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Voluntary Contributions to Public Goods:

A multi-disciplinary examination of prosocial behavior and its antecedents

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TILBURG UNIVERSITY

Voluntary Contributions to Public Goods

A multi-disciplinary examination of prosocial behavior and its antecedents

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“How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortunes of others, and render their happiness necessary to him, though he derives nothing from it, except the pleasure of seeing it.”

-- Adam Smith. *The Theory of Moral Sentiments.* 1822.

Chapter 1

Introduction

Prosocial behaviors are voluntary actions that are costly to the self, but can benefit others. As Aristotle stated, the human being is by nature a social animal. All human societies value cooperation and prosocial behavior. People volunteer to help others, donate money to charity, share knowledge and resources, and even sacrifice their lives for common goods. Prosocial behaviors not only vary in types, but also differ in their motives and antecedents. For instance, the motivation to act prosocially can arise from empathy, self-gratifying, reciprocity, group solidity, and/or internalized moral values. Such multidimensionality of prosocial behaviors reflects humans' long history of living in groups, and are fundamental for humans to develop a complicated, sophisticated, and vast social organizations and a complex and dynamic web of interpersonal relationships.

According to evolutionary biology, natural selection only favors innate prosocial behavior that is individually costly if that behavior significantly boosts the fitness of the focal human's genetically close relatives (Grund, Waloszek, and Helbing, 2013). However, human social relationships do not necessarily map closely onto genetic relatedness or blood-ties. Humans have evolved to possess the cognitive capabilities, such as the theory of mind and language, which reduce the cost of cooperation with unrelated strangers, and thus made the spread of prosocial genes possible (Boyd, 2006). The human brain employs various psychological and neurological reactions to deal with diverse and recurrent social interactions. In other words, human prosocial behavior involves the complex relationship between diverse motives and contextual factors.

From a psychological point of view, to count as prosocial behavior, this behavior must be voluntary and intentional (Eisenberg and Mussen, 1989, p. 3). However, altruistic behavior can be stimulated not only by other-concern, but also by self-interest. Prosocial behavior, hence, is not equivalent to altruistic behavior, although these two terms are often used interchangeably (Batson and Powell, 2003; Piatak and Holt, 2019). Hawley (2014) provides a social psychology framework regarding the definitions of prosocial and altruistic behaviors. On the one hand, individuals may act prosocially out of pure other-regarding concern such as empathetic care, perspective taking, internalized prosocial values, and a strong moral identity. On the other hand, prosocial behavior can

be egoistically motivated to reduce unpleasant feelings such as regret or guilt[1], to avoid potential future conflicts, to care about own reputation, or to anticipate external benefits or punishments. To count as psychologically altruistic behavior, the behavior must be primarily motivated by an intrinsic concern for the welfare of recipients, rather than the emotion or welfare of the actor herself.

In experimental economics and psychology, prosocial behavior is examined in the context of the social dilemma setting, which involves a non-zero-sum situation in which people face the decision to serve the greater collective interests or to pursue their personal interests. In a one-shot social dilemma setting such as the prisoner's dilemma game, a selfish and rational economic response is to favor self-interest, but everyone will end up suffering from a suboptimal outcome if everyone chooses to be selfish. However, changing the time horizon into a repetitive interaction offers a more optimistic account of cooperation: Non-relative cooperation can be sustained if present cooperation can be reciprocated in the future, either directly (E. Fehr and Gächter, 2000; Trivers, 1971) or indirectly (Nowak and Sigmund, 2005). Direct reciprocity relies on future repetitive encounters, so the scope of cooperation is limited to close colleagues, friends and relatives. On the other hand, social networks can transmit information about one's reputation, sustaining cooperation and punishing misbehavior among strangers who are indirectly connected in a community.

Dixit (2009) classifies governance modes in promoting cooperation and enforcing contracts into first-party, second-party, and third-party institutions. A third-party institution employs formal rules and third-party judges to provide information, adjudication, and enforcement, intervening in the rules of a game and changing the payoff matrix to sustain cooperation. A second-party system is an informal relation-based governance that sustains cooperation through direct/bilateral or indirect/multilateral reciprocity (Nowak & Sigmund, 2005). Such governance allows individuals to organize themselves by building trust and reputation in peer-to-peer, decentralized networks. Lastly, first-party governance refers to innate psychological predispositions such as empathy, prosocial values, and other-regarding preferences: People feel empathetic towards others' well-being, internalize prosocial beliefs and values into their social identity, and feel shame and guilt after cheating or harming others. These psychological predispositions benefit group members at a cost to

[1] From an economics perspective, avoiding guilt and regret is considered to be motivated by concerns for others (referred to as other-regarding preferences), rather than being egoistic concerns (selfishness). Such preferences differ from empathy in that guilt and regret aversion arises from counterfactual comparisons across alternatives. In psychology, (genuinely) altruistic motivation is often defined as an ultimate and intrinsic desire to prioritize the well-being of others over personal interests and feelings (Doris, Stich, Phillips, and Walmsley, 2006; but see Slote, 2013, for a counterargument). Some psychologists instead refer to guilt and regret aversion as egoistic empathy (Sarlo, Lotto, Rumiati, and Palomba, 2014).

the self and cannot be justified in terms of self-interest or social network (E. Fehr, Fischbacher, & Gächter, 2002; Gintis, 2000).

Different governance institutions can be complements (crowding in) or substitutes (crowding out) vis-à-vis each other. Bénabou and Tirole (2006) develop a theory of prosocial behavior that considers three different incentive schemes in their analysis: individual heterogeneity in altruism, material rewards, and concerns for social reputation or self-image. The mix of these three incentives varies across individuals and social contexts, presenting a signaling problem of inferring a person's (her or his own, or the other's) primary motive for the performed behavior. For instance, greater publicity of actions can change the meaning attributed to altruism and reveal some information about the type of the actor, which then feeds back to the reputational incentive to engage in prosocial behavior. Hence, third-party governance systems such as external incentives and social norms can have a crowding-out effect on the first-party motivation to contribute to public goods.

Self-determination theory (SDT) from social psychology provides another framework to differentiate motivations and incentives across social contexts in terms of the degree of being autonomous and controlled (Ryan and Deci, 2000). Different types of motivations can be described, using the extent to which the motives are self-determined and intergraded into the self. From this perspective, Dixit (2009)'s first-party to third-party governance modes vary in their degree of internalization and external intervention: The locus of control shifts from inside the actor in the case of first-party governance ('I act prosocially out of my internal satisfaction or my moral identity') to outside the actor in the case of second-party (' I act prosocially to attain reputation or avoid social disapproval') and third-party governance ('I act prosocially because of external regulation'). Motivation crowding theory suggests that providing external intervention such as monetary rewards and monitoring can sometimes impair self-esteem and self-determination, and thus may hence undermine the intrinsic motivation to serve the public (Bowles and Polania-Reyes, 2012; Frey and Jegen, 2001).

Above discussions on prosocial behaviors across different disciplines are summarized in Table 1.1. My research contributes to this stream of literature by investigating prosocial motivations to make voluntary contribution to public goods in different social contexts, and doing so with different research methodologies. In particular, my research focuses on the discussion of one type of prosocial motivations: Public Service Motivation. PSM relates to first-party governance, relying on individuals' self-determined motivation to make personal sacrifices and serve the public interest (Perry, 2000). PSM theory was developed in an attempt by public administration scholars to challenge the rational-

Table 1.1 Prosocial Behavior Across Disciplines

	Psychological Motives Eisenberg and Mussen (1989)		Evolutionary biology	Bénabou and Tirole (2006)	Dixit (2009)	Ryan & Deci (2000)
Prosocial Action	Unintentional	e.g. positive externality				Amotivation
	Involuntary	e.g. legal enforcement		Extrinsic	Third-party Governance	
Prosocial Behavior	Egoistic	External (rewards, punishment)				External Regulation
		Reputational concern	Direct or Indirect Reciprocity (Nowak & Sigmund, 2005)	The publicity and reputation value	Second-party Governance	Introjected Regulation
		Guilt, Pride, Shame	Strong Reciprocity (E. Fehr et al., 2002; Gintis, 2000)	Impure altruism	First-Party Governance	
	Altruistic	Internalized Value		Pure altruism		Identified Regulation
		Moral Identity				Integrated Regulation
		Empathy				Intrinsic Regulation

choice perspectives on bureaucratic behavior, which mainly focus on second-party and third-party governance structure to explain social behavior. PSM theory suggests that individuals volunteer to serve the public interest out of mixed self-determined motives, ranging from intrinsic motivation (joy of giving or a sense of achievement) and affective concerns (empathic and compassionate feeling), to normative reasons (commitment to public values).

