisficing

bargaining strategies. In summary, these findings add robust (quasi-)experimental evidence on the adverse effect of PSM because agents with high-levels of PSM behave paradoxically in each study in which we tested PSM: They are more likely to engage in pro-social rule breaking [study 4], they negotiate less efficient in bargaining games [study 3], and they are significantly more likely to defect early from functional PPPs [study 2]. Consequently, high-PSM agents are less predictable partners in PPPs which further corroborates the potential *dark sides* of PSM (Schott & Ritz 2018).

5. Avenues for future research

Prior research on risk in PPPs primarily focused on macro-level contextual and institutional factors often related to specific operational risks in PPPs and mega-project management (Hodge 2004; Noble & Jones 2006; Wang *et al.* 2018). The vast majority of studies researching PPP failure concern market and country-specific regulations and project-specific issues as well as considerations on the optimal practice of risk governance to absorb macro-level threats (Reeves 2008; Greco 2015; Wang *et al.* 2018). To date, most research on risk in PPPs relies on meso- and macro-level perspectives, e.g. new institutional economics (Wang *et al.* 2018), transaction costs (Parker & Hartley 2003; Jin & Doloi 2008; Iossa & Martimort 2015), agency theory (Laffont & Martimort 2002; Klijn & Teisman 2005), and theories on collaborative advantage (Huxham & Vangen 2005; Klijn & Teisman 2005; Vangen & Huxham 2010). To our knowledge, this thesis is the first to advance the scholarly discourse with a *micro* lens focusing on individual behavior in the complex choice environment of PPPs. However, the studies presented in this thesis are only first step stones into a largely unexplored and severely understudied topic, hence opening up numerous avenues for future research.

Field experiments. We encourage future studies to test the generalizability of this thesis' findings in the field, i.e. in real PPP projects, by using qualitative (e.g. longitudinal embedded observatory or interview-based research) or – ideally – mixed-methods approaches that hold the potential to reveal how macro-level constraints might accelerate or reduce the biasing effects of heterogeneity between partners on the micro-level. These procedural and methodological extensions would advance and challenge the empirical results of our studies and will deliver valuable insights on the psychological mechanisms resulting in heuristic risk behavior in PPPs for both scholarship and practice.

Implicit methods. We explicitly encourage scholars to partially replicate our experiments while controlling for implicit processes of cognition with more advanced methods, for instance by using implicit psychometric response tests. Applying the *implicit association test* (IAT; Greenwald & Banaji 1995), the *affect misattribution procedure* (AMP; Payne & Lundberg 2014), or the *semantic misattribution procedure* (SMP; Sava *et al.* 2012; Ye & Gawronski 2017) could help reveal how exactly implicit attitudes toward public and private agents and contexts mitigate agents' (relative) partnership evaluation – especially studies [2] and [3] – with high precision and in a very economical way.

***Games*.** The scientific discourse will profit from direct replications of study [1] and [2] in the domain of loss because such replications could link – or contrast – both studies' results with recent findings by Bækgaard (2017) showing that risk behavior in a public sector context often defies the predictions of prospect theory (Kahneman & Tversky 1979; Thaler 1981). Replicating study [3] with dissimilar pie-sizes and varying degrees of discretion as either pure zero-sum or non-zero-sum games will illuminate the powerful interaction effects between PSM, domain, and magnitude.

Replications. Full and partial replications with fully factorial designs and samples raised among practitioners engaged in PPPs and within an international context will test the generalizability of our findings. Following recommendations of Landman (2008) and Walker *et al.* (2017), study [4] was already conducted in a multi-lab multi-national setup with data raised independently in three European countries revealing only marginal differences between country samples which points toward high reliability of findings. Yet, future research could test the ecological validity of study [4]'s findings by replicating it directly with professional samples of civil servants drawn from representative populations in, first, each of the three original European countries but also, secondly, in other countries with dissimilar administrative traditions as to scrutinize the effect of international sectoral logics on the acceptability of SRB. In contrast to study [3], which relies on the equipment of a lab for economic experiments to be replicated, study [4] is especially suitable for large-scale multi-site international replication studies due to its cost-efficient vignette design and online experiment. Such a study would surely yield novel insights on the connection of PSM, pro-social motives, and deviant behavior in the public sector, valuable for scholarship and practice.

6. Appendices to Synopsis

A. Pre-study [A]

Explicit sector-specific associations (original German items)

				Valence					Valence	
	Public sector	*n*	f_i [b]	*M* [a]	*SD*	**Private sector**	*n*	f_i [b]	*M* [a]	*SD*
1	bürokratisch	110	14.8	-0.70	0.68	gewinnorientiert	180	28.7	0.50	1.64
2	verantwortlich	88	11.9	1.32	1.07	egoistisch	56	8.9	1.10	1.37
3	gewissenhaft	72	9.7	0.70	1.06	effizient	46	7.3	0.97	0.87
4	seriös	69	9.3	1.40	0.75	opportunistisch	39	6.2	1.10	1.37
5	gemeinwohlorientiert	51	6.9	0.94	1.10	zielstrebig	33	5.3	2.00	1.05
6	langsam	44	5.9	-1.50	1.08	haftbar	31	4.9	-0.90	0.32
7	ineffizient	35	4.7	0.65	1.15	risikofreudig	31	4.9	1.10	0.57
8	risikoavers	29	3.9	-0.85	1.02	kompetent	25	4.0	1.62	0.88
9	unflexibel	26	3.5	-0.70	0.48	rational	23	3.7	1.50	1.08
10	langzeitorientiert	22	3.0	2.20	0.79	selbstbewusst	21	3.3	1.80	0.63
11	verbeamtet	18	2.4	-1.41	1.10	konkurrierend	19	3.0	-1.06	1.12
12	gesetzeskonform	17	2.3	-0.90	1.37	innovativ	13	2.1	1.03	0.97
	∑	581	78.3			∑	517	82.3		
	other items [c]	161	21.7			other items [c]	111	17.7		
	N	742	100.0			*N*	628	100.0		

Notes: [a] Mean emotional valence range: *min.* = -3.0, *max.* = 3.0; [b] Frequencies in %; [c] all other items f_i < 2.0%.

B. Pre-study [B]

B.1 Sample characteristics

	Full Sample	Civil servants	Private sector employees	*Balance*	
				t	*p*
N	100% (382)	21.5% (82)	78.5% (300)		
Public sector employee	20.5%	100%	0.0%		
Male	50.0%	57.3%	48.1%	-1.34	.183
Age in years [a]	43.9±13.8	44.2±13.3	44.8±13.5	-.38	.700
Primary Education					
No formal education (yet)	1.0%	1.2%	1.0%	.22	.823
Secondary school or equivalent	32.0%	17.1%	35.9%	-3.29	.001
High School diploma or equivalent	34.0%	29.3%	35.2%	-1.01	.312
University entrance qualification	33.0%	52.4%	28.0%	4.28	.000
Higher Education					
No formal higher education (yet)	12.8%	4.9%	11.3%	-2.41	.017
Vocational training	66.5%	56.1%	72.3%	-2.25	.025
Bachelor's degree or equivalent	6.25%	13.4%	4.0%	3.03	.003
Master's degree or equivalent	10.8%	14.6%	10.3%	1.27	.204
Ph.D. or higher	3.8%	11.0%	2.0%	3.93	.000
Status of employment					
Self-employed, freelancer, or entrepreneur	7.3%	2.4%	8.5%	-1.89	.060
White-collar worker	49.0%	62.2%	45.6%	2.70	.007
Tenured public servant	5.8%	25.6%	0.0%	9.59	.000
Blue-collar worker	33.5%	9.8%	39.6%	-5.27	.000
Attitude toward public sector [a]	3.70±1.10	3.37±1.08	3.78±1.10	-3.22	.001
Attitude toward private sector [a]	3.59±1.05	3.50±1.07	3.62±1.04	-.90	.370

Note: Balance tested with two-tailed *t*-tests. [a] $M \pm SD$.

B.2 OLS regression estimates on *Attitude toward public sector*

	Model I		*Model II*	
	b	*SE*	*b*	*SE*
Relativity				
Attitude toward private sector	.59***	.04	.59***	.04
Treatment effect				
Private sector stimulus	-.24**	.09		
Public stimulus × Private sector employee			.35**	.16
Private stimulus × Civil servant			-.24	.18
Individual Characteristics				
Civil servant	-.30**	.13	-.09	.16
Tenure (1 = yes)	-.42†	.22	-.42†	.22
Male	-.12	.09	-.12	.09
Age	.01	.00	.01	.00
Years of schooling	.03	.07	.03	.07
University degree (1 = yes)	.05	.14	.05	.13
Intercept	1.79***	.28	1.31***	.25
N	382		382	
F (df)	27.59***		24.50***	
df	9		10	
Adj. R²	.35		.35	
VIF [a]	1.19		1.34	

Notes: all *VIF* ≤ 1.47; robust standard errors; [a] mean *VIF*. † *p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.*

7. References to Synopsis

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CHAPTER 2: PUBLICNESS AND MICRO-LEVEL RISK BEHAVIOUR

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Experimental Evidence on Stereotypical Discounting Behaviour

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ABSTRACT

Anti-public stereotypes suggest that public agents are more likely to shun risk and tolerate delay in decision making compared with private sector agents. Drawing on the idea of context dependence of administrative behaviour, this study reports experimental evidence from 22,800 choice tasks to explore the effects of publicness as a mental frame for individual risk judgement. Decision makers are not automatically triggered to deviate from predicted economic discounting behaviour by a public sector context. However, public sector employees systematically overestimate risks and tolerate delay in rewards compared with the general population, linking public sector affiliation with biases in risk behaviour.

Keywords: *Publicness Bias, Risk Behaviour, Probability Discounting, Delay Discounting, Behavioural Public Administration.*

INTRODUCTION

Risk is a pervasive factor of economic life and determining the adequate and acceptable amount of risk is the core activity of strategic management. Both acting overly risk averse and overly risk affine can have negative effects and bias strategic choice (Dohmen *et al.*, 2011): On the one hand, taking risks is a necessary prerequisite for innovation (Brown & Osborne, 2013), on the other hand, underestimating risks can be detrimental because this behaviour leads to missing out on chances to realize strategic leverage. While risk-affine exploitation of potentially risky opportunities is typically associated with rent seeking private sector agents, evaluating individual risk strategies is an equally relevant issue for public sector decision makers (Baarspul & Wilderom, 2011): For instance, public employees are often in charge of managing public welfare and pension funds or assets on public-private co-investments in PPPs and state-owned enterprises, in which revenues have to be generated through active and risk-sensitive strategies.

According to stereotypes worldwide, public organizations are the typical habitat of individuals that tolerate red tape and lower procedural efficiency because they inhibit a relatively low tolerance for taking risks and a high tolerance for delay (Rainey & Bozeman, 2000; Baarspul & Wilderom, 2011). In contrast, private sector employees are stereotypically characterized as being primarily self-interested individuals who are risk-savvy decision makers with little concern for externalities imposed onto public welfare as a result of their risk-affine behaviour (Brewer & Brewer, 2011; Buurman *et al.*, 2012). Both stereotypes are overly simplistic, yet, there is a considerable body of research indicating that individuals might (unwillingly) respond differently toward economic risk when working in a public vs. a private sector environment (Baarspul &Wilderom, 2011).

Drawing on the classic theory of bounded rationality (Simon, 1945; Kahneman & Tversky, 1979; Thaler, 1981; Kahneman, 2003), this article explores the effects of a public vs. a private sector contextual framing treatment on individuals' revealed choice behaviour under risk and delay. At its core lies the perennial question whether individuals perform differently when making decisions in the public realm and with public funds (Bozeman & Bretschneider, 1994; Klijn & Teisman, 2003). The experiment reported in the subsequent third and fourth section of this study explores whether, *ceteris paribus*, risk behaviour is biased by *publicness as a context of choice* and whether work experience in the public sector moderates this effect. In methodological terms, its design responds to recent calls for more behavioural and

experimental research in public administration (PA) and public management (PM) scholarship by demonstrating the value of conducting systematically controlled and between-subject randomized survey experiments as a means to study the latent causal-mechanisms of risk behaviour in specific contexts and with a relevant subject pool (Grimmelikhuijsen *et al.*, 2017; James *et al.*, 2017; James & Van Ryzin, 2017; Tepe & Prokop, 2018). Specifically, this study contributes to the discourse on the micro-level factors that result in observable differences in risk behaviour across-sectors (Bozeman & Bretschneider, 1994; Nutt, 2005; Chen & Bozeman, 2012; Eshuis & van Buuren, 2014) by conducting a series of 57 behavioural choice experiments on the judgement of risk and delay with a balanced population-based sample of N=400 German citizens. In total, the empirical evidence is based on 22,800 individual observations of discounting behaviour complemented with a sociodemographic questionnaire to determine whether and in which way actual public sector employees' behaviour deviates from their peers' in private sector employment. It introduces two novel measures originally derived from behavioural economics to the field of experimental PA and PM research: Madden *et al.*'s (2009) *Probability Discounting (PD) Questionnaire* and Kirby *et al.*'s (1999) *Delay Discounting (DD) Scale*. By corroborating these two implicit measures with explicit attitude scales, this study heeds to calls for more rigorous behavioural – i.e. micro-level – experimental designs by Baarspul and Wilderom (2011), Brewer and Brewer (2011), van Witteloostuijn (2016), Grimmelikhuijsen *et al.* (2017), and Walker *et al.* (2017) and demand for a more thorough exploration of why people tend to exhibit idiosyncratic choice behaviour in the context of public sector institutions (Baarspul & Wilderom, 2011; Bækgaard, 2017; Tepe & Prokop, 2018).

The remainder of this article is structured as follows: Based on the idea of context dependency of risk perception, section two presents a theory building literature review of how and why discounting behaviour under risk and delay could be influenced by the 'publicness' as a cognitive frame for decision making and derives a set of hypotheses. Section three describes the treatment design, the logic behind estimating discounting parameters, the sample, and the experimental procedure. Section four presents the empirical findings, which reveal that sector-specific differences in discounting behaviour are not merely related to abstract contextual framing effects but that actual civil servants do exhibit significant anomalies in choice. The last section summarizes and discusses the theoretical and practical implications of these findings and presents avenues for future research.

THEORY

Individuals' risk propensity – i.e. their tendency to seek or shun risk based on their interpretation of the perceived probabilities of entry for specific choice outcomes – is not an inherent and absolutely stable characteristic but it is strongly influenced by context (Kanner, 2005). What people consider to be adequate risk behaviour in one specific situation might be perceived as inadequate under different circumstances. The ability to evaluate risk in context is acquired knowledge that is socially constructed (Kanner, 2005; Gigerenzer, 2015). With regard to risk adversity, Gigerenzer (2015: 76) points out that people "tend to fear whatever their peers fear." The 'adequate' response to the prospect of risk is directly related to the risk culture nested in decision makers' immediate social and organizational environment in the sense of an implicit choice architecture setting norms, frames, and boundaries to choice behaviour (Kanner, 2005). This holds true if we compare micro-level risk strategies across sectoral boundaries because the public and the private sector are characterized by dissimilar institutional logics that constrain and direct individual (managerial) choice in a potentially heuristic manner (Simon, 1945; Fottler, 1981; Boyne, 2002). The sector we work in constitutes a certain risk culture that we gradually learn about and adapt to (Oltedal *et al.*, 2004).

The statistical probability of an outcome is not the only dimension that influences decision maker's *perception of riskiness*. The riskiness of an outcome is constituted by its probability – i.e. the statistical likelihood of its entry – on the one hand and by its temporal dimension i.e. its delay in time on the other hand. These two dimensions of risk are psychologically interrelated: For instance, decision makers who are generally risk averse exhibit a strong tendency to discount rewards that are remote in time more steeply than immediate outcomes because decision makers (falsely) perceive them as seemingly more uncertain (Anderhub *et al.*, 2001). Perceptions regarding the adequacy of delay are important because time is the 'silent language' of management that determines the pace of professional behaviour (Hall, 1973). Following the popular stereotype, direct comparisons in large-scale quantitative studies indicate that, on the organizational level, decision making processes take more time in public compared with private sector organizations (Bozeman *et al.*, 1992). As a negative consequence, public organizations often tend to shy away from risky but innovative endeavours (Chen & Bozeman, 2012). Furthermore, Bozeman and Bretschneider (1994), Nutt (2005), and Eshuis and Van Buuren (2014) provide robust empirical evidence that micro-level decision making takes more time in public compared with private organizations when structural differences between sectors are controlled for (Scott & Falcone, 1998; Boyne, 2002).

Publicness & risk behavior

Investigating cross-sectoral anomalies in risk behaviour is a hen-and-egg problem: Does a public sector context trigger psychological effects that result in deviances in risk behaviour or do public sector organizations primarily attract people who already exhibit a preference to shun risk? Prior studies suggest two logical streams of argumentation: The first is that the particular context of public organizations elucidates psychological information cues that trigger and bias choice behaviour under risk in favour of a certain – potentially stereotypical risk-averse – direction (Simon, 1945; Kanner, 2005). The second is based on prior empirical research indicating that people with a certain tendency to shun risk could be especially likely to being drawn into public sector employment (Rainey *et al.*, 1976; Roessner, 1977; Bozeman & Kingsley, 1998; Parker & Bradley, 2000; Boyne, 2002; Tepe & Prokop, 2018) because they assume – presumably from this very same signal of organizational 'publicness' – that these organizations fit their preferences and, hence, adapt their risk behaviour accordingly.

To date, the empirical evidence regarding either perspective is scarce and contradictory. In two out of their three data sets, Hartog *et al.* (2002) find that public sector employees are explicitly more risk averse than private sector employees. These results correspond with prior research by Bellante and Link (1981) who provide evidence that risk-averse individuals are significantly more likely to choose public sector employment. In contrast, a study by Nutt (2005) on managerial decision making reports that public sector managers are prepared to take more risks on the job compared with private sector managers. Regarding risk behavior, Tepe and Prokop (2018) provide experimental lottery-game based evidence that, ceteris paribus, higher levels of risk aversion are positively associated with higher levels of public service motivation (PSM) and with a higher likelihood of studying PA. However, in Tepe and Prokop's (2018) study, students of PA are not found to be more likely to behave more risk averse (i.e. choosing the less risky lottery option) compared with students studying business management or law. Furthermore, students of PA take more time to come to their decision under risk. Other studies by Barton and Waldron (1978), Pfeifer (2010), and Tzioumis (2018) comparing public and private sector employees find no evidence for micro-level differences in risk behaviour or risk preferences. Why do we observe this inconclusive evidence?

Publicness as a cognitive frame for risk evaluation

The idea that public and private sector agents respond differently to the prospect of risk is rooted in Simon's (1945) classic description of administrative behaviour: He argues that "in

private organizations [decision-making] is much simpler than in public agencies. The private organization is expected to take into consideration only those consequences of the decision which affect it, while the public agency [and its agents] must weigh the decision in terms of some comprehensive system of public or community values" (Simon, 1945: 69). Kanner (2005) points out that this context-dependency is a common dilemma for research into risk behaviour because while decision makers' individual risk attitudes vary, their risk behaviour is also an outcome of their sectoral environment that provides a *dynamic directive frame for choice*. Risk is rarely evaluated purely on objective measures; rather, decisions are made based on decision makers' perceived state of their environment and risk is rarely assigned purely on objective measures (Kanner, 2005). Explicitly or implicitly, individuals' worldview and interpretation of the context (i.e. the sectoral environment of their strategic decision, their socialization, or their sector-related attitudes) will affect their choice behaviour so that observable "changes in risk attitude reflect changes in the belief set being used by the decision maker to assess the most likely state of nature in the future" (Kanner, 2005: 334) within a specific directive choice frame provided by the context of the choice situation.

In a professional context, organizational culture defines this greater contextual paradigm, the cognitive and psychological meaning, and the relative adequacy of any behaviour or process within an organization. It defines the norms and implicit patterns of behaviour against which any kind of structural element of decision making is evaluated, interpreted and *framed* against (Nachbagauer & Schirl-Bieck, 2019). The tangible and intangible constitution of an organization's culture is the system of what individuals regard as self-evident within a certain sectoral context thus facilitating sense-making in strategic dilemmas (Tompkins, 2005; Weick *et al.*, 2005). Unsurprisingly, organizational risk cultures across sectors vary (Bozeman & Kingsley, 1998; Tompkins, 2005) and especially public organizations with a higher degree of red-tape, weak political independence, and weak links between employee promotion and employee performance are more likely to feature risk cultures hostile to risk-taking (Bozeman & Kingsley, 1998).

Particularities of risk preference between sectors

More than 40 years of research into behavioural economics revealed that people often do not respond as predicted by classic economic theory of rational choice. When faced with the

task of making good[1] decisions under risk, people tend to be easily distracted by factually unimportant side information nudging them toward more risk averse or risk-affine behaviour (Kahneman & Tversky, 1979; Thaler, 1981). This does not mean that people are automatically 'biased' by the context – e.g. the sector – they are supposed to make decisions in but it indicates that they automatically adapt to what they (*implicitly*) assume to be *adequate risk behaviour* within this context.

Individuals' prior experiences with and derived attitudes about public organizations and the individuals working in these organizations prime individual choice behaviour (Kahneman, 2003). The result is a (often negative) contextual expectation bias: Many studies demonstrate that sector-specific contextual framing biases individuals' behaviour in the sense that individuals' choices under risk violate the economic principle of invariance – preference stability in the context of inconsequential variations in the description of outcomes (Tversky & Kahneman, 1986) – one of the basic assumptions of rational choice theory (e.g. James, 2011; Hvidman & Andersen, 2016; Olsen, 2015; Bækgaard & Serritzlew, 2016). These frames can also come in the guise of heuristic "prototypes" (Kahneman, 2003) – i.e. anti-public stereotypes stored (implicitly) in memory – that are activated automatically once certain information cues become salient (Marvel, 2015, 2016; Hvidman & Andersen, 2016). Given that 'publicness' elicits strong stereotypes mainly related toward risk-aversion and based on prior research indicating that public sector organizations typically shun risk (Bozeman & Kingsley, 1998), it follows that 'publicness' functions as a contextual information cue affecting individuals' interpretation of risk in the sense that

> *HYPOTHESIS 1 (H1): Individuals discount probabilistic rewards more steeply in a public sector setting compared with a private sector setting.*

Delay discounting in cross-sectoral context

Anecdotal evidence codified in common anti-public stereotypes worldwide characterizes public sector employees as slow working, and as excessively long-term-oriented bureaucrats who differ greatly from their peers in private sector organizations regarding their perception and use of time (Taylor *et al.*, 2001). In their qualitative case-based study on team-level decision making, Eshuis and Van Buuren (2014) conclude that public sector employees are

[1] In this context, a *good* decision is defined as a decision that increases the likelihood that any specific desired outcome will become more likely to be achieved based on this choice (Gigerenzer & Goldstein, 1996; Gigerenzer & Gaissmaier, 2011).

oriented toward medium- and long-term goals, while private sector employees are more short-term-oriented. The authors argue that public agents' lack of urgency in short-term decision making poses a serious problem for public sector governance because the transaction costs of innovative ventures mainly consisted of time. Furthermore, the authors find that public and private sector actors perceive time pressure rather differently: While civil servants value the investment of time in the preparation of decisions as a means to increase the quality and acceptability of decisions by their subordinates, private sector actors tend to regard this investment as an unnecessary access cost of transaction, echoing loudly prior conceptual research by Simon (1945).

The conclusions that Eshuis and Van Buuren (2014) draw correspond well with previous findings by Bozeman and Bretschneider (1994), who used a large sample of research labs in the US to disentangle the nature and effect of publicness on the organizational level of behaviour. When asked explicitly, respondents reported that decision making – especially with respect to personnel and procurement – generally required more time in public sector organizations than in private sector organizations. These studies indicate that a public sector context is generally associated with higher complexity in choice which results in need for more scrutiny in decision making and hence takes more time (i.e. delay adequacy). This idea is not new: Hall (1973) stated that whether individuals perceive time spent before making decisions as a necessary investment or a tedious delay greatly depends on both their individual temporal preferences and the institutional context of decision making (Hall, 1973). The institutional logics regarding time vary greatly between the sectors and are often codified in (time consuming) bureaucratic rules and processes to determine to what extent actors *should* take temporal aspects into account when making decisions (Frederick *et al.*, 2002; Fulmer *et al.*, 2014) and, consequently, how much temporal delay is regarded as acceptable in completing a task. It is likely that delay is perceived as socially more acceptable in a public sector context because it is associated with higher scrutiny. It follows that,

> *HYPOTHESIS 2 (H2): decision makers discount delayed rewards less steeply (i.e. are more likely to tolerate delay in rewards) in a public sector context*

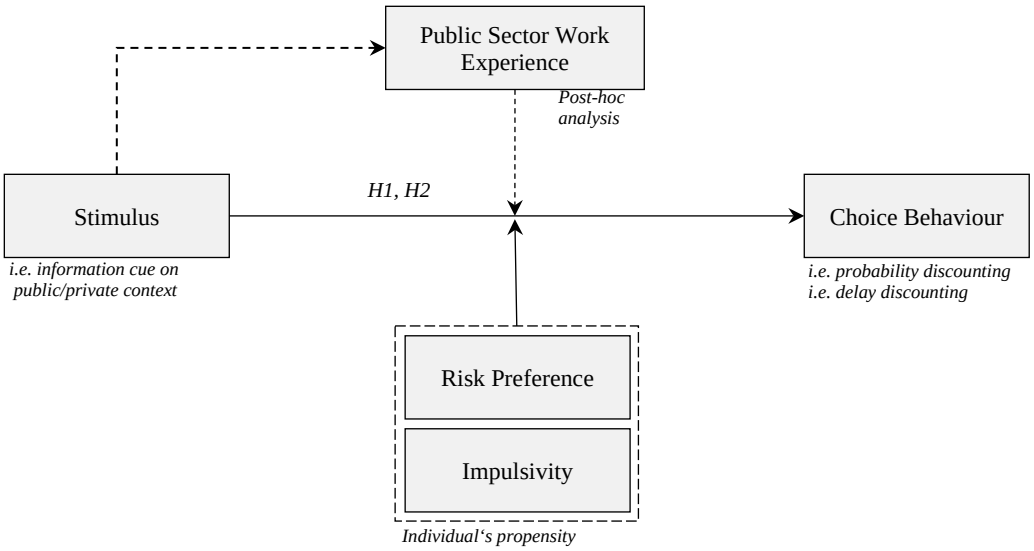
compared with a private sector context.

MATERIALS AND METHODS

Experimental procedure

Hypotheses are tested with an online survey experiment based on a series of systematically varied economic discounting tasks. After a short introduction, respondents were randomly assigned to one of two vignette scenarios, putting them either in a public or a private sector context (*treatment*). In each treatment, respondents were framed into identical roles of a managerial decision maker faced with the task of making a series of independent financial investment choices (*discounting tasks*) under risk and delay in a way that were beneficial for their organization (i.e. a public institution or an equivalent for-profit private firm in the vignette scenario).[1] Each participant responded to 57 discounting tasks, resulting in a full dataset of 22,800 observations nested in N=400 participants, complemented by a socio-demographic questionnaire. The conceptual model is presented in Figure 1.

Figure 1: Conceptual model



Dependent variables: Discounting parameters *h* and *k*

Using Madden *et al.*'s (2009) *Probability Discounting Questionnaire* and Kirby *et al.*'s (1999) *Delay Discounting Scale*, participants responded to 30 decisions trading off probabilistic vs. secure outcomes and 27 trade-offs between delayed vs. immediate outcomes, all of which are systematically varies by the magnitude of prospected rewards, probabilities,

[1] See Appendix A.1 for a translation of the exact wording of the vignettes used for the contextual framing treatment. Respondents were explicitly reassured that both their salary in this hypothetical scenario and their actual pay-out for participating in the experiment were independent of their subsequent choices in the experiment.

and temporal delay. Both measures result in a single characteristic logarithmic discounting parameter (*h* for probabilistic and *k* for delayed rewards), which allows for metrical comparison of individuals' implicit revealed discounting behaviour across treatment groups.[1] Myerson *et al.* (2003) and Bickel *et al.* (2014) provide strong evidence for the validity and reliability both discounting measures.[2]

Probability discounting. The logic of the parameter estimation procedure is essentially rooted in an advanced, hyperbolic form of Samuelson's (1937) discounted utility theory and the premise of rational choice (Mazur, 1987; McKerchar *et al.*, 2009). Hyperbolic utility models are more reliable in predicting actual choice behaviour in the prospect of risk and delay than self-reported measures of risk preferences (Kirby & Maraković, 1996; Frederick *et al.*, 2002). In a controlled setting, well-informed individuals make choices under conditions of risk on the basis of their individual estimation of the expected value of the choice options given: For instance, in a scenario in which only two options exist – one option offering a fixed reward of €20 (i.e. the secure choice option), the other offering a 25% chance of receiving €80 and a 75% chance of receiving €0 (i.e. the risky choice option) – risk-neutral actors should be indifferent to the two choice options because both options offer an expected reward of €20. However, most people individuals are not indifferent to risk and tend to either seek out or shy away from probabilistic choice options. This is because risk-averse agents will ascribe less value to probabilistic choice options compared with secure choice options, even if the expected value of both options is identical (as in the example above). This relative devaluation can be modelled as a hyperbolic discounting function (equation 1),

$$V = \frac{A}{1+h\cdot\Theta} \qquad (1),$$

where *V* represents the subjective expected value of the choice option under conditions of risk as a function of the prospected amount of reward *A* (e.g. €80), and the odds against receiving the reward Θ, with $\Theta=(1-p)/p$, where *p* refers to the probability of obtaining the reward (e.g. 25%). Consequently, the relative value ascribed to a probabilistic choice option should become smaller if the chance of winning the prospective amount is small. In contrast, individuals who (implicitly) embrace risk taking, are expected to being willing to pay extra for the chance of

[1] See Appendix A3 and A4 for a complete list of the trade-off tasks.
[2] Following the example of Grey *et al.* (2015) and the spirit of open science, the online supplement to this article provides an algorithm for the statistical software Stata to calculate the *h* and *k* parameters automatically in order to facilitate future replications of the current study.

winning the probabilistic higher reward, while risk-averse individuals excessively devalue the utility of a risky choice option even if the expected value of these prospects exceeded the expected value of the secure choice option. These individual differences in PD are represented by the parameter *h* in equation (1): Risk-averse individuals attribute additional relative weight to the odds against winning (*h*>1), which will further reduce the perceived, subjective value of a given probabilistic choice option, while risk-affine individuals will welcome the prospect of risk (*h*<1), increasing the relative value of the probabilistic choice option. Consequently, *h* equals 1 for agents who are completely indifferent to risk.

Since utility discounting is an implicit process of decision making, individuals are unable to express their discounting parameter explicitly. Yet, if individuals are asked to perform a series of such trade-off tasks between probabilistic and secure rewards in which the prospective amounts A_i and the probability of winning p_i are varied systematically, *h* is revealed mathematically by the pattern of preference reversals across these tasks. The aim of conducting a series of systematically varied trade-off tasks is to find the specific point of subjective utility-based indifference between the probabilistic and the secure choice option, because if we model the choice problem as a decision between the probabilistic choice option

$$V_{Pi} = \frac{A_{Pi}}{1+h\cdot\Theta_{Pi}};\ \forall\ \Theta_{Pi} = \frac{1-p_{Pi}}{p_{Pi}}, p \in [0; 1.0] \quad (2)$$

and the secure choice option

$$V_{Si} = \frac{A_{Si}}{1+h\cdot\Theta_{Si}} = A_{Si}\ ;\ \forall\ \Theta_{Si} = \frac{1-p_{Si}}{p_{Si}}, p_{Si} \in [1.0] \quad (3),$$

the choice problem amounts to a trade-off between V_{Pi} and V_{Si}. At the point of indifference, the laws of transitivity and invariance suggest that $V_{Pi} = V_{Si}$, which reveals *h* with respect to the relative magnitude of rewards M_i offered as

$$h = \frac{A_{Pi}-A_{Si}}{A_{Si}} \cdot \frac{1}{\Theta_{Pi}} = \frac{A_{Pi}-A_{Si}}{A_{Si}} \cdot \frac{p_{Pi}}{1-p_{Pi}} = M_i \cdot \frac{p_{Pi}}{1-p_{Pi}} \quad (4).$$

It follows that if a decision maker was indifferent to the two options offered in the choice problem example mentioned above (€20 secure vs. a 25% chance of winning €80), his/her PD parameter *h* amounts to

$$h = \frac{€80-€20}{€20} \cdot \frac{0.25}{1-0.25} = 3 \cdot \frac{1}{3} = 1 \qquad (5).$$

Moreover, this allows the direct interpretation that this specific decision maker would be risk-neutral (h=1), and we would be able to objectively compare his or her discounting behaviour in this choice situation with the risk preference of other individuals. Table A.3 in the Appendix shows the total of 30 choice tasks of the set. Since A_{Pi}, A_{Si}, and p_{Pi} are known, h can be calculated at the respective point of indifference for each task and it is possible to collate this specific parameter value to each study respondent.[1]

In the value configuration chosen in the present study, the endpoint values of h range from 0.33 to 16.17, where higher h-values indicate a stronger devaluation of the perceived value of the larger but probabilistic choice option against the secure choice option. This means that respondents with high h parameter values act in a way that is more risk averse.

Delay discounting. Similarly to the estimation procedure of h, Kirby *et al.*'s (1999) DD questionnaire allows for the estimation of a characteristic discounting parameter for the effect of temporal delay of rewards by using a systematic battery of 27 trade-off tasks in which participants have to choose between €31 million *today* and €85 million *seven days from now*. In each task of Kirby *et al.*'s (1999) measure, both alternatives offer secure pay-outs without chance. One choice option offers an immediate but smaller pay-out while the other choice option offers a higher but delayed reward. In order to estimate k with maximal predictive validity, the 27 tasks are randomized within the questionnaire and they vary systematically across all questionnaire items with respect to the amount of immediate (A_{Ii}) and delayed rewards (A_{Di}) and the time delay in days (D_i). The expected value (V_{Di}) of the delayed choice option is modelled as

$$V_{Di} = \frac{A_{Di}}{1+k*D_i}; \forall\, D_i \in]1.0;\, \infty] \qquad (6),$$

[1] If participants exhibited inconsistent choice behaviour (e.g. if they switched back and forth between probabilistic and secure choice options or between delayed and immediate choice options), they were assigned the one parameter that predicted their actual pattern of choice behaviour across the whole set of trade-off tasks with the highest consistency and most precision.

which, at the point of indifference, will be equal to the individual expected value (V_{Ii}) of the immediate choice option ($\forall D_i=0 \rightarrow V_{Ii} = A_{Ii}$). Thus, for each choice task *i*, *k* can be modelled as the relation between reward sizes divided by the amount of delay:

$$k_i = \frac{A_{Di}-A_{Ii}}{A_{Ii}} \cdot \frac{1}{D_i} = \frac{M_i}{D_i} \quad (7).$$

In the setup of the current experiment (see Table A.4 for more detail), respondents' DD rates at indifference (*k*) range from 0.00016 to 0.25 on a logarithmic scale, where high *k* values indicate a strong devaluation of the amount of delayed reward (A_{Di}) based on its remoteness in time, i.e. high DD: For example, assume that two (rational) individuals were offered €100 but would have to wait 100 days for the pay-out, equation 6 suggests that a very patient person on the one extreme of the scale – with a *k*-value of 0.00016 – would be willing to trade this offer for €98.43 of immediate reward, while a person who perceives waiting for the delayed reward as more burdensome (i.e. discounts delayed rewards more steeply) would be willing to forgo the offer for an immediate, secure pay-out of any amount higher than €3.85.

Magnitude Effects. Prior empirical research on discounting behaviour – e.g. by Kirby and Herrnstein (1995), Kirby and Maraković (1996), Green and Myerson (2004), Green *et al.* (2013), and Weatherly and Terrell (2014) – shows that the steepness of the discounting function decreases with an increase in the relative magnitude of rewards under probability and delay because risk behaviour is a function of scale (Thaler, 1981). This means that respondents are expected to discount higher prospected amounts less steeply compared with lower prospected amounts. The experimental tasks of the current study are designed to incorporate three ranges of relative reward magnitudes M_i (see Tables A.3 and A.4 in the appendix for more detail), resulting in three free, transitive discounting parameters for PD ($h_{small} < h_{medium} < h_{large}$) and for DD ($k_{small} < k_{medium} < k_{large}$), respectively. Controlling for the transitivity of discounting parameters by magnitude serves as a reliability check.

Control variables

Prior research shows that risk behaviour in context is influenced by individual character traits, most predominantly individuals' *explicit risk propensity* (Sitkin & Weingart, 1995; Anderhub *et al.*, 2001; Dohmen *et al.*, 2011; Rohde & Rohde, 2011), *impulsiveness* (Kirby & Maraković, 1996; Frederick *et al.*, 2002), and *socio-economic covariates* such as age and

individuals' level of education (Gerbing *et al.*, 1987; Sitkin & Weingart, 1995; Kirby & Maraković, 1996).

Explicit risk preference. Respondents' explicit attitude towards risk was assessed with Nicholson *et al.*'s (2005) seven-item Likert-type scale on personality and domain-specific risk preferences (*ERP*) in its validated German translation by Meyer *et al.* (2015). Opposite value labels range from 1='strongly disagree' to 9='strongly agree'. All items were geometrically sum-scored, with higher scores of the composite measure indicating higher explicit risk-affinity.

Impulsiveness. Impulsiveness was measured with the 34-item version of Barratt's Impulsiveness Scale (BIS) in its validated four-point Likert-type form (Patton *et al.*, 1995). Opposite value labels range from 1='hardly ever/never' to 4='very often/always'. Higher geometric sum-scores indicate higher impulsivity.

Sample

The experiment was conducted with an original, non-nested sample of N=400 German citizens recruited in January 2016 by a professional online panel provider (Respondi AG).[1] Respondents received a fixed monetary incentive for participation in this study. The sample is representative for the German working population aged 18 to 69 with respect to *gender* (female=50%), *age*, *level of education*, and *professional training* (see Appendix A.2). With 20.5% (n=82), public sector employees are slightly over-represented in the sample compared with 11.5% in the general population (Statistisches Bundesamt, 2016). All public sector employees are civil servants with tenure. Respondents are characterised by a slight tendency toward risk aversion when asked explicitly about their risk preferences (ERP: M=5.04, SD=0.89) and are below average impulsive (BIS: M=1.85, SD=0.40). Respondents were randomly assigned to either the public or the private treatments group (balance confirmed by multiple Wilcoxon two-sample rank-sum tests (all $p \geq 0.138$); see A.2).

Model specification

In the expectation of a linear treatment effect, hypotheses were tested by estimating in total four – two for PD and two for DD – multi-level mixed effects regression models clustered at

[1] The minimum sample size for reliable two-tailed comparisons of means amounts to N=352 participants and was estimated conservatively with Cohen's d-score in the assumption of a small to medium-size treatment effect; $d \leq |0.30|$; α=0.05, power=0.8 (Ellis, 2010).

the level of the individual and estimated with heteroscedasticity-robust standard errors. The main effects models (I_i) are specified as:

$$h_I = \beta_1 Treatment + \beta_{2;3;4} Magnitude + \beta_5 Employment\ Sector + \beta_6 ERP + \beta_7 Impulsivity + \beta_8 Age + \beta_9 Female + \varepsilon_i.$$

and

$$k_I = \beta_1 Treatment + \beta_{2;3;4} Magnitude + \beta_5 Employment\ Sector + \beta_6 ERP + \beta_7 Impulsivity + \beta_8 Age + \beta_9 Female + \varepsilon_i.$$

respectively. Relative magnitudes of rewards are modelled as binary indicators with small magnitudes arbitrarily serving as reference categories. In the second models (II_i), interaction terms between framing treatment and employment sector as well as between employment sector and magnitude of reward are added as post-hoc analysis on prior work experience.

RESULTS

Descriptive analysis

Prior to hypotheses testing, all discounting parameters h_i and k_i were log-transformed for normalization from their originally logarithmic scales and additional reliability checks for the dependent variables regarding magnitude effects and item transitivity were conducted. Participants across both framing treatments follow hyperbolic discounting strategies as predicted by discounted utility theory when faced with different magnitude-levels of prospect rewards; they discount probabilistic rewards more steeply if relative magnitudes of rewards are higher in a strictly transitive way ($h_{small} < h_{medium} < h_{large}$). Confirmatory factor analysis shows that the three PD parameters are indeed interrelated (*KMO*=0.683; Bartlett's Chi^2=432.48, p=0.000; *AIC*=0.963) and load onto one single underlying construct (Cronbach's α=0.812).

The three DD parameters are also reliably related to a single underlying construct (*KMO*=0.711; Bartlett's Chi^2=560.97, p=0.000; *AIC*=4.905; Cronbach's α=0.849), but respondents in both treatment groups and across professional sector affiliations (public or private) discount delayed rewards intransitively ($k_{large} < k_{small} < k_{medium}$) resulting in overall higher discounting rates for medium-size magnitudes of delayed rewards (see Table 1). This response pattern is stable across treatment groups and employment sector-based subsamples

(see Table 2) pointing toward a general pattern cognition instead of being indicative of a specific magnitude-related treatment effect.

Table 1 displays the descriptive results of the PD and DD choice tasks split by magnitudes of reward and experimental treatment. Contrary to *H1* and *H2*, *t*-testing does not reveal a publicness-related treatment effect on PD or DD (all two-tailed between-group *t*-tests statistically non-significant; t=|0.101 to 1.104|, p=0.270 to 0.919; d=|0.010| to |0.109|).

Table 1: Descriptive results of discounting tasks by treatment

Dependent variable	Experimental Treatment	N	M	SD	[95% CI]		*t*-test		*d*
							t	*p*	
Probability discounting (PD)									
h_{large}: €20 vs. €80	public	200	1.553	1.38	1.361	1.746	-.281	.779	.028
	private	200	1.515	1.34	1.328	1.702			
h_{medium}: €40 vs. €100	public	200	1.126	1.25	.952	1.300	.653	.514	-.065
	private	200	1.209	1.29	1.029	1.388			
h_{small}: €40 vs. €60	public	200	.789	1.27	.612	.966	-1.104	.270	.110
	private	200	.656	1.13	.498	.814			
Delay discounting (DD)									
k_{large}: €75 to €85	public	200	-5.412	2.51	-5.762	-5.062	1.092	.276	-.109
	private	200	-5.136	2.55	-5.491	-4.780			
k_{medium}: €50 to €60	public	200	-4.712	3.15	-5.151	-4.273	-.131	.896	.013
	private	200	-4.753	3.18	-5.197	-4.310			
k_{small}: €25 to €35	public	200	-6.651	2.51	-7.000	-6.302	-.101	.919	.010
	private	200	-6.676	2.47	-7.021	-6.332			

Notes: Normalized discounting parameters; amounts in millions; *t*-testing Welch-adjusted.

In contrast, comparing the results of the PD and DD choice tasks by respondents' employment sector (Table 2) reveals that – across all three magnitude levels of reward – public sector employees discount probabilistic rewards more steeply than private sector employees. This effect is especially strong for large probabilistic rewards (h_{large}), where public sector employees (M=1.12, SD=1.29) discounted risky choice options almost 44.3% more steeply than private sector employees (M=0.62, SD=1.16); t=-3.156, p=0.002; d=-0.416. The absolute size of this effect decreases with smaller magnitudes of probabilistic reward (h_{medium}: t=-1.732, p=0.086; d=-0.219; h_{small}: t=-2.222, p=0.028; d=-0.267) but the effect is robust in its direction and considerable in its absolute effect size.[1]

[1] As an illustration, assume that someone would offer a randomly drawn respondent from the current sample a risky venture with a probability of 50% for winning €100 and a 50% chance of winning nothing. Using Equation 2, we can calculate that they would trade this offer for €24.69 if they actually worked in the public sector and that they would trade the very same offer for €34.96 if they were drawn from the group of private sector employees. This indicates that the average public sector employee in our sample discounts probabilistic rewards more steeply

Regarding DD, descriptive analysis shows that public and private sector employees differ regarding their willingness to wait for relatively larger but delayed rewards, but this is only the case for small amounts (k_{small}). Public sector employees discount small delayed rewards less steeply (M=-5.93, SD=2.49) compared with private sector employees (M=-5.11, SD=2.52); k_{small}: t=2.663, p=0.009; d=0.328. Although the absolute difference of the mean discounting scores seems small, a short example calculated with Equation 6 illustrates the considerable size of this effect: If a public sector employee randomly drawn from the current sample was offered the prospect of receiving €100 after waiting 100 days, they would be happy to trade this offer for €78.98 of immediate reward. In contrast, a randomly drawn private sector employee from the same sample would be content to trade the very same offer for €62.24 of immediate reward. This means that public sector employees are more tolerable toward delayed gratification.

Table 2: Descriptive results of discounting tasks by respondents' employment sector

Dependent variable	Employment Sector	N	M	SD	[95% CI]		*t*-test		*d*
							t	*p*	
Probability discounting (PD)									
h_{large}: €20 vs. €80	public	82	1.115	1.29	.832	1.399	-3.156	.002	**-.416**
	private	318	.621	1.16	.493	.749			
h_{medium}: €40 vs. €100	public	82	1.387	1.30	1.102	1.673	-1.732	.086	**-.219**
	private	318	1.110	1.25	.972	1.249			
h_{small}: €40 vs. €60	public	82	1.821	1.30	1.536	2.105	-2.222	.028	**-.267**
	private	318	1.460	1.37	1.310	1.611			
Delay discounting (DD)									
k_{large}: €75 to €85	public	82	-6.652	2.48	-7.196	-6.108	-.047	.963	-.006
	private	318	-6.667	2.49	-6.942	-6.392			
k_{medium}: €50 to €60	public	82	-5.158	3.21	-5.863	-4.454	1.355	.178	.170
	private	318	-4.623	3.14	-4.970	-4.276			
k_{small}: €25 to €35	public	82	-5.929	2.49	-5.383	-4.828	2.663	.009	**.328**
	private	318	-5.105	2.52	-5.383	-4.828			

Notes: Normalized discounting parameters; amounts in millions; *t*-testing Welch-adjusted.

The results of pair-wise correlation analysis (Table 3) amplify these results. As expected, explicit (stated) risk preferences (ERP) correlate with revealed PD behaviour (ρ=-0.177 to -0.142, p=0.004 to 0.019). ERP is also significantly related to impulsiveness (ρ=-0.410, p=0.000). Higher age is positively correlated with a higher explicit preference for risk (ρ=0.245, p=0.000) but a lower implicit tolerance for risk (h_{large}: ρ=-0.115, p=0.021; h_{medium}: ρ=-0.150, p=0.002; h_{small}: ρ=-0.114, p=0.022) and lower impulsiveness (ρ=-0.355, p=0.000).

than the average private sector employee revealing that, *ceteris paribus*, public sector employees behave more risk averse.

Table 3: Correlations and reliabilities

		Range (min. – max.)		1	2	3	4	5	6	7	8	9	10	11
Treatment variables [a]														
1	h_{large}	-1.11	2.68	–										
2	h_{medium}	-1.11	2.72	.659***	–									
3	h_{small}	-1.11	2.78	.494***	.626***	–								
4	k_{large}	-8.74	-1.39	-.116*	-.096	-.248***	–							
5	k_{medium}	-8.74	-1.39	-.014	.047	-.103*	.594***	–						
6	k_{small}	-8.74	-1.39	-.059	-.006	-.121*	.651***	.745***	–					
7	Public sector treatment	0	1	.055	-.033	.014	.005	.007	-.055	–				
Control variables														
8	Explicit risk propensity	1	9	-.132**	-.117*	-.142**	-.012	-.024	-.039	.025	–			
9	Impulsiveness	1	4	.027	.041	.080	.022	.017	-.008	.087	-.410***	–		
10	Public sector employee	0	1	.166***	.088	.107*	.002	-.069	-.132**	.074	.058	-.022	–	
11	Age in years	18	69	-.115*	-.150**	-.114*	.023	.030	.006	.012	.245***	-.355***	.011	–
12	Female	0	1	-.000	.014	.019	-.010	-.023	-.002	.000	.171***	.032	-.074	.000

Note: [a] Normalized discounting parameters; * $p<0.05$, ** $p<0.01$, *** $p<0.001$

Main analysis

The results of multi-level mixed-effects regression analyses are presented in Table 4. Since each study participant responded to 57 choice tasks nested in three magnitudes, the model estimates are clustered at the individual level (N=400) for conditional contribution and at the task level (N=1,200) in order to achieve heteroscedasticity-robust standard error terms. All four models are well specified (Wald Chi^2=224.11 to 320.20; p=0.000) and rely on in total *Obs*.=12,000 for the PD choice task and on *Obs*.=10,800 for the DD task.

The regression models provide further evidence that *H1* has to be rejected: Changing the context of choice from a public to a private sector organization does not significantly affect respondents' discounting behaviour (h: b_I=0.027, p=0.800; k: b_I=-0.049, p =0.847). Intriguingly, the models reveal a substantial positive effect of public sector affiliation on PD (h: b_I=0.411, p=0.002): *ceteris paribus*, public sector employees discount probabilistic rewards much more steeply than their socio-demographically equivalent peers actually working in the private sector. Since h was log-transformed, the estimated coefficients have to be interpreted in their exponentiated form ($e^b=e^{0.703}$=1.509, p=0.004), which means that – under the exact same circumstances and given the exact same information – public sector employees discount risky amounts more than 1,5 times as steeply as private sector employees.[1]

Adding the interaction terms reveals that this effect is not moderated by the magnitude of reward (b_{II}=-0.067, p=0.351), which exerts a strong direct effect on PD behaviour (b_{II}=-0.839 to -0.381, p=0.000). As revealed by the correlation matrix (Table 4), age and explicit (i.e. stated) risk preference exert small but statistically significant effects on PD behaviour with older (b_I=-0.010, p=0.004) and risk-averse respondents (ERP: b_I=-0.133, p=0.045) discounting probabilistic rewards less steeply (see Figure 2).

Regression analysis does not reveal a similar direct effect of real-life public sector affiliation on DD behaviour (b_{II}=-0.443, p=0.138). Intriguing, respondents discount delayed rewards asymmetrically and intransitively in the sense that they are more likely to accept waiting for numerically *larger* amounts of reward (b_{II}=-1.564, p=0.000) while they perceive waiting for *medium*-sized delayed rewards as more burdensome and discount these prospects

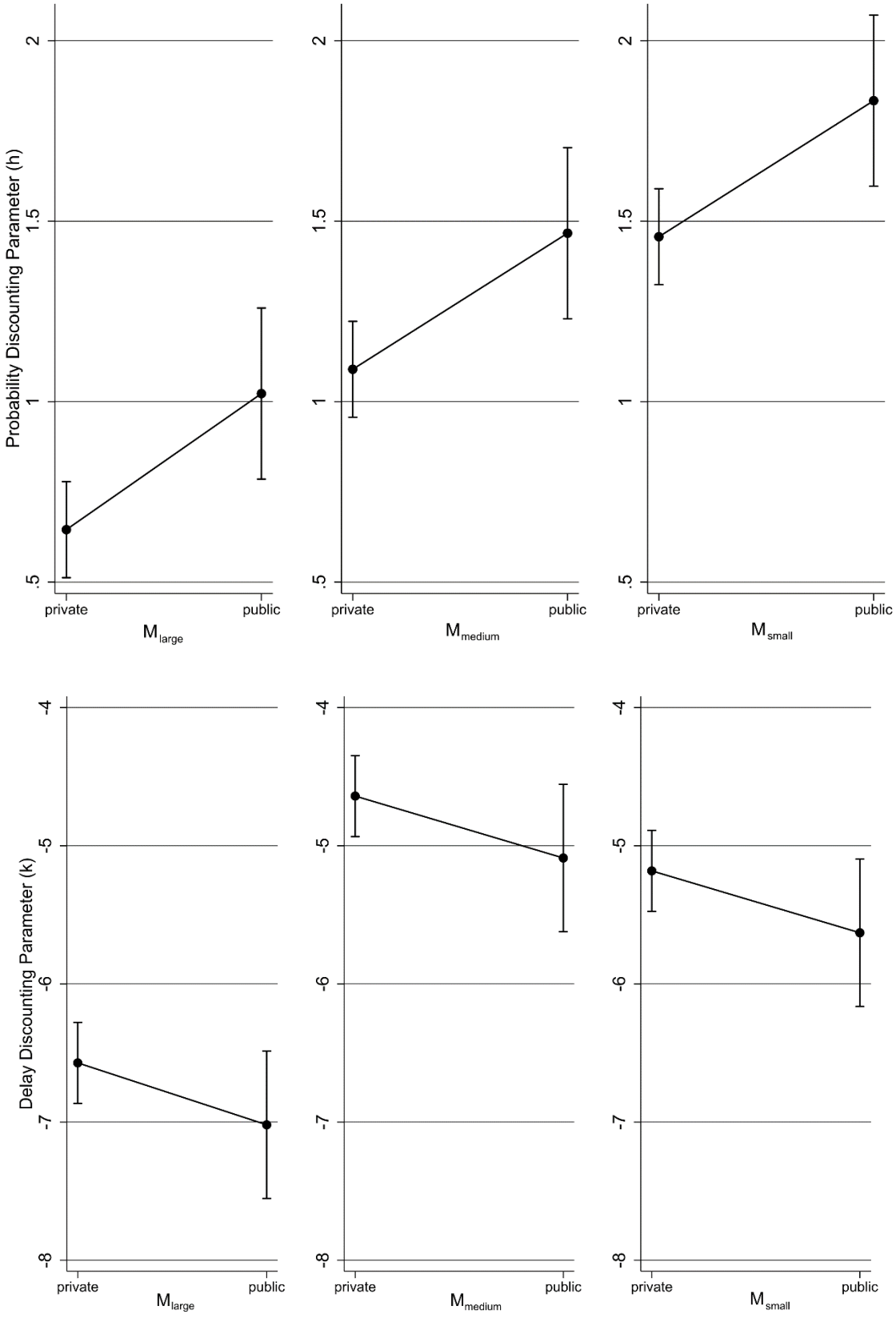
[1] To investigate potential distortions based on the unequal sample sizes, regression analyses were re-run 500 times with equal-sized samples randomly drawn from the pool of public and private sector employees. None of these robustness checks altered any of the substantive findings.

Table 4: Results of multi-level analysis

	Probability discounting		*Delay discounting*	
	I	*II*	*I*	*II*
Level 1 (framing treatment)				
Public sector treatment	.027	.085	-.049	-.147
	(.11)	(.12)	(.24)	(.27)
Large rewards	-.812***	-.839***	-1.390***	-1.564***
	(.06)	(.07)	(.11)	(.13)
Medium rewards	-.367***	-.381***	-.541***	.456***
	(.06)	(.06)	(.11)	(.12)
Small reward	*– reference category for magnitude –*			
Level 2 (individual)				
Cross-level two-way interactions				
Public sector employee x Public context		-.285		.484
		(.26)		(.60)
Public sector employee x Magnitude of reward		-.067		-.419**
		(.07)		(.14)
Control variables				
Public sector employee	.411**	.703**	-.443	.126
	(.13)	(.24)	(.30)	(.53)
Explicit risk propensity	-.133**	-.137**	-.044	-.039
	(.05)	(.05)	(.10)	(.10)
Impulsivity	-.177	-.181	.111	.118
	(.19)	(.19)	(.43)	(.43)
Age	-.010*	-.010*	.006	.006
	(.00)	(.00)	(.01)	(.01)
Female	.116	.117	-.076	-.078
	(.11)	(.11)	(.25)	(.25)
Intercept	3.037***	3.057***	-5.337***	-5.262***
	(.61)	(.61)	(1.38)	(1.38)
N (Level 1/Level 2)	1,200/400	1,200/400	1,200/400	1,200/400
Observations	12,000	12,000	10,800	10,800
Wald Chi^2 (df)	224.78***	227.11***	307.31***	320.20***
var(Intercept)	.886	.883	4.849	4.849
var(Residual)	.667	.667	2.609	2.580
ICC	.570	.570	.650	.653
AIC	3,584.93	3,586.90	5,331.50	5,326.03
BIC	3,640.92	3,653.07	5,387.49	5,392.20
*-2*Log Likelihood*	3,562.93	3,560.90	5,309.50	5,300.03

Notes: Multi-level regression estimates clustered at the individual level for conditional contribution, heteroscedasticity-robust standard errors in parentheses; Model *I*: main effects; Model *II*: with interaction effects; * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Figure 2: Discounting parameters by employment sector



Note: Linear predictions with 95%-CIs by magnitude of reward; upper panel: probability discounting (*h*); lower panel: delay discounting (*k*).

to an even higher degree than in the case of waiting for smaller amounts (medium-sized rewards: b_{II}=0.456, p=0.000). Interaction terms reveal that this effect is related to public sector employees reacting much more strongly toward the magnitude of delayed reward (b_{II}=-0.419, p=0.003) compared with private sector employees. This means that, *ceteris paribus*, public sector employees are more willing to accept delay in rewards than private sector employees.

DISCUSSION

The experimental findings reveal that public sector employees systematically overestimate economic risks and that they are more likely to tolerate delay in rewards compared with the general population. This effect is independent from '*publicness'* as a mere *choice context* because a public sector treatment does not automatically lead to deviances in economic discounting behaviour.

Intriguingly, the experiment reveals that the public sector employees in this sample *do* exhibit dissimilar discounting behaviour compared with public sector employees. This points toward a link between public sector affiliation and biases when faced with choice problems under risk. These findings are the first to substantiate prior research based on self-report measures by Bozeman *et al.* (1992), Bozeman and Bretschneider (1994), Nutt (2005), Eshuis and Van Buuren (2014), and Tepe and Prokop (2018) with evidence on *revealed* economic risk discounting behaviour. The experimental evidence of the current study is based on balanced randomly controlled trials to warrant high internal validity and to eradicate the influence of socio-demographic factors that might differentiate public and private sector employees (James *et al.*, 2017). Yet, sector specific differences in discounting behaviour persist.

The results have important practical implications for PM, especially regarding organizational performance and employee decision-making (Brewer & Brewer, 2011). Essentially, the "behaviour of the individual[s] is a tool with which [an] organization achieves its targets" (Simon, 1945: 108). Consequently, the finding that individuals who work for the public sector evaluate economic risks differently is an important contribution to the core of the PA and PM discourse. It relates to the perennial question of whether certain tasks such as performance evaluation and strategic planning should rather be assigned to public or private sector agents (Rainey *et al.*, 1976; Rainey & Bozeman, 2000; Brewer & Brewer, 2011) and to whether these tasks can be efficiently organized in complex cross-sectoral environments such as public-private partnerships (PPPs) (Klijn & Teisman, 2003; Alford & Greve, 2017). As

cooperative institutional arrangements, PPPs are particularly valuable for their capacity for bundling and sharing venture-related risks among partners. Consequently, PPPs gained considerable popularity with policy makers in the last two decades (Hodge & Greve, 2007; Wang *et al.*, 2018). PPPs are often created to conduct large-scale projects that are governed by traditional approaches to risk management generally following control-and-order logics – *time, budget, and scope* – to account for the complex challenges that emerge during the lifetime of such projects. The typical way of incorporating such uncertainty in PPP management is by estimating the likelihood of potential threats that might hinder collaboration efficiency – and, hence, partnership success – by means of stochastic evaluations (Acebes *et al.*, 2014). This means that individuals engaged in these partnerships are challenged with estimating probabilities and potential delays of processes on a regular basis both in their roles as partners within the PPP but also from the perspective of their own organization – be it public or private. The manifest asymmetries between public and private sector agents revealed by the current study might lead to considerable fraction within the partnership if differences in the perception of risk and delay are not accounted for and aligned accordingly. This is a challenging task for the members of both sides of the partnership especially individuals' discounting behaviour is the result of implicit and often subconscious cognitive process (Ajzen, 2001).

The absence of a significant public sector treatment effect has important implications for PM and PA scholarship: By revealing that '*publicness*' might function as a much weaker and potentially asymmetric behavioural cue stimulating individuals' evaluation and choice behaviour than previously anticipated. In contrast to prior studies by Marvel (2015; 2016), and Hvidman and Andersen (2016), the findings of the current experiment show that although people might be influenced by information cues related to the public sector in case of evaluating organizations' performance, their *own behaviour* is not as easily manipulated by a contextual public-sector cue, calling for more research.

Sector affiliation

This study shows that revealed behavioural risk aversion is associated with working in the public sector. It is important to recognize the possibility that *risk* may have different meanings in different sectors (Bozeman & Kingsley, 1994). On the one hand, daring to take risks is essential for organizational innovation and the creative generation of new ideas and policies to tackle complex issues idiosyncratic to the public sector (Brown & Osborne, 2013). On the other hand, taking risks always incorporates the chance of failure, which – in the case of public

organizations providing essential goods and services to the general public – can have devastating consequences for the life of many people who rely on these services. Risk aversion might actually be the implicit *cognitive benchmark* for individuals' professional behaviour in public organizations because the anticipated cost of failure is much higher than the potential gain from taking risks (Sarin & Weber, 1993). This could be the case particularly with people who are especially interested in and considerate of issues of public values, pro-social behaviour, and societal welfare, i.e. people with high levels of public service motivation (PSM) (Giauque *et al.*, 2015; Van de Walle *et al.*, 2015; Homberg & Vogel, 2016). People who actively seek public sector employment are more likely to being motivated by pro-social values and exhibit higher levels of PSM (Buurman *et al.*, 2012; Esteve *et al.*, 2015; Esteve *et al.*, 2016; Vogel & Kroll, 2016) and prior experimental research by Tepe and Prokop (2018) reveals that PSM is positively associated with risk-averse behaviour. In this context, the result that public employees discount probabilistic rewards more steeply makes a lot of sense because this specific group of respondents should be relatively more aware that taking risks in public organizations may result in severe negative consequences for societal welfare.

These macro-level threats of risk-affine behaviour are complemented by both explicit and intangible incentive structures designed to attract micro-level risk-aversion: societies that organize large parts of their public sector workforce in the form of a career-based employment system (such as Germany) often unwillingly create traditionally risk-averse administrative cultures within their public organizations because engaging in risky and innovative ventures will not materialize in individual benefits (e.g. higher wages or earlier promotion) for motivated employees but still offers the potential of failure and, consequently, the individual threat of not being promoted as scheduled (Rainey *et al.*, 1976; Roessner, 1977; Bozeman & Kingsley, 1998; Parker & Bradley, 2000; Boyne, 2002). Since individuals' ability to make good – i.e. goal-oriented and contextually adequate – decisions under risk is the outcome of a socially informed learning process (Oltedal *et al.*, 2004; Gigerenzer, 2015), this micro-level dynamic of incentive structures implies that even initially risk-neutral or risk-affine individuals might gradually adapt their risk behaviour when working in an organizational culture of explicit or implicit risk aversion if engaged in long-term public sector employment (like the sample of public sector employees in the current study). Brewer and Brewer (2011) point out that micro-level differences in (risk) behaviour could be the core factors that – over time – accumulate into observable organizational differences between the sectors, especially regarding performance and effectivity. For instance, individuals' micro-level tendency to

tolerate delays might manifest in very mundane phenomena often associated with public organizations such as higher red tape and lower organizational efficiency (Bozeman *et al.*, 1992). This idea is in-line with prior research by Bozeman and Kingsley (1998) who report that managers working in public organizations with high red tape and weak links between performance and promotion – such as many public organizations in the continental European tradition of PA – acted comparatively more risk averse and that they were more likely to adapt to and promote a risk-averse organizational culture. Consequently, the experimental finding that public employees were more tolerant to delay and discounted delayed rewards significantly less steeply than private employees might indeed be the result of a latent adaptation process due to their long-term service within a risk-averse culture.

Practitioners might want to counteract these latent and adverse learning processes by, first, providing opportunities for their co-workers to develop their skills of handling economic risks, i.e. training to become *risk savvy* (Gigerenzer, 2015). Second, they are encouraged to work towards increasing their organization's capability to being open to pro-active risk-taking for innovation by fostering active awareness of the issue and by establishing procedural capacities that allow for trial-and-error without punishing individual employees daring to take reasonable risks. Third, this awareness for both the positive and negative effects of risk and delay could have very positive effects on behavioural and procedural efficiency in cross-sectoral collaboration by decreasing the cost of coordinating with private sector partners, who are often more open to embrace economic risks (Brown & Osborne, 2013).

Limitations & future research

Like any empirical research, the results presented in the current study are associated with limitations and encourage future research. First, the empirical evidence is based on choice data from an online experiment to measure behavioural intent as a proxy for actual risk behaviour. Following the logic of classic experiments in behavioural economics, this high level of abstraction and control allows for the direct identification of causal mechanisms between '*publicness*' and the perception of risk (Brewer & Brewer, 2011; James *et al.*, 2017). While this hypothetical scenario comes at the cost of limited ecological validity, prior experimental research shows that individuals exhibited no substantial difference in discounting behaviour when asked to evaluate real vs. hypothetical rewards (Johnson & Bickel, 2002; Madden *et al.*, 2003; Logorio & Madden, 2005; Odum, 2011). Second, the discounting tasks employed in the experiment only comprise the domain of gains. Prospect theory suggests that individuals

follow dissimilar discounting strategies in the domain of gains compared with the domain of losses (Kahneman & Tversky, 1979; Thaler, 1981) and a recent study by Bækgaard (2017) indicates that '*publicness*' might influence this effect. Future studies could replicate the experiment in the domain of loss. Third, the experimental logic and treatment design of this study is based on a strict cognitive distinctiveness between the public and the private sphere, and assumes that this distinction is salient in respondents' minds.

This premise has two consequences for the reliability and generalizability of the findings: First, it excludes the theoretical perspective of hybrid organizations. Second, under the premise of an absolute public/private dichotomy, the results of the current study can only be interpreted as *relative* effects – in contrast to *absolute* effects – i.e. comparing public and private sector agents' discounting behaviour in relation to each other, with the absence of the true control group. While this assumption is realistic for countries associated with the continental European tradition of PA – such as Germany – future replication studies conducted in countries with other administrative traditions might find dissimilar effects of publicness and sector-affiliation on discounting behaviour under risk. Replication studies using samples with a similar tradition will test whether the finding that public sector professionals react differently to the prospect of economic risks is idiosyncratic to the specific characteristics of public sector employees in Germany. Public employees in Germany often enjoy the privilege of a career-based system of employment with the prospect of lifetime tenure, which might attract especially risk-averse individuals (Bellante & Link, 1981; Hartog *et al.*, 2002). Second, follow-up studies using samples from countries with a less pronounced public-private distinction – e.g. in the Anglo-Saxon administrative tradition – will help evaluate whether or not the experimental results still hold if the psychological lines between the sectors is less precise so that risk-averse individuals find no special incentive to self-select into one sector or the other.

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APPENDICES

A.1 Experimental treatment

English translation; extensive original codebook in German upon request.

1. **PUBLIC SECTOR TREATMENT:**

[Introduction & public sector vignette]

'Please imagine that you work for a public service agency, which means working in the public sector. Imagine that, on a regular daily basis, it was your job to make decisions about different alternatives for investments, which will result in different outcomes, respectively. Each time, you can choose between two alternatives. These two options are independent of each other. Your salary is absolutely independent of the decisions you make and, from a long-term perspective, it is secure. You do not have to worry since both your supervisors and your colleagues fully trust in your judgement on these investment decisions.

For example:

For this investment, you have these two alternatives to choose from:

- **Alternative A**: will yield a return on investment of € 40m in 50% of all cases, and will yield a return an investment of € 0 in 50% of all cases.
- **Alternative B**: will yield a risk-free return on investment of € 20m.

Please make sure to take a close look at the two alternatives offered in each task and please select the one alternative that you think is the best choice for your public service agency:'

[… followed by 57 choice tasks based on Madden's (2009) and Kirby et al.'s (1999) questionnaires. Each choice task was presented independently on a new page to inhibit carry-over effects. Participants were constantly reminded of their role as a decision maker in the public sector, for instance, test-item 1 of Madden et al.'s (2009) read:

[Probability discounting item 1]

'Please select the one alternative that you think is the best choice for your public service agency:

For this investment, you have these two alternatives to choose from:

- **Alternative A**: will yield a return on investment of € 80m in 10% of all cases, and will yield a return an investment of € 0 in 90% of all cases.
- **Alternative B**: will yield a risk-free return on investment of € 20m.

Please select one alternative now:'

2. PRIVATE SECTOR TREATMENT:

[Introduction & private sector vignette]

'Please imagine that you work for a business company, which means working for a profit-oriented, private-sector organization. Imagine that, on a regular daily basis, it was your job to make decisions about different alternatives for investments, which will result in different outcomes, respectively. Each time, you can chose between two alternatives. These two options are independent of each other. Your salary is absolutely independent of the decisions you make and, from a long-term perspective, it is secure. You do not have to worry since both your supervisors and your colleagues fully trust in your judgement on these investment decisions.

For example:

For this investment, you have these two alternatives to choose from:

- **Alternative A**: will yield a return on investment of € 40m in 50% of all cases, and will yield a return an investment of € 0 in 50% of all cases.
- **Alternative B**: will yield a risk-free return on investment of € 20m.

Please make sure to take a close look at the two alternatives offered in each task and please select the one alternative that you think is the best choice for your business company:'

[… followed by 57 choice tasks based on Madden's (2009) and Kirby et al.'s (1999) questionnaires. Each choice task was presented independently on a new page to inhibit carry-over effects. Participants were constantly reminded of their role as a decision maker in the private sector, for instance, test-item 1 of Madden et al.'s (2009) read:

[Probability discounting item 1]

'Please select the one alternative that you think is the best choice for your for-profit company:

For this investment, you have these two alternatives to choose from:

- **Alternative A**: will yield a return on investment of € 80m in 10% of all cases, and will yield a return an investment of € 0 in 90% of all cases.
- **Alternative B**: will yield a risk-free return on investment of € 20m.

Please select one alternative now:'

A.2 Descriptive sample statistics

Variable	Full sample	General population	Treatment group balance				
			Public	Private	*z*	*p*	*Sign.*
N	400	82.5m	200	200			
Gender (default = male)	50.0%	49.1%	50.0%	50.0%	.000	1.000	n.s.
Age in years							n.s.
18-24	9.3%	11.3%	9.0%	9.5%	.786	.432	
25-39	29.8%	27.3%	30.0%	29.5%	.661	.509	
40-59	45.0%	44.8%	45.0%	45.0%	.066	.948	
60-64	10.3%	9.4%	9.5%	11.0%	-1.110	.267	
65-69	5.8%	7.3%	6.5%	5.0%	.840	.401	
School-based education							n.s.
No formal education (yet)	1.0%	7.3%	1.0%	1.0%	.000	1.000	
High school diploma	32.0%	33.0%	32.0%	32.0%	.000	1.000	
General secondary education	34.0%	29.5%	34.0%	34.0%	.000	1.000	
Higher education qualification	33.0%	29.5%	33.0%	33.0%	.000	1.000	
Higher education & professional training							n.s.
No post-secondary education	12.8%	25.8%	11.0%	14.5%	-1.048	.295	
Vocational training	66.5%	57.1%	68.5%	64.5%	.846	.397	
First stage of tertiary education[a]	6.3%	1.5%	7.5%	5.0%	1.032	.302	
Second stage of tertiary education[b]	10.3%	13.7%	10.0%	11.5%	-.484	.629	
Third stage of tertiary education[c]	3.3%	1.1%	3.0%	4.5%	-.788	.430	
Public sector employee	20.5%	11.5%	23.5%	17.5%	-1.484	.138	n.s.
Explicit risk propensity: M ± SD	5.04 ± .80	.	5.01 ± .89	5.08 ± .90	-.776	.438	n.s.
Impulsiveness: M ± SD	1.85 ± .40	.	1.87 ± .37	1.83 ± .43	1.070	.285	n.s.

Notes: Balance tested with Wilcoxon two-sample rank-sum test. [a] Bachelor's degree or equivalent.
[b] Master's degree or equivalent. [c] Ph.D. or equivalent.

A.3 Probability discounting questionnaire

Based on Madden *et al.* (2009)

Item No.	Questionnaire Part	Secure Option	Probabilistic Option			h_M at indiff.
		Reward A_{Si}	Probability p_{Pi}	Reward A_{Pi}	Expected Value	
1	Part 1: Large magnitude of rewards $M_{Large} = \frac{80-20}{20} = 3$	€20	10%	€80	€8	.33
2		€20	13%	€80	€10	.45
3		€20	17%	€80	€14	.61
4		€20	20%	€80	€16	.75
5		€20	25%	€80	€20	1.00
6		€20	33%	€80	€26	1.48
7		€20	50%	€80	€40	3.00
8		€20	67%	€80	€54	6.09
9		€20	75%	€80	€60	9.00
10		€20	83%	€80	€66	14.65
11	Part 2: Medium magnitude of rewards $M_{Medium} = \frac{100-40}{40} = 1.5$	€40	18%	€100	€18	.33
12		€40	22%	€100	€22	.42
13		€40	29%	€100	€29	.62
14		€40	33%	€100	€33	.74
15		€40	40%	€100	€40	1.00
16		€40	50%	€100	€50	1.50
17		€40	67%	€100	€67	3.04
18		€40	80%	€100	€80	6.00
19		€40	86%	€100	€86	9.21
20		€40	91%	€100	€91	15.17
21	Part 3: Small magnitude of reward $M_{Small} = \frac{60-40}{40} = 0.5$	€40	40%	€60	€24	.33
22		€40	46%	€60	€28	.43
23		€40	55%	€60	€33	.61
24		€40	60%	€60	€36	.75
25		€40	67%	€60	€40	1.01
26		€40	75%	€60	€45	1.50
27		€40	86%	€60	€52	3.07
28		€40	92%	€60	€55	5.75
29		€40	95%	€60	€57	9.50
30		€40	97%	€60	€58	16.17

Note: Amounts in million €.

A.4 Delay discounting questionnaire

Based on Kirby *et al.* (1999)

Item No.	Questionnaire Part	*k* rank	Immediate Reward A_{Ii}	Delayed Option		Magnitude *M*	k_M at indiff.
				Delay	Reward A_{Di}		
9	Part 1: Size of delayed reward A_{Di} = large	1	€78	162	€80	.026	.00016
17		2	€80	157	€85	.063	.00040
12		3	€67	119	€75	.119	.0010
15		4	€69	91	€85	.232	.0025
2		5	€55	61	€75	.364	.0060
25		6	€54	30	€80	.481	.016
23		7	€41	20	€75	.829	.041
19		8	€33	14	€80	1.424	.10
4		9	€31	7	€85	1.742	.25
1	Part 2: Size of delayed reward A_{Di} = medium	1	€54	177	€55	.019	.00016
6		2	€47	160	€50	.064	.00040
24		3	€54	111	€60	.111	.0010
16		4	€49	89	€60	.224	.0025
10		5	€40	62	€55	.375	.0060
21		6	€34	30	€50	.471	.016
14		7	€27	21	€50	.852	.041
8		8	€25	14	€60	1.4	.10
27		9	€20	7	€55	1.75	.25
13	Part 3: Size of delayed reward A_{Di} = small	1	€34	186	€35	.029	.00016
20		2	€28	179	€30	.071	.00040
26		3	€22	136	€25	.136	.0010
22		4	€25	80	€30	.2	.0025
3		5	€19	53	€25	.316	.0060
18		6	€24	29	€35	.458	.016
5		7	€14	19	€25	.786	.041
7		8	€15	13	€35	1.333	.10
11		9	€11	7	€30	1.727	.25

Notes: Amounts in million €. Delay in days.

ONLINE SUPPLEMENTARY MATERIAL

Stata .do-file with algorithm to calculate probability and delay discounting scores.

<<< discounting.do >>>

CHAPTER 3: TRUST IN PPPS

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A behavioral framing experiment on the paradoxical effect of 'publicness' on strategic behavior in PPPs

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ABSTRACT

Public-private partnerships (PPPs) have become widespread in the delivery of public services. This study explores behavioral mechanisms of building and eroding trust in partnering across sectors at the micro-level of interaction between public and private partners. It shows that partners' sector affiliation can have adverse signaling effects on individuals' intention to uphold effective partnerships over time, and that this intent is moderated by sector-specific attitudes. Tested with a novel and dynamic multi-stage behavioral experiment based on the classic centipede game (*N*=482; *Obs.*=4,338), results show that sector affiliation functions as a strong but potentially misleading signal for partners' strategic behavior in PPPs and that sector-specific associations and attitudes asymmetrically moderate respondents' will to collaborate. These findings contribute to micro-foundations of strategic behavior in PPPs, calling into question basic assumptions about coordination efficiency in cross-sectoral partnerships.

Keywords: *PPP, strategic risk behavior, trust, PSM, behavioral public administration.*

JEL: *H83, D91, D81, C73*

TRUST IN PPPS – A behavioral framing experiment on the paradoxical effect of 'publicness' on strategic behavior in PPPs

Public-private partnerships (PPPs) have become popular with policy makers worldwide (Klijn and Teisman 2003): Across sectoral boundaries, two or more often very dissimilar partners come together to co-create public goods and services, which are considered to be otherwise hard to attain (Hodge and Greve 2007; 2017). However, a large body of research points out how the success of cross-sectoral collaboration is too often subject to problems of coordination (Klijn and Teisman 2003) and lack of effective risk-sharing among partners (Hodge 2004). These problems often result in dramatic losses for public agencies, while private partners may ride free (Klijn and Teisman 2003; Hodge 2004; Edelenbos and Klijn 2007; Hodge and Greve 2007; Bryson *et al.* 2015).

From a behavioral perspective, strategic decision-making in PPPs is tough: In order to create stable and long-lasting relationships, partners in PPPs have to find ways to coordinate and bridge the very distinct logics and goals of the two sectors involved. In the public realm, bureaucrats are expected to strictly follow bureaucratic rules and to take into account issues of societal welfare (Simon 1945), whereas private actors are assumed to simply maximize their individual utility. Decision makers in PPPs are required to anticipate their partners' latent intentions and need to coordinate their own strategic choices accordingly so as to foster overall partner collaboration instead of sending signals that may undermine a *trustful* partnership (Connelly *et al.* 2011).

Trust is a multi-facetted multi-level construct both anchored in an individual's general propensity to trust others, the perceived trustworthiness of their partners', and in the specific situation in which a decision maker has to decide whether or not to trust (Mayer *et al.* 1995; Colquitt *et al.* 2007). In PPPs, establishing and maintaining trust between strategic partners lowers the transaction costs involved in initiating and controlling the partnership because it facilitates information flow and coordination, encourages knowledge sharing and helps resolve disputes (Doz 1996; Das and Teng 1998; Das and Teng 2001; Klijn *et al.* 2010; Lamothe and Lamothe 2011). Trust directly influences agents' willingness to take risks and tolerate uncertainty in partnerships and it is always a function of *context* (Mayer *et al.* 1995). Prospect theory suggest that risk assessments are rarely based purely on objective evaluations of given information (Kahneman and Tversky 1979). In his prospect dynamic model of decision making, Kanner (2005) points out that the chance of individuals engaging in subjective assignment of

risk based on their individual worldview and personal interpretation of the context of the decision becomes more likely as the decision situation (i.e. *context*) becomes more complicated. While partnering across organizational boundaries is challenging by default, PPP add another layer of complexity for decision making because it changes the context of choice into a cross-sectoral setting, arousing sector-specific attitudes, associations, and motivations such as public service motivation (PSM), however the dynamics of strategic behavior in PPPs are severely understudied.