PSM has long been theorized as a sense of public morality that is rooted in a logic of appropriateness and grounded in the public sector (Vandenabeele, 2007), but whether PSM is a genetically predisposed trait or a learned attitude remains contested in the PSM literature, and scholars urge for more work on a causal map for PSM (Bozeman & Su, 2015). On the one hand, arguing that PSM is an innate trait often reduces PSM to a general other-regarding motive that is indistinguishable from altruism and related concepts (Bozeman & Su, 2015). It also implies that the PSM-relevant preferences, motivations, and values would be determined by selection or other evolutionary forces, which is hardly tenable since Weberian and modern democracies only exist for merely hundreds of years. On the other hand, if PSM is a learned attitude that can be institutionally inculcated, how is PSM uniquely different from work and career motivation, except that working in the public sector mainly involves helping others and benefitting society?

My research aims to answer these questions by investigating the antecedents of altruistic motivations, employing different disciplines, varying from public administration, economics, and social psychology to evolutionary biology and cognitive science. Chapter 2 presents a Moral Theory

of Public Service Motivation, which offers a model somewhere in between these two extreme perspectives. We argue that cognition links relevant stimuli with innate psychological capabilities, constructing a higher-order representation of the relationship between the self and others, which guides social behavior. From this perspective, PSM is a cognitive process in which relevant stimuli trigger innate moral emotions to construct a logic of appropriateness by eliciting relevant beliefs, attitudes, and past experiences regarding public service. Therefore, PSM is specific to public organizations but different from other work motivations because performing public service has been moralized through the recurrent interaction between innate human moralities and institutional stimuli grounded in public organizations. Inspired by the social psychology theory Moral Foundation Theory (MFT), we theorize how five innate moralities act as the potential antecedents of PSM, and contribute to the institutional variation in the meaning of PSM. A pluralistic set of moral foundations – from empathy and justice to hierarchical authority, group loyalty, and spiritual purity – can be linked to the concept of public service to explain the motivation to perform public services.

In Chapter 3, we provide empirical evidence for the essential role of moral foundations in shaping PSM and affecting behavioral consequences. Using survey responses from a representative Dutch panel, we find that PSM is related to a pluralistic set of moral concerns that people can associate with their life experiences and social environment in order to establish a sense of public morality, and so to develop the motivation to serve the public. In particular, we find that PSM and its sub-dimensions respond to individual-based moralities (such as empathy and fairness) more comprehensively than to group-based moralities (group cohesion, authority, and spiritual purity). Moreover, PSM mediates the positive relationship between individual-based moralities, on the one hand, and participation in humanitarian and environmental organizations, on the other hand. In contrast, we find the often-observed relationship between PSM and religious activities to be mediated by the concern for spiritual purity. These pieces of evidence imply that various social institutions rely on particular configurations of moral foundations to attract and motivate people to contribute to public goods.

Chapter 4 and Chapter 5 apply methods from experimental economics to investigate the role of contextual stimuli in affecting prosocial motivation in a lab experiment of the volunteer's dilemma game, where a public good is produced if and only if at least one volunteer provides it (Diekmann, 1985). The asymmetric pure strategy equilibrium in the volunteer's dilemma characterizes the sense of obligation and commitment usually found in PSM: Individuals endowed with PSM often believe that there would be detrimental consequences for societal welfare were they not to volunteer to make

personal sacrifices. Therefore, the volunteer's dilemma serves as an ideal game for investigating prosocial motivation in a lab experiment. Chapter 4 first extends the classic volunteer's dilemma game and develops novel treatments to examine pro-social risk-taking and competitive behavior. Chapter 5 then incorporates the PSM theory in Chapter 4's extended volunteer's dilemma game to explore the role of PSM and its relationships with external contextual factors.

Chapter 4 examines the influence of pro-social risk-taking and intergroup conflict by extending the volunteer's dilemma game. Intergroup conflict often involves individuals who voluntarily make personal sacrifices and take great risks to provide public goods. We argue that intergroup competition, as a social stimulus, triggers an innate psychological response and engenders a sense of group identity that motivates group members to contribute to public goods in the absence of leadership. To identify motivational change, we introduce a novel group competition treatment, where two groups compete for a public good in a sequential move setting. We find experimental evidence that intergroup competition significantly increases the volunteering rate of providing a public good, and mitigates the negative impact of risk on intragroup cooperation. In response to intergroup competition, males are more likely to volunteer when volunteering involves a risk of failure, while females are responsive only if volunteering guarantees the success of public goods production. Risk aversion influences volunteering in ways that are inconsistent with economics' expected utility theory. The role which individual heterogeneity may play in the evolution of parochial altruism is explored and discussed to understand the observed heterogeneous treatment effects of risk aversion and gender.

In Chapter 5, we contribute further to extant knowledge of the behavioral implications of PSM by exploring the association between self-reported PSM and prosocial behavior under different task characteristics and social contexts, again in a lab setting. The pseudo-experimental analyses are run with the same experimental data used in Chapter 4, but combined with survey-based PSM measures. We find a positive relationship between PSM and volunteering, which is moderated by the risk associated with the performed task and competition with another team. High-PSM people are less likely to volunteer more if the performed task requires risk-taking or if competition with another team is involved. The theoretical rationale for this crowding-out effect is discussed by incorporating insights from self-determination theory.

Chapter 2

A Moral Theory of Public Service Motivation

2.1 Introduction

Alan Kurdi, a three-year-old Syrian boy, drowned on September 2, 2015 in the Mediterranean Sea when he and his family tried to flee to Europe. Images of his toddler's lifeless body lying face-down on a Turkish beach made global headlines and reverberated across the world. The image revealed the tragic plight of refugees, and stimulated emotional empathic responses that motivated many people to volunteer and provide physical or material help in the European refugee crisis. One charity helping migrants and refugees, the Migrant Offshore Aid Station, recorded a 15-fold increase in donations within 24 hours of the publication of the shocking pictures.[2]

The above story demonstrates the important, sometimes dramatic, role of empathetic emotion in motivating volunteers to act prosocially (Doidge and Sandri, 2019). Sympathy belongs to a set of moral emotions that are "linked to the interests or welfare either of society as a whole or at least of persons other than the judge or agent" (Haidt, 2003, p. 853). Triggered by social stimuli, moral emotions establish a motivational and cognitive state in which there is an increased tendency to engage in prosocial actions. Therefore, motivation to perform public service can be seen as an emotional goal system that responds to social stimuli throughout life events and in institutional environments. In this article, we aim to reposition moral emotions inside the theory of Public Service Motivation (PSM) by examining the social cognition process underlying PSM.

Public Service Motivation (PSM) is a prominent concept within the domain of Public Administration. PSM theory was developed in an attempt by public administration scholars to challenge the rational-choice perspectives on bureaucratic behavior, which assume a rational and self-interested agent who pursues personal gains such as reputation, power, and monetary rewards.

[2] Henley, J. (3, September, 2015). Britons rally to help people fleeing war and terror in Middle East. *The Guardian*. Retrieved from **https://www.theguardian.com/uk-news/2015/sep/03/britons-rally-to-help-people-fleeing-war-and-terror-in-middle-east**

However, goals are usually less specified in public organizations, and performance is more difficult to measure and link to external rewards, so the variation in behavior is more reflective of variation of individual differences than incentive structures (Shamir, 1991). Therefore, PSM emphasizes the important role of self-determined motivation such as moral obligation, intrinsic motivation, and affection in explaining work behavior and job performance in public organizations.