A number of recent studies show that individuals' attitudes toward the public sector are systematically biased by sector-specific and often stereotypical associations (see, for instance, James and Moseley 2014; Marvel 2015; Olsen 2015; Marvel 2016; del Pino *et al.* 2016). For instance, public organizations are widely associated with higher red tape and lower efficiency while public servants and employees are often characterized as unamiable individuals with a low tolerance for risk and a higher tendency for delay (Rainey and Bozeman 2000; Baarspul and Wilderom 2011; Buurman *et al.* 2012). Prior research by Kanner (2005) suggests that individuals' perception of the riskiness of partnering across sectors could be substantially biased by their belief systems – i.e. their psychological associations – regarding the two sectors. Although these associations need not necessarily be negative, it is reasonable to assume that individuals' strategies will be influenced by their assumptions about the strategic behavior of their partners' and result in dissimilar courses of action (Scharle 2002; Kanner 2005). Furthermore, game theoretical research on collaboration efficiency suggests that negative assumptions about partners' will or capacity to collaborate can have detrimental effects on strategic choice under risk and, ultimately, lead to partnership failure (Gulati *et al.* 2012; Bryson *et al.* 2015). Since sector-specific stereotypes function as a strong signal for (in)efficiency, it is logical to assume that partners' sector affiliation and sector-specific associations will substantially influence the strategic choices they make and, hence, affect the likelihood of PPP survival.

To test and extend this idea, the current study explores cognitive and behavioral mechanisms of cross-sectoral collaboration at the micro-level of interaction between public and private sector partners. Based on Mayer *et al.*'s (1995) classic dynamic model of trust, the experimental evidence of our study shows that the specific role people find themselves in – i.e. the role of being a public or a private sector decision maker partnering with a private or public sector agent, respectively – substantially influences their intention to uphold effective partnerships, and that this relation is moderated by sector-specific associations and attitudes.

Specifically, the current study reports experimental evidence of a between-subject randomized vignette experiment employing a multi-stage choice experiment based on the classic centipede game (Rosenthal 1981). Using a large sample of *N*=482 German citizens, this study explores how the sector-specific context of choice influence individuals' likelihood to defect in a PPP setting. Analyzing *Obs.*=4,338 strategic decisions on whether to collaborate or defect under varying degrees of risk, it also reveals the decisive role of PSM, risk propensity, and general trust in determining this likelihood and shows that sector-specific attitudes and associations asymmetrically moderate people's decision to defect. These findings have important implications for the micro-level governance of PPPs regarding team member selection and operational partnership management in the prospect of hidden characteristics, encouraging practitioners to create mechanisms that breed trust among partners to absorb the destructive capacity of anti-public and anti-private stereotypes as well as a dark side of PSM (see also Schott and Ritz 2018).

Although not central to this study, its innovative methodology comes with a number of crucial advantages. First, by opting for an experimental research design, the current study seeks to identify causal mechanisms based on systematic and balanced treatment variation, heeding to calls by Jilke *et al.* (2016), van Witteloostuijn (2015), and Walker *et al.* (2017). Second, to our knowledge, this study is the first to apply the centipede game (Rosenthal 1981) in the field of public administration (PA) and public management (PM) research, thus introducing a new tool for measuring the evolution and erosion of trust in a strategic choice environment over time. Third, this study combines both direct and indirect measures to answer calls for a more rigorous behavioral approach to PA research (Grimmelikhuijsen *et al.* 2017; Walker *et al.* 2017).

The remainder of this study is organized as follows: The second section draws on previous research on trust and sector-specific attitudes to develop a theoretical model and derive hypotheses on the role of trust on strategic behavior in PPPs. The third section introduces our take on a classic behavioral experiment developed to model the strategic dilemma at the core of risk governance in PPPs and describes the data raising procedure. The results of PPP-survival analysis and multi-level regression modelling are presented in section four. The final section discusses theoretical, practical, and methodological implications of these findings as well as limitations paving way for future research.

THEORY

A Model of Trust and Sector Affiliation

PPPs are organizational arrangements in which agents from dissimilar sectors collaborate in order to achieve a common and mutually beneficial goal. In contrast to (contractual) arrangements of privatization, in which public and private agents create a structure of hierarchy that can more easily be monitored by legal arrangements that clearly specify principal and agent, working together in PPPs involves mutual interdependence.[1] In case of partnership failure, both partners are vulnerable because of their shared accountability and legalistic control mechanisms are only weak remedies in such cases.

Following Mayer *et al.*'s (1995: 712) classic definition, trust is "the willingness of a party to be vulnerable to the actions of another party based on the expectations that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party". Consequently, trust is a dynamic and social phenomenon that is directly related to risk because the need for trust only arises in situations in which a meaningful incentive is at stake of which the trustor must be aware of (Johnson-George and Swap 1982; Mayer *et al.* 1995). In this perspective, trust is not the equivalent of risk taking but it is a willingness to take risk given a certain configuration of context, perception, and behavior (Mayer *et al.* 1995). Mayer *et al.*'s (1995) classic model is well recognized for its theoretical merit because it presents a holistic concept of trust including both the micro-level factors of trustor's and trustee's characteristics, attitudes, and behaviors as well as the macro-level factor of context and the larger outcomes of both parties' risk behavior. Furthermore, a large-scale meta-analysis conducted by Colquitt *et al.* (2007) largely confirms Mayer *et al.*'s (1995) concept and empirical evaluation (Mayer and Davis 1999) of this integrative partial mediation model of trust.

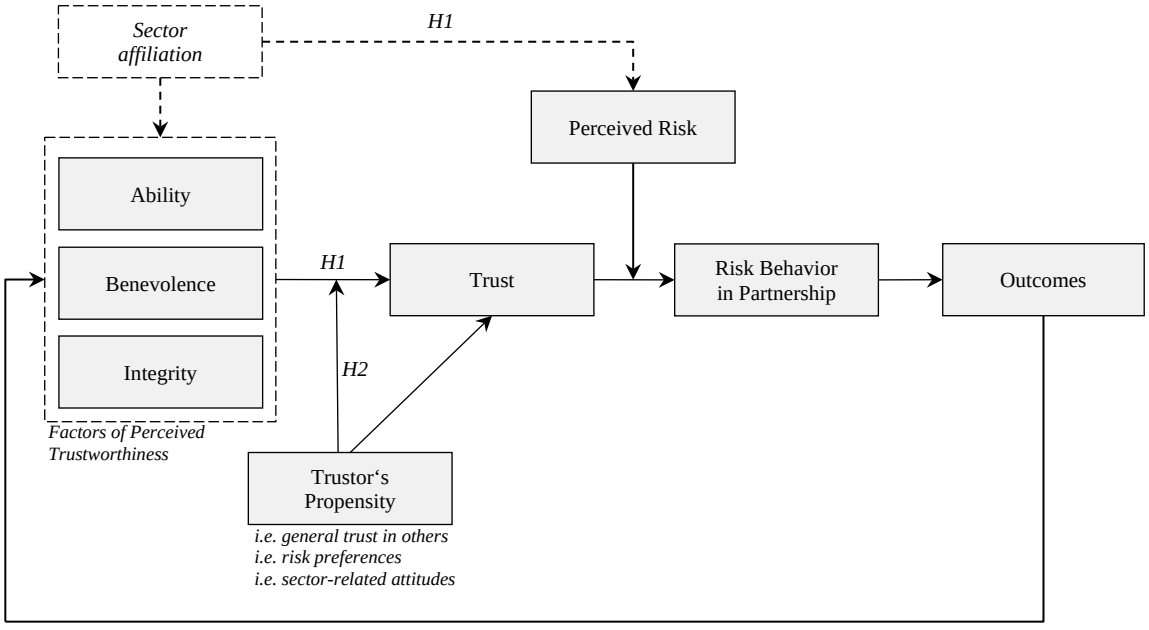
Trust is the result of a dynamic feedback loop of a trustor's individual disposition and attitudes toward risk and trust (*trustor's propensity*), the perceived characteristics or *factors* that (potentially) deem the trustee trustworthy (i.e. the trustee's hidden characteristics with regard to his/her *ability*, *benevolence*, and *integrity* to act as promised), the perceived riskiness of a given situation (*perceived risk*), and both partners' *risk behavior* in the course of the partnership

[1] This mutual interdependence is what differentiates *partnership* from mere *collaboration*. Trust is not a necessary condition for efficiency in mere collaboration because it does not necessarily put a party at risk at the will of the other party (Mayer *et al.* 1995).

(Sitkin and Pablo 1992; Mayer *et al.* 1995; Sitkin and Weingart 1995). Thus, partners' individual propensity to trust others (*trustor's propensity*) is both a learning outcome of their general experiences and a contextual consequence of their situational embeddedness in the interactive and interdependent social structure of the partnership.

Building on Mayer *et al.*'s (1995) concept of trust and trustworthiness, Figure 1 illustrates these relationships but it adds one central factor for trust research in PPPs: the effect of *sector affiliation*. What differentiates PPPs from mundane partnerships is the fact that at least one partner comprises the psychological and socio-culturally constructed category of '*publicness'*, which adds an additional layer of complexity to strategic choice (Connelly *et al.* 2011).

Figure 1: Theoretical model of trust in PPPs



Note: Adapted from Mayer *et al.*'s general model of trust and trustworthiness (1995: 715).

Prior research indicates that partner heterogeneity is one of the most serious obstacles for partnership success because perceived heterogeneity – '*otherness'* – can result in tension between partners that manifest in the long-term of partnership tenure (Gurevitch 1988). For instance, latent or explicit heterogeneity regarding institutional core objectives and values often manifests in concurrent long-term interests that eventually erode mutual trust and increase partners' likelihood to defect (Klijn and Teisman 2003; Hodge and Greve 2007; Bryson *et al.* 2015). Case-based research in the Netherlands by Klijn and Teisman (2003) revealed that decision makers in PPPs find it especially difficult to make joint decisions and develop long-lasting, *trustful*, and effective relationships across sectoral boundaries. Mayer *et al.* (1995) point

out that the positive effect of trust on collaboration efficiency is especially relevant in contexts where trustor and trustee have dissimilar characteristics, e.g. in the sense of originating from different sectors, because trust facilitates cohesion and is associated with organizational legitimacy, hence, increasing individuals' capacity and willingness to work together. Cross-sectoral research on managerial choice by Nutt (1999; 2005) shows that individuals follow dissimilar strategies when making decisions in the public compared with the private sector. For decades, scholarship has been busy exploring the institutional differences between the sectors (e.g. Bozeman and Bretschneider 1994; Rainey and Bozeman 2000) to investigate why people – most prominently managers and employees – behaved differently in the context of the public and the private realm (Brewer and Brewer 2011).

Classic theories on administrative behavior suggest that sector-specific peculiarities will affect the factors that Mayer *et al.* (1995) theorize as being decisive factors of trustworthiness. In his perennial work on *Administrative Behavior*, Simon (1945: 108) points out that the specific context of the public sector primes and frames the premises of decision-making on the level of the individual. He stresses that the evaluative processes of the human mind are bounded by the psychological environment constructed in the process of sense-making (Weick *et al.* 2005). This means that knowing that the trustee belongs to the public or the private sector will influence the trustor's evaluation of the trustee's ability and willingness to fulfill his or her obligations in the partnership, it will affect the trustor's expectations regarding the trustee's benevolence and it will elucidate certain (positive or negative) assumptions about the trustee's integrity.

Mayer *et al.* (1995) point out that a given trustor can have dissimilar levels of trust for various trustees. Trustors infer expectations about the behavior of trustees based on implicit or explicit signals they receive from the trustee (Johnson-George and Swap 1982). *Ceteris paribus*, partners' sector affiliation is one of the most explicit of these signals.

Sector-affiliation and adequacy of trust

Generally speaking, public and private partners are expected to pursue dissimilar organizational goals and follow dissimilar institutional logics. These logics define what is regarded as *adequate* behavior in a specific situation under risk and mold risk perception and risk behavior accordingly (Fottler 1981; Gigerenzer and Gaissmaier 2011; Rohde and Rohde 2011). Private sector agents are expected to maximize individual profits while public agents must find a balance between achieving their specific strategic goals within the PPP and

satisfying the broader objectives of societal welfare (Simon 1945, 69; Brewer and Brewer 2011; Buurman *et al.* 2012). Due to these restrains, public partners often experience a relative lack of discretion for strategic maneuver in PPPs under risk rendering them more vulnerable compared with private agents. Since both partners are cognizant of their partner's sector affiliation and stereotypical logics, we hypothesize that a partner's sector affiliation moderates the perceived contextual risk of the partnership as well as the interpretation of the factors of *perceived* trustworthiness.

Backward induction leads to two alternative hypotheses for this effect (Aumann 1998). First, rational agents might exploit the asymmetry of strategic discretion by unilaterally defecting from a PPP if their immediate subjective utility from defection is larger than the subjective expected utility of completing the PPP. Since private agents are assumed to be more likely to follow self-serving utility maximizing strategies (Simon 1945, 69; Brewer and Brewer 2011; Buurman *et al.* 2012) it follows that

> *Hypothesis 1a (H1a): Private (public) sector actors are more (less) likely to defect from PPPs under risk than private sector actors.*

Alternatively, rational public agents might anticipate this asymmetry and interpret their partner's private-sector affiliation as a signal for lower trustworthiness (Weick *et al.* 2005; Connelly *et al.* 2011). As a consequence, rational backward induction would incentivize public agents to defect themselves early in the tenure of the PPP in order to prevent larger prospective subjective losses so that

> *Hypothesis 1b (H1b): Public (private) sector actors are more (less) likely to defect from PPPs under risk than private sector actors.*

Sector-specific attitudes as cognitive frames

In situations of incomplete information – i.e. comprising classic Knightian uncertainty (1921) of unknown outcomes and unknown probabilities – decision makers predominately rely on attitude-based heuristic choice strategies or even on pure *gut feeling* informed by liking or disliking to come to any form of decision (Overskeid 2000; Loewenstein *et al.* 2001; Kanner 2005; Brighton and Gigerenzer 2015). PPPs are a typical context of Knightian uncertainty especially in the early stages of partnership tenure because partner can only speculate about their partners' hidden intentions and characteristics. Following Mayer *et al.*'s (1995) model,

trustors might deduce logical (but heuristic) conclusions about their partners' trustworthiness and the likelihood that their cross-sectoral partners defect for self-serving reasons based on the trustor's individual attitudes toward the sectors especially in lack of further information about their partner's characteristics (see Figure 1).

Kanner (2005), Weick *et al.* (2005), and Colquitt *et al.* (2007) specifically argue that the evaluation of these signals itself is not free of the trustor's individual cognitive frames, especially in a cross-sectoral context. These cognitive frames – the associative network stored in memory – are especially relevant for understanding risk behavior in PPPs: An emerging field of research in PA and PM shows that individuals are systematically biased by their stereotypical associations and attitudes toward the public sectors (e.g., James and Moseley 2014; Marvel 2015; Olsen 2015; Marvel 2016; del Pino *et al.* 2016). Attitudes form relatively stable patterns of learned behavior to regularly react toward objects of evaluation in a favorable or an unfavorable way (Schacter and Graf 1986; Chen and Bargh 1999; Conrey and Smith 2007) and abstract – often implicit – associations are the psychological foundations of these attitudes.

Unfortunately, empirical research worldwide reveals that people's attitudes toward the public sector are skewed by typically negative (and often implicit) public sector stereotypes and associations (Butler *et al.* 2011; James 2011; Van Ryzin 2013; Olsen 2015; Marvel 2016; del Pino *et al.* 2016). Since associations prime attitudes and attitudes guide risk behavior (Cacioppo and Gardner 1999; Dolan and Sharot 2012), we argue that partners' likelihood to trust each other and, hence, their risk behavior will be moderated by their implicit and explicit affective attitudes toward the sectors in the sense that

> *Hypothesis 2 (H2): PPP partners are less (more) likely to defect if they hold positive (negative) attitudes toward the other sector participating in the partnership.*

DATA AND METHODS

Hypotheses were tested in a dynamic multi-stage behavioral experiment with randomized trials. The game is based on the classic centipede game (Rosenthal 1981) and complemented with a sector-specific contextual role framing treatment. This design combines advantages of two experimental procedures: First, it uses pre-tested vignettes elaborating a schematic but close-to-life PPP scenario to increase the ecological validity of its results (Neff 1979; Aguines and Bradley 2014). Second, the strictly controlled environment of an economic game setup

allows for the systematic manipulation of context parameters – i.e. sector affiliation and risk – and the control of behavioral cues and incentives (Jilke *et al.* 2016; Walker *et al.* 2017).

Participants

The study relies on experimental responses of N=482 German citizens who made *Obs.*=4,338 strategic decisions in total. The data were collected in the form of an anonymous online experiment from October to November 2017 using a professional panel of (former) graduate students of PM, business administration, political science, and other social sciences at a large national university. Study participants were incentivized with the possibility of winning one of eleven significant money prizes (1x €250, 4x €150, 6x €50) to be paid out as online retail gift vouchers. Out of the total pool of 2,429 individuals, 646 took part in the online experiment, which corresponds to a response rate of 26.6%. Any incomplete responses were excluded rigorously from the dataset resulting in treatment groups of adequate sizes (public sector treatment: n=263; private sector treatment: n=219) for detecting small to medium sized treatment effects (Cohen's d<|0.30|, power=0.8, α=0.05; n=172; Ellis 2010). Although not representative for the general population, this sample is an especially interesting target group for behavioral PA research because the future decision makers of both public and private organizations are likely to be recruited from this particular group of respondents.

Contextual framing treatment

The contextual vignette introduced participants to a fictitious but realistic mega-project carried out collaboratively by a local government (i.e. the public partner) and by a for-profit construction firm (i.e. the private partner).[1] Both the partnership and the project are described in a very positive way, benefitting all stakeholders involved. This is to trigger neutral to positive associations (i.e. a low level of perceived situational risk) and to provide a logical reason as to why collaboration until project completion was the most beneficial – i.e. "rational" – option for all partners involved. The experiment is a non-zero-sum game. In each round, the instructions emphasized that participants' individual expected utility in case of defection was substantially smaller than their expected utility in case of collaboration until the project was completed. Consequently, rational actors should interpret this setting in a way that will incentivize them either to defect in the very first node (Aumann 1998) or continue to the very end of the partnership to maximize their individual utility.

[1] See Appendix A.1 for a comprehensive description of the experimental setup and the vignette treatments.

Next, respondents randomly received one of two treatments, asking them to assume the role of an executive manager in either of the two partnering organizations (s*ector affiliation treatment*). Participants were informed that the PPP had been installed successfully, performing well and to mutual benefit. Yet, a contractual and legal loophole would now – ten planning periods before its completion – allow partners to unilaterally terminate the partnership to the disadvantage of the remaining partner, if they wished so. This is to create the interdependent vulnerability that makes trust necessary. *Ceteris paribus*, we assume that participants' role frame will stimulate sector-specific associations and context-dependent behavior toward their partner from the other sector, influencing their likelihood to defect (*H1a* and *H1b*).

Centipede game

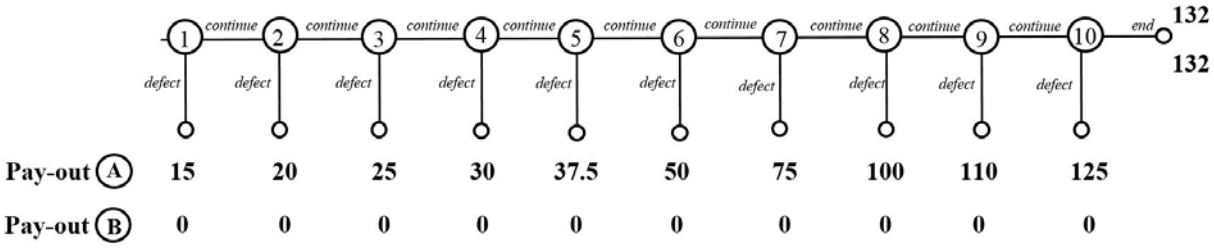
The scenario described in the previous section was implemented as a pseudo[1] two-player non-zero-sum centipede game set in the domain of gains (Rosenthal 1981; Kawagoe and Takizawa 2012). The centipede game is a finite game with a predefined number of rounds[2] with linear increasing pay-outs and stable rules known to both players beforehand (McKelvey and Palfrey 1992). In this game, two players make consecutive strategic decisions to either cooperate in the prospect of a larger reward at the end of the game or defect to cash-in an immediate and smaller reward. If the first mover (player A) decides to defect and thus ends the game, the second mover (player B) will have substantial disadvantages from A's decision. In this way, the centipede game models the classic dilemma of a conflict between short-term self-interest against long-term considerations of mutual benefit, a core problem of incentive structures in PPPs under risk (Wang *et al.* 2018). The centipede game is the classic game of trust in partnerships: The pie shifted between the two players grows with each round. Consequently, it is rational and beneficial for all players to continue the game but they will only decide to follow this strategy if they feel that they can trust in their partner's ability and integrity to abide by the partnership agreement so that, in the end, they will both profit from sharing the full pie.

[1] The online-experiment was played with only one respondent at a time but the vignette-scenario was framed as a two-player situation stressing that the opposing party also had the power to terminate the PPP without further notice. However, the experiment was programmed as to always signal that the opposing partner wished to continue the collaboration. We use this mild form of deception to dramatically increase the perceived realism of the – explicitly fictitious and controlled – scenario. Following the advice for a reasonable use of deception in economic experiments by Cooper (2014), the introduction reassured participants that their monetary incentive payout was absolutely independent from their performance in the game, that the objective of this experiment was studying the psychological dynamics of cross-sectoral partnering, and participants were adequately debriefed at the end of the experiment.

[2] 100 rounds in Rosenthal's (1981) original setup, hence the name. See Figure 2 for an illustration.

In the setup employed in the current study, the centipede game consisted of a maximum of 10 rounds (i.e. the maximal PPP tenure). The exact narrative of the scenario is presented in Appendix A.1. In each round, players had two choice options: either stand by the PPP agreement (thus betting on the relatively larger but risky overall pie) or defect to materialize a substantially smaller individual but immediate reward, causing their partner to lose out completely. Figure 2 displays the centipede game structure with individual prospective rewards for each partner in case of collaboration and defection. The progression of the payout structure was informed by Madden *et al.*'s (2009) *Probability Discounting Questionnaire* because its trade-off tasks provide a validated scheme for systematically varied expected utility under risk.

Figure 2: Extrinsic game structure



Note: Hypothetical pay-outs in million €.

Dependent variable

After each round of the centipede game, respondents were asked to indicate whether they wished to collaborate and proceed to the next period or defect and, consequently, terminate the collaboration and the game. Consequent, individuals' exit node in relation to the maximum of 10 rounds serves as the main dependent variable, i.e. the relative likelihood of PPP survival (*PPP survival; min.=1; max.=10*).

Independent variables

Sector-specific associations. Respondents were asked to think carefully about the role they were asked to assume and to key in at least *three associations* they spontaneously attributed to the sector they were affiliated in (i.e. the public sector if they were to act as a senior civil servant or the private sector if they were asked to assume the role of a strategic manager at the construction firm, respectively). These explicit associations were manually coded and matched with Võ *et al.*'s (2009) *Berlin Affective Word List* (BAWL-R), a systematic inventory of several thousand German words experimentally tested for their emotional arousal, i.e. the positive and

negative feelings they are associated with implicitly. Matching respondents' stated sector-specific associations by their emotional valence helps us to reveal whether respondents held relatively more negative or positive attitudes toward the sectors in a systematic procedure. We calculate a compound valence score based on the rank-adjusted geometric means of Võ *et al.*'s (2009) list (continuous; range: *min.*=-3 to *max.*=3) for each sector. This procedure results in two independent variables (*public sector association* and *private sector association*) which we use to test *H2*. Following Brauer *et al.*'s (2000) example, we also assess respondents' *explicit attitudes* toward the two sectors as part of the socio-demographic questionnaire to complement the revealed items generated from the association input. Respondents were asked to indicate their explicit attitudes toward the public and the private sector on two single seven-point Likert-type items (order randomized between subjects to inhibit order and priming effects) ranging from 1='very negative' to 7='very positive'.

Control variables – Trustor's propensity

Prior research by Mayer *et al.* (1995), Barsky *et al.* (1997), and Hartog *et al.* (2002) suggests that individuals' will to collaborate is influenced by individual preferences regarding risk, uncertainty, and the trustworthiness of others in general. This argument is straightforward since a considerable body of research – see, for instance, Sitkin and Weingart (1995), Colquitt *et al.* (2007), Dohmen (2011), or Rohde and Rohde (2011) – shows that risk attitudes prime trust and mediate strategic decision-making and risk behavior. Respondents' *risk propensity* was revealed with Madden *et al.*'s (2009) *Probability Discounting Questionnaire* (PDQ) using Weißmüller's (2016) algorithm.[1] We measure individual's *tolerance for uncertainty* with Dalbert's (1999) scale on general and work-related tolerance for uncertainty (eight six-point Likert-type item; range: 1='strongly disagree' to 6='strongly agree'). Higher sum-scores indicate higher tolerance for uncertainty. People differ in their motivation to help others and to make meaningful contributions to common welfare, which are important issues in PPPs. We measure *public service motivation* (PSM) with Kim *et al.*'s (2012) 12-item Likert-type scale, opposite value labels ranging from 1='absolutely disagree' to 7='absolutely agree'. Participants' *general trust in others* was measured with Yamagishi and Yamagishi's (1994) six-item Likert-type *General Trust Scale* with opposite value labels ranging from 1='strongly

[1] Based on the idea of hyperbolic discounting, Madden *et al.*'s (2009) PDQ is a measure to reveal individuals' implicit risk preferences based on the analysis of in-total 30 dyadic trade-off tasks between systematically varied relatively smaller but fixed pay-outs and relatively larger but probabilistic pay-outs. Respondents' pattern of choice and preference reversals allows deriving a specific numeric discounting parameter for each respondent. This parameter is a reliable predictor for preferences and choice under risk and robust against conscious manipulation (Green and Myerson 2004).

disagree' to 5='strongly agree'. Furthermore, people have different capabilities in evaluating numerical performance information. Respondents' *numerical literacy* was tested and controlled with the first seven items of Weller *et al.*'s (2013) *Abbreviated Numeracy Scale.*[1] Finally, respondents' *age* and *gender* were controlled for in order to balance treatment-groups for socio-demographic differences that might affect collaboration capacity.

Analytic procedure and model estimation

We test our hypotheses in two consecutive steps. After a preliminary descriptive analysis, the focus, first, lies on the treatment effect of sector affiliation on *PPP survival* (*H1*) by conducting survival-based mixed effects logistic regression analyses. Second, the association-based dynamics of the relation between sectorial affiliation and *PPP survival* are deciphered by adding interaction terms to test for moderation effects (*H2*) in a second model. All models were clustered at the individual level to take into account the conditional contribution of each respondent, which is a consequence of the varying number of game periods played by each person.

RESULTS

Descriptive results

The dataset comprises responses by N=482 participants, 90% of which were German citizens. On average, respondents took 14.6 minutes to complete the full experiment and survey. Table 1 presents the descriptive sample statistics and respective correlations with reliabilities.

The sample comprises relatively more female participants (61.2%) and respondents are on average M=24.7 (SD=4.94) years old. The PDQ reveals that the sample is predominantly risk averse (ln(h): M=0.96, SD=0.80; risk neutrality at M=0.00) and that they slightly prefer to avoid uncertainty (M=2.54, SD=0.66; six-point scale). Respondents report average levels of *PSM* (M=3.48, SD=0.70) and *trust in others* (M=2.54, SD=0.66; six-point scale). They express slightly negative attitudes towards both sectors when asked explicitly (public: M=2.83, SD=1.44; private: M=2.76, SD=1.47; 5-point scale; t(482)=0.770, p=0.442, d=|0.513|). Regarding their sector-related associations, respondents ascribe more negative affective valence to the public sector (M=0.31, SD=1.30) compared with the private sector (M=0.51, SD=1.39) but this result

[1] This scale originally comprises eight items of statistical word problems of varying complexity. We omitted the last and most complex item for the sake of research pragmatism to prevent higher dropout rates due to survey length.

Table 1: Correlations, reliabilities, and descriptive results

	1	2	3	4	5	6	7	8	9	10	11	12
Study variables												
1. PPP survival	–											
2. Public sector affiliation [a]	-.04*	–										
3. Public sector associations	.05**	-.11***	–									
4. Public sector attitude (explicit) [b]	-.01	-.03*	.09***	–								
5. Private sector attitude (explicit) [b]	-.03	.02	.00	.04**	–							
Control variables												
6. Risk propensity (revealed)	-.02	.09***	-.01	.04**	.06	–						
7. Trust in others (explicit)	.06***	.03	.03*	-.01	.07***	.03	–					
8. Uncertainty avoidance (explicit)	-.06***	.02	.07***	.00	.06***	-.01	-.10***	–				
9. PSM (explicit)	-.02	.02	-.03*	.01	-.07***	.03*	-.02	.04**	–			
10. Female [a]	-.02	-.03	.02	.01	-.01	.03*	-.04*	-.07***	.08***	–		
11. Age [a]	.04**	.01	-.01	-.05**	.05**	.11***	.15***	-.04*	.06***	-.08***	–	
12. Numeracy	.08***	.01	.02	-.02	.01	-.03	-.05***	.01*	-.11***	-.19***	-.04	–
M	8.62	.55	.40	2.83	2.76	3.59	2.54	2.54	3.48	.61	24.7	4.70
SD	2.90	.50	.91	1.44	1.46	3.16	.66	.66	.70	.49	4.93	1.40
range	0–10	1 / 0	-1.83–2.60	1–7	1–7	.33–15.31	1–5	1.30–5.30	1.85–5.80	1 / 0	17–51	0–6

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; [a] distribution in treatment groups controlled for balance with between-group two-tailed *t*-tests, all n.s.; [b] stated attitudes centered for normalization.

is only indicative; $t(1,444)=2.801$, $p=0.005$, $d=|0.095|$). Participants are above average capable of handling numerical information ($M=4.70$, $SD=1.40$), which indicates that their responses to the experiment are reliable and not biased by a lack of numeracy.

Hypotheses testing

At first glance, the descriptive analysis shows relatively little variance between the two treatment conditions if we only focus on the overall likelihood of *PPP survival* (*min*.=1, *max*.=10; $M=8.62$, $SD=2.90$). On average, respondents decided to uphold the PPP for $M=8.51$ ($SD=3.08$) periods in the public treatment and for $M=8.73$ ($SD=2.67$) periods in the private treatment; $t(4,336)=0.010$, $p=0.010$; $d=-.078$. Although the differences between treatment groups appear small, there is significant variance between the two treatment groups in the course of the game periods if individual dispositions are taken into account.

One reason for the small size of the treatment effect is revealed by inspecting the smoothed hazard function (Figure 3). The graph shows the relative frequency of defection (in percent) by treatment in each game period. In the first two periods, public sector agents are revealed to being less likely to defect than private sector agents while the former exhibit substantially higher rates of defection in the four last periods.

Table 2 reports the results of the mixed-effects logistic regression estimates (see Table 2).[1] The main effects model (see Model I in Table 2) is well-specified (Wald Chi^2 (10)=84.49, $p<0.000$) and reveals a negative association between the likelihood of *PPP survival* and collaborating with a private sector partner (*treatment effect*: $\beta_{1=}$-0.258, $p=0.049$). This suggests that *H1a* has to be rejected because public sector agents are significantly more likely to defect from the PPP, hence causing its termination.[2] *H1b* cannot be refuted. Furthermore, the model reveals that *PPP survival* is also directly and substantially influenced by respondents' *explicit attitudes about the public* ($\beta_{3=}0.239$, $p<0.000$) but not by their private sector attitudes ($\beta_{4=}$-0.078, $p=0.227$). In line with our theoretical expectations, individual characteristics such as

[1] Appendix A.2 presents further analysis to investigate the prevalence of sample-size induced artificial inflation of model estimates. Results show that the results are *not* substantially biased by artificial inflation.
[2] An alternative and equally valid interpretation would be that respondents in the role of private sector agents are significantly more likely to maintain the PPP under risk.

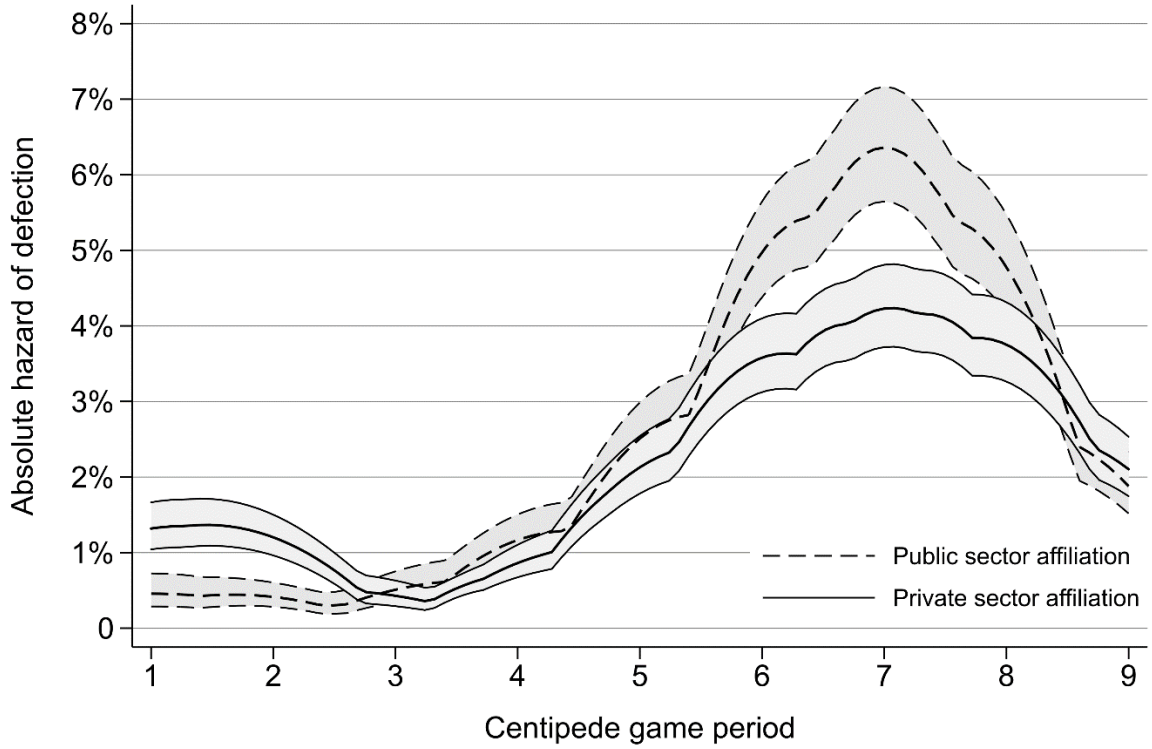
Table 2: Mixed-effects logistic regression analysis on *PPP survival*

	Model I					*Model II*				
	β	*p*	*SE*	*[95% CI]*		*β*	*p*	*SE*	*[95% CI]*	
Treatment effect										
Public sector affiliation (i.e. *collaborating with a private sector partner*)	-.26*	.049	.13	-.52	-.00	-.15	.302	.14	-.43	.13
Subject-level effects										
Sector-specific associations	.08	.141	.06	-.03	.19	-1.68***	.000	.22	1.25	2.12
Public sector attitude	.24***	.000	.07	.11	.37	.28***	.000	.07	.15	.42
Private sector attitude	-.08	.227	.07	-.21	.05	-.10	.126	.07	-.23	.03
Two-way interactions										
Public sector treatment x public sector associations						-1.88***	.000	.24	-2.36	-1.40
Private sector treatment x private sector associations						-1.41***	.000	.21	-1.81	-1.00
Control variables										
Risk aversion (revealed)	-.07***	.000	.02	-.10	-.03	-.06***	.000	.02	-.10	-.03
PSM (explicit)	-.36***	.000	.09	-.54	-.18	-.34**	.001	.10	-.53	-.14
Trust in others (explicit)	.31**	.006	.11	.09	.53	.39**	.001	.11	.16	.60
Uncertainty avoidance (explicit)	-.14†	.099	.08	-.31	.03	-.09	.297	.09	-.26	.08
Female	-.19	.131	.13	-.44	.06	-.29*	.019	.12	-.53	-.05
Age	-.01*	.016	.02	-.04	.02	-.01	.436	.02	-.05	.02
Intercept	4.38***		.59	3.23	5.54	4.18***	.000	.62	2.96	5.41
Obs.	4,338					4,338				
N	482					482				
Wald Chi² (df)	84.49***					141.49***				
df	10					12				
AIC	2,064.27					1,999.36				
BIC	2,134.39					2,082.24				
*-2*Log Likelihood*	2,042.27					1,973.36				

Notes: Clustered at individual level for conditional contribution, robust standard errors; explicit attitudes centered. Model I: main effects; Model II: combined model with interaction effects. † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

respondents' *revealed risk preference* ($\beta_{5=}$-0.069, p<0.000), their general level of *trust in others* ($\beta_{7=}$0.311, p=0.006), and (indicatively) their individual tendency to *avoid uncertainty* ($\beta_{8=}$-0.139, p=0.099) also explain substantial amounts of variance, while the model does not reveal age ($\beta_{8=}$-0.013, p=0.390) or gender effects ($\beta_{9=}$-0.192, p=0.131) in relation to *PPP survival*. Respondents' level of PSM is a surprisingly influential driver of people's likelihood to collaborate: We find that higher levels of PSM are strongly and negatively associated with *PPP survival* ($\beta_{6=}$-0.359, p=0.000). This means that high-PSM individuals are substantially more likely to defect from the PPP than low-PSM individuals are.

Figure 3: Smoothed hazard function of *PPP survival* by treatment



Note: Absolute hazard smoothed functions of partners' defection in per cent by game period and by treatment; kernel density estimated with Epanechnikov kernel to minimize the mean squared error.

H2 predicts that the relationship between sector affiliation and the likelihood of *PPP survival* is moderated by respondents' sector-specific associations because these associations would determine individuals' interpretation of having a partner from the public or the private sector and, hence, moderate trust in their cross-sectoral partner. The dynamics of this attitude-based moderation effect were analyzed by estimating a second mixed-effects logistic regression model (Model *II* in Table 2) including interaction terms between sector-specific treatment and the two compound affective valence scores derived from respondents' associations with the two

sectors. The model is well specified (Wald Chi^2 (12)=141.49, p<0.000) and posthoc analysis showed that multicollinearity was not an issue. In Model *I*, sector-specific associations have a substantial negative effect on the likelihood of *PPP survival* (β_2=-1.68, p<0.000). Explicitly stated attitudes toward the public sector were positively associated with *PPP survival* (β_3=0.28, p<0.000) while those toward the private sector had no reliable association with PPP survival (β_4=-0.10, p=0.126).