In the last decade or so, studies have extended the concept of PSM to explain a predisposition or attitude to help others and enhance the well-being of society, linking PSM to activities such as volunteering or donating (Clerkin, Paynter, and Taylor, 2009; D. Coursey, Brudney, Littlepage, and Perry, 2011; Lee, 2012; Perry, Coursey, Brudney, and Littelpage, 2008). Accordingly, Vandenabeele (2007) defines PSM as a set of value-laden behavioral determinants: The beliefs, values, and attitudes that transcend individual and organizational interests, motivating individuals to think about what is appropriate for society and to act accordingly. In other words, PSM relates to a sense of public morality that responds to institutional stimuli, and which motivates individuals to regulate selfishness (Staats, 1988).

The measurement scale of PSM has been first developed by Perry (1996), and has been revised through a cross-culture survey study into a validated international scale (Kim et al., 2012). PSM is a multidimensional construct with four types of motives: Compassion, Attraction to Public Service, Commitment to Public Values, and Self-Sacrifice. Compassion is an individual's affective commitment to concern for the welfare of others or society at large. It entails love and a desire to protect people from distress. Attraction to Public Service refers to an instrumental motive driven by the internal satisfaction or enjoyment from serving the public. Commitment to Public Values reflects a norm-based motive to fulfill societal obligations and pursue public values. Self-sacrifice is a prosocial tendency to make a personal sacrifice in order to contribute to the well-being of others or society at large. Based on these four dimensions, the greater the level of one's PSM, the more likely one is to act beyond monetary or reputational benefits, and to engage in behavior that serves the public.

Prior work identified antecedents of PSM such as individual characteristics, sociohistorical contexts, and organizational influences (Perry, 1997; G.A. Brewer, Selden, and Facer II, 2000), but causal mechanisms underlying PSM are still underdeveloped and much less investigated (Bozeman and Su, 2015). Only a few empirical studies investigate the role of basic psychological needs in explaining the motives to serve the public interest. Further work is needed to understand the origin of PSM, and to develop a comprehensive theory of PSM that can explain cultural and institutional

differences (Perry and Vandenabeele, 2015). Furthermore, PSM has long been theorized as a sense of public morality grounded in the public sector, but whether PSM is a genetically predisposed trait or a learned attitude remains contested in the PSM literature, and scholars urge for more work on a causal map for PSM (Bozeman and Su, 2015).

The current study offers a model to shed some light on the psychological orgin of PSM, which will co-define the future empirical agenda. The psychological dispositions to help others and act accordingly are inherent to all human beings, and PSM is the result of a mental representation that links these innate dispositions with stimuli grounded in the public institutions to engender a logic of appropriateness (i.e. "what behavior is appropriate given who I am and what I want to be"). Perry's (1996) four dimensions of PSM categorize the integrated mental representation, which includes beliefs, attitudes, and experiences about public service from long-term memory. In other words, performing public service becomes 'moralized' through the recurrent interaction between innate human moralities and relevant stimuli from the institutional environment, which engenders a feeling of obligation and affective commitment.

As said, the current study contributes to this literature by applying Moral Foundation Theory (MFT; Graham et al., 2012), and insights from relevant neurobiological studies, to explore the role of innate moralities as potential antecedents of PSM. MFT and associated empirical work have developed validated measures of the moral profiles of individuals. MFT postulates that humans are motivated to suppress selfishness by various combinations of cultural traits, referred to as moral foundations (MFs), which are innate, modular, and irreducible. In line with this theory, we argue that people feel motivated to provide public service because moral foundations trigger a socially and institutionally competent person to regulate selfishness and collaborate with others by eliciting PSM-relevant beliefs, attitudes, and memories. This logic implies that social stimuli that emerge throughout life events and in institutional environments contribute to the onset and recurrence of PSM. Furthermore, according to MFT, this motivational influence is both constructed and constrained by a restricted number of five moral foundations: Care, Fairness, Authority, Loyalty, and Sanctity. Additionally, after describing and illustrating our theory, we will suggest a future empirical research agenda.

Our article is organized as follows. First, we summarize the existing literature on the relationship between moralities and PSM. Second, we introduce Moral Foundation Theory and discuss its relevance to PSM theories. Third, we incorporate insights from neurobiology to present the social cognition process of PSM, explaining how innate moral foundations shape prosocial

motivation to affect social behavior. Finally, we elaborate the process of moralizing public service for each moral foundation, and explore its behavioral implications and boundary conditions. We conclude with a brief discussion of our contribution, and reflect upon a few promising research opportunities that may feed into a systematic empirical inquiry of the fundamental moral roots of serving the public.

2.2 Moralities and PSM

Perry and Wise (1990) define PSM as a pluralistic construct to understand the human motivation to serve the interests of society, and to explain individual behavior in public organizations, such as job performance and satisfaction. A series of studies have demonstrated that PSM is a general, altruistic motivation to serve the public that is not exclusively grounded in public institutions (Rainey and Steinbauer 1999; Perry and Hondeghem 2008; Liu, Tang, and Zhu 2008). PSM is a mix of motives that drive an individual – regardless of being employed in the public sector or not – to take social responsibility, suppress selfishness, and benefit society. For instance, PSM has been associated with a variety of prosocial behaviors, such as volunteering and donating time or blood (Clerkin, Paynter, and Taylor, 2009; Lee, 2012; Houston, 2006; Coursey et al., 2008; Perry et al., 2008; Piatak and Holt, 2019). The relationship between PSM and observed prosocial behavior is also found in laboratory and field experiments: People with higher PSM are more altruistic, egalitarian, cooperative, and trustworthy, and are more likely to undertake altruistic punishment to uphold social justice (Esteve, Urbig, van Witteloostuijn, and Boyne, 2016; Esteve, van Witteloostuijn, and Boyne, 2015; Prokop and Tepe, 2019; Tepe, 2016; Tepe and Vanhuysse, 2017).

Research has identified a variety of PSM antecedents, such as individual sociohistorical characteristics and organizational influences (Perry, 1997; Perry et al., 2008; Moynihan and Pandey, 2007b). Perry (1997) finds that individual formative experiences such as parenting, religion, schooling, and profession are significant for the development of PSM. He postulates that moral development could play a role in socializing individuals through social and interpersonal interactions. However, research on the antecedents of PSM has mainly focused on institutions and environments that interact with the basic psychological needs of each individual (Kim & Vandenabeele, 2010; Taylor, 2007), and only a few studies have examined basic psychological needs as fundamental antecedents of PSM. Van Witteloostuijn, Esteve, and Boyne (2016) constitutes one of the few exceptions to investigate the role of fundamental personal traits in explaining PSM. A fuller

understanding of basic psychological needs could help establish whether PSM is a stable trait or a dynamic state (Bozeman and Su, 2015), and to explain the differences in behavioral and organizational implications of PSM (van Witteloostuijn, Esteve, and Boyne, 2016), as well as in the meaning and scaling of PSM dimensions across different cultures and languages (Kim et al., 2012).

Perry (2000) argues that moral convictions, beliefs, and ideologies play essential roles as social institutions determining people's motivation and behavior in the public sector. Morality is an expression of the relationship between the self and others (Staub, 1993). It makes up an individual's identity and values that help individuals distinguish the difference between right and wrong, and create corresponding obligations and motivations. PSM can be interpreted as a sense of public morality (Staats, 1988), rooted in a logic of appropriateness, being defined as a set of belief about what is right or wrong according to who "others and I think I am". Such morality is characterized by institutional values and transmitted to individuals through identity and beliefs (Vandenabeele, 2007). Moral values and identity make up an individual's self-concept and engender a logic of appropriateness, which has motivational consequences in performing public service (Perry 2000). Studies have shown that moral values and worldviews could affect individual motivation, and shape collaborative and ethical behavior in the public sector (Stazyk and Davis, 2015; Conner et al., 2015; Perry et al., 2008).

Moral values provide attitudes, beliefs, and norms about the relationship between the self and the social world, helping people to suppress the self-interest and to pursue the interest of the common good instead. Likewise, PSM is rooted in the notions of the common good, encouraging public employees to act out of compassion, sacrifice personal interests, and endorse public values. PSM-relevant beliefs and norms are inherent in and connected with the moral high road, an ethical approach that relies on personal integrity and moral intuition (Stazyk and Davis, 2015). This important role of morality in engendering PSM does not rule out learning and internationalization of laws, institutional rules, and professional standards. High-PSM individuals can associate intuitional values with their internal moral systems through socialization, environmental reinforcement, and value congruence (Stazyk and Davis, 2015; Wright and Pandey, 2008).

In sum, morality makes up an individual's self-concept by providing a logic of appropriateness about the social relationships between the self and others, especially in relation to the public domain. Individuals with high PSM can be seen as "moral exemplars" who pursue their moral goals to achieve a life characterized by deep integration of self and public morality (Perry, 2000; Perry et al., 2008).

In the following sections, we draw from Moral Foundation Theory to explore this alleged moral content of PSM, and to understand how individuals construct their moral identity.

2.3 Moral Foundation Theory

Traditional approaches in moral psychology research often treat moral judgment as a rational and deliberative process (Kohlberg, 1969; Rest, 1986). The cognitive-developmental approach assumes a stage theory where individual moral cognition progresses, and becomes more sophisticated, through a series of development stages (Kohlberg, 1969). Rest (1986) portrays individuals' moral decision-making as a four-component process: awareness, judgment, motivation, and behavior. Empirical research has identified several individual and contextual influences on these four processes, including cognitive biases, identity, leadership, and reward systems (Treviño, Weaver, and Reynolds, 2006). However, Kohlberg's theory has been criticized for its reliance on a limited set within moral philosophy, particularly liberal ideals (Graham et al., 2011; Hogan, Johnson, and Emler, 1978; Shweder and Kohiberg, 1994), and for its assumption that moral deliberative reasoning is the basis of moral judgments and behaviors (Haidt, 2001). In Kohlberg's theory, morality is centerd on the protection of individuals, so conservative ideas are not acknowledged to be moral principles, such as loyalty to the ingroup, respect for the superior, and avoidance of spiritual pollution (Haidt and Graham, 2007).

Recent approaches consider moral behavior to be strongly influenced by intuitions and emotions. Haidt's (2001) social intuitionist model of moral judgment maintains that "moral judgment is generally the result of quick, automatic evaluations (intuitions)" (p. 814). Moral judgment is innate, intuitive, and emotional so that our moral mind is organized in advance of experience, and prepared to learn values, norms, and behaviors related to social problems, which explains why individuals often feel, physically and emotionally, self-righteous about moral propositions (Haidt, 2001; Haidt and Joseph, 2004). This approach has opened the door to reexamine the functional content of human intuitive responses regarding moral issues, and to expand the moral domain beyond altruism and fairness concerns. Graham et al. (2011) develop a social intuitionist model, known as Moral Foundation Theory (MFT), to investigate the plurality of moral intuitions and to broaden the moral domain that matches the anthropological accounts of morality. Moral foundations are an affective, evolutionary response of human ancestors facing a diverse set of longstanding adaptive challenges to organize social lives (Haidt, 2007; Keltner and Gross, 1999; Keltner, Haidt, and Shiota, 2006).

Organized in advance of experience and prepared to learn values, moral foundations enable humans to write and interpret moral codes that guide patterns of behavior across different cultures and societies.

MFT emphasizes the affective primacy of moral judgment. Innate moral intuitions enable humans to solve collective action problems by making automatic, quick, and affective reactions to stimuli (Haidt, 2007). Higher-level cognitive thinking is preceded and stimulated by affective reactions that motivate people to adopt approach or avoidance strategies (Zajonc, 1980). This nativist perspective does not preclude cultural learning: Moral foundations are not finished moralities, but only constrain how moral codes can evolve. Social environments are important in the process of moral development: Different religions, cultures, and institutions have coevolved with complex practices, stories, and norms for people to find their moral mind and develop their social knowledge. Evolution has shaped brains that are prepared to learn patterns of the social world, and innate psychological mechanisms have coevolved with cultural institutions and practices in a long history of humankind (Gifford, 2008). This intuitionist perspective has been supported by psychological experiments and neuroscience evidence (see, for example, Cushman, Young, and Hauser, 2006; Everett, Pizarro, and Crockett, 2016; Gore and Sadler-Smith, 2011; Greene and Haidt, 2002; Greene, Sommerville, Nystrom, Darley, and Cohen, 2001; Luo et al., 2006; Sinclair, 2011), and has been applied in psychology, anthropology, behavioral economics, cognitive science, and organization studies (e.g., Clark et al., 2017; Ellemers, van der Toorn, Paunov, and van Leeuwen, 2019; Enke, 2019; Greene and Haidt, 2002; Weaver, Reynolds, and Brown, 2014).

MFT takes a pluralistic morality approach, expanding the previous narrow concern for justice, welfare, and rights to the duty of social role fulfillment (Graham et al., 2013, 2011). MFT delineates the moral mind into five content domains: Care/Harm, Fairness/Cheating, Authority/Subversion, Loyalty/Betrayal, and Sanctity/Degradation. These five dimensions can be collapsed into two larger categories: individualizing and binding foundations. Care and Fairness are individualizing foundations, as their focus is on an individual. Loyalty, Authority, and Sanctity make up the binding foundations, as they bind people together by promoting duty, order, and cohesion. Binding foundations are related to the domain of human morality because they serve the social functions of limiting autonomy and self-expression for the good of social communities such as families, teams, and nations (Graham and Haidt, 2010). Cross-cultural research on moral codes has revealed that various societies rely on different interpersonal moral codes to regulate behavior: Collectivistic cultures such as India and Japan emphasize social harmony and a duty-based interpersonal moral

code, while individualistic cultures such as the U.K. and the U.S. stress autonomous voluntarism and an individually oriented moral code (Markus & Kitayama, 1991; Miller, 1994; Singelis, Triandis, Bhawuk, & Gelfand, 1995).

Different institutions – from private firms and government agencies to cultures and societies – can employ a specific configuration of moral foundations to shape diverse social relationships, political ideologies, and actual behaviors. The difference is not just cultural, between modern and traditional societies, but individual: Even within Western societies, liberals prioritize individualizing foundations over the binding ones in their moral judgments, whereas conservatives apply individualizing and binding foundations equally (Graham, Haidt, and Nosek, 2009). Individual differences in moral foundations have been found to have effects on political identity, donation behavior, and attitudes towards public issues such as climate change and punitive policies (Dawson and Tyson, 2012; Dickinson, McLeod, Bloomfield, and Allred, 2016; Winterich, Zhang, and Mittal, 2012). Recently, management scholars started to use MFT as a framework to investigate organizational behavior, prosocial behavior, and ethical leadership (Egorov et al., 2017; Jancenelle and Javalgi, 2018; R. Fehr, Yam, and Dang, 2015; Winterich, Zhang, and Mittal, 2012). In sum, moral foundations could take a significant role in predicting motives toward social behavior and collective action.

MFT's biggest advantage is its pluralistic and modular approach. MFT is aimed to provide a positive, descriptive investigation of human morality across cultures, and its modular approach enables researches to refine and extend the moral domain in the face of new evidence (Graham et al., 2013). Graham et al. (2012) offer examples of moral judgement that cannot be produced by a single mental process. Harm-based moral monism is not sufficient to describe moralized values in non-Western societies (Graham and Haidt, 2010). For example, Buchtel et al. (2015) show that Chinese, compared to Western, people are less likely to associate immorality tightly to harm, even in the case of killing where the harm is intentionally inflicted upon a suffering person. By incorporating insights from MFT, we can explore the moral variation of PSM and provide a dis-aggregated view of PSM dimensions, improving our understanding of the mechanisms behind various behavioral relationships (Perry and Vandenabeele, 2015).

Another advantage of MFT is its emphasis on moral emotion, such as pity, guilt, pride, or disgust, and incorporation of cognitive science. Moral emotions are strong motivational states that link perception of social stimuli to social behaviors by constructing a mental representation of oneself as situated within a community or society (Adolphs, 2003, 2009; Tangney, Stuewig, and Mashek,

2007). Moral emotions not only construct how we feel about social events, but also motivate us to act accordingly; they function to suppress self-interest and trigger altruistic helping and punishment in the long-term interest of a social group (Adolphs, 2009). In line with MFT, PSM is a contextually dependent disposition that motivates individuals to act in ways that are consistent with their moral self-concept, including their internal value system and cultural identity (Perry, 2000). Therefore, we propose that PSM relies on moral foundations to associate the self-concept with institutional and other contextual stimuli, activating public employees' motivation to perform public services. We also argue that specific moral foundations are associated with certain aspects of PSM, and thereby may influence social behavior differently. In the following section, we will elaborate on this cognition process and redefine the PSM constructs through the lens of neuroscience to emphasize the important role of moral intuition in engendering PSM.