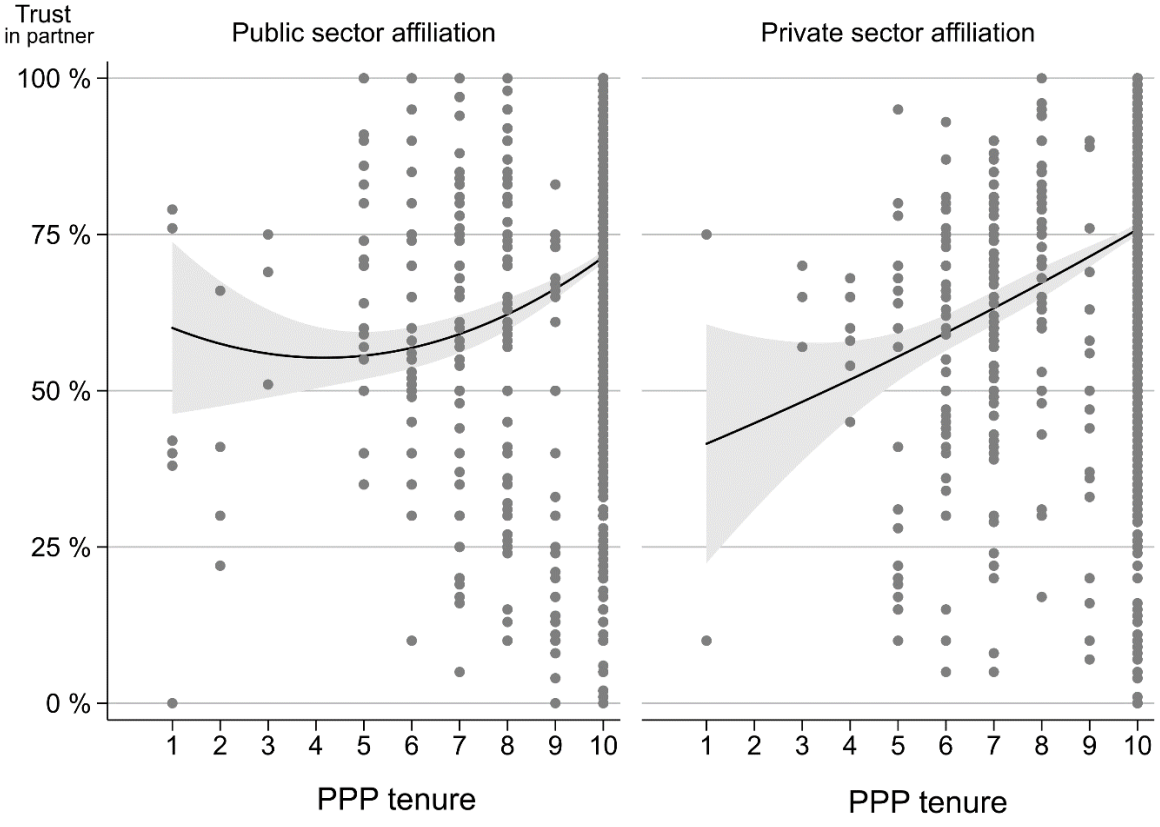
In contrast, Model *II* shows that sector-specific associations strongly and statistically reliably predict PPP survival (β_3=-1.63, p<0.000). The relationship is negative, which means that either way, pronounced public or private sector attitudes have a detrimental effect on the likelihood of respondents' will to uphold beneficial long-term collaboration with cross-sectoral partners. This finding is strongly supported by the result that under both treatment conditions interaction effects with revealed public and private sector associations are robust and positive (public: β_5=1.51, p<0.000; private: β_6=1.81, p<0.000).

An inspection of the marginal effect plots of sector-specific associations on *PPP survival* within their respective 95%-confidence intervals by treatment (Figure 4) reveals that both positive and negative associations with the public sector result in a parabolic moderation effect on the marginal likelihood of *PPP survival*. In contrast, sector-specific associations with the private sector do not have a similar complex moderation effect but, with a positive slope, have a linear marginal effect on the likelihood of *PPP survival*. Since results show that the valence of sector-specific associations moderates the strength of the signaling effect of partners' sector affiliation on *PPP survival*, *H2* cannot be refuted.

This result is substantiated by individuals' explicit perception of their partners' trustworthiness. Figure 5 reveals that agents partnered with a private sector agent experience a valley of trust (Aven 2015) while we find no equivalent trend for agents partnered with a public sector agent, *ceteris paribus*. As a consequence, we find that while public sector actors are less likely to defect in the beginning of the PPP lifetime, they become significantly more likely to defect, after incentives to defect transgress a certain threshold in period six.

Figure 4: Marginal effects plot of sector-specific associations on *PPP survival* by treatment

Figure 5: Trust in partners by treatment-based sector affiliation



Note: Shaded areas indicate 95%-CIs; grey dots denote exit nodes in centipede game.

DISCUSSION AND CONCLUSION

The findings from the experiment provide striking evidence for a signaling paradox: Public sector agents are more likely to terminate the PPP and follow risk strategies that are a higher threat to PPP survival than private sector agents even if their partner only sends positive signals for collaboration. For public sector actors, the information cue of knowing that they collaborate across sectors with a private sector agent increases the likelihood of terminating the PPP early to the severe disadvantage of their partners' shared profit on the one hand but also to the detrimental loss of the general publics' because the mutually beneficial PPP project is unilaterally terminated. In this way, public actors' assumption about the idiosyncratic, self-serving characteristics and potential hidden intentions of their private sector partners is enough to severely compromise public actors' fundamental role as outcome-oriented providers of public services. This result is in line with the predictions of prior qualitative scholarship by Scharle (2002), Klijn and Teisman (2003), Kets and Sandroni (2014), and Bryson, Crosby, and Stone (2015) and substantiates these lines of reasoning with first experimental quantitative results.

This result is striking because it shows that, in the context of PPPs, private sector affiliation functions as a signal strong enough to evoke negative assumptions about partners' intentions to collaborate and erode trust – even in the face of explicit information indicating that there is no logical reason for partners to defect. This finding resonates with prior empirical research by Calanni *et al.* (2014) and with conceptual ideas about the adverse effect of 'otherness' on collaboration efficiency by Kets and Sandroni (2014) and Gurevitch's (1988) effects of otherness. Furthermore, our findings are in line with prior PA and PM research arguing that the origins of organizations' (dis)ability to coordinate and collaborate effectively across sectoral boundaries lie on the micro-level, i.e. within the *individual* members of an organization and that PPP survival is, thus, dependent on individual idiosyncrasies (Lewis and Weigert 1985; Klijn and Teisman 2003; Calanni *et al.* 2014; Bryson, Crosby, and Stone 2015).

This effect cannot be explained by rational deduction based on the information provided in the experiment and since the effect is not mirrored by private sector actors in a reciprocal way (which would point toward a pure homophily effect), it is apparent that the private sector signaling effect echoes another behavioral phenomenon of unconditional negativity previously observed in citizen-state interactions and called *anti-public sector bias* (e.g. James and Moseley 2014; Marvel 2015; Olsen 2015; Marvel 2016; del Pino, Calzada, and Días-Pulido 2016).

However, results provide strong indications for an *anti-private sector bias*. Our results show that despite neutral signals, people are more likely to assume that private sector actors will defect and – hence – defect themselves in order to minimize losses to public welfare. This escalation of strategic choice is intriguing and tragic because it is only this biased *anti-private sector* assumption that eventually *causes* losses to public welfare by terminating the PPP – a paradox resonating loudly with the classic prisoner's dilemma. Yet, this anti-private effect is not a bias in the sense of a cognitive illusion as defined by, for instance, Camerer (1998) or Rabin (1998), but represents exactly what Herbert Simon defined as a rational heuristic within the boundaries of a specific context (Simon 1945; Gigerenzer and Gaissmaier 2011). It is not irrational for public actors to assume that private sector partners may act more selfishly because the latter are not obliged to serve the public interest. Consequently, the *bias* in the *anti-private sector bias* is not a cognitive illusion but it is a *consequential bias* in strategic choice based on an erroneous interpretation of actors' anticipation that private partners will defect even against their own best interest. Our findings are, therefore, fully in line with Simon's (1945) model of bounded yet rational behavior within the specific context of the public sector and illustrate quantitatively how strategic choice in PPPs is bounded by context-dependent heuristics.

This result is intriguing in several ways because it stands in contrast to normative choice theory and base-level assumptions about collaborative behavior of people with high levels of PSM. First, normative choice theory predicts that rational actors should defect at the first possible node to minimize behavioral uncertainty and cash in any amount larger than zero. This is the optimal strategy in the assumption of backward induction (Aumann 1998), and it would also be in line with prior findings on the antecedents of free-riding (Albanese and van Fleet 1985). In contrast, hardly any participant defects at the first node, which indicates that respondents adopt mixed strategies that do not reflect classic assumptions about human choice. Prior empirical research using the centipede game shows that this behavior can be attributed to the expectation of a small chance that the other partner will be an altruist (McKelvey and Palfrey 1992).

The second prediction from game theory is that rational actors' likelihood to defect grows linearly with each round since the incentive to terminate the partnership grows with each round while the expected utility from upholding the partnership at the end node is constant so that the marginal utility decreases with each round (Aumann 1998). In contrast, the smoothed hazard function has a flattened negative parabolic slope (see Figure 5) with peak hazard in round seven. The form of this slope can be interpreted as an indicator of how actors' trust in their partner

erodes as incentives to defect grow up to a certain threshold, which is typical behavior in strategic alliances with potentially conflicting interests to defect (Kawagoe and Takizawa 2012; Krockow, Pulford, and Colman 2015). Also, it is logical to find that the relative defection hazard decreases in the final rounds of the PPP because for the remaining actors a learning effect regarding their partners' intention might have set in.[1]

Third, results show that sector-specific attitudes and associations are influential drivers of strategic behavior in PPPs. While private-sector associations have a linear positive effect on the likelihood of PPP survival, which means that higher emotional involvement increases decision makers' willingness to uphold cross-sectoral collaborations over a long period of time, the effect of public-sector associations is parabolic. This means that holding either very negative or very positive associations toward the public sector is beneficial to the likelihood that people will opt to uphold the PPP until completion, which indicates that, in fact, emotional involvement with the public sector *in general* is positive for *PPP survival* irrespective of the direction of valence. Additionally, this finding indicates that people who are passionless about the public sector are actually less likely to collaborate until PPP completion. The latter finding is in line with prior experimental research from economic psychology by Arora *et al.* (2012), who show that lower levels of emotional involvement lead to lower levels of trust in partners and, consequently, decrease collaboration efficiency in social good games. Trust is an essential micro-foundation of collaboration (Ostrom 1998). Consequently, public sector practitioners may want to fill positions that involve the strategic management of critical situations in cross-sectoral partnerships with employees who are highly involved and passionate toward the cause of the PPP. Special care should be given to the establishment of a transparent and truly trustful relationship between all partners involved. Furthermore, these results have important practical relevance for the governance of risk in PPPs: Practitioners may want to conclude from our findings that it is wise to establish a shared culture of communality within the PPP to inhibit the adverse effects of perceived cross-sectoral differences.

Fourth, results show that people reporting high levels of PSM are especially likely to terminate the PPP early. This is surprising because high PSM is usually regarded as a robust indicator for a higher likelihood of pro-social behavior (Esteve *et al.* 2015), a higher likelihood of trusting and of behaving more trustworthy (Tepe 2016), and people with high PSM are

[1] An alternative interpretation could be that – knowing that the experiment would only last up to a maximum of ten rounds – respondents primed to act as private sector agents are led to behave more myopically and thus fail to engage in backward induction.

especially likely to self-select into the public sector presumably in the prospect of putting their motivation to help others and contribute to the greater good into action (Crewson 1997; Vandenabeele and Skelcher 2015; Esteve *et al.* 2016). Yet, the data show that PSM *increases* the likelihood of defection. It is important to note that the effect of PSM was more than five times the size of the effect of being a risk-averse person while the negative effect of PSM was about equal to the positive effect of being a generally trustful person. One reason for the strength of this negative association between PSM and the likelihood of *PPP survival* could be that high-PSM people hold a relative preference in favor of the public sector in general and that they may, thus, disapprove of general concept of cross-sectoral partnering as described in the treatment scenario of the current experiment (Crewson 1997).[1] On the other hand, the adverse effect of PSM is still puzzling because defecting from the PPP – and, thus, causing its termination – is clearly adverse to societal welfare at least as described in the scenario of the current experiment. In this sense, this finding is in contrast to prior research by, for instance, Bullock, Rainey, and Stritch (2015) and may provide further evidence for the dark side of PSM (Schott and Ritz 2018), calling for further research.

Limitations and future research

Like any form of experimental research, our study is subject to limitations. First, its empirical evidence is based on decisions made by graduate university students. We are confident in our findings because prior empirical research by Falk *et al.* (2013) and Mullinix *et al.* (2015) shows that student and non-student samples hardly differ in behavioral experiments incorporating social preferences. Furthermore, this sample of future bureaucrats and managers is an especially characteristic and interesting target group for PA and PM research. Yet, future studies are encouraged to assess the external validity of our findings by replicating our experiment – ideally with public and private sector executives.

Conceptual replication studies are encouraged to use our experimental design to investigate within-sector collaborations in both the private and public sector and compare the results with findings for cross-sectoral collaborations in PPPs. This would provide an even more nuanced picture of framing and signaling effects since in PPP settings, almost by definition, the role framing of one partner (as public or private) implies a simultaneous framing of the other partner

[1] The current study was conducted with a sample of German citizens who are accustomed to the European continental tradition of public administration, which comprises a relatively strict legal and organizational distinction between the sphere of the public and the private sector. Studies conducted in countries with other administrative traditions might find dissimilar effect of sector-affiliation on PPP collaboration efficiency.

(as the opposite). This limited our possibilities to causally attribute the observed effects to the framing either of the self or the other. Consequently, future research is needed to examine how the special incentive structures in PPPs affect strategic behavior. We assume that our knowledge about the micro-mechanisms of behavior in PPPs will gain substantially by the use of more elaborate economic research methods in PA and PM scholarship.

Conclusion and practitioner's advice

This study reveals that sector-specific attitudes and the perception of otherness can have adverse consequences for the likelihood of pursuing and upholding mutually beneficial PPPs. While changing individuals' negative (implicit) attitudes and associations toward cross sectoral partners is a long-term endeavor, practitioners might want to consider some firsthand remedies. The key factor eroding trust between partners, *ceteris paribus*, is the perception of heterogeneity between partners which is related to partners' presumably negative hidden characteristics and hidden intentions. As a first step, practitioners might want to engage in actions that create a sense of communality shared by all members of the partnership within their specific PPP project right from its initiation and throughout its lifetime tenure until its completion. This can be achieved by practical measures of team management for instance by explicitly and recurrently communicating the mutual benefits created through the partnership as well as by promoting a shared set of values that are espoused across partners' sectoral affiliations. Values provide justification for behavior and should (explicitly and implicitly) be codified in the partnership's strategy, its goals, and its managerial philosophy by implementing them on the micro-level of collaboration (Tompkins 2005). Acculturation transformational and symbolic management techniques by, for instance, providing rituals, stories, and mission statements both in the initial phases and throughout the lifetime of the PPP can help create and maintain emotional attachment and diminish the risk of partner alienation because it builds psychological bridges across sectoral and organizational boundaries, promoting the PPP's ultimate objective of long-term stability and cross-sectoral mutual synergy for all partners involved (Schein 1992; Huxham and Vangen 2005; Tompkins 2005). Simple measures such as establishing an interactive and visible system of artifacts – e.g. in the form of a PPP brand, common spaces to actually work together, flat hierarchies and collaborative organizational structures, processes, and events – can be hands-on and relatively easy ways to achieve the desired outcome of bringing partners more closely together. These tangible artifacts of communality may seem mundane but they are immediate and affective economical reminders to all agents that although partners might originate from different sectors they do actually share a common course in the

partnership, providing spaces of dialogue in which trust can evolve and stabilize (Gurevitch 1988). In short, everything that makes the partners less alien – less *other* and *strange* – will help reduce the adverse effects of sector-specific attitudes and help reinforce the micro-foundations of successful collaboration in PPPs under risk.

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APPENDIX (Supplementary online material)

A.1 Experimental setup and treatment stimuli

English translation, original German codebook upon request.

1	**General introduction**	
2	**Introduction to performance rating task [all study participants]:** 'Please consider the following scenario: As a result of a generous subsidy from the federal government, new building land has been laid out in your home town a few years ago, on which a new large town district is to be built. This project is considered to be very positive for future urban development by all stakeholders. However, in spite of the federal funding granted, the investment costs for the construction of roads and for the development of the site are very high so that the city cannot bear these costs for the development of the neighborhood on its own and, consequently, has established a long-term partnership with a large construction company from the private sector. It has been contractually agreed that costs and returns of this project are going to be shared equally. This partnership has been working very well for several years and to mutual benefit. But suddenly, an unforeseeable problem arises for which none of the two partners are to blame: There are rumors that the Federal Government's funding program will be terminated early in the coming years. Consequently, the partnership is now in much more distress. If the neighborhood development was not completed, the whole project could lead to disastrous financial losses. Unfortunately, no special clause was agreed upon for such a case, so that if one of the two partners now decided to withdraw prematurely from the project, this would leave behind the other partner with all the liabilities and without means of penalty for the other partner.	
3	**Vignettes and explicit sector specific associations [prime]:** Study participants randomly receive one of two vignette treatments, followed by up to 10 rounds of deciding on whether they wished to continue the partnership.	
4	**A**	**[Public Sector Treatment]** Imagine that you are a civil servant in the higher service of the city administration. This means that you decide whether the collaboration with the private company should to be maintained. Please think carefully about the role you are taking on in this experiment. Imagine how it is to work in the public sector, how it feels like. What are the immediate

		associations that come to your mind in relation to the public sector and to the people working in the public organizations? Please specify at least 3 attributes: *[open response]* *[open response]* *[open response]* As a reminder, you are a civil servant in the higher service of the city administration, this means that you are in the position to decide whether the collaboration with the private company is to be maintained or terminated. So far, the collaboration has been very fruitful and, at this moment, the changes in policy are only rumors. You also know that it is an advantage for both the city you represent and the partner company from the private sector to continue the partnership. A glance at your calculations shows you that the partnership project must last only another 10 planning periods in order to generate the maximum total return for all participants. Then each of the two partner organizations would receive € 132 million funding, but only if the partnership is maintained until the end of the 10 planning periods.
	B	**[Private Sector Treatment]** Imagine that you work as a senior manager in the private sector construction firm. This means that you decide whether the collaboration with the city administration should to be maintained. Please think carefully about the role you are taking on in this experiment. Imagine how it is to work in the private sector, how it feels like. What are the immediate associations that come to your mind in relation to the private sector and to the people working in private companies? Please specify at least 3 attributes: *[open response]* *[open response]* *[open response]*

		As a reminder, you are a senior manager working at the private construction firm, this means that you are in the position to decide whether the collaboration with the city administration is to be maintained or terminated. So far, the collaboration has been very fruitful and, at this moment, the changes in policy are only rumors. You also know that it is an advantage for both the firm you represent and your public sector partner (the city) to continue the partnership. A glance at your calculations shows you that the partnership project must last only another 10 planning periods in order to generate the maximum total return for all participants. Then each of the two partner organizations would receive € 132 million funding, but only if the partnership is maintained until the end of the 10 planning periods.
5	**Centipede Game Trials:** [maximum of 10 rounds, depending on respondents' decision whether or not to continue the partnership; partner descriptions adapted to prior role framing treatment.]	
	1	Please decide under these conditions (planning period 1 of 10): If you decide to terminate the partnership now, your organization ([the city administration/the private construction company]) will receive an amount of € 15 million and your partner ([the private construction company/the city administration]) € 0 million. If you work together until the end, your organization will receive € 132 million and your partner will also receive € 132 million. Please note that your partner can also decide at any time to terminate the partnership without prior notice! This would mean that your organization ([the city administration/the private construction company]) will receive € 0 million and your partner ([the private construction company/the city administration]) will receive € 15 million. Do you want to maintain the partnership? [ ] yes [ ] no. How likely is it that your partner will also wish to maintain the partnership? [slider: 0 --- 100] %
	2	Thank you very much! Your partner has also decided to maintain the collaboration. Meanwhile some time has passed and you have to decide again (planning period 2 of 10):

		If you decide to terminate the partnership now, your organization ([the city administration/the private construction company]) will receive an amount of € 20 million and your partner ([the private construction company/the city administration]) € 0 million. Please note that your partner can also decide at any time to terminate the partnership without prior notice! This would mean that your organization ([the city administration/the private construction company]) will receive € 0 million and your partner ([the private construction company/the city administration]) will receive € 20 million. If you work together until the end, your organization will receive € 132 million and your partner will also receive € 132 million. Do you want to maintain the partnership? [ ] yes [ ] no. How likely is it that your partner will also wish to maintain the partnership? [slider: 0 --- 100] %
	3	Thank you very much! Your partner has also decided to maintain the collaboration. Meanwhile some time has passed and you have to decide again (planning period 3 of 10): If you decide to terminate the partnership now, your organization ([the city administration/the private construction company]) will receive an amount of € 25 million and your partner ([the private construction company/the city administration]) € 0 million. Please note that your partner can also decide at any time to terminate the partnership without prior notice! This would mean that your organization ([the city administration/the private construction company]) will receive € 0 million and your partner ([the private construction company/the city administration]) will receive € 25 million. If you work together until the end, your organization will receive € 132 million and your partner will also receive € 132 million. Do you want to maintain the partnership? [ ] yes [ ] no. How likely is it that your partner will also wish to maintain the partnership?

		[slider: 0 --- 100] %
	4	Thank you very much! Your partner has also decided to maintain the collaboration. Meanwhile some time has passed and you have to decide again (planning period 4 of 10): If you decide to terminate the partnership now, your organization ([the city administration/the private construction company]) will receive an amount of € 30 million and your partner ([the private construction company/the city administration]) € 0 million. Please note that your partner can also decide at any time to terminate the partnership without prior notice! This would mean that your organization ([the city administration/the private construction company]) will receive € 0 million and your partner ([the private construction company/the city administration]) will receive € 30 million. If you work together until the end, your organization will receive € 132 million and your partner will also receive € 132 million. Do you want to maintain the partnership? [ ] yes [ ] no. How likely is it that your partner will also wish to maintain the partnership? [slider: 0 --- 100] %
	5	Thank you very much! Your partner has also decided to maintain the collaboration. Meanwhile some time has passed and you have to decide again (planning period 5 of 10): If you decide to terminate the partnership now, your organization ([the city administration/the private construction company]) will receive an amount of € 37.5 million and your partner ([the private construction company/the city administration]) € 0 million. Please note that your partner can also decide at any time to terminate the partnership without prior notice! This would mean that your organization ([the city administration/the private construction company]) will receive € 0 million and your partner ([the private construction company/the city administration]) will receive € 37.5 million.

		If you work together until the end, your organization will receive € 132 million and your partner will also receive € 132 million. Do you want to maintain the partnership? [ ] yes [ ] no. How likely is it that your partner will also wish to maintain the partnership? [slider: 0 --- 100] %
	6	Thank you very much! Your partner has also decided to maintain the collaboration. Meanwhile some time has passed and you have to decide again (planning period 6 of 10): If you decide to terminate the partnership now, your organization ([the city administration/the private construction company]) will receive an amount of € 50 million and your partner ([the private construction company/the city administration]) € 0 million. Please note that your partner can also decide at any time to terminate the partnership without prior notice! This would mean that your organization ([the city administration/the private construction company]) will receive € 0 million and your partner ([the private construction company/the city administration]) will receive € 50 million. If you work together until the end, your organization will receive € 132 million and your partner will also receive € 132 million. Do you want to maintain the partnership? [ ] yes [ ] no. How likely is it that your partner will also wish to maintain the partnership? [slider: 0 --- 100] %
	7	Thank you very much! Your partner has also decided to maintain the collaboration. Meanwhile some time has passed and you have to decide again (planning period 7 of 10): If you decide to terminate the partnership now, your organization ([the city administration/the private construction company]) will receive an amount of € 75

		million and your partner ([the private construction company/the city administration]) € 0 million. Please note that your partner can also decide at any time to terminate the partnership without prior notice! This would mean that your organization ([the city administration/the private construction company]) will receive € 0 million and your partner ([the private construction company/the city administration]) will receive € 75 million. If you work together until the end, your organization will receive € 132 million and your partner will also receive € 132 million. Do you want to maintain the partnership? [ ] yes [ ] no. How likely is it that your partner will also wish to maintain the partnership? [slider: 0 --- 100] %
	8	Thank you very much! Your partner has also decided to maintain the collaboration. Meanwhile some time has passed and you have to decide again (planning period 8 of 10): If you decide to terminate the partnership now, your organization ([the city administration/the private construction company]) will receive an amount of € 100 million and your partner ([the private construction company/the city administration]) € 0 million. Please note that your partner can also decide at any time to terminate the partnership without prior notice! This would mean that your organization ([the city administration/the private construction company]) will receive € 0 million and your partner ([the private construction company/the city administration]) will receive € 100 million. If you work together until the end, your organization will receive € 132 million and your partner will also receive € 132 million. Do you want to maintain the partnership? [ ] yes [ ] no. How likely is it that your partner will also wish to maintain the partnership? [slider: 0 --- 100] %

	9	Thank you very much! Your partner has also decided to maintain the collaboration. Meanwhile some time has passed and you have to decide again (planning period 9 of 10): If you decide to terminate the partnership now, your organization ([the city administration/the private construction company]) will receive an amount of € 110 million and your partner ([the private construction company/the city administration]) € 0 million. Please note that your partner can also decide at any time to terminate the partnership without prior notice! This would mean that your organization ([the city administration/the private construction company]) will receive € 0 million and your partner ([the private construction company/the city administration]) will receive € 110 million. If you work together until the end, your organization will receive € 132 million and your partner will also receive € 132 million. Do you want to maintain the partnership? [ ] yes [ ] no. How likely is it that your partner will also wish to maintain the partnership? [slider: 0 --- 100] %
	10	Thank you very much! Your partner has also decided to maintain the collaboration. Meanwhile some time has passed and you have to decide again (planning period 10 of 10): If you decide to terminate the partnership now, your organization ([the city administration/the private construction company]) will receive an amount of € 125 million and your partner ([the private construction company/the city administration]) € 0 million. Please note that your partner can also decide at any time to terminate the partnership without prior notice! This would mean that your organization ([the city administration/the private construction company]) will receive € 0 million and your partner ([the private construction company/the city administration]) will receive € 125 million. If you work together until the end, your organization will receive € 132 million and your partner will also receive € 132 million.

		Do you want to maintain the partnership? [ ] yes [ ] no. How likely is it that your partner will also wish to maintain the partnership? [slider: 0 --- 100] %
6	**Probability discounting questionnaire (Madden *et al.*, 2009)**	
7	**Tolerance for uncertainty (Dalbert 1999)**	
8	**PSM (Kim *et al.* 2012)**	
9	**Explicit attitude about the public sector**, single 7-point Likert-type item: 'If you think about the public sector in general your thoughts are…' 1='very negative' to 7='very positive'.	
10	**Explicit attitude about the private sector**, single 7-point Likert-type item: 'If you think about the private sector in general your thoughts are…' 1='very negative' to 7='very positive'.	
11	**Trust in others (Yamagishi and Yamagishi 1994)**	
12	**Socio-demographic questionnaire:** - year of birth - gender - citizenship - field of study - education - prior work experience and intent to apply to public sector.	
13	**Numeracy (Weller *et al.* 2013)**	
14	**Acknowledgement and end of study**	

A.2 Additional analysis on artificial inflation bias

The empirical evidence presented in the current study relies on a relatively large number of observations (*Obs.*=4,338) nested in a sample of *N*=482 respondents. Larger sample sizes are generally regarded as beneficial for regression analysis because a higher number of respondents increases power and, hence, reduces the likelihood of committing type II (β) errors, i.e. falsely accepting a null hypothesis (Banerjee *et al.* 2009).

Yet, large sample size can also cause artificial inflation of *p*-values resulting in models that identify statistically significant but inconsequential effects. In very large samples, *p*-values quickly cross the threshold levels typically interpreted as statistical significance – $p<0.05$; $p<0.01$; $p<0.001$ – see Lin *et al.* (2013) for an extensive discussion.

Consequently, we test our empirical results for inflation bias by drawing a random sample of our data (controlled for treatment balance) and re-run the multi-level mixed effects regression analysis. We repeat this procedure and, by each step, systematically halve the number of drawn observations until we reach the minimum sample-size necessary to detect statistically significant effects in between-group mean comparisons, i.e. *Obs.*>172 (Ellis 2010).

Figure A.2.1 presents the results of this step-wise procedure. The test reveals that the results presented in the main body of the current study are largely robust against artificial inflation. Especially the results regarding respondents' revealed *risk aversion*, *uncertainty avoidance*, and their *explicit attitude toward the public sector* remain stable. In contrast, the treatment effect – *public sector association* (i.e. collaborating with a private sector partner) – becomes sign-indicative and exhibits considerable variation if sample sizes are reduced. This indicates that although the partners' sector does function as a cue for the trustworthiness of a partner, the main drivers of whether or not people decide to defect from the PPP are still their individual dispositions and attitudes, predominantly their level of *PSM* ($\beta_{6=}$-0.359, $p<0.000$), their *general trust in others* ($\beta_{7=}$0.311, $p=0.006$), their *revealed risk propensity* ($\beta_{5=}$-0.069, $p<0.000$) and their *attitude toward the public sector* ($\beta_{3=}$0.239, $p<0.000$). We already discuss this *caveat* in more detail in the discussion section of the main study and are, hence, confident in our findings.

TABLE A.2.1: Regression results on the likelihood of *PPP survival*

	Model I	*Model II*	*Model III*	*Model IV*	*Model V*
Treatment effect					
Public sector affiliation (i.e. *collaborating with a private sector partner*)	-.258* (.049)	-.156 (.383)	-.071 (.790)	-.307 (.457)	-.105 (.881)
Subject-level effects					
Sector-specific associations (revealed)	.082 (.141)	.108 (.172)	.103 (.392)	.025 (.888)	.362 (.186)
Public sector attitude	.239*** (.000)	.176† (.062)	.306* (.036)	.507* (.028)	1.044* (.033)
Private sector attitude	-.078 (.227)	-.108 (.213)	.002 (.990)	.212 (.273)	.345 (.364)
Control variables					
Risk aversion (revealed)	-.069*** (.000)	-.050† (.056)	-.088** (.009)	-.145*** (.000)	-.183** (.001)
PSM (explicit)	-.359*** (.000)	-.229† (.084)	-.178 (.367)	.479 (.158)	.390 (.348)
Trust in others (explicit)	.311** (.006)	.214 (.185)	.426† (.086)	-.028 (.930)	.141 (.818)
Uncertainty avoidance (explicit)	-.139† (.099)	-.265* (.029)	-.183 (.355)	-.508† (.073)	-.762† (.099)
Female	-.192 (.131)	-.273 (.122)	-.032 (.897)	-.115 (.778)	.386 (.533)
Age	-.013 (.390)	.002 (.933)	.001 (.968)	.048 (.331)	.015 (.856)
Intercept	4.383*** (.000)	3.931*** (.000)	3.088* (.015)	2.411 (.198)	4.085 (.216)
Obs.	4,338	2,170	1,085	543	272
N	482	482	482	482	(482)
Wald Chi² (10)	84.49***	33.42***	25.43**	21.81*	17.84
p	.000	.000	.005	.016	.058
AIC	2,064.27	1,090.77	526.91	228.18	103.29
BIC	2,134.39	1,153.28	581.79	275.44	142.95
*-2*Log Likelihood*	2,042.27	1,070.77	504.91	206.18	81.29

Notes: Multi-level mixed effects regression estimates clustered at subject level for conditional contribution; heteroscedasticity-robust standard errors; direct effects models (*p*-values in parentheses); † $p<0.1$, * $p<0.05$, ** $p<0.01$, *** $p<0.001$. The estimates of Wald's Chi (*df*), AIC, and BIC indicate that models IV and V are substantially biased and should not be selected.

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CHAPTER 4: NEGOTIATION IN PUBLIC-PRIVATE PARTNERSHIPS

CHAPTER 4: NEGOTIATION IN PUBLIC-PRIVATE PARTNERSHIPS

A laboratory experiment on context, domain, and PSM

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ABSTRACT

Strategic negotiation is a central but mostly unexplored activity in public-private partnerships (PPPs). Based on prior research on sector-specific behavior and game theory, we theorize that public and private sector agents follow dissimilar bargaining strategies when negotiating about excess gains and losses in a PPP scenario. Specifically, we investigate the role of sectoral context, bargaining domain, implicit associations, and PSM on subjective negotiation efficiency. Tested with a strictly controlled laboratory negotiation experiment (dyadic alternating-offers bargaining game with dynamic dominance; *N*=118 participants; *Obs.*=8,368 offers and counteroffers leading to *n*=1,121 contracts), we provide tentative behavioral evidence on a linear relationship between public agency and satisficing (vis-à-vis maximizing) negotiation behavior in a PPP scenario. PSM moderates the effect of domain on sectoral agency asymmetrically across negotiation magnitudes. These findings advance our understanding about the micro-foundations of strategic choice in PPPs and underline the complex psychologically effects of individual motivations and *publicness* on negotiation behavior.

Keywords: *Negotiation, Strategic Bargaining Behavior, Public-private Partnership (PPP), Public Service Motivation (PSM), Laboratory Experiment.*

JEL: *H83, C78, D81, D91*

INTRODUCTION

Public-private partnerships (PPPs) play a major role in the provision of public goods and services worldwide. In theory, PPPs are formalized long-term oriented cross-sectoral arrangements in which both public and private sector agents collaborate for mutual benefit, bundling and sharing risks to realize large-scale projects in a synergetic manner (Hodge and Greve 2007; Reynaers and De Graaf 2014; Villani, Greco, and Phillips 2017). In practice, partners often fail to sustain mutually beneficial partnerships and instead tend to recur to self-serving strategies that, ultimately, lead to partnership failure (Kee and Forrer 2012). Following recent streams of behavioural research on strategic risk behaviour in cross-sectoral contexts (Zou and Kumaraswamy 2009; Weißmüller and Vogel 2018; Bouwman *et al.* 2019) and on (negativity) biases toward the public sector (Marvel 2015; Weißmüller 2016), this study argues that – based on partners' heterogeneity in logics and the dissimilar attributes associated with the sectors – PPPs create dysfunctional negotiation spaces that incorporate incentive problems on the micro-level that ultimately impede coordination efficiency (Malatesta 2011).

PPPs mark the clash of two worlds: On the one hand, public partners socialized in the *satisficing* logic of the public sector strive to balance conflicting demands between economic returns and long-term interests of the general public. On the other hand, private partners are trained to apply the *maximizing* logics of their private sector firm, striving to maximize their subjective utility in the form of (monetary) profits. These essentially incongruent logics implicitly or explicitly incentivize private partners to self-servingly exploit opportunities that emerge in PPPs over time, disregarding the direct or indirect effects of their strategic behavior on the long-term objective of the PPP and the general public (Simon 1945; Van Ham and Koppenjan 2001; Saz-Carranza and Longo 2012). Following this logic of conflicting micro-level interests, we explore how partners' sector affiliation (i.e. their sectoral agency) and their implicit affective and explicit motivational attitudes influence their strategic negotiation behavior in allocating partnership-related gains and losses.

Negotiation on and allocation of risks is a central strategic activity in PPPs for both public and private partners and it is a fundamental obstacle for PPP success (Ghere 2001; Kee and Forrer 2012). Although PPPs are generally designed to allow for the implementation of mutually beneficial and reciprocal strategies by contract, navigating the fallacies of bargaining about emerging risks (i.e. those that occur during partnership tenure) is a complex and largely unexplored issue – especially given partners' typical interdependence in PPPs and the challenge

of negotiating across sectoral boundaries (Klijn and Teisman 2003; Medda 2007; Degenhart and Wessel 2015; Bouwman 2018). By exploring the micro-level mechanisms of cross-sectoral negotiation behavior in a PPP scenario under risk, this study answers explicit calls for micro-level research into strategic choice in PPPs by Wright (2015), Bouwman (2018), Wang *et al.* (2018), and Bouwman *et al.* (2019). We conduct a rigorously controlled randomized laboratory experiment in both the domains of gains and losses to advance and challenge prior research on the reliability of the predictions of prospect theory across sectors by Bækgaard (2017) and Bouwman *et al.* (2019), and our results build bridges between the long-standing discourse on maximizing and satisficing rationalities and normative choice theory in the public sector (Simon 1945; Gigerenzer 2005).

Following recent calls for methodological pluralism in public administration (PA) research (Jilke, Van de Walle, and Kim 2016), we test our hypotheses by conducting a dynamic multi-stage negotiation game with alternating dominance (z-Tree laboratory experiment) and systematically manipulate the context of choice with sector-specific vignette framing treatments. Laboratory games are especially valuable for researching context-dependency in negotiation behavior because their strictly controlled design allows for the identification of psychological and contextually-induced causal mechanisms that influence individuals' strategic maneuver in PPPs beyond their individual idiosyncrasies.

Based on 8,368 observations of offers and counteroffers resulting in n=1,121 contracts nested within a balanced original sample of N=118 participants, results show that both public and private sector agents fail to share risks and benefits efficiently, that public agents are less likely to follow utility maximizing strategies, that the domain of loss accelerates self-serving negotiation behavior, and that PSM substantially affects negotiation efficiency in archetypical PPPs.

THEORY

Negotiating across sectoral boundaries

Negotiation is typically defined as a decision-making process among two or more interdependent agents with non-identical preferences but potentially synergetic goals (Naele and Bazerman 1992; Bouwman 2018). Because some partners' interests are shared and some are opposed, strategic negotiation manifests in the form of an interactive back-and-forth communication process aimed at reaching agreement about what each party will give and take

(Ury 1993). Ideally, PPPs are designed as a choice environment that allows for truly synergetic outcomes, a situation equivalent to a non-zero-sum i.e. variable-sum game (Crawford 1997; Peters 2015). For example, individual partners in PPPs might wish to maximize their share of profits while hoping to minimize their share of losses. If one partner's gains block the other partner's goals, the situation is equivalent to a zero- or constant-sum game (Zou and Kumaraswamy 2009).

The normative game theoretical prediction for rational agents who are well-informed about the synergetic benefits of the partnership they are engaged in is that they will strive to maximize their individual utility in two ways: firstly, by strictly following the partnership agreement as long as they expect it to result in the expected subjective utility agreed upon in the future and, secondly, in case of unforeseen risks, they will offer no excess contribution to these risks but accept only amounts equal or lower[1] than what they perceive as a *fair* proportional split among all partners (Rabin 1993). Logically, in a two-player game such as an archetypical PPP with only two agents, this fair share is equivalent to the fifty-fifty split of excess risks and utility among partners. A rich body of empirical economic research shows that most people consider the equal split as the fairest – or: *most acceptable* – outcome of bargaining, making the fifty-fifty split the general stable benchmark in evolutionary bargaining theory (Kahneman, Knetsch, and Thaler 1986; Ochs and Roth 1989; Güth 1995).

It follows that bargaining between rational well-informed agents acting on behalf of their respective organizations in a collaborative and (potentially) synergetic PPP should also result in the proportional split of emergent risks and returns generated from the partnership, by means of bundling them in a fair, efficient, and cost effective manner among the individual partners for mutual benefit (Bing *et al.* 2005; Wang *et al.* 2018). Yet, both scholars and practitioners point out that risk sharing in PPPs is especially challenging (Kee and Forrer 2012), because partnering across sectoral boundaries means that agents who are guided by essentially dissimilar institutional logics need to balance their – potentially competing – subjective strategic goals with those specified as common goals for the partnership in order to realize synergy (Fottler 1981; Pesch 2008). Prior research on heterogeneity in group decision-making by Gillet, Schram, and Sonnemans (2009) indicates that PPPs might incorporate bilateral coordination problems by default: Because PPP partners originate from dissimilar sectors and are potentially populated by agents holding dissimilar individual motivations and values

[1] Likewise, utility maximizing agents would accept amounts equal or *above* the fair split in the case of excess *gains*.

(Nabatchi 2018), they might in fact be unable to interpret their shared negotiation space and its incentives in a congruent way that would allow for efficient bargaining – in the sense of reaching a pareto-optimal solution that still satisfies both partners' individual objectives – because their ultimate goals and the strategies perceived as acceptable means to realize these goals are fundamental opposites and essentially incongruent (Fottler 1981; Pesch 2008): Archetypically, the public partner will carry a societal responsibility as a consequence to their actions while private partners are not burdened by this obligation to the general public and hence possess relatively higher degrees of discretion to individually and immediately pursue subjective utility maximizing strategies (Simon 1945). This is problematic because opportunistic behavior between partners is directly related to long-term partnership failure.