2.4 Social Cognition Processes and PSM

Social cognition processes rely on neural mechanisms for perceiving, recognizing, and evaluating stimuli, which together provide information required to construct motivation, emotion, and cognition regarding the social environment (Adolphs, 2001). Moll et al. (2005) suggest that moral behaviors are products of the integration of social perception, contextual knowledge, and basic emotional states. Figure 2.1 summarizes the social cognition process regarding social behaviors. Triggered by a stimulus, perception first provides relevant information to cognition, and cognition responds to stimuli by guiding automatic or controlled behavior. Moral judgements are mostly direct products of emotional processes (Haidt, 2001; Nichols, 2002; van den Bos, 2003), but reasoning still plays a role in moral behavior as well (De Schrijver, 2009; Forbes and Grafman, 2010; Greene et al., 2001; Haidt, 2001; Moll, de Oliveira-Souza, and Eslinger, 2003). However, we often use reasoning to justify our automatic moral intuitions (post hoc justifications) or persuade others (reasoned persuasion) (Haidt, 2001).

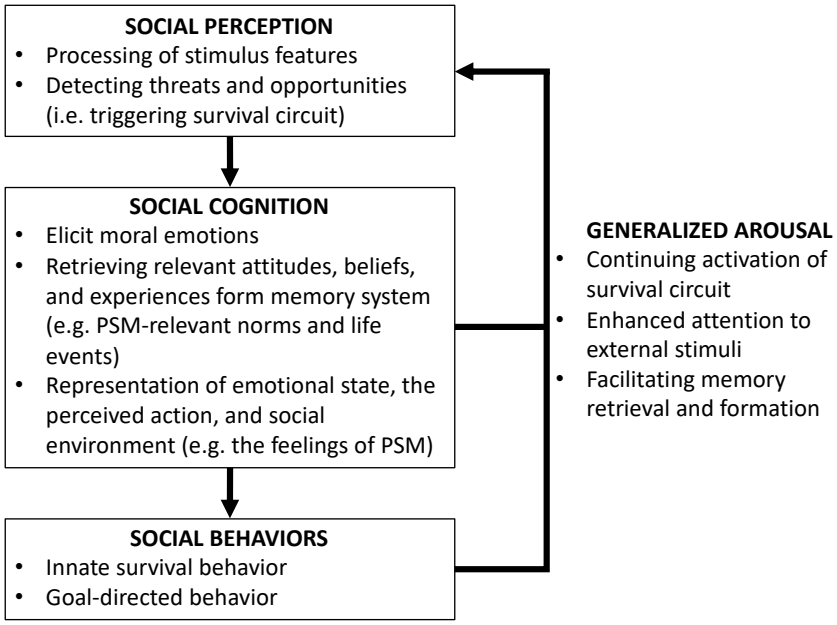


Figure 2.1 Cognition process of social behavior (synthesizing from Adolphs 2001; LeDoux 2012; Adolphs 2003).

In the stage of social perception, neural functions and circuits related to survival (survival circuits) participate in processing socially relevant stimuli, detecting opportunities and threats, and modulating behavioral responses when facing particular kinds of challenges and opportunities (LeDoux, 2012). In this stage, the amygdala plays a key role in evaluating morally salient actions, attributing emotional or social value to the stimuli and linking perceptual representations to cognition (Adolphs, 2001; Shenhav and Greene, 2014). In the stage of cognition, specific emotions, memories, beliefs, and motivations that are relevant to the perceptual representation are elicited and integrated to construct higher-order representations of the social environment that can guide social behavior. Besides innate survival behaviors, goal-directed actions that are associated or reinforced through life experiences can then be stimulated in the ventromedial prefrontal cortex, which collects goal-relevant affective information and forms integrative representations that guide behaviors (Shenhav and Greene, 2014).

Overall, the detection of a threat or an opportunity by survival circuits can have three behavioral consequences: (1) the elicitation of hard-wired/innate behavioral reactions; (2) the performance and learning of goal-directed actions through association and reinforcement; and (3) the generalized arousal in which a feedback loop is established to facilitate the continuing activation of survival circuits, to enhance attention to external stimuli, and to stimulate memory retrieval and formation

(LeDoux, 2012). The overall result establishes a state of arousal in which brain resources are coordinated and monopolized to cope with threats or opportunities.

Integrating these interdisciplinary insights, we argue that PSM is a cognitive process to construct high-order representations of the social environment that enable individuals to regulate selfishness and serve the interest of a larger community in the public sector. Social behavior is tightly coupled to and heavily regulated by emotion, and moral emotions have been found to serve an essential and privileged role in guiding altruistic and punitive behaviors (Adolphs, 2003). In the stage of social perception, moral foundations play an important role in detecting social opportunities and threats, and in eliciting automatic and emotional responses that stimulate the mental construction process. Therefore, eliciting prosocial motivation such as PSM involves a neural mechanism in which innately specified moral foundations are associated with path-dependent social experiences and recurring social stimuli, engendering the feelings of compassion, commitment, and meaningfulness regarding public service.

Once moral foundations are triggered and stimulated to a point of awareness, relevant beliefs, values, and memories are retrieved to construct high-order representations of the social environment that can create a logic of appropriateness, and drive pro-social and other desirable behavior in public institutions. PSM is "grounded primarily or uniquely in public institutions and organizations" (Perry and Wise, 1990, p. 368) because stimuli generated in and around public institutions are moralized through the association with the extant triggers of moral foundations. Besides, a dual process of social cognition implies that PSM is multi-dimensional and entails affective, normative, and rational motives: Automatic and controlled processes work in tandem to construct a motivated state to cope with opportunities and challenges. Together with triggered moral emotions, PSM-relevant beliefs and lived experiences are retrieved and evaluated, and become the ingredients of a motivated state that helps individuals to understand the relationship of the self with others and with the environment, engendering the sense of public morality or the prosocial identity.

The ability to construct and adopt high-order representations of the social environment that can motivate individuals to serve the public interest is quite flexible, even though this capacity involves an individual psychological makeup that is innate and not fully immutable (Adolphs, 1999). Through the lens of social cognition, the reasons for such flexibility are twofold. First, since innate morality is diverse, different institutions can utilize different configurations of moral foundations to provide individuals with different codes of conduct, social identities, and motivational vocabularies. As a result, public service can be associated with different sets of moral foundations in different cultures

and public organizations. Second, Perry (1996)'s four dimensions of PSM can be regarded as the conscious feelings that individuals construct to represent their state of emotion and arousal. Such mental construction involves matching the emotional state with long-term memory stories, experiences, and languages as reinforcers of behavior (LeDoux, 2012).[3] Hence, individuals can hold different conceptions of PSM (G.A. Brewer et al., 2000; Schott, van Kleef, and Steen, 2015), associating different lived experiences and life events with innate morality.

In the following two subsections, we will apply the social cognition process to investigate how each MF can be associated with PSM-relevant beliefs and attitudes to moralize public service, and to explore behavioral implications in the existing PSM literature. Table 2.1 summarizes our propositions by showing how each moral foundation is triggered to subsequently construct PSM to effect certain types of prosocial behaviors.

Table 2.1 The social cognition process of PSM

		Care	Fairness	Authority	Loyalty	Sanctity
SOCIAL STIMULUS	**Triggers**	Suffering, distress, or neediness	Cooperation and defection	Signs of ranks and status	Signs of ingroup and outgroup	Degradation, corruption, piety
	Opportunity or threat to	Wellbeing of others	Social justice	Social stability	Group cohesion and security	Spirituality
SOCIAL COGNITION	**Moral Emotions**	Compassion, anger	Gratitude, anger, guilt	Pride, respect, fear	Group pride, shame, anger	Disgust, elevation
	Locus of attention and belief elicitation	Feelings and perspectives of others	Welfare distribution, trustworthiness	Division of roles and responsibilities	Membership boundaries, group identity	Meaning and connection to higher purpose
	Logic of appropriate-ness	Guardian of people in need and distress	Guardian of the underprovided and mistreated	Guardian of rules and institutions	Guardian of the community	Guardian of transcendent purposes
	Relevant PSM concepts	Compassion, benevolence, and kindness	Equality, equity, and individual rights	The sense of duty, professionalism	Patriotism, social security, citizenship	Temperance, a calling of public service
SOCIAL BEHAVIOR	**PSM behavior**	Helping behavior	Reciprocal cooperation, altruistic punishment	Bureaucratic behavior	Citizenship behavior, group-based altruism	Self-transcendence behavior
	Evidence in practice	Social volunteering, knowledge sharing, collaboration	Administrative equality, collaboration	Rule-abiding, leadership/fellowship, civic (dis-)obedience	Social security service, community development	Pro-environment behavior, self-restraining

[3] More precisely, ingredients to construct a mental representation (or emotional feeling) in a cognitive workspace includes sensory information about the stimulus and the environment, the activated survival circuit (which identifies opportunities or threats), information about the elicited generalized arousal, body feedback from innate responses, and long-term memories about the stimulus and the resulting state (LeDoux 2012, p. 665).

2.5 Individualizing Foundations and PSM

2.5.1 Care Foundation

Individualizing foundations, comprising Care and Fairness, are primarily concerned with individual rights, freedom, and autonomy. People try to recognize kindness, promote reciprocity, and avoid unfair defection. ***Care*** involves an ability to feel the pain of others, and underlies virtues of kindness and gentleness. It responds to the adaptive challenges of taking care of vulnerable offspring and promoting other-regarding prosocial helping; compassionate individuals are considered to be more attractive in mate selection, and desirable in cooperative relations (kinship or friendship). It helps individuals to participate in social relationships by identifying with the welfare of others and recognizing kindness.

The Compassion component of PSM is an affective motive to identify others' wellbeing and help those in need. Compassion and care are interchangeable terms that refer to other-orientedness, along with sympathy, tenderness, and kindness (Goetz, Keltner, and Simon-Thomas, 2010; Graham et al., 2009). As stated at the beginning of the article, the death of Alan Kurdi increased attention to the suffering of others and stimulated empathetic concern that motivated many people to provide humanitarian support, demonstrating the important role of Care in motiving people to provide public service. Likewise, Bagozzi and Moore (1994) present evidence that public service advertisement can induce prosocial behavior by stimulating emotions and sympathies toward the suffering of others.

The suffering and neediness of others act as social stimuli that trigger the Care foundation to increase attention to others' wellbeing (perspective-taking), and elicit relevant beliefs and attitudes from past memories. If public service has been moralized (conditioned with Care by the social environment) as an appropriate response to alleviate the suffering or increase the wellbeing of others, then it is more likely to establish generalized arousal towards public service. In this case, information about the Care foundation (the survival circuit), observed feelings (sensory information), and beliefs and attitudes towards the consequences of intervention (mnemonic information) then integrate to construct the higher-order representations that we label as the feeling of Compassion. As a result, Care-driven PSM constructs a Samaritan logic of appropriateness: They see themselves as guardians of the people in distress and need, and they perform public service in order to increase the wellbeing of others (G. A. Brewer et al., 2000).

Because of the increased attention to others' individual wellbeing, the Care foundation is more likely to be associated with helping behaviors such as sharing, comforting, rescuing and helping (Doris, Stich, Phillips, and Walmsley, 2006; Sibicky, Schroeder, and Dovidio, 1995; Underwood and Moore, 1982). Social volunteering and donation to charity, as the opening story in this article does illustrate, are two prominent examples. Other examples found in practice are collaboration and knowledge sharing: Affective expressions embedded in compassion are found to help to diffuse trust, which is essential for collaboration and knowledge sharing in public organizations (Amayah, 2013; Eldor, 2017).

> *Proposition 1: Triggered by the suffering and neediness of others,* ***Care*** *moralizes public service through increased attention to others' wellbeing, elicits the affectation of* ***compassion*** *that values others' wellbeing, and stimulates* ***helping behaviors***.

2.5.2 Fairness Foundation

Fairness is the result of the evolutionary process of reciprocal altruism. People are sensitive to signs of cooperation and cheating, and tend to play "tit for tat" with emotions that motivate them to sacrifice their material well-being (Graham et al., 2013). Fairness enables individuals to recognize the social relationship with different others, and to appreciate the values of other individuals(Cosmides and Tooby, 1989). Signs of cooperation and defection, such as other's kindness or cheating, trigger Fairness and its relevant moral emotions, such as guilt after cheating others, anger at unfair treatment, and gratitude for other's kindness. Fairness increases attention to the cost and benefit of an action, and elicits beliefs about its implication for social welfare or long-term cooperation.

The normative component of PSM entails public values such as equality and concern for future generations (Kim et al. 2012). These public values can trigger Fairness, and become key ingredients that stimulate arousal of commitment in social justice, equality, and individual rights (Cropanzano, Stein, and Nadisic, 2011). Fairness-driven PSM constructs a humanitarian logic of appropriateness: Those driven by Fairness see themselves as guardians of the underprivileged and mistreated, and perform public service in order to uphold or restore social justice (G. A. Brewer et al., 2000). For instance, Pedersen, Stritch, and Taggart (2017) find that citizens with higher PSM are more concerned about administrative equality.

Behavioral economics has extensively studied people's fairness concerns, reporting overwhelming experimental evidence that concerns for fairness and reciprocity strongly motivate a majority of people to exhibit reciprocal cooperation and altruistic punishment (Rabin 1993; Fehr and Schmidt 2006). For instance, Clark et al. (2017) find that people who endorse the individualizing foundations over the binding ones can display a higher level of cooperative behavior in prisoner's dilemma and trust games. Therefore, Fairness-driven PSM is more likely to stimulate reciprocal cooperation and altruistic punishment (Esteve et al., 2015; Prokop and Tepe, 2019).

> *Proposition 2: Triggered by cooperation and defection,* ***Fairness*** *moralizes public service through increased attention to welfare distribution, elicits the sense of commitment in* ***public values*** *such as social justice and equality, and stimulates* ***reciprocal cooperation and altruistic punishment****.*

2.6 Binding Foundations and PSM

Binding foundations, comprising Authority, Loyalty, and Sanctity, are focused on binding together individuals into a cohesive unit. Binding foundations emphasize role steadiness, duty, and self-control to build a well-ordered stable community. At first glance, binding foundations may look at odds with the PSM-relevant values, which include equality, human rights, and democracy (Kim & Vandenabeele, 2010). These three foundations are presented particularly to understand human nature, and to explain the religiosity and social tradition beyond Western, educated, industrialized, rich, and democratic (WEIRD) societies (Graham and Haidt, 2010; Henrich, Heine, and Norenzayan, 2010). Fukuyama (2018) argues that most people's inner self is not based on individuality and autonomy, but "actually constituted by their relationship with other people, and by the norms and expectations that those others provide" (Chapter 6, para. 15). Therefore, MFT's pluralistic approach can explore moral variations across cultures and institutions regarding the content of PSM: Binding foundations provide psychological imperatives for individuals to develop collective identities that could be defined by tradition, nation, or religion. In line with this perspective, G.A. Brewer, Selden, and Facer II (2000) show that people can be motivated to perform public service with diverse causes beyond compassion and justice: Prestigious work and a love of country can stimulate PSM as well.

2.6.1 Authority Foundation

Authority underlies virtues of leadership and followership, including deference to legitimate authority and respect for traditions. Authority was initially a response to the adaptive challenges of building a hierarchical society to coordinate the associated large-scale division of labor. Authority values the recognition of status, the sense of obligation for subordinates to comply, and the sense of legitimacy and desirability for social hierarchy. However, human hierarchies depend not merely on dominance (the threat of force), but much more strongly on freely conferred deference (Henrich and Gil-White, 2001). Today, the efficiency of large modern nation-states relies on rational/legal authority. Authority enables citizens to grant legitimacy and confer deference to public institutions such as judicial courts and police departments (Haidt and Graham, 2006; Lipsky, 2010, p. 57).