These differences can result in potentially conflicting incentives to follow individual utility maximizing strategies and break partnership agreements (Bouwman 2018). In their qualitative study based on interviews with managers of public-private joint ventures, Saz-Carranza and Longo (2012) found that competing logics were especially critical obstacles to successfully implementing strategic collaboration in PPPs. If partners from the public and the private sector – explicitly or implicitly – follow dissimilar individual-level goals that are incongruent with the shared meso-level objective of sharing the PPP's endogenous risks and find sufficient incentive for opportunisms and sufficient discretion, normative choice theory suggests that rational partners will independently strive to minimize their individual share of these risks by micro-level bargaining in a way that allocates any excess risks (i.e. risks that arise unexpectedly during partnership tenure) to their partner(s) rather than themselves by using any means of discretion. It follows that

> *Hypotheses 1 (H1): public (private) sector agents are less (more) likely to follow utility maximizing negotiation strategies in PPPs*

in the sense that public (private) sector agents negotiate comparatively smaller (higher) amounts of excess profits for themselves and accept to carry relatively higher (smaller) amounts of excess losses, *ceteris paribus*.

Domain-specificity of negotiation behavior

Prior research on cognitive and behavioral biases in risk behavior strongly indicate that people use dissimilar negotiation strategies when negotiating in the domain of gains compared wth the domain of losses (see Naele and Bazerman (1992) for an extensive review). While prior

research points out that domain can influence bargaining behavior in the public sector (Bouwman 2018), the direction of this effect in a PPP – i.e. in a cross-sectoral setting with goal interdependence and partial goal incongruence – is unclear and needs further exploration because not all behavioral biases translate linearly into a public-private setting.

Most prominently, prospect theory suggests that in the prospect of gains, i.e. when negotiating about shares of profits, individuals act relatively more risk averse than in a situation of negotiating about sharing losses of the same amount (Kahneman and Tversky 1979; Thaler 1981). However, recent experimental findings by Bækgaard (2017), Weißmüller (2016), Weißmüller and Vogel (2018) reveal that individuals are likely to violate this heuristic principle and instead prefer to take risks in the domain of gains if they are framed as public sector agents. Further experimental evidence by Bracha and Brown (2012) shows that people spending public funds will act relatively more risk affine and Khadjavi and Lange's (2015) study employing linear public goods games reveals that individuals contribute less to the public good when taking from an existing public account and contribute smaller amounts if they have the action space of both giving and taking. It follows that

> *Hypothesis 2 (H2): domain moderates the relationship between public agency and utility maximizing negotiation strategies, such that the relationship is stronger (weaker) in the domain of loss (gains).*

Affective implicit biases

In dyadic settings – that is the simplest form of an archetypical PPP consisting of only one public and one private partner – two factors drive micro-level negotiation behavior: the specific situational *context* framing the bargaining setting (i.e. the PPP as well as the formal rules established to govern it) and the individual goals, perceptions, emotions, and, eventually, *actions* of the individual negotiators (Barry and Oliver 1996). Consequently, the affective states experienced by both agents on all stages of the negotiation process are as essential in priming, framing, mediating, and moderating negotiation behavior (and outcomes) as the interpretation and evaluation of the contextualizing choice environment, the incentives it offers, and the mechanisms by which it allows prior bargaining results to feedback into the proximate stages of bargaining (Barry and Oliver 1996).

A large body of empirical research shows that in many countries individuals are systematically biased toward the public sector in the sense of unconditionally assuming that

public organizations were less effective (Baarspul and Wilderom 2011; Chen and Bozeman 2012; Marvel 2015), that public agents acted irrationally risk averse (Bellante and Link 1981; Bozeman and Kingsley 1998; Boyne 2002; Olsen 2015), and that public sector performance was *per se* inferior (Bækgaard and Serritzlew 2016; Hvidman and Andersen 2016). Consequently, implicit and explicit anti-public sector bias, negative stereotyping, and a feeling of alienation – i.e. the perception of *otherness* (Gurevitch 1988) – toward the public sector can have powerful effects on decision makers' negotiation strategies. A substantial body of scholarship shows that such attitudes and associations play a functional role in negotiation behavior, indicating that positive affect increases the likelihood of cooperation and equal risk sharing while negative affect increases the likelihood of engaging in opportunistic behavior (Barry and Oliver 1996; Bazerman *et al.* 2000; Tsay and Bazerman 2009). Consequently, we assume that strong implicit affect toward the sectors increases the perceived heterogeneity between sectors which can have detrimental consequences for partners' collaboration efficacy and, hence, influence bargaining strategies and negotiation outcomes. Prior research by Gulati (1995) and Calanni *et al.* (2014) shows that in strategic partnerships trust is an essential factor for maintaining and governing partnerships under conditions of risk and that it is much harder to maintain trust and effective cooperation if partners are perceived as unfamiliar or belonging to other (social) groups such as sectors (van Asselt and Renn 2011; Degli Antoni and Grimalda 2016). It follows that

> *Hypotheses 3 (H3): strong sectoral affective associations influence the relationship between sectoral agency and negotiation strategies*

such that public (private) agents with positive public (private) sector associations are more likely to follow subjective utility maximizing bargaining strategies.

Public service motivation

Normative theories of choice assume that people are mainly motivated by self-interest (von Neumann and Morgenstern 1944; Luce and Raiffa 1957), yet 50 years of research in the fields of behavioral economics and social psychology revealed that individuals' choice behavior under risk frequently and systematically deviates from the theoretically predicted self-serving (i.e. subjective utility maximizing) paradigm: People prefer to contribute to the greater good, share more than they are obliged to and are generally driven by motivations and values that consider the consequences of their behavior for their social environment (Kuhlman and Marshello 1975; Van Lange and Kuhlmann 1994; Bozeman 2007). This systematic deviance is

prominently explained by the idea that people are motivated by an abstract value-driven motivation related to serve others and the public interest based on social value orientation, reciprocity, and a preference for fairness and sharing (Bogaert, Boone, and Declerck 2008; Balliet, Parks, and Joireman 2009; Nabatchi 2018).

The most prominent concept exploring this motivation to serve others in PA research is public service motivation (PSM). PSM is "an individual's predisposition to respond to motives grounded primarily or uniquely in public institutions" (Perry 1996: 6) and its relation to commitment to the public interest, compassion, self-sacrifice, attraction to public sector employment (Coursey and Pandey 2007; Vandenabeele 2008; Esteve *et al.* 2016), altruism, and pro-social behavior (Houston 2006; Esteve, van Witteloostuijn, and Boyne 2015; Esteve *et al.* 2016; van Witteloostuijn, Esteve, and Boyne 2017) has been explored vastly.

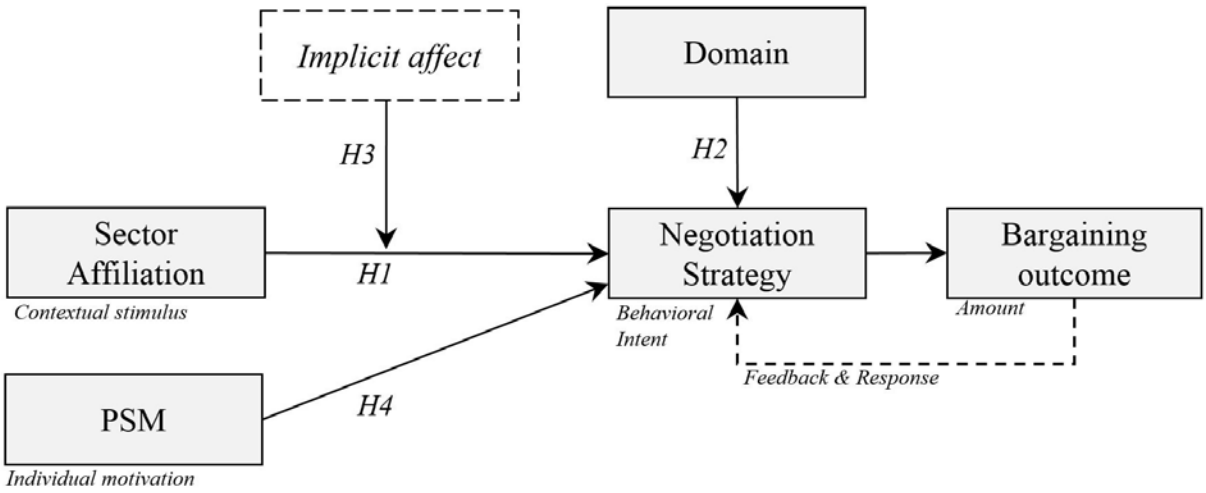
A number of recent behavioral and conceptual studies give rise to the assumption that individuals' sector-specific negotiation behavior in PPPs could be moderated by individuals' sector-specific attitudes – i.e. affective attraction and associations – and social value orientation (Kanagaretnam *et al.* 2009) – especially their level of PSM (Esteve, van Witteloostuijn, and Boyne 2015; van Witteloostuijn, Esteve, and Boyne 2017; Schott and Ritz 2017; De Waele, Weißmüller, and van Witteloostuijn 2018). Conducting two laboratory experiments, Kanagaretnam *et al.* (2009) tested individuals' likelihood to contribute to a common goods investment game. They show that highly pro-social individuals are substantially more likely to reciprocate other agents' investments in the game and are less likely to take advantage of trusting agents. Esteve, van Witteloostuijn, and Boyne (2015) use three experimental games based on the classic prisoner's dilemma to scrutinize the effects of PSM on inter-organizational collaboration behavior. Their study – although not being conducted in a cross-sectoral context – indicates that PSM influences strategic decision making in two ways: first, players with high PSM are generally more willing to collaborate if they have first mover's advantage. Second, the authors show that even if players are in the role of the second mover and already know that their partner has defected, individuals with high levels of PSM will still not opt for the strategic option that would maximize their subjective utility as suggested by rational choice theory. Instead, people reporting high levels of PSM are more likely to uphold their collaborative effort even though they know that their choice will only benefit the other partner and not themselves. Other lab-based experimental research by Tepe (2016) shows that high levels of self-reported PSM are directly related to higher contributions to trust-based games with monetary rewards.

It follows that

> *Hypothesis 4 (H4): the relationship between PSM and subjective negotiation efficiency is negative*

such that high-PSM individuals are less likely to follow subjective utility maximizing negotiation strategies in a PPP context, consequently reaching relatively more disadvantageous bargain agreements compared with low-PSM individuals. In summary, Figure 1 presents our conceptual model.

Figure 1: Theoretical model



MATERIALS AND METHODS

Experimental procedure and sampling

We test out hypotheses by conducting a behavioral laboratory experiment based on a classic strategic bargaining game with alternating-offers and dynamic dominance complemented with a role-framing scenario vignette (public vs. private negotiator in a well-functioning equal split archetypical PPP) and a sociodemographic survey.[1] Dynamic multi-stage games are generally used to research the economic behavior of individuals that strive to realize individual utility by exploiting opportunities by strategic maneuver within a specific context (i.e. the PPP) under fixed premises of outcome interdependence, imperfect information, and chance (Ghere 2001).

[1] In the spirit of open science, this study was preregistered (Open Science Framework: https://osf.io/udrzj/) and appendix A.3 provides the full experimental z-Tree code to facilitate future replication studies.

The data were raised using the z-Tree (version 3.6.7) software in a professional laboratory for economic experimentation at a large German university in May 2018 with an original sample of N=118 participants (Fischbacher 2007; Bock, Baetge, and Nicklisch 2014).

In the prospect of small to moderate treatment effects (Cohen's d<|0.50|, *power*=0.8, α=0.05) necessary sample sizes for detecting significant correlations in two-tailed (non-directional) tests between two treatment groups amount to n=64 participants per treatment group, which has been achieved (Ellis 2010). Participants volunteered after being invited via e-mail among a standing panel of N=2,429 (former) graduate students of PA and PM, business administration, and related social sciences. Participants were incentivized with a minimum show-up fee of €5 and the prospect of winning a considerably larger amount[1] of prize-money based on their actual negotiation efficiency during the game. The sample was on average M=25.9 (SD=4.8) years old and comprises 54.2% female respondents. The raw data were strictly pre-stratified for missing and obviously repetitive responses, resulting in a total sample of 8,368 observations of offers and counteroffers nested in N=118 participants and n=1,121 bargaining agreements (*contracts*).

Game design, priming treatment, and dependent variable

We developed an original between-subject bargaining experiment (see appendix A for full setup and treatment vignettes) comprising elements of the classic ultimatum game and dynamic dominance through alternating-offers bargaining in multiple negotiation rounds.[2] In the lab, the

[1] The incentive payouts were designed to correspond with realistic conditions for civil servants in a career-based PA employment system like Germany: In the public sector treatment, final payouts were fixed at a medium hourly wage rate while, in the private sector treatment, actual payouts depended on the negotiation efficiency of players ranked relatively to all other private agents' efficiency over the whole length of the experiment. This corresponds to the real conditions of employment in the German public and private sector where public service employment does not allow for performance-based (additional) payment. In this way, the incentive payout structure adds more realism to the scenario because it is directly relatable and familiar to the sample thus increasing the likelihood of stimulating characteristic sector-specific negotiation behavior under risk (Battalio, Samuelson, and Van Huyck 2001).

[2] In alternating-offers bargaining games with dynamic dominance, two players (1 and 2) propose offers about how to share a given monetary amount c_t ("cake"). Both players can take the initiative and propose as many offers as they like within a certain timeframe. In multiperiod-ultimatum bargaining setups like the one used in the current study, the game relies on a given number T of possible negotiation rounds and on a given cake size c_t for every possible round $t = 1, \dots, T$. Players determine their individual demand x_t with $0 \leq x_t \leq c_t$ which the responder can either accept or reject. Acceptance yields a binding agreement implying that the proposer receives x_t and the responder $y_t(x_t)=c_t - x_t - r_t$ (with r_t being the residual of the cake with $0 \leq r_t \leq c_t - x_t$ if the game allows for incomplete cake sharing) and resulting in the end of this round. In classic ultimatum games, dominance, i.e. the right to making offers, is fixed or strictly iterated which means that only one player at a given time can propose offers. In bargaining games, both players can simultaneously propose offers and respond to offers (by accepting or counteroffering) as to exercise dominance (Güth 1995; Crawford 1997, 15).

experimental procedure comprised five steps: introduction, scenario contextualization, vignette-based role framing treatment (public or private agency), negotiation game, and, lastly, survey and debriefing.

First, participants were randomly and anonymously seated in their individual cabins where they received all relevant information regarding the aim, scenario, and structure of the experiment (both in written form and also read out aloud to the whole group) for clarification in order to ensure that all participants were well-informed a priori about the game and its payout mechanisms.

Second, the experiment was contextualized in the scenario of a large-scale urban infrastructure project with shared operational risks between one public and one private sector partner. Following Hodge's (2004) PPP risk taxonomy, the scenario stressed that the agreement between partners was to share both profits and losses equally to set an explicit default for negotiation strategies and to increase the validity of findings through higher perceived realism (Duersch and Müller 2016).

Third, participants were randomly framed into either the role of a senior civil servant or a senior private sector employee with equal negotiation discretion and space (*treatment*). They were instructed to act on behalf and in the best interest of their organization (public or private agency, respectively) in the following stages of the experiment to elicit realistic contextual negotiation behavior and test *H1*. To control for scenario immersion and framing treatment success, respondents were asked to specify three immediate associations with their sector to increase cognitive elaboration (Barone and Smith Hutchings 1993; Crawford 1997; Aguines and Bradley 2014). These free associations were later interpreted in an iterative mixed-methods approach with Võ *et al.*'s (2009) validated affective word list inventory[1] to estimate the metric associative valence scores of these associations, which reveal respondents' implicit positive or negative *affect towards the sectors* as an attitudinal control variable to test *H3* in multivariate analysis.

[1] Võ *et al.*'s (2009) BAWL-r inventory is an extensive list of several thousand common German words which were systematically and empirically tested for their emotional valence, emotional arousal, and imageability on a metric scale in order to be used as psycholinguistic indexes and treatment stimuli in psychological and behavioral experiments. Reversely, the BAWL-r inventory can also be used to associate open semantic responses with BAWL-r's values by qualitative coding and quantifying these semantic responses across subjects to create mean implicit affective scores.

After contextualizing and role framing, fourth, the domain-based negotiation phase commenced (*H2*). We used an alternating-offers bargaining game with dynamic dominance (Crawford 1997) that consisted of two sequential phases of 15 rounds each. In the first phase, the PPP project was portrait with superior performance generating unexpected excess profits (*domain of gain*) about which randomized dyads of participants primed with different sector-specific role treatments had to negotiate dynamically about. Player dyads were rematched after each round to inhibit path dependencies and learning-based carry-over effects (Marks and Gerrits 2017). Since risk behavior is a function of scale (Thaler 1981), the magnitude of these excess profits varied systematically across the 15 rounds (range: 20,000€ - 300,000€ in linear steps of 20,000€) to inhibit order effects (Güth 1995). In each round (t), both players had 45 seconds[1] to simultaneously propose offer and counteroffer divisions of said negotiation amount (c_t) between the two players until one of them accepted. To increase scenario realism, the gain-domain leg of this game is a non-zero-sum game: The gains of player 1 (x_t) are the losses of player 2 ($y_t(x_t)=c_t - x_t - r_t$) with a flexible residual (r_t) solely determined by players' bargaining behavior. If the players were unable to negotiate an agreement within 45 seconds, the profit expired and no player received any share of excess profits in this round. The second phase of the game (*domain of loss*) was introduced by a short descriptive interlude, which portraits the PPP project as underperforming so that the newly randomized mixed dyads now negotiated about splitting the full amount of unexpected losses for 15 rounds (zero-sum game; $y_t(x_t)=c_t - x_t$).[2] Failure to reach an agreement within 45 seconds resulted in the default 50-50 split among the two partners.[3]

Our main dependent variable is the *AMOUNT* of gains and losses negotiated by each individual across all rounds. While AMOUNT serves as an indicator for negotiation efficiency, individuals' frequency and amount of *offers* and *counteroffers* is used to further characterize overall negotiation behavior.

[1] The experimental design, treatment, and magnitudes of negotiation amounts were pretested extensively with focus group lab sessions to maximize stimulus realism and minimize response bias. Pretesting revealed that increasing the bargaining phase length (>45 seconds per round) did not increase the likelihood of reaching agreement but substantially increased response fatigue.

[2] The numeric amounts of losses were varied and randomized exactly like the amounts of gains to achieve task balance, see appendix A.1 for more detail.

[3] In cameralistic traditions of public administrative accounting – such as Germany – failure to successfully negotiate about unexpected gains (or parts thereof) often results in the expiration of these opportunities (or parts thereof) while failure to successfully negotiate about how to distribute unexpected losses does not make them go away. We use the equal split in the loss domain because it was set as the explicit default in the treatment and to increase scenario realism.

Independent and control variables

Negotiation behavior is a function of context, attitudes, and individual preferences toward risk and uncertainty (Dohmen *et al.* 2011), as well as a number of individual psychological and socio-economic factors (Bazerman *et al.* 2000; Freundt and Lange 2017; Tepe and Prokop 2018). Consequently, we complemented the negotiation game with a questionnaire on socio-demographic characteristics and individual attitudes to control potentially confounding covariates.[1] Participants' *risk preference* was measured with Madden, Petry, and Johnson (2009) probability discounting questionnaire (PDQ). Based on a set of thirty systematically varied trade-off tasks, the PDQ reliably estimates one independent characteristic parameter (h) for individuals' revealed discounting behavior under risk based on their idiosyncratic pattern of choices and preference reversals (Weißmüller 2016). In each PDQ task, respondents have to indicate whether they would rather prefer a secure but relatively smaller hypothetical reward (e.g. €20) or a relatively larger but risky option (e.g. a 75% chance of winning €80 and a 25% chance of €0). This measure is more reliable in describing individuals' actual risk attitudes compared with explicit self-report measures and its systematic and randomized structure makes it robust against conscious manipulation. The parameter potentially ranges between $-\infty$ and $+\infty$ and it was centralized with $\ln(h)$. Individuals with $\ln(h)<0$ are revealed to be risk averse because they, all things being equal, excessively discount probabilistic rewards by the factor of $\ln(h)$. Risk-affine individuals score $\ln(h)>0$.

We measure participants' *tolerance for uncertainty* with Dalbert's (1999) eight-item six-point Likert-type scale. Higher geometric mean-scores indicate higher tolerance for uncertainty. Individuals' *Public Service Motivation* (PSM) was assessed with Kim *et al.*'s (2012) 12-item seven-point Likert-type scale with higher geometric mean-scores indicating higher levels of PSM. We reveal participants' *Social Value Orientation* (SVO) with Bogaert, Boone, and van Witteloostuijn's (2012) nine-item measure in which respondents are asked to share hypothetical amounts of money with an unknown stranger. Higher sum-scores – min.=0 to max.=9 – indicate stronger pro-social motivation. Because trust is a decisive factor for individuals' negotiation behaviour in the context of PPPs (Das and Teng 2001; Chaudhuri, Sopher, and Strand 2002), we use Yamagishi and Yamagishi's (1994) six-item five-point Likert-type scale to assess participants' general propensity to *trust in others*.

[1]All original measures and scale items were translated into German in a triple-blind procedure with due diligence.

The experiment was complemented with a socio-demographic questionnaire assessing individuals' *year of birth*, *gender*, *nationality*, *field of study* (if applicable), *education*, and their *future intention to apply to the public sector*, as well as their explicit *attitudes toward the public* and *the private sector* (single Likert-type items ranging from 1='very negative' to 7='very positive'). We control participants' numerical literacy with the first seven items[1] of Weller *et al.*'s (2013) *Abbreviated Numeracy Scale*.

RESULTS

Sample characteristics

Table 1 presents the results of the survey questionnaire. Participants hold average to relatively high levels of PSM (M=4.21, SD=1.01; Cronbach's α=0.874), SVO (M=4.66, SD=3.88), and trust in others (M=3.13, SD=0.71; α=0.828). The sample is relatively risk averse (ln(h): M=0.77, SD=0.42) and tends to avoid uncertainty (M=3.66, SD=0.61; α=0.620). Participants report below average positive attitudes toward both the public (M=3.10, SD=0.92) and the private sector (M=2.81, SD=0.92) but explicit preference for the public sector; t=11.74, p=0.000.

Table 1: Descriptive sample statistics

Variable	*min.*	*max.*	*M*	*SD*
Female	0	1	.542	.498
Age (years)	20	45	25.846	4.788
PSM	1	7	4.213	1.010
SVO	1	9	4.661	3.888
Trust in others	1	5	3.128	.707
Risk preference [a]	0	1	.771	.420
Uncertainty avoidance	1	6	3.659	.605
Explicit attitude				
public sector	1	7	3.102	.919
private sector	1	7	2.814	.915
Intention to apply to public sector	1	7	3.754	1.622
Associative implicit affect [b]				
public sector	0	1.388	.906	.399
private sector	0	1.459	.982	.319
Numeracy	0	7	4.797	2.078

Note: N=118. [a] revealed measure normalized with ln(h). [b] revealed with BAWL-r.

[1] This scale originally comprises eight items of statistical word problems of varying complexity. We omitted the last and most complex item out of considerations regarding questionnaire length-related response fatigue.

The sample associates the realm of the public and the private sector with sharply distinguished separate cognitive clusters that hardly overlap (see appendix B for more detail). Affective coding of these sector-specific associations based on Võ *et al.* (2009)'s psychometric inventory (BAWL-r) reveals an implicit affective preference for the private sector (public: *M*=0.91, *SD*=0.40; private: *M*=0.98, *SD*=0.32; *t*=-6.172, *p*=0.000; *d*=-0.207), indicating the prevalence of a small anti-public sector bias. Yet, participants' intention to apply to the public sector is slightly above average (*M*=3.75, *SD*=1.62). Balance testing with multiple between-group *t*-tests (appendix C) and pair-wise correlation analysis (appendix D) shows that all covariates are distributed equally between the two treatment groups, indicating that treatment randomization was successful and that the two treatment groups are fit for treatment-level comparison. Lack of numeracy was not a confounding issue (*M*=4.80, *SD*=2.08).

Descriptive negotiation results

Table 2 and figure 2 present the descriptive game statistics (contract level) by negotiation domain and sectoral agency. The game resulted in *n*=1,121 contracts (i.e. bargaining agreements) which reveal strong treatment- and domain-related differences in overall negotiation behavior *ceteris paribus*.

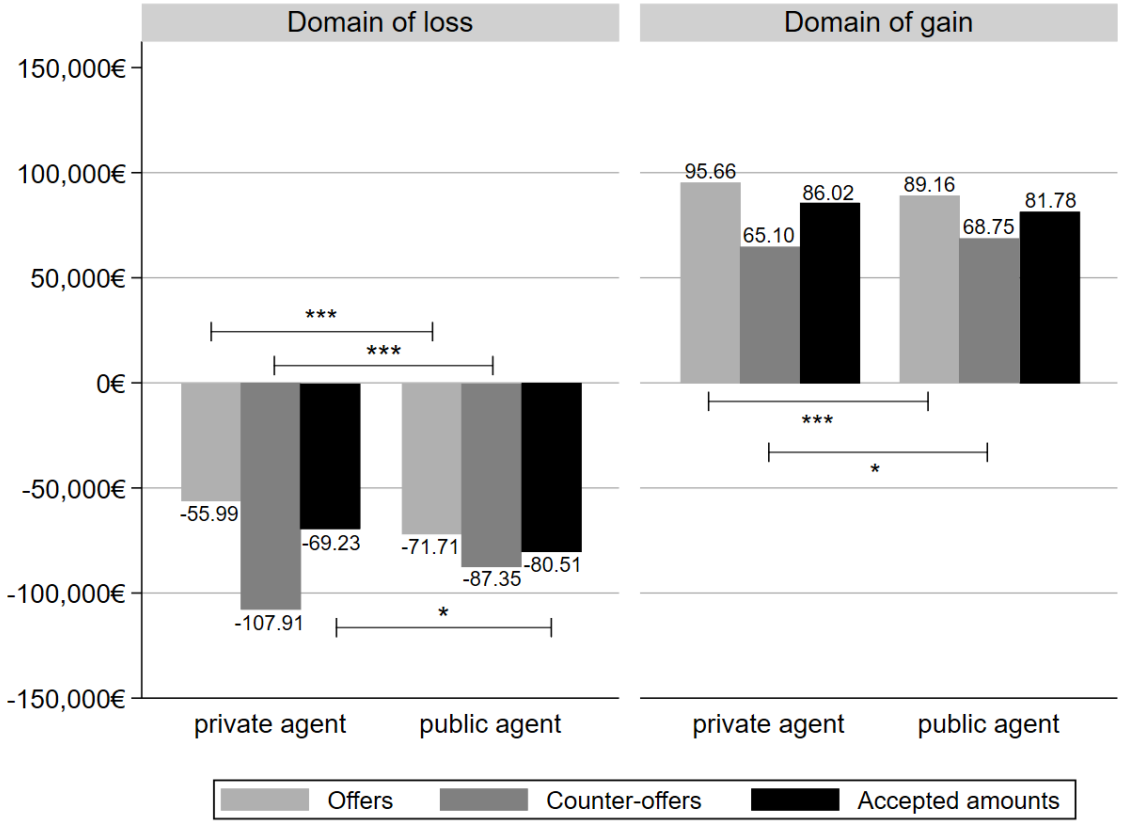
Table 2: Descriptive game statistics

Contract-level	Public agent			Private agent			*t*-test		*Cohen's*
	Obs.	*M*	*SD*	*Obs.*	*M*	*SD*	*t*	*p*	*d*
Loss domain									
AMOUNT	190	-80,511	48,920	147	-69,231	42,039	2.230	**.026**	**.245**
Offers	1,967	-71,714	47,214	2,458	-55,989	44,821	11.325	**.000**	**.343**
Counteroffers	1,967	-87,351	53,770	2,458	-107,909	70,256	-10.708	**.000**	**-.324**
Gain domain									
AMOUNT	481	81,780	48,726	303	86,017	45,351	1.217	.224	.089
Offers	1,907	89,164	54,713	2,036	95,661	56,041	3.723	**.000**	**.119**
Counteroffers	1,907	68,747	45,099	2,036	65,098	44,995	-2.542	**.011**	**-.081**

Note: t-tests two-tailed.

Sign-controlled two-tailed *t*-testing shows that, in the domain of loss, public agents generally offer to carry higher amounts of losses (*M*=-71,714€, *SD*=47,214€) than private agents (*M*=-55,989€, *SD*=44,821€; *t*=11.325, *p*=0.000, *d*=0.343), that public agents propose substantially smaller counteroffers (*M*=-87,351€, *SD*=53,770€; private agents: *M*=-107,909€, *SD*=70,256€; *t*=-10.708, *p*=0.000, *d*=-0.324) and that public agents agree to settle with substantially higher AMOUNTS of losses for themselves (*M*=-80,511€, *SD*=48,920€) compared with private agents (*M*=-69,231€, *SD*=42,039€; *t*=2.230, *p*=0.026, *d*=0.245).

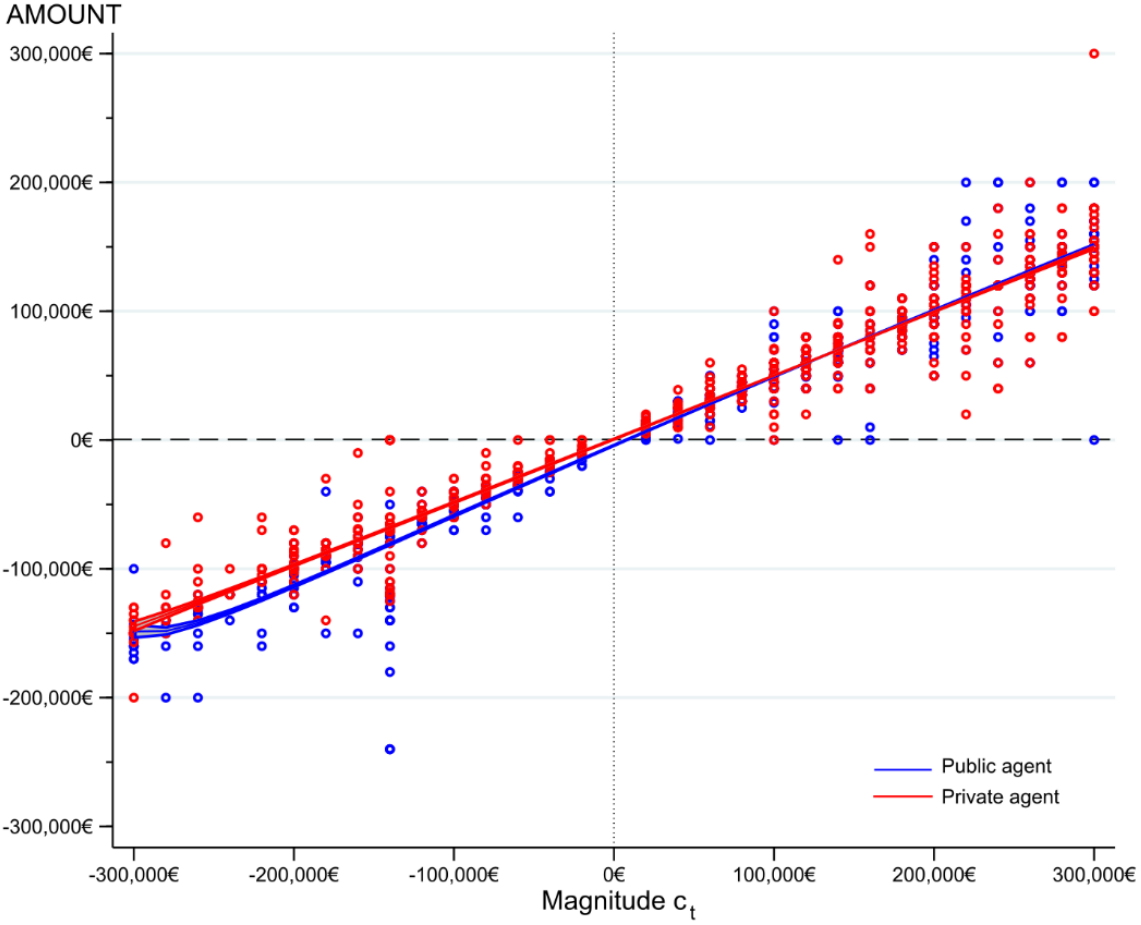
Figure 2: Mean negotiation outcomes per round by treatment and domain



In the domain of gains, differences in negotiation behavior are relatively smaller in effect sizes but still evident in offers (public agent: *M*=89,164€, *SD*=54,713€; private agent: *M*=95,661€, *SD*=56,041€; *t*=3.723, *p*=0.000, *d*=0.119) and counteroffers (public agent: *M*=68,747€, *SD*=45,099€; private agent: *M*=65,098€, *SD*=44,995€; *t*=-2.542, *p*=0.011, *d*=-0.081). Public and private negotiators do not differ significantly in the average total AMOUNTS negotiated per round over the course of the whole experiment (public agent: *M*=81,780€, *SD*=48,726€; private agent: *M*=86,017€, *SD*=45,351€; *t*=1.217, *p*=0.224, *d*=0.089). We hypothesized that public agents are less likely than private agents to follow subjective utility maximizing strategies (*H1*). Because public agents negotiate more benevolently and agree to carry higher shares of losses, *H1* cannot be refuted: Public negotiators are less likely to maximize subjective utility in a PPP setting, *ceteris paribus*.

Figure 3 presents participants' negotiation outcomes by cake-size (c_t), treatment, and domain in case of reaching agreement. Across both domains, public agents propose a smaller number of offers and counteroffers than private agents (see table 2) but public agents' offers are more likely to result in bargaining agreements (loss domain: 56.4% vs. 43.6%; gain domain: 61.4% vs. 38.6%).

Figure 3: Subjective negotiation outcomes by treatment, sorted by magnitude (c_t)



Note: Shaded areas indicate 95%-CI.

Across all magnitudes of c_t, public agents' negotiation outcomes follow the predictions of prospect theory more closely than private agents' whose bargaining outcomes are linear and transitive across both domains. In contrast, public agents act relatively more risk affine in the domain of loss. We hypothesized that domain would moderate the relationship between public agency and the likelihood of negotiating to maximize subjective utility such that the relationship is stronger in the domain of loss (*H2*). Since public sector agents respond intransitively in the domain of losses compared with private sector agents and are indeed less likely to maximize their subjective utility, *H2* cannot be refuted. However, the effect is asymmetric and only marginal in the domain of gains.

Multivariate analysis

To test the effect of sector-specific affective associations and PSM on negotiation efficiency in context, we conduct linear regression analyses on the total *AMOUNTs* negotiated over all

rounds of the game split by domain (main effects in model I), subsequently adding covariates (model II) and explorative interaction effects (models III), see table 3.

Because negotiator dyads were randomly re-matched after each round to inhibit learning effects and because the number of offers and counteroffers varied across dyads, the models were estimated with heteroscedasticity-robust standard errors and clustered at the individual level (N=118) for conditional contribution. The models are well-specified (F=233.65–36,868.99, p=0.000) and explain a very high amount of variance (gain domain: R^2=86.1–86.3%; loss domain: R^2=58.0–58.5%). Variance inflation was not an issue (all mean $VIF \leq 1.99$). In line with the descriptive contract-level results, multivariate analyses reveal that being a negotiator bargaining on behalf of the public sector is associated with achieving lower amounts in the domain of gains (b_I=-4.497, p=0.000). In contrast, public-sector affiliation does not affect overall negotiation outcomes similarly in the domain of losses (b_I=0.081, p=0.968). In contrast to the predictions of prospect theory, the models reveal a substantial but linear magnitude (c_t) effect, affecting bargaining behavior such that agents seek risks in both the domain of loss (b_I=0.439, p=0.000) and the domain of gains (b_I=0.494, p=0.000) – in contrast to behaving risk-aversely in the domain of gains.

Adding control variables, we find that implicit sector-specific affect – in the sense of strong emotional involvement based on implicit associations – is positively related to achieving higher amounts of gains (b_{II}=0.829, p=0.482) and higher shares of losses (b_{II}=2.189, p=0.420) but this effect is not statistically reliable and can only be interpreted sign-indicatively. Consequently, *H3* has to be refuted: sectoral affective associations do not immediately influence bargaining efficiency. Neither revealed risk propensity, trust in others, SVO, nor explicit sectoral attitudes predict individuals' bargaining efficiency. In contrast, uncertainty avoidance functions as a corrective character trait fostering conservatism in bargaining because individuals who tend to avoid uncertainty realized smaller bargain amounts in the domain of gains (b_{II}=-1.268, p=0.059) but also negotiated substantially lower shares of losses for themselves (b_{II}=-2.169, p=0.097).

However, the strongest and most reliable subjective factor driving individual negotiation behavior in a PPP setting is PSM. High (i.e. above scale average) levels of PSM are significantly associated with substantially higher negotiation outcomes in the domain of gains (b_{II}=3.093, p=0.015) but also with a substantially higher likelihood of carrying excess losses (b_{II}=6.257, p=0.025) compared with low-PSM individuals.

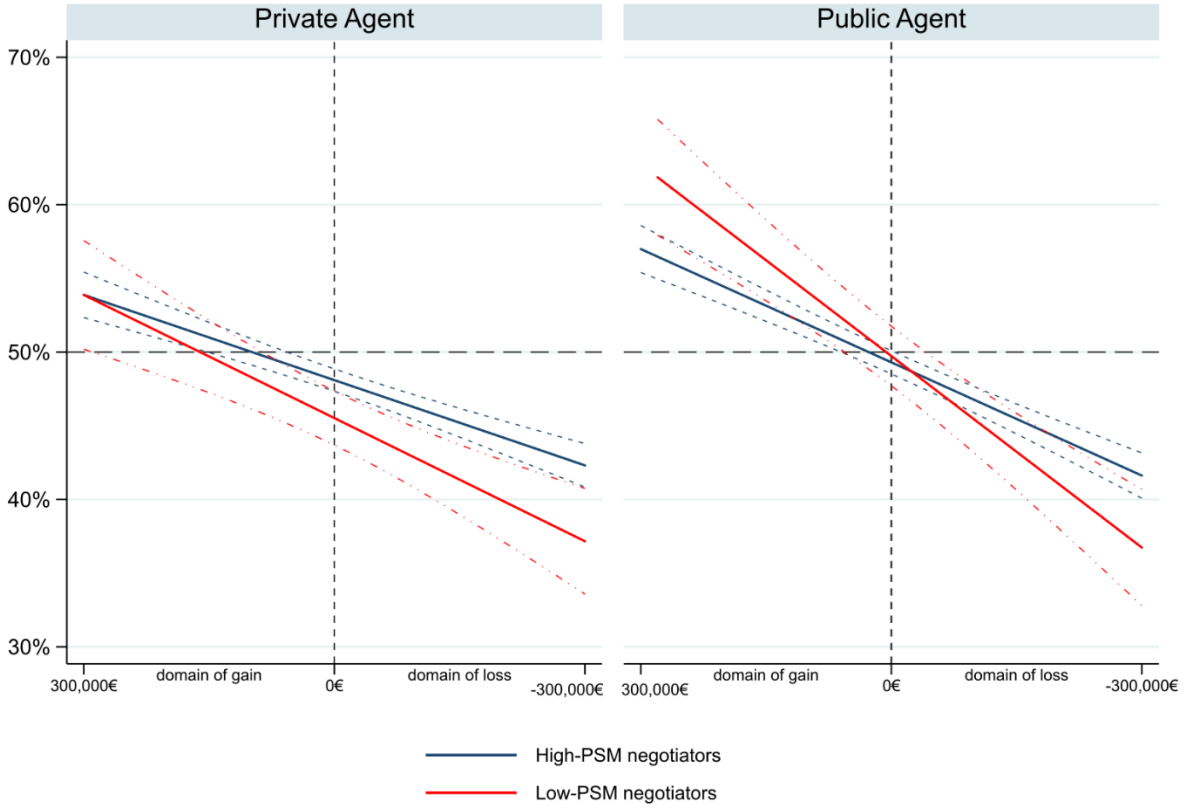
Table 3: Regression analysis on *AMOUNT*

	Gain domain						*Loss domain*					
	I		***II***		***III***		***I***		***II***		***III***	
Treatment effect												
Public-sector agent	-4.497***	(.83)	-4.550***	(.84)	-8.690**	(.001)	.081	(2.02)	.092	(1.95)	3.450	(.469)
Magnitude (c_t)	.494***	(.00)	.363***	(.00)	.494***	(.000)	.439***	(.01)	.439***	(.01)	.439***	(.000)
Control variables												
Sector-specific affect [a]			.829	(1.18)	.597	(.626)			2.189	(2.70)	2.384	(.373)
Risk aversion [a]			-.671	(.87)	-.503	(.541)			.467	(2.12)	.327	(.877)
Explicit attitude: public			-.403	(.42)	-.403	(.302)			-.982	(.98)	-.981	(.324)
Explicit attitude: private			.067	(.42)	.072	(.860)			-1.657	(1.10)	-1.662	(.132)
Trust in others			.196	(.57)	.177	(.731)			-1.372	(1.74)	-1.354	(.425)
Uncertainty avoidance			-1.268†	(.67)	-1.178†	(.051)			-2.169†	(1.30)	-2.232†	(.086)
High PSM			3.093**	(1.25)	.564	(.637)			6.257*	(2.76)	8.284*	(.044)
SVO			-.065	(.09)	-.050	(.575)			.116	(.26)	.105	(.690)
Numeracy			.016	(.21)	-.013	(.950)			.148	(.49)	.170	(.729)
Two-way interaction												
Public-sector agent × high PSM					5.138*	(.049)					-4.183	(.424)
Intercept	-2.055***	(.45)	.543	(3.77)	2.420	(.500)	-.860	(1.52)	10.368	(8.93)	8.872	(.325)
Observations		1,770		1,770		1,770		1,676		1,676		1,676
F		36,868.99***		7,842.64***		7,302.15***		1,185.15***		251.81***		233.65***
VIF (mean)		1.00		1.13		1.99		1.00		1.12		1.99
R^2		.861		.862		.863		.580		.584		.585
RMSE		16.63		16.62		16.59		35.01		34.93		34.93

Notes: Linear regression estimates on *AMOUNT* split by domain and clustered at subject level (*N*=118) for conditional contribution; Model *I*: main effects; Model *II*: full model including control variables; Model *III*: exploratory post-hoc analysis; models *I* and *II*: heteroscedasticity-robust standard errors in parentheses; Model *III*: *p*-values in parentheses; † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. [a] Item revealed by implicit measurement.

Further interaction analysis reveals that the effect of high PSM is accelerated asymmetrically by negotiators' sectoral agency and the domain of negotiation (gain: b_{III}=5.138, p=0.049; loss: b_{III}=-4.183, p=0.42). Figure 4 displays the interaction between high vs. low levels of PSM on the mean share of c_t negotiated for themselves[1] by magnitude and by treatment. We find that high-PSM individuals with private agency negotiate slightly more effective in the domain of gain but less effectively in the domain of loss while high-PSM individuals with public agency perform worse in both domains and across all magnitudes of c_t. This indicates that High-PSM individuals are less likely to follow subjective utility maximizing strategies. Consequently, *H4* cannot be refuted.

Figure 4: Marginal effect of high PSM on mean share of c_t by treatment



Note: Dotted areas indicate 95%-CI.

[1] As a consequence of the game design, it is beneficial for subjective utility maximizing negotiators to achieve mean shares of c_t>50% in the domain of gains and c_t<50% in the domain of loss.

DISCUSSION

Fairness, opportunism, and fixed-pie bias

Public agents are less likely to pursue subjective utility maximizing negotiation strategies in the domain of losses and generally negotiate less dynamically and more cooperatively by offering and counteroffering relatively higher amounts of excess gains to their private partners. These experimental results show that sectoral agency and negotiation domain affects public and private agents dissimilarly, promoting *fairness* in public partners and *opportunism* in private partners.

Fairness. Our experiment was designed as a zero-sum game in the domain of losses which means that one partner's gain was the other partner's loss. Generally, "[t]he frequency of rejections of disadvantageous counteroffers […in ultimatum games] is often taken as evidence that subjects' desire to be fair outweighs all strategic considerations, or that subgame-perfect equilibrium requires too much sophistication to be descriptive. It is clear that subjects do not perceive their payoffs as purely pecuniary" (Crawford 1997, 16). However, our results show that what exactly individuals perceive as *fair* is in fact sector dependent, resulting in bargaining agreements that mostly maximize private partners' utility instead of sharing risks and returns equally. Our findings reveal that public agents' offers and counteroffers were significantly more likely to result in bargaining agreements between partners which indicates that public agents pursued satisficing negotiation strategies aimed at agreement even though they had less individual incentive due to the payout mechanism of the game. This finding is intriguing because it provides a direct empirical response to recent appeals by Bouwman (2018) and Bouwman *et al.* (2019) for more micro-level research into public-sector negotiation as well as to prior conceptual research into the critical success factors of PPPs by Hodge and Greve (2009), Forrer *et al.* (2010), Kee and Forrer (2012) and Reynaers and De Graaf (2014). While many studies assume that PPPs' capacity for generating synergy originated from inspiring public decision makers to imitate their private partners' business-like behavior, our results show that the institutional logics associated with the sectors (maximizing vs. satisficing) persist in bargaining behavior in PPPs and that public agents will not automatically imitate their private partners' strategies. Since treatment groups were strictly balanced, it is fair to assume that public agency might actually function as a behavioral trigger fostering satisficing bargaining behavior closer to the *fair* split in order to promote collaboration while private agency will encourage individual decision makers to pursue subjective utility maximizing strategies.

Opportunism. Prior research by Khadjavi and Lange (2015) shows that individuals tend to behave more selfishly when taking from public compared with private accounts. In dyadic zero-sum games, non-equal splits result in the de-facto loss of utility for one partner to the immediate advantage of the other. Our experiment shows that private negotiators agreed to carry substantially smaller amounts of losses than their private partners. Effectively, this bargaining strategy is a typical example of *active* opportunism (Seggie *et al.* 2013): by violating the premise of equally sharing risks and benefits as set explicitly by the game scenario and simply refusing to agree to close-to-equal splits of gains and losses to the disadvantage of the other partner (Jap and Anderson 2003). Breaching formal or informal partnership agreements (Anderson 1998) and exploiting unexpected events to realize individual benefits are typical examples of active opportunism in PPPs in practice (Kee and Forrer 2012). Consequently, we assume that within its limitations as a laboratory experiment, our experiment illustrates well that framing negotiation into a cross-sectoral context can promote self-serving behavior to the disadvantage of the public sector.

Individuals' tendency toward self-serving behavior when taking from public compared with private accounts also explains why we find that negotiators with public agency are asymmetrically affected by the domain effect predicted by prospect theory (resulting in public agents' comparatively higher risk-affinity in the domain of losses). In a sense, this finding is in contrast to both the classic assumption of Kahneman and Tversky's (1979) prospect theory and Bækgaard's (2017) empirical finding that citizens prefer risk-affine reforms in the domain of gains (instead of risk-averse reforms) if contextualized in the public sector.

The splits are especially disproportional in the domain of losses which can be explained by the phenomenon of the fixed-pie bias related to the dynamic multi-stage design of the experiment. Originally detected by Bazerman *et al.* (1985) with a study investigating integrative bargaining mechanisms under competition, the fixed-pie bias suggests that in multi-round games, negotiators primarily focus on the potentially competitive nature of the situation even in non-zero-sum games (such as the gain-leg of our experiment) before recognizing the mutual advantage that can be achieved through collaboration.

Where is the publicness bias?

We find that emotional affect toward the sectors – both implicit sector-specific associations and explicit public and private sector attitudes – does not reliably predict bargaining behavior in neither treatment group. This is surprising because a substantial body of behavioral and conceptual research into negotiation behavior suggests that sectoral attitudes and affect will asymmetrically bias choice behavior in the context of public sector decision making (Barry and Oliver 1996; Bazerman *et al.* 2000; Tsay and Bazerman 2009). Positive affect functions as a socio-psychological mechanism that breads trust and helps individual partners to span the boundaries between their organizations, hence facilitating the development of mutual trust, which is generally assumed to promote equity and fairness within partnerships (Gulati, Wohlgezogen, and Zhelyzhov 2012). Prior conceptual work by Barry and Oliver (1996) and empirical research by Arora *et al.* (2012) on dyadic negotiation points out that individuals' negotiation behavior is moderated by the strength of affect toward the partners involved. The authors stress that basic psychological mechanisms of liking and disliking (especially if they are implicit) are powerful moderators for both pro-socially motivated bargainers who follow negotiation strategies that "reflect a concern for both their own and their opponent['s] outcomes" (Barry and Oliver 1996: 134) and for bargainers incentivized to being competitive (i.e. who primarily operate out of concern for their own subjective utility). Although participants associate the sectors with very distinct cognitive clusters – e.g. *public welfare orientation*, *administration*, and *red tape* for the public sector vs. *for-profit orientation*, *success*, and *pressure* for the private sector (see appendix B) – the affective valance of these clusters does not significantly influence agents' choice behavior in our experiment. The absence of this effect in our data can be interpreted in two ways: First, participants' individual attitudes toward and preferences regarding the sectors are simply not strong enough to result in statistically significant effects because they varied substantially within and between subjects. This interpretation would call for future replication studies with participants holding more extreme sectoral preferences. Alternatively, we could interpret this finding as another indicator for the persistent influence of sectoral agency on bargaining behavior.

Randomly re-matching the negotiator dyads after each round inhibited participants from deriving any knowledge about their opponents' *individual* disposition toward benevolence in bargaining which means that agents could only rely on what they assumed was rational bargaining behavior for their opponent. This finding is an important contribution to the on-going discourse on the so-called anti-public sector bias (Marvel 2015; Weißmüller 2016;

Weißmüller and Vogel 2018) because it shows that the effect of affect-based sectoral biases might actually be conditional to prior learning experiences in context which means that sector-related stereotypes need immediately relevant context-related triggers in order to be effective as biases for choice behavior under risk.

Dark and bright sides of PSM

High levels of PSM substantially affect individuals' negotiation strategies. Irrespective of individuals' sectoral agency, high-PSM negotiators were more likely to bargain in a way that did not maximize their subjective utility but that was closer to the default – and contractually agreed upon rule – of sharing *fairly* (i.e. 50-50) between the two partners. Only in the domain of gains and with relatively small magnitudes of c_t did private agents with high-PSM demand higher shares of excess gains than private low-PSM agents. These results match prior empirical findings by Kanagaretnam *et al.* (2009) who revealed that PSM is positively associated with higher degrees of reciprocal behavior in investment games and with Tepe and Prokop's (2018) lab-based experimental evidence that PSM is strongly and positively associated with risk-averse behavior in lottery games. Similarly to results by Tepe (2016) – who conducted a lab-based experimental trust game with monetary rewards – we find a significant positive correlation between PSM and trust in others (ρ=0.206, p=0.000). However, stated trust in others was not a reliable predictor for bargaining behavior in a PPP setting, rather, our results show that higher levels of PSM are related to a higher likelihood of collaborating by (counter)offering shares of excess gains and losses that are more likely to being accepted by negotiation partners, revealing a relationship between PSM and *trusting in partners' willingness to collaborate* and with finding bargaining solutions that are mutually acceptable for both partners. Our findings reveal an asymmetric interaction between PSM, sectoral agency, and negotiation domain that directly relates to recent laboratory experimental findings on negotiation behavior by Bouwman *et al.* (2019) who also found that public managers with high levels of PSM contribute higher amounts to public goods games, act more cooperatively in repeated negotiation games, and collaborate more unconditionally, which is helpful in variable-sum games but disadvantageous in constant and zero-sum negotiations.

Our findings provide intriguing quantitative evidence for both dark and bright sides of PSM: On the one hand, pursuing non-subjective utility maximizing bargaining strategies in a scenario as set up by the current experiment (i.e. negotiating about non-essential excess gains and losses in the PPP) reduces the overall profit share generated for the public sector. On the other hand,

the goal of the public sector is not to maximize their profit share but to maintain functional collaboration of both partners in order to complete the long-term objective of the PPP and, hence, generate substantial benefits for the general public (Forrer *et al.* 2010). It is important to note that risk affinity and risk aversion "can constitute either competence or incompetence in public [agents], depending on the demand of the position" (Roszkowski and Grable 2009: 460) and their interpretation of the specific context and outcome of their choice behavior. In this sense, high-PSM individuals' willingness to accept lower shares of gains for themselves and their increased likelihood of agreeing to carry higher shares of losses might be indicative of a pragmatic and rational heuristic to apiece their negotiation partners – especially if the high-PSM negotiators acted with public agency and were, hence, aware that they bargained with a private and potentially self-interested agent (Simon 1945). In this way, the experimental outcomes resonate with one pillar of Schott and Ritz's (2017) conceptual framework of the potentially negative ("dark") sides of PSM. The authors point out that high-PSM individuals find it easier to derive moral justification for their behavior – even if it directly contradicts explicit bureaucratic rules or immediate organizational goals – as long as they perceive their behavior as consistent with the primary goal of serving the public interest. For high-PSM individuals – i.e. people who are motivated to serve the plight of the general public – minor acts of self-sacrifice in bargaining might appear as the *natural* (contextually triggered heuristically rational) behavioral strategy related to their commitment to the public interest if they feel that their excess contribution will help the PPP thrive in the long run by appeasing their presumable self-interested private partners. Hence, from a long-term perspective of public service motivated public agents, bargaining for *satisficing* – instead of maximizing – results might be the rational strategy in PPP negotiations.

Limitations and future research

Like any empirical study, ours is subject to limitations and calls for future research. One shortcoming is that conducting lab experiments naturally comes at the expense of some ecological reliability because they add additional layers of abstraction. Yet, using experimental methods with strictly controlled and randomized trials is a reliable way to scrutinize causal mechanisms (Jilke, Van de Walle, and Kim 2016) and our strictly experimental approach circumvents the typical problem that self-reported measures often hardly correlate with real behavior (Fan *et al.* 2006). To test the external validity of our findings we strongly encourage future research replicating this study both directly and conceptually but also qualitative studies in scrutinizing bargaining dynamics in real PPPs.

Another limitation relates to the sampling procedure. Although not representative for the full population, our sample of graduate students of PA and related fields is an especially interesting target group for PA research because future decision makers in PA are likely to be recruited from this particular population. Furthermore, using student samples is only problematic for ecological validity if the treatment effect is moderated by another (latent) variable that is different in student compared with non-student samples (Druckman and Kam 2011). We do not assume such differences to be evident in the case of the current experiment. Furthermore, Germany has a tradition of an explicit legal and organizational separation between the public and the private sector resulting in sectoral boundaries that are psychologically very salient. We believe that the strong effects of framing negotiators into public and private sector roles might be less pronounced if the experiment was replicated in countries with a less prevalent distinction between the realms of the public and the private sector. Replications conducted in settings of dissimilar administrative traditions – especially if combined with field replications with practitioners – will help reveal the reliability of and transferability of our findings into other cultural and contextual settings of strategic bargaining in PPPs.

Practical implications and conclusion

The empirical findings of this study substantially advance our understanding of causal micro-level mechanisms of bargaining in PPPs. They illustrate the complex interaction of publicness as a meso-level context providing agency and meaning with domain and micro-level character traits and motivations, especially PSM. Prior studies by Bing *et al.* (2005), Kee and Forrer (2012), and Wang *et al.* (2018) point out that poor risk allocation and failure to deal with emergent and dynamic uncertainties are the neuralgic points that often lead to PPP failure. The current study explored the effects of contextualized sectoral agency, domain, and PSM on negotiation behavior in PPPs and its empirical evidence is directly relevant for theory and practice.

Essentially, PPPs are justified on the premise of two fundamental conditions (Forrer *et al.* 2010): first, the assumption that public partners lack the strategic resources, capacities, and capabilities to deliver many types of public goods and services in a cost-efficient way – but still retain the ultimate responsibility for PPP success – and, second, the presumption that public agents (i.e. governments) can partner with private firms in a mutually beneficial and sustainable way that allows the public partner to gain access to the resources required to implement the cost-effectiveness of private delivery while creating a choice environment in which both

partners' "fortunes are linked to the success of the overall project, providing the incentives for both sides to cooperate, innovate, and work collaboratively toward the success of the enterprise" (Forrer *et al.* 2010: 477).

Our experimental results suggest a third fundamental condition for PPP success, namely partners' ability for *matching interpretation*. Agents in strategic alliances such as PPPs generally assume that all partners share the same understanding of both the cooperation agreement and the contribution that is expected (implicitly and explicitly) from each partner (Gulati, Wohlgezogen, and Zhelyzhov 2012). However, our experiment shows that subjective expectations can be idiosyncratic and are influenced by agents' subjective interpretation of this agreement, their sectoral agency, their individual motivation (especially PSM), as well as the bargaining domain. Surprisingly, it is uncertainty avoidance – and not general risk avoidance or a lack of trust in others – that functions as a corrective character trait promoting conservative bargaining behavior. These findings stand in contrast to prior laboratory game-based research by Güth (1995) and Freundt and Lange (2017) who found that risk attitudes and prosocial preferences directly influenced choice behavior and that agents with prosocial motivations will prefer even (i.e. "*fair*") splits and a more balanced allocation between partners. Our empirical results show that prior findings do not necessarily translate linearly into a cross-sectoral bargaining context but are moderated by sectoral agency and domain.

This study provides experimental evidence that public negotiators need to consider that their private partners' perceptions, strategies, and logics in decision making might deviate from their own logics, which are based on the agenda of avoiding long-term harm to society and instead increase public welfare (Ghere 2001). Prior conceptual research by Gulati, Wohlgezogen, and Zhelyzhov (2012) and Saz-Carranza and Longo (2012) points out that partners' failure to cooperate in strategic alliances is rooted in the prevalence of essentially diverging and misaligned meta-interests: In PPPs, private and public sector logics coexist and complicate strategic alignment and cooperation because institutional logics are the basic taken-for-granted rules that guide individuals' behavior in organizations. From the theoretical lens of agency theory, public and private agents' interests and logics are essentially incongruent and are bound to produce tension inherent in any PPP. Yet, PPPs' promise of creating collaborative advantage through synergy depends exactly on this heterogeneity because it is each partner's ability to contribute different resources and behaviors to the partnership (Seggie *et al.* 2013). One way to solve this problem is to install clear and congruent performance measures in critical areas such as risk, cost and benefits and knowledge sharing within the PPP (Kee and Forrer 2012).

Consequently, public partners who need sufficient in-house expertise to design and monitor these areas in order to protect the public interest. While PPPs are not the solution to every problem, the delivery of public goods and services through PPPs "does not have to be a zero-sum game, where the private sector profits and the public sector is taken advantage of" (Kee and Forrer 2012: 197).

The surprisingly strong interaction effects between agency and PSM on bargaining behavior are directly relevant for practitioners because high-PSM people are especially likely to self-select into public sector employment (Wright and Grant 2010; Tepe 2015). It is not unlikely that the very participants of the current study will seek public sector employment and will eventually engage in professional cross-sectoral negotiation. Kee and Forrer (2012: 198-199) explicitly point out that "PPPs […] must be led by individuals who are public "stewards" and who encourage "stewardship" throughout the organization […] entrail[ing] a commitment to the public interest and protection or conservation of ethical values". The authors suggest that this this essential public value-oriented stewardship in PPPs could be achieved by developing a shared ethos directly related to the core principles of PSM. This shared ethos based on public value and service motivation could manifest in a shared code of conduct required of all partners of the PPP irrespective of their sectoral affiliation and particular subjective interests.

Furthermore, practitioners should be aware that public and private agents react dissimilarly to magnitudes in the domain of losses with public agents acting relatively more risk affine and benevolent – especially high-PSM agents. Asides from creating awareness about this tendency, public organizations might want to consider implementing incentive structures typically installed in the private sector i.e. motivating their agents by performance-based benefits related to the outcome of their bargaining while explicitly stressing the benefits of their accomplishments for the general public. Public agents with high-PSM might respond especially well to reminders stressing that following equal-split negotiation strategies benefits the general public since they indirectly bargain on their behalf and potentially save hard-earned tax-money to be invested into public goods and services in the future.

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APPENDICES (Supplementary online material)

A Experimental setup and treatment stimuli

A.1 Experimental design

English translation, original codebook and z-Tree programming code upon request.

1	**General introduction to lab session, random distribution of participants to cubicles.**	
2	**Introduction to negotiation scenario [all study participants]:** 'Please consider the following scenario: A few years ago, new building land has been laid out in a town nearby on which a new large town district is to be built. This project is considered to be very positive for future urban development by all stakeholders. However, the investment costs for the construction of roads and for the development of the site are very high so that the city cannot bear these on its own and, consequently, has established a long-term partnership with a large construction company from the private sector. When the partnership was formally established, it has been contractually agreed that scheduled costs and returns of this project are going to be shared equally among both partners. This partnership has been working very well for some time and everything worked out just as scheduled. In the current period, however, the project has become a bit more dynamic, sometimes creating excess costs as well as excess returns from time to time. Unfortunately, no special clause was agreed upon for cases like this. The only option is to directly negotiate about how the extra profits and losses are to be shared between the two partners.	
3	**Role framing vignettes and explicit sector specific associations [prime]:** Study participants randomly receive one of two vignette treatments:	
	A	**[Public Sector Treatment]** Imagine that you are a senior civil servant in the higher service of the city administration. You have been appointed as the chief negotiator on behalf of the city to settle this dispute with the construction firm. Please think carefully about the role you are taking on in this experiment. Imagine how it is to work in the public sector, how you would feel in this situation. What are the immediate associations that come to your mind in relation to the public sector and to the people working in the public organizations?

		Please specify at least 3 attributes: Immediate association with the public sector in general: [open response] Immediate association with the people working in the public sector: [open response] How do you feel in the role that you have been given as chief negotiator for the city administration? [open response] As a reminder, you are a senior civil servant in the higher service of the city administration and you have been appointed as the chief negotiator on behalf of the city to settle this dispute with the construction firm. Your salary is fixed and independent of the outcome of the negotiation.
	B	**[Private Sector Treatment]** Imagine that you are working as a senior manager in the private sector construction firm. You have been appointed as the chief negotiator on behalf of the company to settle this dispute with the city. Please think carefully about the role you are taking on in this experiment. Imagine how it is to work in the private sector, how you would feel in this situation. What are the immediate associations that come to your mind in relation to the private sector and to the people working in the private, for-profit organizations? Immediate association with the private sector in general: [open response] Immediate association with the people working in the private sector for for-profit firms: [open response] How do you feel in the role that you have been given as chief negotiator for the private-sector company? [open response] As a reminder, you are a senior manager working at the for-profit construction firm and you have been appointed as the chief negotiator on behalf of the company to settle this dispute with the city. Your salary is flexible and depends on how well you negotiate for your firm. You know that your boss will reward you with a considerable bonus equivalent to how much you score in for your company, the better you negotiate in total, the higher your payout!
4	**Cross-sectoral negotiation game** [15 rounds in domain of gain, 15 rounds in domain of loss, randomized dyads of two partners, negotiators recombined after each round.	
	4.1	[**Instructions** round 1 to 15]: “In this period, the partnership has generated excess profits! Please negotiate about the individual share of profits for each partner! You have 45 seconds to come to a conclusion, otherwise the excess profit expires, please negotiate now!”

		[Amounts ranging from 20 to 300 *€1,000; order randomized]
	4.2	[**Instructions** round 16 to 30]: "In this period, the partnership has resulted in excess losses! Please negotiate about the individual share of losses for each partner! You have 45 seconds to come to a conclusion, otherwise the excess losses will be distributed in a 50-50 share, please negotiate now!"] **[Amounts ranging from -20 to -300 *€1,000; order randomized]**
	4.3	**[Overview of negotiation amounts for each round by domain:]**

Round No.	Domain of gains	Domain of losses	Round No.
1	240,000 €	-240,000 €	16
2	160,000 €	-160,000 €	17
3	220,000 €	-220,000 €	18
4	40,000 €	-40,000 €	19
5	100,000 €	-100,000 €	20
6	200,000 €	-200,000 €	21
7	20,000 €	-20,000 €	22
8	60,000 €	-60,000 €	23
9	120,000 €	-120,000 €	24
10	80,000 €	-80,000 €	25
11	300,000 €	-300,000 €	26
12	260,000 €	-260,000 €	27
13	280,000 €	-280,000 €	28
14	180,000 €	-180,000 €	29
15	140,000 €	-140,000 €	30

End of z-Tree game, followed by survey:

1	**SVO (Bogaert, Boone, and van Witteloostuijn 2012)**
2	**Tolerance for uncertainty (Dalbert 1999)**
3	**Probability discounting questionnaire (Madden, Petry, and Johnson 2009)**
4	**Socio-demographic questionnaire:** year of birth; gender; citizenship; field of study; intention to apply to public sector.
5	**PSM (Kim *et al*. 2012)**

6	**Explicit attitude about the public sector**, single 7-point Likert-type item: 'If you think about the public sector in general your thoughts are…' 1='very negative' to 7='very positive'.
7	**Explicit attitude about the private sector**, single 7-point Likert-type item: 'If you think about the private sector in general your thoughts are…' 1='very negative' to 7='very positive'.
8	**Trust in others (Yamagishi and Yamagishi 1994)**
9	**Numeracy (Weller *et al.* 2013)**
10	**Acknowledgement, payout of incentives, end of study.**

A.2 Instructions to z-Tree experiment (original German version)

Instruktionen zu „VERHANDELN in PPPs“

Herzlich willkommen im Experiment „Verhandeln in PPPs“! Vielen Dank, dass Sie teilnehmen!

Im Folgenden nehmen Sie an einem **mehrstufigen, dynamischen Entscheidungsexperiment** teil. **In dieser Studie geht es darum herauszufinden, wie Menschen in bestimmten Situationen verhandeln.**

Bitte stellen Sie sich hierfür folgendes Szenario vor [dieser Text erscheint auch gleich als erstes auf Ihrem Bildschirm]:

Vor einigen Jahren ist in einer nahegelegenen Stadt neues Bauland ausgewiesen worden, auf dem ein neuer, großer Stadtteil entstehen soll. Dieses Projekt wird von allen Beteiligten als **sehr positiv** für die zukünftige Stadtentwicklung betrachtet.

Allerdings sind die **Investitionskosten** für den Bau von Straßen und für die Erschließung des Geländes **sehr hoch**, sodass die Stadt diese Kosten für die Quartiersentwicklung nicht alleine tragen kann und daher mit einem großen Bauunternehmen in einer **langfristigen Partnerschaft** zusammenarbeitet. Das **Bauunternehmen** stammt aus dem **privatwirtschaftlichen Sektor, d.h. es ist profitorientiert**, während die **Stadt ein öffentlicher Akteur** ist, d.h. **dem Gemeinwohl verpflichtet ist und keine Gewinnabsicht hat.**

Als diese Partnerschaft gegründet wurde, wurde vertraglich festgelegt, dass sich **beide Partner** die **Kosten und die Erträge**, die durch dieses Projekt erzeugt werden, **gleichmäßig teilen wollen**.

Diese Partnerschaft funktioniert nun schon seit mehreren Jahren sehr gut und alles läuft so wie vereinbart.

Allerdings ist in der aktuellen Planungsperiode **etwas Unvorhergesehenes passiert**: Das **Projekt entwickelt sich dynamischer als zuvor angenommen** und manchmal kommt es nun dazu, dass **zusätzliche Erträge** und auch **zusätzliche Verluste** erzeugt werden. Leider wurde für diese Fälle **keine spezielle Vertragsklausel vereinbart**, sodass nun Uneinigkeit darüber herrscht, wie diese unplanmäßigen Posten aufgeteilt werden sollen.

Die einzige Option ist nun, dass die beide Partner direkt miteinander verhandeln um auszumachen, wer welchen Teil dieser ungeplanten Erträge und Verluste tragen soll.

→ Dieses Verhandeln wird gleich **Ihre Aufgabe** sein!

Auf Ihrem Bildschirm erscheinen nach diesem Szenario gleich noch zusätzliche Informationen zu der jeweiligen **Rolle**, **welche sie im Rahmen dieses Experiments einnehmen** und eine **kleine Aufgabe** hierzu. **Bitte lesen Sie die Informationen gleich aufmerksam durch**, sie sind **sehr wichtig** für das Experiment und auch **für Ihre Auszahlung am Ende des Experiments**!

Es gibt **zwei verschiedene Rollen**: Ihre Rolle ist **entweder die eines Beamten** bzw. einer **Beamtin im höheren Dienst der Stadtverwaltung**, d.h. Sie verhandeln zu Gunsten der Stadt und des Gemeinwohls, **oder die eines strategischen Managers bzw. einer strategischen Managerin des**

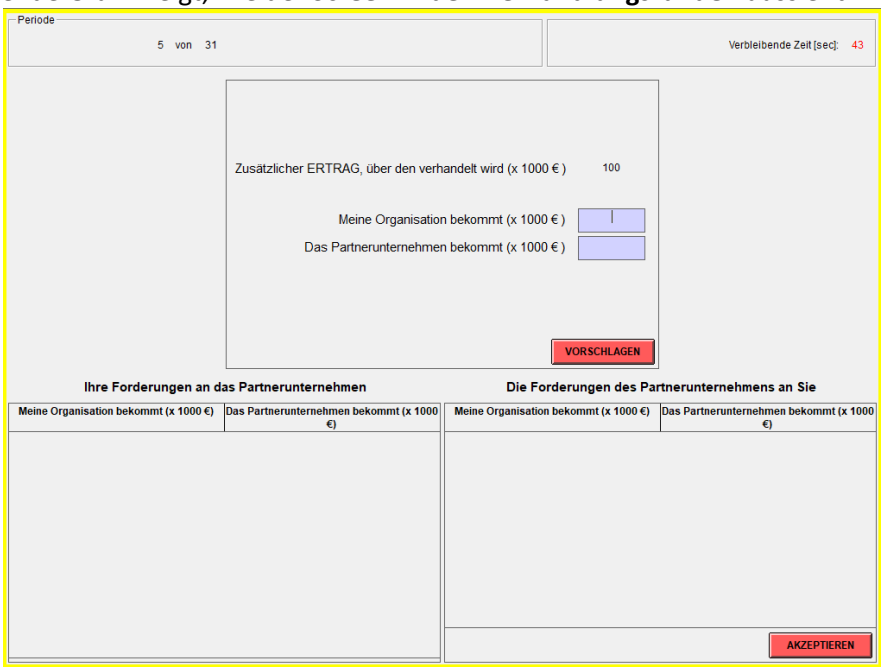
großen Bauunternehmens, d.h. Sie verhandeln zu Gunsten des privatrechtlichen Bauunternehmens.

Sie verhandeln immer zu zweit, ein Unterhändler für die Stadt, der andere für das Bauunternehmen. **Nach jeder Runde, werden Sie zufällig einem neuen Partner zugelost**.

Ihre Aufgabe wird es sein, in insgesamt **31 Runden** Angebote zu der Aufteilung der zusätzlich entstandenen Erträge und Verluste zu machen, indem Sie eingeben, wieviel Sie für Ihre Organisation beanspruchen und was die jeweilige Partnerorganisation übernehmen soll.
Bitte beachten Sie aber, dass Sie nur **45 Sekunden pro Runde** Zeit haben, um sich zu einigen. Sie können immer auch mehrere (verschiedene) Angebote hintereinander abgeben. Beide Partner können gleichzeitig Angebote machen, Sie müssen nicht aufeinander warten.

In den **Runden 1 – 15** geht es darum, **zusätzliche ERTRÄGE aufzuteilen**. Diese können **ganz oder auch nur anteilig** unter den beiden Partnern aufgeteilt werden! Wenn es Ihnen nicht gelingt, innerhalb dieser Zeit eine Einigung über ERTRÄGE zu erzielen, dann verfällt der Ertrag und keiner der beiden Partner erhält in dieser Runde etwas.
In den **Runden 16 – 31** geht es darum, **zusätzliche VERLUSTE aufteilen**. Diese **müssen vollständig (!)** unter den beiden Partnern aufgeteilt werden! Wenn es Ihnen nicht gelingt, innerhalb dieser Zeit eine Einigung über VERLUSTE zu erzielen, dann trägt jeder Verhandlungspartner die Hälfte der Verluste. Hier müssen Sie immer auch das MINUS miteingeben.

Die nachfolgende Grafik zeigt, wie der **Screen in den Verhandlungsrunden** aussieht:



In der Mitte des Bildschirms erscheint der Betrag, über den in der jeweiligen Runde verhandelt werden soll (entweder ein ERTRAG oder ein VERLUST). In die **blauen Kästen** darunter tragen Sie Ihr Angebot zur Aufteilung dieses Betrags **in ganzen Zahlen** ein (bei den Verlusten das MINUS nicht vergessen!) und klicken dann auf VORSCHLAGEN. Die Angebote, die Sie vorschlagen, erscheinen links unten. Die Angebote, die Ihr Verhandlungspartner Ihnen vorschlägt, erscheinen **rechts unten**. Wenn Sie mit einem Angebot einverstanden sind, **markieren Sie es bitte mit der Maus** und klicken auf AKZEPTIEREN.

Sie können so viele Angebote unterbreiten wie sie möchten, solange bis entweder einer der beiden Verhandlungspartner ein Angebot akzeptiert hat, oder die Zeit abgelaufen ist. Die verbleibende Zeit in Sekunden wird Ihnen rechts oben angezeigt.

Alle durch die Verhandlungen erhaltenen Erträge und Verluste werden aufsummiert und **beeinflussen die Auszahlung am Ende des Experiments**. Bitte versuchen Sie so gut wie möglich zu verhandeln!

Für diejenigen in der **Rolle des Beamten bzw. der Beamtin** gilt: Jeder einzelne Euro, den Sie für die Stadt herausholen, **kommt der Gemeinschaft zu Gute**, schließlich handelt es sich um Steuergelder, die investiert wurden. **Ihr eigenes Gehalt ist von dem Ergebnis der Verhandlungen nicht betroffen!** Das bedeutet, dass Sie unabhängig von Ihrem Verhandlungsergebnis **€10** am Ende des Experiments erhalten werden.

Für diejenigen in der **Rolle des Managers bzw. der Managerin** gilt: Jeder einzelne Euro, den Sie für das Unternehmen herausholen, **kommt indirekt auch Ihnen selbst zu Gute**! Sie wissen, dass Ihr Chef Ihr Gehalt relativ zu Ihrem Verhandlungserfolg erhöhen oder abmindern wird. Je mehr Sie für das Unternehmen heraushandeln, desto höher Ihr Gehalt in diesem Szenario!
Das bedeutet, dass **Ihre Auszahlung am Ende des Experiments davon abhängt, wie gut oder schlecht Sie im Vergleich zu allen anderen Teilnehmern verhandeln**.

Nach den 31 Runden folgt noch ein anonymer Fragebogen. Ihre Antworten dort haben keinen Einfluss auf Ihre Auszahlung. Bitte antworten Sie ganz spontan und so ehrlich wie möglich.

Haben Sie noch Fragen zum Experiment?

Bitte halten Sie sich bereit, gleich geht es los!

A.3 Z-Tree code of negotiation game treatment (.ztt) and questionnaire (.ztq)

Supplementary online material:

<<< WBV_2019_Negotiation_Treatment.ztt >>>

<<< WBV_2019_Negotiation_Questionnaire.ztq >>>

B Explicit sector-specific associations (English translation)

				Valence					Valence	
	Public sector	*n*	f_i [b]	*M* [a]	*SD*	**Private sector**	*n*	f_i [b]	*M* [a]	*SD*
1	Public welfare-oriented	29	15.0	.94	1.10	Profit-oriented	40	21.5	.50	1.64
2	Administration	22	11.3	-1.12	1.25	Success	27	14.5	2.10	.97
3	Red tape	19	9.8	-1.90	.57	Pressure	18	9.7	-1.59	1.05
4	Respectable	17	8.8	2.40	1.42	Respectable	16	8.6	2.40	1.42
5	Procurement	15	7.7	-.70	.68	Security	11	5.9	1.32	1.41
6	Nuisance	15	7.7	-1.90	.57	Egoism	10	5.4	-1.10	1.37
7	Neutrality	14	7.2	.75	.97	Relevance	10	5.4	.94	1.07
8	Rules	11	5.7	-.40	1.19	Power	9	4.8	.10	1.37
9	Security	11	5.7	1.32	1.41	Goal-oriented	8	4.3	2.00	1.10
10	Due-diligence	9	4.6	1.40	1.08	Neutral	7	3.8	.00	.00
11	Power	8	4.1	.10	1.37	Amorality	5	2.7	-2.05	1.19
12	Federal state	6	3.1	-.53	1.26	Identity	4	2.2	1.26	1.21
13	Money	6	3.1	1.60	.97	Audacity	4	2.2	2.20	0.63
	Sub-total	182	93.8				169	90.9		
	other terms [c]	12	6.2			other terms [c]	17	8.1		
	Total	194	100.0				186	100.0		

Notes: [a] Mean emotional valence range: *min*. = -3.0, *max*. = 3.0; [b] Frequencies in %; [c] all other items $f_i < 3.0\%$; [d] all other items $f_i < 2.0\%$.

C Treatment balance

Variable	Public treatment		Private treatment		*t*-test	
	M	*SD*	*M*	*SD*	*t*	*p*
Female	.525	.504	.559	.500	.367	.715
Age (years)	25.76	4.660	25.90	4.870	.157	.876
PSM	4.316	1.043	4.110	.973	-1.111	.269
SVO	4.407	3.900	4.915	3.892	.709	.480
Trust in others	3.111	.730	3.145	.690	.264	.792
Risk preference [a]	.638	1.190	.859	1.133	1.030	.305
Uncertainty avoidance	3.692	.584	3.627	.628	-.581	.563
Explicit attitude						
public sector	3.051	.879	3.153	.962	.600	.550
private sector	2.780	1.014	2.848	.811	.401	.689
Intention to apply to public sector	3.576	1.621	3.932	1.617	1.194	.235
Associative implicit affect (n=385)	.906	.399	.982	.319	-1.130	.261
Numeracy	4.848	2.007	4.746	2.162	-.265	.792
Latency of sector-specific evaluation (s)	99.475	51.834	102.288	56.793	.281	.779

Note: N=118; n_{public}=59; $n_{private}$=59; two-tailed t-test. [a] revealed measure normalized with log(h).

D Correlations and reliabilities

		1	2	3	4	5	6	7	8	9	10	11	12	13
Study variables														
1.	AMOUNT	–												
2.	Public agency	-.020	–											
3.	Loss domain	.210***	.000	–										
Control variables														
4.	Risk aversion	.006	-.181***	.002	–									
5.	Uncertainty avoidance	-.037*	.055**	.001	.078***	–								
6.	PSM	.026	.104***	.001	.024	.305***	–							
7.	SVO	.027	-.065***	-.001	-.048**	-.051**	.266***	–						
8.	Intention to apply to public sector	.002	-.112***	-.001	-.058***	-.022	.248***	.085***	–					
9.	Explicit attitude (public)	-.006	-.057***	.000	-.029	-.018	.186***	.157***	.401***	–				
10.	Explicit attitude (private)	-.057***	-.037*	-.002	.221***	.049**	-.275***	-.220***	-.267***	-.275***	–			
11.	Trust in others	-.018	-.025	.000	.047**	.019	.206***	.161***	-.018	.132***	.009	–		
12.	Age (years)	.025	-.014	-.002	-.025	.157***	.191***	.211***	.057***	.063***	-.211***	.015	–	
13.	Female	-.014	-.033*	-.000	-.056***	-.122***	.172***	.070***	.165***	.067***	-.208***	-.010	-.121***	–
14.	Numeracy	.018	.023	-.002	-.141***	-.038*	.152***	.044**	-.034*	-.055***	.095***	.202***	.022	-.107***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.000$.