Authority involves a psychological ability to improve the efficiency of social learning and cultural transmission by identifying and preferentially imitating role models who are likely, or hopefully, to be skilled and knowledgeable (Henrich and Gil-White, 2001). By creating roles and duties, Authority helps individuals to recognize their leaders as role models, and to internalize the values that their supervisors endorse and exhibit. A classic example of the Authority foundation is Plato's Republic: The guardians derive their authority from their superior wisdom and virtues, and the auxiliaries take civic courage/duty to enforce the convictions of the goodness (but see Popper, 1957). Recognition of superiority and self-esteem are the key psychological imperatives that motivate the guardian or warrior class to risk their lives and defend the larger community.[4]

Triggered by signs of rank and status, Authority fulfills the psychological needs of being honored for virtues and competences, and moralizes public service by eliciting moral emotions such as pride and respect, and instilling a sense of professional and civic duty (or relational psychological contracts; see Rousseau, 1995) to take official or civic responsibility. It elicits beliefs and behaviors as to what is expected with regard to social roles and duties, and constructs a bureaucratic logic of appropriateness: Public officials see themselves as guardians of the society with superior virtues and thus a privilege to enforce the law, and the general public see themselves as citizens who comply with the law in exchange for social stability.

[4] Fukuyama (2018) terms "Megalothymia" as the need to be recognized as superior to others and suggests such desire to be inherent to every human being. Megalothymia does not just reflect the vanity of the ambitious; it constitutes the just deserts of the virtuous. Some people need to be valued at a lower rate than others because of their superior virtues or knowledge.

Authority-driven PSM engenders a sense of duty and elicits feelings of pride and respect in performing public service, making a public service career not merely attractive, but also professional: Public servants are obligated to take higher ethical standards, and to accept higher expectations from citizens (G. A. Brewer et al., 2000). Lipsky (2010, p.57) observed that compliance in most street-level bureaucracies arises not merely from fear of punishment, but also from the superior status and legitimacy that citizens grant to the authority in line with the expectation of high ethical standards and professional knowledge. For instance, defenders speak to judges respectfully with the expectation of a fair judicial treatment. Within public organizations, hierarchical authority, scribed duties, and formal rules engender the sense of meticulous respect for protocol, which mitigates probity hazards of public sector transactions (e.g., misinformation, power abuse, and regulatory capture) and ensures the legitimacy of public institutions (for the transcation cost intepretation of Authority, see Williamson, 1999). In short, Authority-driven PSM can stimulate behaviors that are consistent with Weberian bureaucratic values, including accountability, rule abidance, and due process, which have been shown to be positively associated with PSM and the commitment to public values (Andersen, Jørgensen, Kjeldsen, Pedersen, and Vrangbæk, 2013).

> *Proposition 3: Triggered by signs of rank and status,* ***Authority*** *moralizes public service through increased attention to the division of roles and responsibilities, elicits* ***the sense of professional or civic duty*** *of public service, and stimulates* ***bureaucratic behavior****.*

2.6.2 Loyalty Foundation

Loyalty promotes self-sacrifice for the in-group, and vigilance against traitors and the out-group. It triggers a sense of obligations for members to serve the interest of the in-group and the fulfillment of duty to unite the community. Such sense of parochial altruism initially evolved as a response to the adaptive challenges of forming a cohesive coalition to compete for resources, territory, and powers with other groups of people. The original birthplace of this morality is the kin relationships that are based on shared blood and marriage, but loyalty has been extended to more impersonal, imagined communities, such as cities, regions, cultures, or nations (Haidt and Graham, 2006). In the name of loyalty, people tend to limit the scope of individualizing foundations toward outsiders (Bernhard, Fischbacher, and Fehr 2006; Fehr, Bernhard, and Rockenbach 2008), and they are willing to sacrifice their own resources for their group while ignoring harm and injustice inflicted on outsiders (Baron, Ritov, and Greene, 2013).

Loyalty can be interpreted as a psychological ability to depersonalize the self and to integrate into the group by categorizing individuals, exemplifying the group, and adhering to values and norms that embody the group's identity (Ashforth and Mael, 1989). Triggered by signs of in-group and out-group boundaries, Loyalty elicits emotions such as group pride, shame, and anger, and creates a calling to sacrifice for the in-group and to be viligient towards the out-group. It moralizes public service by enabling individuals to derive utilities from activities and objects that are in support of the group's identity. The vast donation to rebuild the Notre Dame de Paris serves as a good example of how an impersonal object can become a calling to contribute, as French President Emmanuel Macron wrote: "Notre Dame of Paris in flames. Emotion for a whole nation." [5] Such social identification increases the homogeneity in beliefs, attitudes, and behaviors, which in turn engenders a shared sense of belonging, sustaining intra-group cooperation and group-based altruism, even in the absence of strong leadership. Therefore, Loyalty creates a patriotic logic of appropriateness: those driven by Loyalty see themselves as guardians of the community or the nation, exemplifying the group identity and fostering social cohesion and security (Ashforth and Mael, 1989; Boyd, Nowell, Yang, and Hano, 2018; Perry, 2000).

Loyalty-driven PSM creates a sense of community or citizenship, motivating people to take obligations to compatriots and to engage in activities that are congruent to this identity (citizenship behavior) (Mason, 1997). However, grouped-based altruism also implies that the needs of compatriots take precedence over the needs of outsiders. In the public sector, Loyalty is most emphasized in military, police and fire service to instill emotional commitment to public security service and stimulate courage to make self-sacrifice (Connor, Andrews, Noack-Lundberg, and Wadham, 2019; Ewin, 1990). For instance, Brænder and Andersen (2013) find that soldiers' PSM and commitment to public values increase after deployment in Afghanistan because soldiers mutually reinforce their shared sense of service duty and professional identity during deployment. Outside of public organizations, the sense of community is an essential catalyst for voluntary participation in local action and neighborhood development (Chavis and Wandersman, 2002).

Proposition 4: Triggered by signs of in-group and out-group boundaries, ***Loyalty*** *moralizes public service through increased attention to membership boundaries, elicits* ***the sense of***

[5] Emmanuel Macron (@EmmanuelMacron), "Notre-Dame de Paris en proie aux flammes. Émotion de toute une nation." Twitter, April 15, 2019 8:05 p.m., **https://twitter.com/EmmanuelMacron/status/1117851407644684288**.

community *and the obligations to promote social cohesion and security, and stimulates* ***citizenship behavior***.

2.6.3 Sanctity Foundation

In the evolution of humankind, ***Sanctity*** was shaped by the psychology of disgust and elevation. Sanctity underlies the spiritual purity of striving to live in an elevated, less carnal, and more noble way (Haidt, 2012). Sanctity initially emerged as a response to the adaptive challenges of avoiding disease transmission because of living in larger and denser groups. Our ancestors developed an effective "behavioral immune system" to detect infectious pathogens, but the system also responded to "an overly general set of superficial cues" that pose no actual threat of disease transmission, but can still provoke aversive feelings and responses (Schaller and Park, 2011). Sanctity stresses the priority of the soul over the body, and imposes strict rules on the "pure" use of the body (Giner-Sorolla, Leidner, and Castano, 2012). People feel disgusted and repelled when witnessing behaviors viewed as degrading or inhuman, whereas they feel uplifted and elevated when witnessing acts of moral beauty and perfection (Haidt, 2000; Haidt and Morris, 2009). Therefore, feelings of elevation and disgust can foster a desire for close affirmation of good deed doers and strong defense against a morally reproachable other.

Sanctity diminishes the self and generates a sense of purpose in life by creating the notion of spirituality or self-transcendence, the feeling of being connected to or monitored by a sacred, non-materialistic whole such as God, the natural environment, or humanity. It directs one's attention to a meaning or purpose that is higher, more important than the one's usual 'banal' concerns (Haidt and Morris, 2009). Spirituality has been found in the management literature to improve employees' performance and organizational effectiveness by providing a sense of meaning and interconnectedness for employees to feel passionate and abundant (Karakas, 2010).

Sanctity-driven PSM moralizes public service as a noble calling that attracts a particular type of individuals who seek interconnection with the community or humanity as a whole, [6] and such interpretation of public service can improve the commitment and competency of public employees (Ferguson and Milliman, 2008; Houston and Cartwright, 2007; Pattakos, 2004; Perry, 1996).