CHAPTER 5: PSM AND PRO-SOCIAL RULE-BREAKING

CHAPTER 5: PUBLIC SERVICE MOTIVATION AND PRO-SOCIAL RULE-BREAKING

An international vignettes study in Belgium, Germany and the Netherlands

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ABSTRACT

We theorize that people with high Public Service Motivation (PSM) are especially prone to engage in social rule-breaking (SRB) behavior, which ultimately leads to discriminatory practices, particularly if moderated by positive affect. We conduct an original vignette study in three countries (Belgium, Germany and the Netherlands) with 1,239 observations in total. Our findings provide tentative behavioral evidence on the linear relationship between PSM and the likelihood of SRB. The results reveal that the relation between PSM and SRB is moderated asymmetrically by client-based information affect cues: Negative affect cues have a larger negative effect than positive affect cues have a positive effect. This means that high-PSM people are not only more likely to engage in SRB, but that they also discriminate more sharply between clients they perceive to be more deserving than their low-PSM peers.

Keywords: *Social Rule-Breaking, Public Service Motivation, Risk behavior, Multi-site design*

INTRODUCTION

A widely-studied concept is Public Service Motivation (PSM). A central claim is that high-PSM people tend to behave differently vis-à-vis their low-PSM counterparts. Esteve *et al.* (2016) reveal in an unconditional public goods game experiment that high-PSM participants contribute more to a public investment than their low-PSM colleagues. In the current paper, we develop a theory of a dark side of PSM. We argue that high-PSM people are more likely to engage in discriminatory social rule-breaking behavior (SRB) than their low-PSM counterparts. High-PSM individuals are assumed to be driven by the intrinsic motivation to help other people (van Witteloostuijn *et al.* 2017). We argue that high-PSM individuals reveal a higher tendency than their low-PSM counterparts to break the rules in favor of citizens they believe need and deserve help and support.

We report evidence from a multi-site, three-country, between-subject randomized vignette-based quasi-experiment. The quasi-experiment was conducted at universities in Belgium (n=220), Germany (n=211) and the Netherlands (n=193), adding a complementary questionnaire to measure PSM. Our design is a quasi-experiment, because PSM (our central independent variable) is very difficult – if at all – to manipulate experimentally, and thus cannot be designed as a randomized treatment. The three treatments involve vignettes that differ in the information affect cues about the client in the form of either neutral, adverse, or compassionate stimuli. This paper presents findings from three studies, replicating a novel quasi-experiment in three countries, examining the information-conditional impact of PSM on the likelihood to engage in SRB.

This research design comes with a few crucial methodological advantages. First, we employ an experimental design, following pleas of van Witteloostuijn (2015) and Walker *et al.* (2017), to identify treatment-related causal mechanisms (of affect). Moreover, as argued by van Witteloostuijn (2015), we add a survey-based measure in the context of a quasi-experimental design for the purpose of a correlational analysis of the impact of a key respondent characteristic (i.e., PSM). Second, in line with Landman (2008) and Walker *et al.* (2017), we conduct a comparative multi-country study to analyze differences and similarities across culture-specific settings. Third, by running the experiment in three countries, this research responds to the recent pleas of van Witteloostuijn (2016), Walker *et al.* (2017, 2018), and Vandenabeele *et al.* (2018) to conduct replication studies, reflecting on generalizability and boundary conditions.

THEORY

Public Service Motivation and pro-social rule-breaking

The principle of non-discrimination among citizens and clients is a core foundation of the public sector. However, reality in public organizations often looks different. Tummers *et al.* (2015) argue that prioritizing clients is a widely-used strategy among street-level bureaucrats to cope with increasing job demands in modern bureaucracies. By "giving certain clients more time, resources, or energy" (Tummers *et al.* 2015, 1108), bureaucrats make use of their *de facto* discretion to deal with the challenges of public service delivery. The consequence is that some clients are prioritized to the disadvantage of others, who will not be given this extra time possibly because bureaucrats might feel more emotionally detached from these individuals. Facing such trade-offs, Tummers *et al.* (2015) argue that bureaucrats follow different coping strategies.

On the one hand, they can decide to move *toward* the client. This triggers positive, pro-active, and client-centered behavior, linking neatly with selfless social behavior. This includes rule-bending and rule-breaking to meet the client's demand, as well as discretion in prioritizing. On the other hand, bureaucrats might move *against* the client by "sticking to rules in an inflexible way that may go against the client's demands" in a way that borders on hostility (Tummers *et al.* 2015, 1108). Moving either toward or against the client is associated with risk since both strategies are discriminatory, threatening the fundamental bureaucratic principle of equity. This paper's central claim is that Public Service Motivation (PSM) plays a key role in co-determining rule-breaking vis-à-vis rule-obeying behavior.

PSM is defined as "an individual's predisposition to respond to motives grounded primarily or uniquely in public institutions and organizations" (Perry and Wise 1990, 368). The central idea of PSM scholarship is that high-PSM people feel attracted to the public sector because employment as a civil servant provides the opportunity to do meaningful work for the sake of (selfless) societal benefit (Perry *et al.* 2010). Research by Oberfield (2014), and Vogel and Kroll (2016) finds that an individual's PSM is relatively stable over time, making this a very important concept indeed to understand individuals' motivation in working for public sector organizations. PSM research largely argues that high-PSM people are more likely to be attracted to working in the public sector (Kjeldsen and Jacobsen 2013).

When examining PSM's underlying dimensions, PSM actually incorporates very distinct conceptual ideas. PSM comprises at least four sub-dimensions – compassion (COM), self-sacrifice (SS), commitment to the public interest (CPI), and attraction to policy-making (APM) – two of which directly relate to acting selflessly in the interest of other people (Kim 2008; Vandenabeele 2008). PSM is also positively related with individual and organizational performance (Alonso and Lewis 2001; Bellé 2012; Ritz *et al.* 2016). Yet, Perry and Wise (1990) already noted that high PSM might potentially have negative effects for bureaucratic organizations. Research about these dark sides of PSM is fairly limited, and empirical evidence is even scarcer, despite some explicit calls (Steen and Rutgers, 2011). One of the first to address this issue was Giauque *et al.* (2013), revealing that COM and SS are related to higher satisfaction rates after resigning from public service, while APM and CPI are associated with reduced satisfaction after resignation. PSM is also reported to positively correlate with stress (Giauque *et al.* 2012), burnout and job dissatisfaction (Van Loon *et al.* 2015), absenteeism (Koumenta 2015), and over-attachment leading to adverse presentism (Andersen and Hjortskov 2016).

A potential downside of PSM is a higher likelihood of social rule-breaking. Rule-breaking has been discussed in the entrepreneurship literature (Obschonka *et al.* 2013; Warren and Smith 2014; Arend 2016; Elert and Henrekson 2017). Rule-breaking can be characterized as 'institutional deviation': individuals deviate from the behavior stipulated by implicit and/or explicit institutional rules (Elert and Henrekson 2017). The argument is that employees violate such rules in order to serve their own monetary or hedonic self-interest at the expense of others and/or their organizations. This rule-breaking behavior is primarily considered as unethical and self-oriented: the goal is to serve one's self-interest at the expense of public interest (Robinson and Bennett 1995; Griffin and Lopez 2005; Hodson *et al.* 2012; Arend 2016). The literature defines these forms of rule-breaking as pro-self or anti-social (Nogami and Takai 2008).

Most studies stress the negative consequences of rule-breaking. However, rule-breaking can also function as a remedy if the rules are dysfunctional (Vadera *et al.* 2013), and rule-breaking can also be pro-social instead of pro-self when the primary intention is to help others (Morrison 2006). Little is known about social rule-breaking. A query in the Web of Science gives five hits only: Morrison (2006), Dahling *et al.* (2010), Parks *et al.* (2010), Vardaman *et al.* (2014), and Ambrose *et al.* (2015). Morrison (2006, 6) pioneers SRB by defining it as "any instance where an employee intentionally violates a formal organizational policy, regulation or prohibition with the primary intention of promoting the welfare of the organization or one of its stakeholders."

Morrison (2006) identifies three forms of SRB: rule-breaking to (a) facilitate work performance, (b) help another member of the organization, and (c) provide good customer service. Her vignette study shows that participants are more likely to engage in SRB if the job is characterized by high autonomy and if other employees have engaged in SRB in the past. Furthermore, (self-reported) risk-taking propensity is positively related with the likelihood of SRB. Dahling *et al.* (2010) develop and validate a general scale to capture the likelihood of SRB. Parks *et al.* (2010) argue conceptually that work characteristics such as autonomy and risk-propensity impact SRB. Vardaman *et al.* (2014) suggest that organizational ethical norms play a major role in explaining SRB: a climate of instrumental and law-incongruent standards is likely to increase SRB. Ambrose *et al.* (2015) further conceptualize SRB antecedents, viewing SRB as a deontic reaction to the organizations' unfair policies toward customers. They propose that the SRB likelihood increases with organic workgroup structures, low workgroup service motivation, and substantial supervisor support for SRB.

In modern public bureaucracies, examples of SRB are shortcutting lengthy bureaucratic procedures to the benefit of a client, with no direct and functional benefit for the civil servant taking the shortcut (Morrison 2006; Dahling *et al.* 2010). Seemingly benevolent, SRB can be a fundamental problem for public bureaucracies as the core equity principle is violated, and because the hierarchical logic of top-down rules in combination with policies set by law and formal regulation is undermined (Zhou 1993). This violation is deliberate, the primary motive being the intent to help the organization, clients and/or stakeholders in an honorable fashion (Morrison 2006; Dahling *et al.* 2010). However, such deliberate SRB actively breaks down the core principles of public bureaucracies (Udy 1959; Mills 1970).

How may PSM be related to SRB? We argue that high-PSM people are more likely to break the rules for noble causes. The discriminatory effect of high PSM is supported by Andersen and Serritzlew (2012), revealing that high-PSM public service providers are more likely to deviate from profit-maximizing strategies in order to help clients they regard as needy. They report that professionalism in the sense of rule-abiding behavior on the job is negatively correlated with user orientation and compassion with the client.

H1: The relationship between PSM and the likelihood of SRB is positive.

Client information cues

SRB is a risky endeavor because there is a real threat that breaking the rules will be noticed higher up in the hierarchy. SRB is associated with uncertainty because the likelihood and magnitude of potential adverse consequences for both the rule-breaker and the organization are unknown and incalculable. If odds cannot be calculated, people (subconsciously) rely on heuristics to cope with the motivational conflict between the wish to help a client and the potential of experiencing adverse consequences from doing so. Heuristics are cognitive rules of thumb activated by internal and external cues, and that help making "good" decisions under uncertainty by reducing complexity (Gigerenzer and Goldstein 1996). External cues could be the perception of organizational mistreatment of customers (Ambrose *et al.* 2015), or specific client characteristics triggering sympathy toward this client, increasing the will to help him or her (Keiser 2010). Experimental research on decision-making shows that such feelings play an essential role in priming behavior by substantially influencing attitudes and preferences (Kahneman 2003; Thaler and Sunstein 2008).

Public servants facing clients with problems are challenged with the daunting task of trying to match rules with the dire needs of clients. Street-level bureaucrats will oftentimes be emotionally affected by their clients' fate. Buurman and Dur (2012) found that caseworkers who were weakly altruistic toward clients preferred to not allocate help to needy but unwilling clients, rather than sanctioning them. These findings resonate with Jilke and Tummers (2018), who found teachers to be more willing to help students who worked hard, rather than those who were merely successful according to the bureaucratic success criteria. Affect can be positive in the form of having sympathy for another person, or negative in the form of disliking another person (Eisenberg 2000), with affect moderating behavior (Fazio 2001; Oikawa *et al.* 2011).

Scott (1997) shows that bureaucrats' use of their discretion is strongly influenced by the attitudes they form on the basis of client characteristics. He argues that client characteristics function as behavioral cues that are much stronger than the individual decision maker's attitudes or traits, revealing that the level of (monetary) assistance provided to a client of social services is directly related to the level of compassion held by the bureaucrat toward the client. This echoes earlier findings by Goodsell (1980; 1981), who provides evidence that clients who gave cause for compassion because they exhibited greater need receive proportionally greater benefits. An experimental study by Weimann (1982) indicates that bureaucrats can be easily swayed by clients who use 'altruistic' appeals that result in positive affect toward the client.

We assume that positive affect is directly linked with a higher likelihood of SRB. Conducting a series of laboratory experiments, Christian and Alm (2014) report that people who are very socially motivated by being more than averagely concerned with other peoples' wellbeing, as expressed by these other peoples' emotional state, are more likely to be tax compliant. Gino and Pierce (2009; 2010) show that clerks are more likely to give discounts to customers if they feel sympathy toward these customers.

H2a: The likelihood of SRB increases with positive affect toward a client.

Client discrimination can lead to adverse consequences for clients who are perceived as less likeable or needy (Weimann 1982; Scott 1997; Goodsell 1980; 1981). This is especially evident when street-level bureaucrats have to make decisions without face-to-face contact with clients. Keiser (2010) shows that street-level bureaucrats make eligibility decisions in social welfare programs based on abstract (and factually irrelevant) informational cues about the client (whom they have never met) to form heuristic attitudes about perceived deservingness. Using a dataset on a social security disability program from the US, Keiser reveals that such abstract negative cues cause bureaucrats to arbitrarily make an assumption about the honesty of the client, which decreases the likelihood of generously applying the eligibility rules. Having a negative attitude vis-à-vis the client also decreases the priority given to these client cases.

H2b: The likelihood of SRB decreases with negative affect toward a client.

METHODS

Multi-national vignette study

This study was conducted between April and August 2017 with three convenience samples in Belgium, Germany, and the Netherlands. Potential participants were invited through an e-mail distributed among students in public and for-profit management degree programs, as well as other social sciences at four large universities. Participation was voluntary and incentivized by the chance of winning one of four substantial gift certificates (1 x €250, 1 x €150, and 2 x €50) from a well-known online retailer. Table 1 presents socio-demographic characteristics of respondents.

Survey and vignette stimuli were carefully designed by an international research team to make sure that the treatment was equally reliable and logical in the specific context of civil

services for all three countries. Scales validated in prior research were translated with due diligence from English into German and Dutch in a triple-blind procedure. Adequate and rigorous pre-tests were conducted prior to launching the vignettes (Finch 1987; Wilson and While 1998). In the prospect of small to medium-sized effects (Cohen's $d \leq 0.3$; power=0.8; $\alpha=0.05$), samples per country should at least comprise $n=176$ respondents (Ellis 2010). The final datasets only include complete responses since raw data were strictly pre-stratified for missing values and repetitive response patterns.

Table 1: Respondents' socio-demographic characteristics

	Study 1	**Study 2**	**Study 3**
Sampling site	Germany	Belgium	The Netherlands
n	211	220	193
Obs.	315	322	219
Experimental treatment (*Obs.*)[a]:			
Vignette 1	33.7% (106)	33.9% (109)	33.0% (96)
Vignette 2	32.7% (103)	33.2% (107)	33.3% (97)
Vignette 3	33.7% (106)	32.9% (106)	33.7% (98)
Perceived realism			
Vignette 1	2.14 ± .80	2.45 ± .84	2.13 ± .81
Vignette 2	2.97 ± .84	3.06 ± .61	3.04 ± .66
Vignette 3	3.19 ± .70	3.10 ± .71	2.97 ± .56
Gender, male (*n*)[a]	45.0% (95)	48.6% (107)	48.2% (93)
Age in years[a]	25.84 ± 4.82	21.13 ± 2.82	22.47 ± 3.65
Field of study (*n*)			
Public administration	19.7% (38)		1.4% (3)
Business administration	19.2% (37)	46.8% (103)	36.1% (76)
Socioeconomics & economic policy	9.9% (19)	10.0% (22)	31.3% (66)
Political sciences	3.6% (7)	7.3% (16)	5.7% (12)
Industrial engineering and management		24.1% (53)	4.3% (9)
Other applied social sciences	47.7% (92)	11.8% (26)	21.3% (45)
Public service motivation	5.26 ± .98	5.53 ± .85	5.38 ± .92
Risk preference[b]	.65 ± .62	1.57 ± .63	.96 ± .61

Notes: Items are reported with geometric means and standard deviations ($M \pm SD$) or proportions (%) and frequencies (*n*). [a] Frequencies in relation to total number of observations per study sample; tested for treatment balance; all two-tailed *t*-tests within and between studies non-significant. [b] Centralized logarithmic discounting parameter.

Quasi-experimental design and vignette treatments

Vignettes are narrative scenarios that invite participants to imagine a specific scenario. Participants are asked to express how they would behave if they were in the said scenario. Vignettes use textual descriptions that are more elaborate than most written stimuli used in other experimental setups to create scenarios that are highly relevant and realistic, increasing

the ecological reliability and validity of measured responses (Hughes and Huby 2004). Vignettes are very powerful instruments in triggering context-dependent behavior with high internal and external validity under highly controlled experimental conditions, allowing for systematic variation of treatments in a very economical manner (Aguines and Bradley 2014).

Our study comprises four parts (Appendix A.1). First, participants were introduced to the study. Second, we administered a short socio-demographic questionnaire to measure control variables regarding age, gender, nationality, and field of study. Third, we measured our key independent variable (PSM) and respondents' risk preference as a potential covariate using standardized measures developed in prior work: Kim's (2011) PSM scale and Madden *et al.*'s (2009) Probability Discounting Questionnaire (PDQ). Kim's scale consists of 12 Likert-type statement items, with the standard quadruple of underlying dimensions (COM, SS, APM, and CPI), and answer values from 1 (= 'absolutely disagree') to 7 (= 'absolutely agree').

Madden *et al.*'s (2009) PDQ is based on 30 dyadic trade-off tasks between one relatively smaller but fixed pay-out (e.g., €20 for sure) and one higher but risky pay-out (e.g., 67% chance to win €80 and 33% chance to win €0). We use Weißmüller's (2016) algorithm to estimate a risk discounting parameter (h) from respondents' pattern of choice and preference reversals across this set of 30 items. Pay-outs are hypothetical, but Madden *et al.*'s (2009) measure is very reliable in predicting preferences and real choice under risk (Green and Myerson 2004), whilst being very robust against conscious manipulation. The parameter is exponential and is centralized by taking its logarithm. Since higher discounting parameter values indicate that respondents devalue risky options more strongly, individuals with $\ln(h)>0$ are risk averse.

Fourth, respondents were randomly assigned to two out of three vignette treatments, with randomization offering the opportunity for causal inference (Meyer *et al.* 2017). These vignettes are designed to represent a typical scenario for street-level bureaucrats. Respondents are put into the active role of a civil servant handling applications for social housing. In a face-to-face meeting, clients ask to speed up this process by prioritizing their case, which is not in accordance with the organization's prescribed rules. The manipulation is through the (lack of) specific information given about the client's background. The first vignette describes a male client with a very negative criminal track-record, who is reluctant to collaborate ('negative' treatment). The second vignette serves as a control scenario, providing no specific information about the client except that he is male ('neutral' treatment). The third vignette presents a male disabled single-parent in need beyond his own fault ('positive' treatment). In each of the

scenarios, respondents are reminded that speeding up individual applications would clearly conflict with the organization's internal codes of conduct. The vignettes make very clear that the civil servant will not benefit personally in any way from prioritizing the client's case. The cases are based on real application procedures in actual institutions of public welfare services in Belgium, Germany, and the Netherlands. The ecological validity and perceived realism of these treatments was corroborated by both an expert panel, as suggested by Gould (1996), and by pre-testing. Between and within-group *t*-testing indicate that treatment balance was achieved for all three country samples.

PSM is a feature of an individual that we measured through a survey scale. We enter this measure into regressions for what are essentially correlational analyses, as PSM is not randomly attributed in a pure "treatment fashion" across our study participants. Our other central variable is affect, which we could randomly vary across study participants through an experimental vignette design. This implies that we are able to engage with causal inference regarding this second variable. Together, this implies that we have a quasi-experimental design (van Witteloostuijn 2015), with a non-malleable correlational leg (PSM) and a treatable causal leg (affect).

Social rule-breaking

We developed a three-item scale that serves as a measure of our main dependent variable – social rule-breaking intent (*SRB Intent*). Respondents were asked to indicate how likely they were to break the rules for the client (likelihood), how justified breaking the rules was (justification), and how comfortable they would feel in doing so (affect). All items are Likert-type questions, with score options from 1 (= 'absolutely disagree') to 5 (= 'absolutely agree'). The three items were standardized and sum-scored. We conducted confirmatory factor analyses (varimax rotated). Since five-point Likert scales are not continuous, the data were first transformed into a polychoric matrix upon which factor analyses were performed (Appendix A.3), confirming high internal validity and robustness against country effects. Shapiro-Wilk testing shows that *SRB Intent* is normally distributed across all treatment groups (Vignette 1: $W(311)=0.965$, $p=0.000$; Vignette 2: $W(307)=0.985$, $p=0.003$; Vignette 3: $W(310)=0.989$, $p=0.016$). We investigate participants' rationalization strategies on rule-breaking by explicitly asking them to indicate on two five-point Likert scales whether they found that breaking the rules was beneficial for the client (client's benefit) and damaging for the public agency (agency's loss). We added a fourth item (realism) as a manipulation check, which is a four-

point scale asking participants to assess each vignette from being 'very unrealistic' (1) to 'very realistic' (4).

Model estimation

All participants responded to two vignettes that were randomly assigned and drawn randomly from the set of three different vignettes. Appendix A.4 (available online) provides extensive post-hoc analyses to control for order and spill-over effects, showing that procedure-based order and spill-over effects were not an important issue. We run linear regression analyses with heteroscedasticity-robust standard errors clustered at the individual respondent. We specify our model as

$$SRB\ Intent = \beta_1 PSM + \beta_{2;3} Treatment + \beta_{4;5} Motiv + \beta_6 Realism + \beta_7 Risk\ Aversion + \beta_8 Age + \beta_9 Female + \beta_{10;11} Country + \varepsilon_i.$$

We use the neutral vignette scenario as reference category. We first analyze each country study individually and then pool the data for a combined sample in which the German sample arbitrarily serves as the reference category (which we therefore take as our Study 1).

Appendix A.2 includes the correlation matrix between all dependent and control variables, as well as respective reliabilities at the five per cent level. Appendix A.5 (available online) provides additional post-hoc analyses exploring potential interaction effects between *PSM* and treatments, pointing toward a small but substantial interaction effect between *PSM* and *SRB Intent* in the negative treatment condition. All analyses have been conducted with *PSM*'s underlying dimensions (available upon request), which decreased the explanatory power in comparison to *PSM* as the compound multi-dimensional construct, as originally conceptualized by Perry and Wise (1990). Hence, we decided to follow the many recent examples (e.g., Vandenabeele *et al.* 2018; van Loon *et al.* 2015; Schott and Ritz 2017) that all argue in favor of a unidimensional conception of *PSM*.

FINDINGS

Study 1

The data were collected through a standing online panel of a large German university. We have *n*=211 respondents who are, on average, 25.8 (*SD*=4.8) years old. The sample is slightly dominated by female participants (55.0%), consisting of undergraduate and graduate students

of various social sciences, predominantly of public administration (19.7%), business administration (19.2%), and other advanced economic, political and socio-economic studies (47.7%). Respondents score high on *PSM* (*M*=5.26, *SD*=0.98), and are rather risk averse (*M*=0.65, *SD*=0.62).

We find strong discriminatory behavior. Two-tailed *t*-testing shows that different client descriptions in the vignette treatments create significant variance in *SRB Intent.* Table 2 presents the descriptive analysis of the treatment effects on *SRB Intent*.

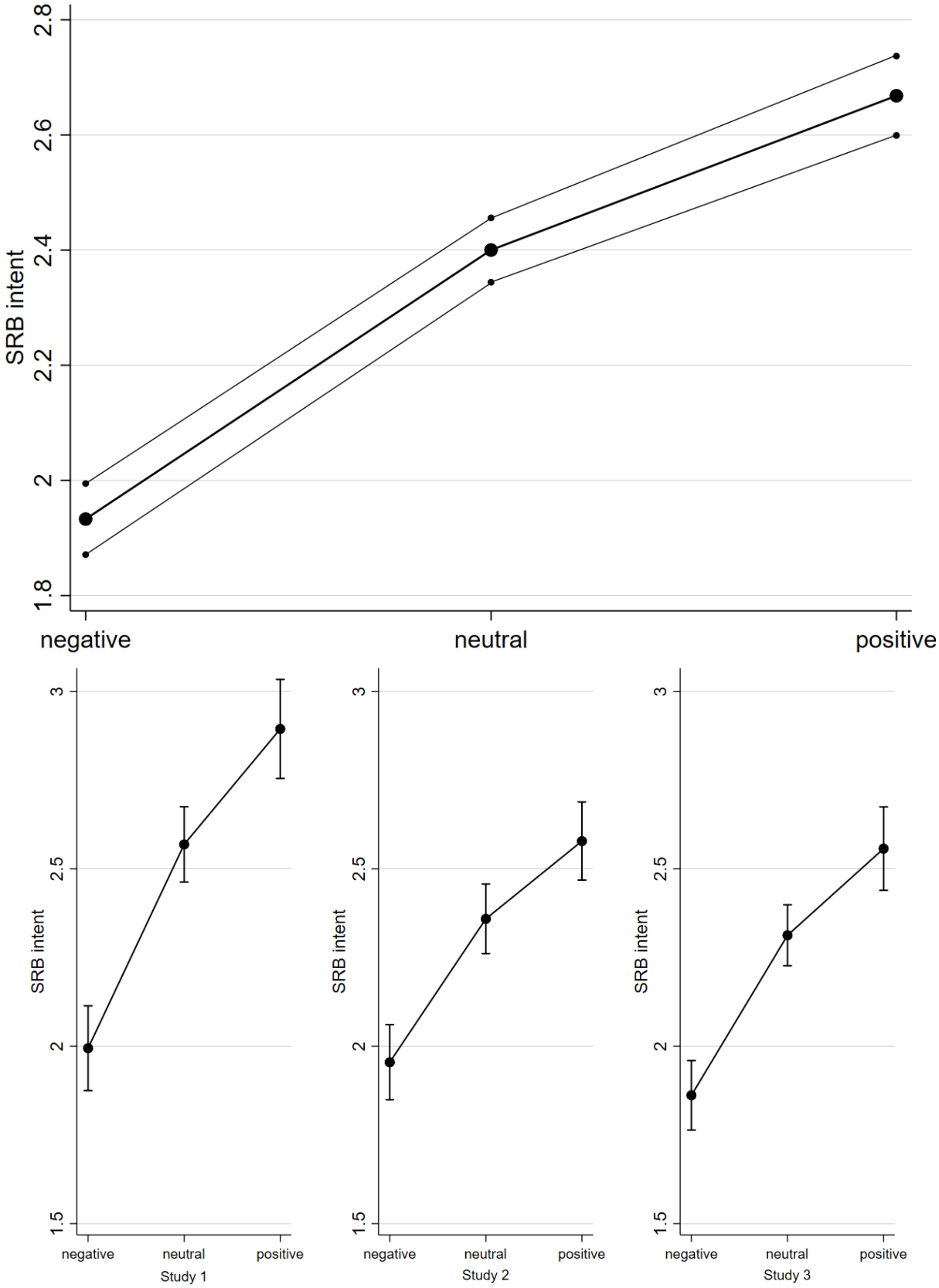
Table 2: Descriptive analyses of *SRB Intent* by study

			Treatment effect[a]		
SRB Intent	**Mean**	**SD**	***t***	***p***	***d***
Study 1 (GER)					
Negative treatment	1.79	.77	-6.98	.000	-1.026
Neutral treatment	2.64	.87	*– reference category –*		
Positive treatment	3.17	.89	4.19	.000	.611
Study 2 (BEL)					
Negative treatment	1.81	.67	-5.55	.000	-.804
Neutral treatment	2.38	.76	*– reference category –*		
Positive treatment	2.83	.80	3.96	.000	.573
Study 3 (NL)					
Negative treatment	1.68	.65	-6.93	.000	-.966
Neutral treatment	2.38	.80	*– reference category –*		
Positive treatment	2.73	.87	2.99	.003	.422

Notes: Values range: 1 = 'very low' to 5 = 'very high'. [a] Tested against vignette 2 ("neutral") with two-tailed *t*-tests; effect sizes estimated with Cohen's *d*-score (Welch-adjusted).

Tested against the neutral treatment (Vignette 2: *M*=2.64, *SD*=0.87), respondents are less willing to break the rules when confronted with a less amiable client (*M*=1.79, *SD*=0.77; *t*=-6.98, *p*=0.000), but much more willing to do so for an amiable client (*M*=3.17, *SD*=0.89; *t*=4.19, *p*=0.000). The direction of this treatment effect is strictly transitive, indicating a causal relation between affect toward client and likelihood of rule-breaking, supporting *H2a* and *H2b*. This effect is subject to a negativity bias since effect sizes (Cohen's *d*) indicate that the negative treatment (*d*=-1.026) has a stronger effect on inhibiting *SRB Intent* than the positive treatment (*d*=0.611) has on increasing *SRB Intent* (Figure 1).

Figure 1: Treatment effect



Note: Absolute effects with 95%-CIs; upper panel: pooled effect (*Obs.*=1,239); lower panel: treatment effect split by study.

With linear regression (Table 3), we find a strong and significant linear main effect of treatment on *SRB Intent* (negative treatment: β_2=-0.224, p=0.020; positive treatment: β_3=0.313, p=0.002). The model is well specified [F_1(9, 193)=26.47, p=0.000] and explains a large share of variance (adj. R^2_1=0.370). The main association of *PSM* with *SRB Intent* is negative, but not statistically significant (β_1=-0.023, p=0.599), providing no support for *H1*.

Table 3: Regression on *SRB Intent*

	Study 1		***Study 2***		***Study 3***		***Pooled data***	
Independent variable								
PSM	-.023	(.04)	.053	(.05)	.047	(.04)	.028	(.03)
Treatment								
Negative	-.224*	(.10)	-.047	(.08)	-.106	(.09)	-.129**	(.05)
Neutral			*– reference category for vignettes –*					
Positive	.313**	(.10)	.283**	(.08)	.285***	(.08)	.310***	(.05)
Control variables								
Client's benefit	-.037	(.04)	-.089†	(.05)	.080†	(.05)	-.010	(.03)
Agency's loss	.272***	(.04)	.393***	(.04)	.453***	(.04)	.355***	(.02)
Realism	.357***	(.05)	.249***	(.05)	.141*	(.07)	.262***	(.03)
Risk aversion	-.224*	(.10)	.033	(.10)	-.041	(.08)	-.100†	(.05)
Age	.023*	(.01)	.026	(.02)	-.004	(.01)	.005	(.01)
Female	.010	(.10)	-.090	(.08)	-.158*	(.07)	-.114*	(.05)
German			*– reference category for country effects –*					
Belgian							.040	(.07)
Dutch							-.017	(.06)
Intercept	.321	(.43)	-.052	(.54)	.104	(.33)	.353	(.27)
Observations	386		384		397		1,239	
F	26.47***		32.49***		31.48***		66.67***	
VIF[a]	1.14		1.09		1.11		1.25	
R^2	.384		.414		.456		.382	
Adj. R^2	.370		.400		.443		.376	

Notes: Linear regression estimates clustered at subject level for conditional contribution; heteroscedasticity-robust standard errors in parentheses; † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. [a] Mean variance inflation factor (*VIF*): all *VIF* ≤ 1.99.

Consideration of the client's interest is not significantly associated with *SRB Intent* (β_4=-0.037, p=0.384). Assuming that breaking the rules will result in adverse effects for the public agency increases *SRB Intent* (β_5=0.272, p=0.000). We do not see a significant gender estimate, and only a small but significant age effect (β_8=0.023, p=0.039). Risk aversion is strongly negatively and significantly related with *SRB Intent* (β_7=-0.224, p=0.032).

Study 2

Data were collected at a Flemish university in Belgium, including n=220 participants who predominantly study business administration (46.8%), industrial engineering and management (24.1%), and socioeconomics and economic policy (10.0%). The sample is slightly dominated

by females (51.4%). Respondents are slightly younger (*M*=21.1 years, *SD*=2.8) than Study 1's, with high scores of *PSM* (*M*=5.53, *SD*=0.85) and being predominantly risk averse (*M*=1.57, *SD*=0.63).

Study 2 mostly corresponds with Study 1. We find a linear, transitive and asymmetric treatment effect (positive treatment: *M*=2.83, *SD*=0.80; *t*=3.96, *p*=0.000, *d*=0.573; vis-à-vis negative treatment: *M*=1.81, *SD*=0.67; *t*=-5.55, *p*=0.000, *d*=-0.804) compared with the neutral treatment (Table 2 and Figure 1), which strongly supports *H2a* and *H2b*. Linear regression (Table 3) gives a well-specified model [F_{II} (9, 191)=32.49, *p*=0.000], explaining a substantial share of the variance (adj. R^2_{II}=0.400). We have a positive but non-significant relation between high *PSM* and *SRB Intent* (β_1=0.052, *p*=0.303), providing only indicative sign support for *H1*. Consideration of the client's interest does not influence *SRB Intent* (β_4=-0.089, *p*=0.066). Again, being aware that breaking the rules will result in public agency harm significantly increases *SRB Intent* (β_5=0.393, *p*=0.000). We do not find a significant association of individual risk preferences, age, or gender with *SRB Intent*.

Study 3

Data were collected at two universities in the Netherlands with *n*=193 respondents who are, on average, 22.5 (*SD*=3.7) years old, featuring a slight overrepresentation of females (51.8%). Participants are students of a number of social sciences degree programs, with the majority in business administration (36.1%) and economic policy (31.3%). They report, on average, high *PSM* (*M*=5.38, *SD*=0.92) and are rather risk averse (*M*=0.96, *SD*=0.61).

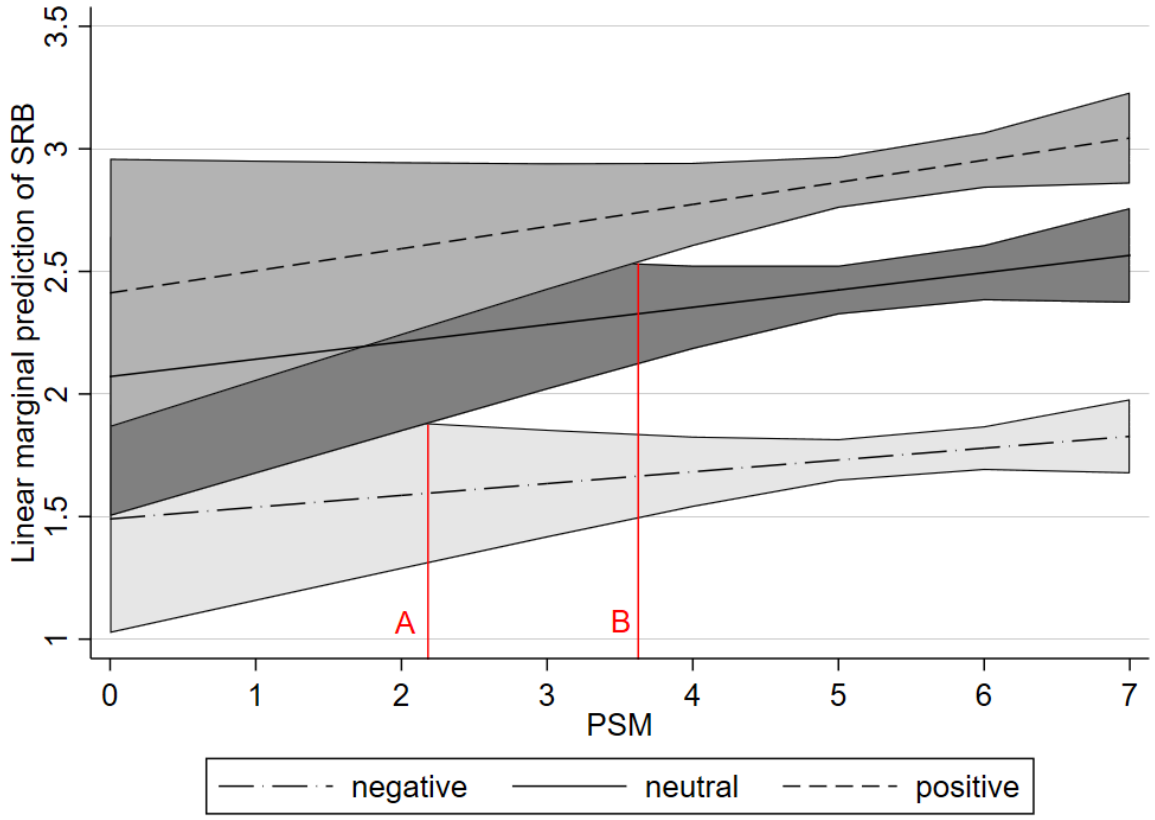
In line with Study 2, high *PSM* is positively associated with higher *SRB Intent* (β_1=0.047, *p*=0.239), providing sign-indicative but non-significant support for *H1*. Regarding the effect of client-based information cues, the findings mostly correspond with Study 1. We observe linear and transitive, but asymmetric positive (*M*=2.73, *SD*=0.87; *t*=2.99, *p*=0.003, *d*=0.422) and negative treatment effects (*M*=1.68, *SD*=0.65; *t*=-6.93, *p*=0.000, *d*=-0.966) compared with the neutral treatment (Table 2 and Figure 1). Linear regression further substantiates this asymmetric treatment effect (Table 3; F_{III} (9, 198)=31.48, *p*=0.000, *adj.* R^2_{III} =0.443), with a negative but none significant relation between the negative treatment and *SRB Intent* (β_2=-0.106, *p*=0.242), and a significantly larger and positive relation between the positive treatment and *SRB Intent* (β_3=0.285, *p*=0.000), providing support for *H2a* and *H2b*. In contrast to Studies 1 and 2, the perception that SRB would benefit the client has a small but only indicative positive association with *SRB Intent* (β_4=0.080, *p*=0.081), while agency harm is strongly significantly and positively

related with *SRB Intent* (β_5=0.453, p=0.000). Female participants reveal significantly lower *SRB Intent* (β_8 =-0.139, p=0.013), but a significant coefficient for age or risk preferences cannot be observed.

Pooled data

Clustered regression (Table 3) with the pooled data (n=1,239) does not provide further evidence regarding a positive association between *PSM* and *SRB Intent* (β_1=0.028, p=0.281), thus not supporting *H1*. The model is well specified [F_{IV} (9, 1,239)=66.67, p=0.000] and explains a substantial share of the variance (adj. R^2_{IV} = 0.376). Treatment with positive information cues has a strong direct positive effect on *SRB Intent* (β_3=0.310, p=0.000), and negative treatment results in a complementary but asymmetrically larger negative effect on *SRB Intent* (β_2 =-0.129, p=0.009), providing further support for *H2*. The marginal effects plot reveals a substantive asymmetric moderation effect of treatment on the relation between *PSM* and *SRB Intent* (Figure 2; further explored in Appendix A.5).

Figure 2: Marginal effect of treatment on the relationship between PSM and rule-breaking



Note: Shadings indicate 95%-CI; pooled data-set (*Obs.* = 1,239); red lines indicate PSM thresholds for discrimination.

A first threshold (A) is reached between the negative and neutral vignette. The reaction of the respondents with very low *PSM*-scores hardly differs between the negative and the neutral treatment, with the 95 per cent confidence intervals intersecting. A second threshold (B) is reached for average *PSM*-scores. Up to this threshold, respondents' reaction to the neutral and positive treatment is indiscriminant, as indicated by the intersection of the confidence intervals. Public agency harm has a significantly positive association with *SRB Intent* (β_5=0.355, p=0.000), while acting on behalf of the client's benefit (β_4=-0.010, p=0.714) is not significantly associated with *SRB Intent*. The slight variations between the three country samples cannot be explained by country or culture-specific characteristics, but should be attributed to differences within the samples regarding, for instance, the small variances in age and gender distributions.

DISCUSSION

Dark horse

Positive cues about the client do, probably due to triggering a feeling of sympathy, increase the likelihood of rule-breaking, which is in line with prior studies by Goodsell (1980; 1981), Weimann (1982), Scott (1997), Gino and Pierce (2009; 2010), and Christian and Alm (2014). In our study, the cross-national consistency and the large effect sizes across the three replications underline the crucial influence of client affect cues on the likelihood of SRB. Negative information cues about the client decrease the likelihood of SRB, resonating with prior research by Goodsell (1980; 1981), Weimann (1982), Scott (1997), Keiser (2010), and Tummers *et al.* (2015). Negative information cues, which are practically irrelevant for the application of bureaucratic rules, lead the way to strong discrimination of these clients against other clients perceived as more amiable.

This effect is asymmetric: The negative cues have a stronger negative effect than the positive cues have a positive effect. This relates to a psychological effect referred to as the negativity bias: People tend to ascribe stronger valence to negative events than to equally strong positive events. This effect is not uncommon in public administration and management research. Earlier studies by Lau (1985), Rozin and Royzman (2001), and Olsen (2015) showed that dissatisfaction generally has a larger negative impact than satisfaction has a positive effect. Lau (1985) points out that, under certain circumstances, this perceptional asymmetry can actually be a rational heuristic because negative events are perceived as more threatening, with their overall impact often being rapid and complex to grasp, hence creating higher uncertainty.

Risk aversion is negatively correlated with the likelihood of SRB, but this association is only statistically significant for Study 1's German and the pooled data. This can be explained by country-specific differences between the samples, with Study 1 comprising respondents that are generally more risk affine vis-à-vis the other two samples with larger variance in risk preferences. Consequently, any statistically significant association of risk aversion with social rule-breaking is hard to detect in these two samples. However, in all three samples, the association of experimentally revealed risk aversion with SRB intent is negative, which turns significant in the pooled data. This sign consistency is an indication that bureaucracies might want to carefully consider whether or not to hire people that score high on PSM *and* are highly risk affine.

Regarding PSM, we find indications for significant moderation between PSM and the positive or negative information client cues. The amplifying association of PSM with SRB is stable across all three replication studies, indicating that the effect is sign-robust across Germany, Belgium, and the Netherlands. The discriminatory effect based on the client's information cues treatment sets in when people pass a certain PSM threshold. People scoring low on PSM are not just less likely to engage in SRB in general, but the biasing effect of affect toward clients also proves to be less substantial. Figure 2 reveals that the marginal effects of the three treatment conditions converges in two thresholds. Individuals with high PSM react more strongly to the client-based information cues and make more discriminatory distinctions between the perceived deservingness of clients. High-PSM people then adapt their behavior accordingly, and are more likely to break the rules in favor of the clients they perceive to be more deserving.

Our study contributes to the emerging discourse on the dark sides of PSM, providing a direct empirical response to recent theoretical appeals. When developing their multi-level conceptual framework of the potential negative effects of PSM, Schott and Ritz (2017) proposed that high-PSM people are more likely to engage in SRB, because they find it easier to derive moral justification for their acts if they perceive that their rule-breaking serves a noble cause. The reasoning of Schott and Ritz (2017) is consistent with Bolino and Grant's (2016) that the primary motive for rule-breaking is to benefit the client. Yet, we find that the principle motive for rule-breaking is not grounded in helping others, but in harming the organization instead, given the large and positive correlation (0.48) between the perception of agency loss and the likelihood to engage in SRB, opposed to a much weaker correlation (0.09) between the motive of producing benefit for the client and SRB.

This peculiar finding further emphasizes the negative behavioral consequences of high PSM. This anti-bureaucracy motive has an equally strong association with the likelihood of SRB behavior as the client-specific information cues. Apparently, the act of SRB might function as an implicit expression of resistance toward the bureaucratic organization, which is in contrast with earlier work primarily focusing on the pro-client perspective. We can only speculate why this is the case. Perhaps, in Western democracies such as Germany, Belgium, and the Netherlands, bureaucracy bashing is popular among young adults, including university students. Of course, future research is needed to find out whether or not this finding is – notwithstanding its robustness across three replications – a false positive; and if not, what might be the underlying explanation.

Bureaucratic paradox

Our samples are all three composed of young adults without job experience in bureaucracies. What may our results imply for these bureaucracies? Max Weber was the first to formally study the principles of bureaucracy, leading to a wide popularization of the concept (Albrow 1970; Pearce 1995; Raadschelders 2000). At least since Weber (1922), equity is the core principle of a bureaucracy (Udy 1959; Warwick, Reed, and Maede 1975). An essential strength of a bureaucracy is assumed to be the non-discriminatory implementation of policy (Mills 1970). A bureaucracy is an organizational form well equipped to apply rules regardless of non-relevant attributes of those being ruled. In the words of Olsen (2006, 2 & 5), an ideal-type bureaucracy is a "formalized, hierarchical, specialized [bureau] with a clear functional division of labor and demarcation of jurisdiction, standardized, rule based, and impersonal", populated with "bureaucrats [who] are responsible for following rules with regard to their office with dedication and integrity and for avoiding arbitrary action and action based on personal likes and dislikes." The ideal-type bureaucracy is a non-discriminatory organization with non-discriminating bureaucrats applying standardized rules efficiently without any preferential treatment.

Bureaucracies are the habitat of bureaucrats. But bureaucrats come in many different forms and shapes (Downs 1957). Ever since Perry's (1996) introduction of the PSM construct, scholarship in public administration and management argues that high-PSM people are attracted to (stay in) the public sector (Perry 1996; Bozeman and Su 2015; Vandenabeele and Skelcher 2015). This follows from the attraction-selection-attrition (ASA) model (Wright and Grant 2010) and homophily logic (McPherson 2001), arguing that groups of people reveal in-group

similarities and out-group differences. Boone *et al.* (2004) show that top management teams are "cloning machines", selecting in likes and selecting out dislikes. Applying ASA argumentation, Wright and Grant (2010) indeed argue that high-PSM people are more likely to land in a public sector job. Although high-PSM graduates might not enter the labor market through a public sector job, they are more likely to end up in the public sector later in their career, compared with their low-PSM counterparts. However, the empirical evidence regarding this core assumption in PSM research is still mixed (Wright *et al.*, 2017).

We find that these young high-PSM people who might be more likely to end up in jobs in public bureaucracies, may also, ceteris paribus, be more likely to engage in discriminatory (pro-social) rule-breaking: Non-discriminatory bureaucracies tend to attract discriminatory bureaucrats. This is an intriguing paradox that suggests an important future research agenda. Maybe, the tendency of these young high-PSM people to discriminate, like those populating our three samples, is reduced after entry into a public bureaucracy. Perhaps, socialization processes in public bureaucracies, with formal rules and informal codes *not* to discriminate, neutralize the "natural" tendency of high-PSM bureaucrats to engage in (pro-social) rule-breaking. Extensive fieldwork is required to find answers to these important questions, also exploring potential contingencies (such as national culture, preventive choice architectures, or HRM practices) that may turn a public bureaucracy into either a discriminatory or a non-discriminatory organization.

Like any empirical study, ours is associated with limitations. First, our empirical evidence is based on student samples that may not be representative of the general populations of Germany, Belgium, and/or the Netherlands. Yet, by focusing on undergraduate students predominantly engaging in (public) management and policy studies, the data are especially representative of precisely the population of students likely to seek employment in the public sector once they graduate. The current study provides a glimpse into the behavior of the key focus group of public sector recruitment candidates. The students of today are the civil servants of tomorrow. Second, as a survey-based quasi-experiment largely relying on self-reported measures, this study suffers from the general problem that self-reported behavior never fully correlates with real behavior (Fan *et al.* 2006). Third, this study only investigated the relation of PSM on pro-social forms of rule-breaking. PSM might also play a role regarding the likelihood of anti-social forms of rule-breaking, such as in cases where high-PSM bureaucrats actively block clients from accessing public services because they perceive these clients as undeserving. This and the effects of PSM and affect on prosocial rule-breaking may play out

differently in different cultural and institutional contexts than those represented by our set of three affluent Western-European countries.

Given these limitations, we identify several further avenues for future research. First, the study calls for further replication in other countries in which the cultural perception of rule-breaking is more diverse than between the three European cultures included here. Replications will help to shed more light onto the effect of different bureaucratic traditions and administrative organizational cultures, and the greater institutional context on the likelihood of SRB. Second, future studies could explore even further the effect of PSM as a necessary condition with distinct thresholds in discriminatory SRB behavior by systematically manipulating the client information cues. Choice-based conjoint analyses on a diverse set of clients and also bureaucrat characteristics such as age, gender, social status, religious beliefs could be a very promising method to gain further insights. Third, future research could include implicit methods (cf. Slabbinck *et al.* 2018) to systematically and (quasi-)experimentally scrutinize what exactly causes asymmetric discrimination in SRB behavior to further explore the behavioral paradox of modern public sector bureaucracies.

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APPENDICES

A.1 Structure of survey experiment and vignette treatments

English translation; extensive codebooks in German and Dutch are available upon request.

1	**General introduction**
2	**Socio-demographic questionnaire** - Year of birth - Gender - Nationality - Field of study
3	**PSM-scale (Kim 2011)**
4	**Probability discounting task (Madden *et al.* 2009)**
5	**Introduction to social rule-breaking scenarios [all study participants]:** 'Please imagine that you are employed as a public servant at a social housing institution that assists individuals with physical disabilities or low income in finding an appropriate and affordable residence. You are employed at the organization for three years so that you are well-informed about its internal operations. One of the important activities of your job responsibilities includes settling application forms in an efficient manner. One client, John, asks you to prioritize his application form. You know that strict procedures are applicable when application forms become prioritized. The most important rules stipulate that you get permission from your manager when prioritizing an application form. However, the problem is that your manager today has to attend meetings during the entire day so that it is impossible to prioritize this application form. As a result, the dossier is likely to receive final approval within a month when it is not approved today. You doubt to approve this application without permission from your manager, which might entail potential consequences. Although you will not have any personal gain when prioritizing this application, you know that it would be the best for John and that it aligns with the mission of the organization that stipulates that every client needs to be helped as soon as possible. What would you do in the following two situations?'

6	**Vignettes:** Study participants randomly received two out of three vignette treatments, the order of which was randomized; each treatment was followed by seven Likert-type scale items: 'The following statements relate to the preceding scenario. Please indicate to what extent you agree with the following statements: 1. This scenario appears realistic. [1 = 'totally disagree'; 4 = 'totally agree'] 2. How likely do you think you will break the rules in order to prioritize the dossier without permission from your supervisor? [1 = 'very unlikely'; 5 = 'very likely'] 3. How justified do you find to break the rules and to prioritize the application without permission from your supervisor? [1 = 'very unjustified'; 5 = 'very justified'] 4. How would you feel about breaking the rules and prioritizing the application without permission? [1 = 'very uncomfortable'; 5 = 'very comfortable'] 5. Breaking the rules is beneficial for the client (John). [1 = 'totally disagree'; 5 = 'totally agree'] 6. Breaking the rules is adverse for the organization. [1 = 'totally disagree'; 5 = 'totally agree']'	
	A	**Negative treatment: "Former IS-fighter"** You receive an urgent application form from John, a former ISIS-fighter who led a terrorist cell in Syria that committed several assaults in which many people became wounded. John since then became interned for three years that he sat out. John is now looking for a residence so that he can rebuild his life and apply for a job. Therefore, he makes an appointment with you to discuss his application. After the appointment John asks you to prioritize his application.
	B	**Neutral treatment: "Male client"** You receive an urgent application form from John. John makes an appointment with you in order to discuss his application. After the appointment John asks you to prioritize his application.
	C	**Positive treatment: "Disabled single father with three children"** You receive an urgent application form from John. John is a single father with three children and has a physical disability (wheelchair patient).

		John is desperate because he has been refused by the social housing institution for the third time due to lack of space. Consequently, he is waitlisted. John makes an appointment with you in order to discuss his application. After the appointment John asks you to prioritize his application.
7	**Acknowledgement and end of study.**	

A.2 Correlations and reliabilities

	1	2	3	4	5	6	7	8	9	10	11	12	13
Study variables													
1. SRB Intent	1												
2. Negative treatment	-.22***	1											
3. Neutral treatment	.05*	-.36***	1										
4. Positive treatment	.25***	-.29***	-.36***	1									
5. Client's benefit	.10***	-.01	-.07*	.12***	1								
6. Agency's loss	.51***	-.12***	.06*	.07*	.11***	1							
7. PSM	.09**	-.01	-.04	.01	.00	.08**	1						
8. Realism	.36***	-.21***	.13***	.13***	.14***	.18***	.13***	1					
Control variables													
9. Risk aversion	-.10**	-.03	-.01	.02	-.03	-.11***	.08**	-.01	1				
10. Age	.10***	.00	.03	-.03	-.06*	.17***	.07*	-.01	-.10***	1			
11. Female	-.04	-.01	.01	.03	.02	.03	.12***	.01	.03	-.10***	1		
12. German	.10**	-.02	-.03	.00	.01	.21***	-.08**	-.05	-.30***	.40***	.03	1	
13. Belgian	-.02	-.02	.02	-.02	.09**	-.07*	.09**	.07*	.37***	-.37***	-.01	-.45***	1
14. Dutch	-.08**	.03	.02	-.00	-.03	-.12***	-.00	-.03	-.06*	-.08**	-.03	-.46***	-.46***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

A.3 Dependent variable validation

Table A.3.1 reports the results of the factor analysis and unique variances for each item, as well as the respective Kaiser-Meyer-Olkin (KMO) measure of sample adequacy. KMO mean values range between 0.64 and 0.74 across all treatment conditions and country samples, indicating meritoriously high sample adequacy (Kaiser 1974). Prior to factor analysis, Bartlett's test for sphericity was conducted to examine whether factor items are inter-correlated. The significant Chi^2-testing results of Bartlett's test (Chi^2 (3): 238.70 – 305.56, $p<0.000$) indicate that factor items are interrelated and should load onto the same factor(s). The factor analysis results show that the three items strongly and significantly load onto one single factor. This finding is stable across all three country samples, indicating high internal and external validity of the developed construct of *SRB Intent* with its three components.

Item uniqueness (*U*) is a measure of the percentage of variance for the respective item that is not explained by the common factors. Values of $U=0.6$ are considered as high. In our analysis, uniqueness values range from $U=0.26$ to 0.55. Items with lower uniqueness matter less for explaining the variance observed. First, across all treatments and study samples, *justification* ($U=0.26$ to 0.39) was relatively less influential in explaining the variance observed than those items with relatively higher uniqueness values, with *likelihood* ranging from $U=0.36$ to 0.44 and *affect* from $U=0.42$ to 0.55. Second, across all three samples, items are in a relatively stable and narrow range, which indicates only subtle differences between samples, further substantiating the measure's internal validity in measuring one underlying construct and its robustness against country-specific influences, indicating high external validity. Because of the high inter-correlation, high overall scale reliability (Cronbach's α ranges from 0.762 to 0.803), and the strong factor model fit, no item was excluded, and the final dependent variable of this study is created by arithmetically sum-scoring the four indicators *likelihood*, *justification*, and *affect*.

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Table A.3.1: Results of factor analysis of dependent variable by treatment and study

	Study 1 (GER)			Study 2 (BEL)			Study 3 (NL)			Pooled data		
Negative Treatment												
Factor item	Factor 1	*U*	KMO	Factor 1	*U*	KMO	Factor 1	*U*	KMO	Factor 1	*U*	KMO
Likelihood	.86	.26	.69	.81	.35	.62	.80	.36	.77	.80	.36	.73
Justification	.92	.16	.63	.83	.31	.70	.84	.29	.71	.86	.26	.67
Affect	.76	.42	.80	.76	.43	.78	.81	.34	.75	.76	.42	.78
Mean KMO	.70			.73			.74			.72		
Eigenvalue	2.16			1.92			2.01			1.96		
Bartlett *Chi*² (3)	182.47			131.71			163.57			473.46		
p	.000			.000			.000			.000		
Cronbach's α	.839			.784			.809			.803		
Neutral Treatment												
Factor item	Factor 1	*U*	KMO	Factor 1	*U*	KMO	Factor 1	*U*	KMO	Factor 1	*U*	KMO
Likelihood	.92	.16	.59	.65	.58	.71	.84	.30	.74	.80	.36	.68
Justification	.91	.17	.60	.77	.41	.63	.88	.23	.69	.85	.28	.64
Affect	.57	.68	.92	.66	.56	.69	.80	.36	.79	.69	.53	.80
Mean KMO	.64			.67			.74			.69		
Eigenvalue	1.99			1.45			2.11			1.83		
Bartlett *Chi*² (3)	163.93			79.47			181.81			405.69		
p	.000			.000			.000			.000		
Cronbach's α	.800			.709			.836			.791		
Positive Treatment												
Factor item	Factor 1	*U*	KMO	Factor 1	*U*	KMO	Factor 1	*U*	KMO	Factor 1	*U*	KMO
Likelihood	.78	.40	.65	.72	.48	.65	.77	.41	.72	.75	.44	.69
Justification	.80	.35	.64	.79	.37	.61	.73	.48	.77	.78	.39	.66
Affect	.62	.62	.80	.60	.64	.75	.81	.35	.68	.67	.55	.77
Mean KMO	.68			.66			.72			.70		
Eigenvalue	1.63			1.51			1.77			1.62		
Bartlett *Chi*² (3)	100.61			82.65			118.34			315.13		
p	.000			.000			.000			.000		
Cronbach's α	.748			.722			.789			.762		

Notes: U = uniqueness; KMO = Kaiser-Meyer-Olkin measure.

[Supplementary online material]

A.4 Additional analysis on order and spillover effects

For each country sample, the order of vignette treatments was randomized before randomly drawing two out of three vignettes for each respondent. Compared with a between-subject design in which each respondent would receive only one single vignette, this approach dramatically reduces the number of respondents needed to achieve reasonable sample sizes to investigate treatment effects with respect to the anticipated effect sizes. Yet, this way of distributing the treatments could potentially confound the observed treatment effect on the main dependent variable because showing two randomly drawn vignettes to each respondent actually creates latent clusters between respondents based on the unique vignette order they received. For instance, the effect of receiving a positive vignette first followed by a neutral vignette next could relatively outweigh the effect of receiving two extreme conditions – for instance, in the form of first receiving a negative vignette followed by a positive vignette.

The technical implementation of our quasi-experimental design allows us to identify three unique combinations – "clusters" – of vignettes, as described in Table A.4.1: *neutral & negative* (cluster *C1*), *negative & positive* (cluster *C2*), and *neutral & positive* (cluster *C3*). Cluster *C2* represents the combination of receiving the two extreme treatment conditions. In order to investigate whether the clustering of the vignette within each respondent resulted in order or spillover effects, we conduct a series of two-tailed *t*-tests between these three clusters on the pooled data, and we redo the regression analyses (main effects and, subsequently, adding interaction terms; both clustered at the level of the individual for conditional contribution) using the treatment clusters instead of the singular vignette treatments.

TABLE A.4.1: Descriptive statistics of *SRB Intent* by treatment cluster

SRB Intent		**Obs.**	**Mean**	**SD**	**Min**	**Max**
Cluster description						
C1	Neutral & negative treatment	248	2.250	.910	1.000	4.642
C2	Negative & positive treatment	222	2.342	.981	1.000	5.000
C3	Neutral & positive treatment	196	2.707	.844	1.000	4.642

Notes: Pooled data; *SRB Intent* values range: 1 = 'very low' to 5 = 'very high'.

Descriptive mean-based analysis of *SRB Intent* by clusters (see Table A.4.1) instead of singular treatments provides further support for hypotheses *H2a* and *H2b* as well as the finding

that negative affect cues have a larger negative impact on *SRB Intent* than positive affect cues have a positive impact. Respondents receiving both the neutral and the positive vignettes (*C3*) are substantially more likely to engage in SRB behavior (*C3*: *M*=2.71, *SD*=0.84) compared with respondents who received the negative affect cue paired with either the positive (*C2*: *M*=2.34, *SD*=0.98) or the neutral cue (*C1*: *M*=2.25, *SD*=0.91).

Mean comparison analysis reveals that cluster-based order effect do not confound the findings presented in the main body of this study, but rather confirm the observation that negative affect cues relatively outweigh positive affect cues: Receiving a combination of a neutral and positive treatment stimuli (*C3*) correlates with a higher likelihood of *SRB Intent* compared to receiving any cluster including a negative affect cue, hence $M_{C3} > M_{C1}$ and $M_{C3} > M_{C2}$.

TABLE A.4.2: Between-cluster differences of *SRB Intent*

SRB Intent		***t***	***p***	***|d|***
Cluster comparison				
C1 vs C2	[neutral & negative] vs. [negative & positive]	1.058	.290	.098
C2 vs C3	[neutral & positive] vs. [negative & positive]	4.049	.000	.397
C3 vs C1	[neutral & positive] vs. [neutral & negative]	5.424	.000	.518

Notes: Clustered treatment effect; tested with two-tailed *t*-tests; effect sizes estimated with Cohen's *d*-score (Welch-adjusted).

Furthermore, two-tailed *t*-testing for between-treatment cluster differences of *SRB Intent* (see Table A.4.2) reveals that receiving the neutral and negative treatment cluster (*C1*) has the same effect on *SRB Intent* than receiving the negative and positive treatment cluster (*C2*); *t*=1.058, *p*=0.290, *d*=|0.098|. In contrast, there are significant differences in dependent variable outcome when comparing cluster *C3* with either *C2* or *C1* (*C3* vs *C2*: *t*=4.049, *p*=0.000, *d*=|0.397|; *C3* vs *C1*: *t*=5.424, *p*=0.000, *d*=|0.518|). Hence, we do observe order effects, but these are in line with our hypotheses, that is, both findings mirror the results of the main (treatment-based) analysis and can be explained by two compound effects. Although the vignette treatments were developed in a diligent procedure using an expert panel, to warrant their relative affective equivalence, negative stimuli are generally more salient than positive stimuli and, consequently, both clusters that incorporate the negative affective cues toward the client in the vignette (*C1* and *C2*) logically result in lower likelihoods of *SRB Intent*. Consequently, the latent cluster analysis does not indicate that the randomization procedure created obtrusive artefacts based on order or spillover effects, but rather confirm the results of

the main analysis testing *H2a* and *H2b* by showing that practically irrelevant client information substantially and asymmetrically influences *SRB Intent*.

TABLE A.4.3: Regression on *SRB Intent* by clustered treatments

	Pooled data		
	β	***p***	***rob. SE***
Independent variable			
PSM	.028	.293	(.03)
Treatment effect			
C1: neutral & negative	.089	.148	(.06)
C2: negative & positive	.166**	.008	(.06)
C3: neutral & positive	.342***	.000	(.08)
Client's benefit	.002	.957	(.03)
Agency's loss	.360***	.000	(.02)
Realism	.278***	.000	(.03)
Control variables			
Risk aversion	-.086	.109	(.05)
Age	.003	.547	(.01)
Female	-.118*	.018	(.05)
German	*– reference category for country effects –*		
Belgian	.025	.739	(.08)
Dutch	-.035	.584	(.06)
Intercept	.290	.307	(.28)
Obs.			1,239
F			52.56***
VIF[a]			1.25
R^2			.359
Adj. R^2			.353

Notes: Linear regression estimates clustered at subject level for conditional contribution; heteroscedasticity-robust standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$. [a] Mean variance inflation factor (*VIF*): all $VIF \leq 2.00$.

Replicating the regression analyses by vignette clusters (see Table A.4.3) further substantiates this result by showing that both the direction and the relative size of the association between the vignette treatment respondents received and *SRB Intent* directly match the results reported in Table 3 in the main body of this study. The association of receiving a negative treatment combined with any of the other treatments and *SRB Intent* is substantially smaller (C1: β_2=0.089, p=0.148; C2: β_3=0.166, p=0.008) than receiving a neutral and positive treatment (C3: β_4=0.342, p=0.000). All other associations between the remaining independent variables and *SRB Intent* remain stable, as does the amount of variance explained by our models. Thus, the vignette-cluster-based analysis matches our findings in the main analysis we conclude that

the current experimental setup was robust against order effects involuntarily induced by latent vignette clustering, and hence that order or spillover effects between vignettes were not an issue.

Consequently, we have confidence in our findings and methodological approach, but encourage scholars conducting future replications of the current study to recognize the methodological risk of introducing additional noise by automatized randomization procedures that might potentially result in latent vignette-clusters in treatment distribution among respondents. Although we do not find evidence for order or spillover effects induced by latent treatment clusters, future replication studies could, alternatively, use a pure between-subject design in which respondents receive, first, a non-affective neutral vignette to set a benchmark across respondents followed by, second, a single (positive, negative, or neutral) treatment vignette randomized across the whole sample to rule out the potential of treatment cluster-based artefacts. Yet, researchers following this approach should be aware that they would have to work with substantially larger sample sizes to achieve the same level of power, which – due to increasing between-subject heterogeneity – might induce further noise into the data, while the expected benefit of circumventing marginally small cluster effects is limited. Research pragmatism, hence, suggests that replicating the current study in its original design would be the most advisable.

A.5 Additional explorative analysis on interaction effects

In order to further explore the asymmetric treatment-related client affect on the effect of *PSM* on *SRB Intent*, we conducted additional post-hoc analyses exploring the potential interaction effects between *PSM* and treatments. In the expectation of a linear relation between *SRB Intent* and the experimental variables, as well as controls, we specify our direct effects model (Model I) as

$$SRB\ Intent = \beta_1 PSM + \beta_{2;3} Treatment + \beta_{4;5} Motiv + \beta_6 Realism + \beta_7 Risk\ Aversion + \beta_8 Age + \beta_9 Female + \beta_{10;11} Country + \varepsilon_i.$$

We use the neutral vignette scenario as a reference category for the treatment effects and we, first, analyze each country study individually and then pool the data for a combined sample in which the German sample arbitrarily serves as the reference category. Subsequently, we add two-way interaction terms between treatment and *PSM* in the second model (Model II), which is specified as

$$SRB\ Intent = \beta_1 PSM + \beta_{2;3} Treatment + \beta_5 Negative \times PSM + \beta_6 Positive \times PSM + \beta_{7;8} Motiv + \beta_9 Realism + \beta_{10} Risk\ Aversion + \beta_{11} Age + \beta_{12} Female + \beta_{13;14} Country + \varepsilon_i.$$

The results of the regression analyses of both Models I and II are presented in Table A.5.1. In **Study 1** (German sample), we find no significant moderation effects between high *PSM* and treatments (negative: β_{II5}=-0.040, p=0.713; positive: β_{II6}=-0.189, p=0.104); F_{II} (11, 386)=21.99, p=0.000; adj. R^2_{II}=0.414. Similarly, conducting regression analyses with the data of **Study 2** (Belgian sample) (F_{II} (11, 384)=20.69, p=0.000; adj. R^2_{II}=0.399; see Model II of Study 2 in Table A.5.1), **Study 3** (F_{II} (11, 397)=21.81, p=0.000; adj. R^2_{II}=0.440; see Model II of Study 3 in Table A.5.1), and the **pooled data** (F_{II} (11, 1,239)=29.94, p=0.000; adj. R^2_{II}=0.397; see Model II of *Pooled data* in Table A.5.1) support the main findings of the current study but including interaction terms reveals no additional interaction effects between PSM and treatment reception. In total, the analysis indicates no substantial additional interaction effect between respondents' level of *PSM* and receiving a negative or positive treatment on the likelihood of *SRB* throughout all three country studies.

TABLE A.5.1: Regression on *SRB Intent* including interaction terms

	Study 1				***Study 2***				***Study 3***				***Pooled data***			
	I		***II***		***I***		***II***		***I***		***II***		***I***		***II***	
Independent variable																
PSM	-.096†	(.05)	.037	(.754)	.055	(.06)	.127	(.269)	.044	(.05)	.112	(.281)	.004	(.03)	.080	(.218)
Treatment																
Negative	-.338**	(.11)	-.130	(.822)	-.187*	(.09)	.715	(.277)	-.190†	(.11)	.679	(.228)	-.235***	(.06)	.263	(.453)
Neutral	*– reference category for vignettes –*															
Positive	.342***	(.10)	1.339*	(.031)	.278**	(.09)	.135	(.820)	.314***	(.09)	-.163	(.741)	.314***	(.05)	.538	(.108)
Two-way interactions																
Negative x PSM			-.040	(.713)			-.164	(.164)			-.164	(.128)			-.092	(.154)
Positive x PSM			-.189	(.104)			.029	(.790)			.091	(.317)			-.041	(.508)
Control variables																
Client's benefit	-.057	(.05)	-.045	(.325)	-.066	(.06)	-.077	(.218)	.084	(.06)	.070	(.239)	-.006	(.03)	-.007	(.827)
Agency's loss	.309***	(.04)	.311***	(.000)	.385***	(.04)	.385***	(.000)	.450***	(.05)	.458***	(.000)	.369***	(.03)	.369***	(.000)
Realism	.310***	(.06)	.307***	(.000)	.224***	(.06)	.220***	(.000)	.115	(.08)	.107	(.157)	.229***	(.06)	.228***	(.000)
Risk aversion	-.296**	(.11)	-.317**	(.007)	.045	(.06)	.022	(.853)	.016	(.09)	.001	(.988)	-.102†	(.06)	-.104†	(.074)
Age	.022*	(.01)	.025*	(.014)	.020	(.02)	.021	(.348)	-.006	(.01)	-.011	(.305)	.003	(.01)	.003	(.760)
Female	.089	(.10)	.086	(.398)	-.093	(.09)	-.084	(.345)	-.185*	(.08)	-.186*	(.030)	-.103†	(.05)	-.095†	(.078)
German	*– reference category for country effects –*															
Belgian													.048	(.08)	.047	(.560)
Dutch													-.027	(.07)	-.027	(.698)
Intercept	0.888*	(.43)	.079	(.915)	.157	(.58)	-.205	(.798)	.257	(.40)	.088	(.879)	.650*	(.29)	.241	(.576)
Observations		386		386		384		384		397		397		1,239		1,239
F		25.88***		21.99***		25.86***		20.69***		25.27***		21.81***		57.58***		49.94***
VIF[a]		1.18				1.11				1.13				1.28		
R^2		.430		.437		.414		.422		.449		.460		.404		.406
Adj. R^2		.411		.414		.395		.399		.432		.440		.397		.397

Notes: Linear regression estimates clustered at subject level for conditional contribution; Model I: direct effects, heteroscedasticity-robust standard errors in parentheses; Model II: with interaction effects (*p*-values in parentheses); † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. [a] Mean variance inflation factor (*VIF*): all $VIF \leq 2.04$.

APPENDICES

A. Abstracts in English and German

Abstract

This dissertation explores the effects of publicness, uncertainty, and sector-specific attitudes on micro-level risk behavior in public-private partnerships (PPPs). Following the emerging perspective of *behavioral public administration*, this thesis presents extensive quantitative evidence derived from four independent experimental studies that test causal hypotheses on the interaction of economic risk, behavioral uncertainty, partner heterogeneity, and conflicting incentive structures within the complex choice environment of PPPs, specifically focusing on decision makers' risk preferences, risk perception, and risk participation. Based on Herbert Simon's classic work on *Administrative Behavior* as well as insights and methods from social psychology and behavioral economics, this dissertation contributes to the theoretical foundations of micro-level risk behavior in PPPs.

Its central contributions are: (1) empirical evidence calling for a novel integrative concept of *publicness* as a powerful behavioral cue both priming and framing micro-level risk behavior in PPPs based on dissociated psychological clusters that trigger heuristic choice as relative cognitive benchmarks. (2) Experimental evidence that sector affiliation and sector-specific work-experience influence the interpretation of risk and sector-related information cues, revealing that public sector employment is strongly associated with risk-aversion and tolerance for delay. (3) Partners' cross-sectoral heterogeneity in motives and logics creates behavioral ambiguity; sector affiliation functions as a complex signal that can lead to paradoxical premature PPP failure by unilaterally eroding partners' trust in each other. (4) Public and private sector agents use dissimilar and asymmetric negotiation strategies when bargaining about financial gains and losses in PPPs; public agents negotiate less aggressively and settle on less profitable bargaining results. (5) Sector-specific attitudes and public service motivation asymmetrically moderate collaboration intent, the emergence and erosion of trust in partners, negotiation strategies in PPPs, the likelihood of (ir)rational defection, and pro-social rule-breaking.

Taken together, these findings substantially advance the scientific discourse on risk behavior in PPPs by challenging core assumptions about behavioral efficiency in these partnerships. By deciphering the integrative effects of sector-specific psychological, behavioral, and contextual biases within the complex incentive structures of PPPs, this dissertation presents novel insights into the micro-foundations of risk perception, risk behavior, and risk participation in PPPs. Calling for sector-conscious strategy making and risk-savvy PPP governance, it concludes with an agenda for future research as well as recommendations for theory and practice.

Kurzfassung

Die vorliegende Dissertationsschrift untersucht das individuelle Risikoverhalten von strategischen Akteuren in öffentlich-privaten Partnerschaften (ÖPP). ÖPP erzeugen komplexe, ambivalente und konfliktäre Anreizsysteme, welche das Risikoverhalten von öffentlichen und privatwirtschaftlichen Akteuren asymmetrisch beeinflussen. Basierend auf psychologischen und verhaltensökonomischen Modellen menschlichen Entscheidens präsentiert die vorliegende Dissertationsschrift die Ergebnisse von sechs quantitative Experimentalstudien zu Risikopräferenz, Risikowahrnehmung und Risikoverhalten auf der Mikroebene des Individualakteurs in ÖPP.

Die zentralen Ergebnisse sind: (1) Die empirische Beforschung von *Öffentlichkeit* als dynamischer und ambivalenter Verhaltensstimulus, welcher die strategischen Entscheidungen von Individualakteuren in ÖPP unter Risiko und Unsicherheit beeinflusst. (2) Insbesondere wird die Interpretation von statistischen Wahrscheinlichkeiten, temporalen Stimuli und von Unsicherheit in Verhandlungsräumen durch den sektoralen Kontext des Entscheiders (öffentlich vs. privat) verzerrt; Individuen, die im öffentlichen Sektor tätig sind, agieren risikoscheu, sind jedoch tolerant gegenüber Verzögerungen. (3) Die intersektorale Heterogenität der Partner kann zu einem (ir)rationalen Vertrauensverlust gegenüber dem Partner und zu einem paradoxen Koordinationsversagen in ÖPP führen. (4) Öffentliche und privatwirtschaftliche Akteure verfolgen unterschiedliche Verhandlungsstrategien, um unvorhergesehene monetäre Belastungen und Erträge untereinander aufzuteilen (*ceteris paribus*). (5) Sektorale Einstellungen und Public Service Motivation wirken als asymmetrische Moderatoren auf Kollaborationsintention, auf Vertrauensbildung und -erosion, auf die Wahl von Verhandlungsstrategien, und auf die Wahrscheinlichkeit (ir)rationalen einseitigen Regel- und Vertragsbruchs.

Die Studienergebnisse bilden einen bedeutsamen Beitrag zur Mikrofundierung des Diskurses zu Entscheidungsverhalten in ÖPP. Sie erweitern das Feld sowohl methodisch als auch theoretisch und hinterfragen zentrale – jedoch bislang empirisch ungeprüfte – Annahmen zu rationalem und stereotypem Verhalten in ÖPP. Die vorliegende Dissertationsschrift präsentiert direkt praxisrelevante Ergebnisse quantitativ-experimenteller Grundlagenforschung, welche das wissenschaftliche Verständnis von Risikoverhalten in ÖPP in der komplexen Interaktion von sektorspezifischen Einstellungen, pro-sozialer Motivation und asymmetrischen Anreizsystemen beleuchtet. Ihre Erkenntnisse sind von unmittelbarer Bedeutung für das Risiko- und Partnerschaftsmanagement in ÖPP, da die identifizierten psychologischen Mechanismen und Verzerrungen die Effizienz und die langfristige Überlebensfähigkeit von ÖPP gefährden.

B. Liste der Einzelarbeiten, der hervorgegangenen Veröffentlichung und Selbstdeklaration

Gemäß § 6 der Promotionsordnung der Fakultät für Wirtschafts- und Sozialwissenschaften der Universität Hamburg vom 18.01.2017 sind bei Vorlage einer kumulativen Dissertation folgende Informationen explizit aufzuführen. Erstens ist der schriftlichen Promotionsleistung gemäß § 6 Abs. 2 (b) eine Liste der in die Sammlung eingefügten Einzelarbeiten beizulegen, aus welcher die Titel und Koautorinnen bzw. Koautoren der Einzelarbeiten hervorgehen. Zweitens sind gemäß § 6 Abs. 2 (b) die aus diesen Einzelarbeiten hervorgegangen Veröffentlichung dazulegen. Drittens ist gemäß § 6 Abs. 3 bei schriftlichen Promotionsleistungen, die in Zusammenarbeit mit anderen Wissenschaftlerinnen und Wissenschaftlern entstanden sind, im Einzelnen darzulegen mit welchem Anteil die Doktorandin bzw. der Doktorand an Konzeption, Durchführung und Berichtsabfassung des jeweiligen Beitrags mitgewirkt hat, so dass der Anteil der Doktorandin bzw. des Doktoranden eindeutig abgrenzbar und bewertbar ist.

Die folgende Tabelle enthält eine Übersicht mit allen unter den Punkten eins bis drei aufgeführten notwendigen Informationen:

	Titel der Einzelarbeiten und der hervorgegangenen Publikationen	**Selbstdeklaration** Geleisteter Beitrag der Doktorandin	
1	**Weißmüller, K. S.** 'PUBLICNESS AND MICRO-LEVEL RISK BEHAVIOUR – Experimental Evidence on Stereotypical Discounting Behaviour' in: *Public Management Review* (im Begutachtungsprozess; VHB-JOURQUAL 3: B; 3-yr Impact Factor: 3.394)	Alleinautorenschaft	100%
2	**Weißmüller, K. S.** & Vogel, R. 'TRUST IN PPPs – A behavioral framing experiment on the paradoxical effect of 'publicness' on strategic behavior in PPPs' in: *Journal of Public Administration Research and Theory* (Revise & Resubmit; VHB-JOURQUAL 3: A; 3-yr Impact Factor: 4.409)	Konzeption Durchführung Berichtsabfassung	70% 100% 70%
3	**Weißmüller, K. S.**, Bouwman, R., & Vogel, R. 'NEGOTIATION IN PUBLIC-PRIVATE PARTNERSHIPS – A laboratory experiment on context, domain, and PSM' in: *Journal of Public Administration Research and Theory* (im Begutachtungsprozess; VHB-JOURQUAL 3: A; 3-yr Impact Factor: 4.409)	Konzeption Durchführung Berichtsabfassung	70% 70% 100%
4	**Weißmüller, K. S.**, De Waele, L., & van Witteloosstuijn, A. 'PUBLIC SERVICE MOTIVATION AND PRO-SOCIAL RULE-BREAKING – An international vignettes study in Belgium, Germany, and the Netherlands' in: *Public Administration* (im Begutachtungsprozess; VHB-JOURQUAL 3: B; 3-yr Impact Factor: 3.035)	Konzeption Durchführung Berichtsabfassung	35% 50% 65%

C. Erklärung und eidesstattliche Versicherung gemäß § 6 Abs. 6 PromO

Erklärung

Hiermit erkläre ich, Kristina Sabrina Weißmüller, dass ich keine kommerzielle Promotionsberatung in Anspruch genommen habe. Die Arbeit wurde nicht schon einmal in einem früheren Promotionsverfahren angenommen oder als ungenügend beurteilt.

Hamburg, den _____

(Kristina S. Weißmüller)

Eidesstattliche Versicherung

Ich, Kristina Sabrina Weißmüller, versichere an Eides statt, dass ich die Dissertation mit dem Titel „*Risk in Public Private Partnerships: Behavioral experiments on risk preference, risk perception, and risk participation*“ selbst und bei einer Zusammenarbeit mit anderen Wissenschaftlerinnen und Wissenschaftlern gemäß den beigefügten Darlegungen nach § 6 Abs. 3 der Promotionsordnung der Fakultät Wirtschafts- und Sozialwissenschaften vom 18. Januar 2017 verfasst habe. Andere als die angegebenen Hilfsmittel habe ich nicht benutzt.

Hamburg, den _____

(Kristina S. Weißmüller)