[6] For example, Bruce (2000) finds in a survey that 60% of public sector employees feel public service as a spiritual calling, and 48% see their work as a part of their spiritual path.

Sanctity-driven PSM engenders a sainted logic of appropriateness that motivates to achieve self-transcendence: those driven by Sanctity see themselves guardians of collective and transcendent purposes, framing public service as "a unique, humanistic process of spiritual connection and enlightenment that helps groups achieve their collective and often transcendent aims" (Pattakos 2004, p. 107). For instance, Sanctity moralizes pro-environment behavior by connecting the self to the natural world and creating an elevated feeling towards animals, plants, or other aspects of nature (Moreton, Arena, Hornsey, Crimston, and Tiliopoulos, 2019).

In public organizations, public employees are expected to preserve the sanctity of public service by keeping public service "unspotted from the dirty political world" (Denhardt, 1988, p. 58), and by restraining themselves from the abuse of power and corruption that are deemed to be detrimental to society. Attaching public service with a spiritual connection is also found to help law enforcement officals to appreciate their rountine duties that require emotional labor towards negative feelings from clients (Dutelle and Taylor, 2017, pp. 46-48). Without such moralization, officals working in emotional labor-intensive functions (such as healthcare, education, law, and social work) tend to beome cynical and unmotivated.

> *Proposition 5: Triggered by signs of piety and degradation,* ***Sanctity*** *moralizes public service through increased attention to meaning and connection to higher purpose, elicits* ***the sense of spirituality*** *that connects the self to a collective and transcendent purpose, and stimulates* ***self-transcendence behavior****.*

2.7 Discussion

2.7.1 Theoretical and Practical Contribution

This study theoretically investigates the social cognition process associated with prosocial motivation, and links a range of moral foundations to Public Service Motivation (PSM) and behavioral consequences. In so doing, we take Moral Foundation Theory (MFT) to develop a theory of a causal PSM map, as such a casual map is still underdeveloped in the current public administration literature. In particular, how PSM is distinguishable from altruism and related concepts is still contested (Bozeman and Su, 2015). Specifically, we contribute to PSM theory by emphasizing the underlying cognition process and by providing microfoundations for a broad range of PSM-related behaviors.

We do so by identifying PSM's trigger for moral intuitions, the resulting locus of attention and belief elicitation, the representation of the emotional state (the logic of appropriateness), and specific types of motivated behaviors. Although our study focuses on explaining the moralization of public service, the proposed social cognition process framework can be used to analyze other social and organizational behaviors as well (see Fehr et al., 2015; Weaver et al., 2014).

By including moral concerns beyond empathy and social justice, we avoid making normative assumptions regarding the moral contents of PSM. This instead allows us to adopt a more pluralistic view towards PSM. The pluralistic approach is particulary important to further build PSM research internationally. First, the meaning and scaling of PSM dimensions are found to differ across different cultures and languages, even though the PSM measurement is confined to democratic and right-based concerns (Kim et al., 2012). Second, current PSM theory has been found to be "WEIRD" and thus problematic in explaining the motivational behavior and organizational dynamic in non-Western contexts, even in a democratic country such as South Korea (Kim, 2009; van der Wal, 2015). Third and lastly, adopting a pluralistic conceptualization of PSM not only helps to internationalize PSM research, but also allows us to explore diverse altruistic motives that stimulate public service, improving the understanding of basic psychological needs behind PSM.

Beyond this theoretical contribution, the study also suggests potentially important practical implications regarding the use of PSM to stimulate prosocial behaviors. Individuals can hold different conceptions of PSM by associating different social experiences and life events with their innate morality. Public organizations should consider individuals' innate morality and its behavioral consequences when motivating specific types of prosocial behavior. The social cognition process of PSM as spelled out in this study provides a framework for public organizations to think about ways to utilize different configurations of moral foundations, providing individual employees with relevant codes of conduct, social identities, and motivational vocabularies.

2.7.2 Limitation and Future Research Directions

We present several propositions that can be developed into testable hypotheses. Since MFT and PSM have both developed validated measurements of five moral foundations (Graham et al., 2009) and four PSM-subdimensions (Kim et al., 2012), respectively, the first step is to empirically investigate their relationships and behavioral implications through representative survey data across different countries. Also, the so-called Moral Foundations Dictionary, developed by Graham et al. (2009), can

be used to conduct textual analysis on organizational documents to measure moral configurations across different public organizations or departments, and subsequently test person-organization moral congruence and its effect on PSM. For instance, the public security and safety sector, such as the police and military, may emphasize Loyalty when moralizing public service, while the health care and education sectors may rely on Care and Sanctity to promote public service.

Moreover, different cultures and organizations may employ their own configurations of moral foundations to construct moral codes, value systems, and social norms that specify desirable and inappropriate behaviors. In other words, cultural norms may tweak our moral mind and cognition process to help people adapt to a particular social environment (see McNamara, Willard, Norenzayan, and Henrich, 2019). For instance, although individualizing moral foundations are widely shared across cultures, collective cultures tend to rely on binding foundations more than do individualistic cultures (Vauclair, Wilson, and Fischer, 2014). Individualistic cultures could even devalue binding foundations in constructing public service morality, making binding foundations to be negatively associated with PSM. As a result, the configuration of moral foundations may differ in constructing PSM across cultures, geographies, and languages, even though individualizing foundations are more universally endorsed (e.g. Wheeler et al., 2019).

For instance, religion, as a salient cultural phenomenon, has been found to influence the concept of PSM (Vandenabeele, Hondeghem, Maesschalck, and Depré, 2004) and MFs (Johnson et al., 2016). Religion provides triggers of moral foundations that can also be associated with stimuli regarding public service. Catholic morality such as deliverance (related to Sanctity) and obedience (Authority) is institutionalized within the public service in a Catholic country such as France, while Protestant morality such as work ethic and egalitarianism (related to Fairness) is rooted in the public value in the Netherlands (Houston, Freeman, and Feldman, 2008). Similarly, Kim (2009) investigates PSM in Korea and suggests that in a Confucian-oriented society, people tend to respect and honor governments' bureaucrats with a higher social status because of their superior benevolence and administrative ability, which implies the important role of Authority in shaping the commitment to and rationale regarding public service in East Asian countries.

Our study has explored moral intuitions and social stimuli behind various PSM-related behaviors. However, when relying on certain moral concerns to construct their motivations and preferences regarding public service, individuals may inevitably bring their "biases" or worldviews

into public administration.[7] Prokop and Tepe (2019) find evidence in a lab experiment that individuals who are attracted to public service tend to enforce a Fairness norm through unnecessarily excessive sanctions. By understanding the cognitive bias that moral foundations entail, such as punitive behavior, blind loyalty, and rule-bending, future studies could contribute to a recent thread of research on the "dark side" of PSM (Schott and Ritz, 2017), and provide practical implications as to how to manage moralized behaviors. For instance, the willingness to blow the whistle is shown to be predicted by a tradeoff between Fairness and Loyalty (Waytz, Dungan, and Young, 2013). Public institutions that intend to promote whistle-blowing behavior, therefore, can embed Fairness-relevant stimuli and avoid relying on Loyalty to associate with PSM.

Finally, our study argues that PSM involves a cognition process that links automatic emotional responses with explicit knowledge of public service to construct a representation of the social world. We focus our discussion on how the concept of public service is associated with moral intuitions and become moralized in public institutions. However, how deliberation can override or reappraise automatic intuitions is beyond the scope of this paper, but important to enquire. For instance, on the one hand, Stazyk and Davis (2015) observe that public employees who lack advanced professional degrees are more likely to favor personal intuitions over externally derived obligations in the context of decision-making as PSM increases. So, professional education may enhance the cognitive ability to reappraise features of the situations and regulate emotional reactions. On the other hand, research has shown that individualizing foundations require abstract and analytic thinking when making moral decisions (Napier and Luguri, 2013; Pennycook, Cheyne, Barr, Koehler, and Fugelsang, 2014; Yilmaz and Saribay, 2017). People also tend to give consequentialist, non-emotional justification (based on the outcomes or consequences of actions) to Care- and Fairness-related moral decisions (Wheeler and Laham, 2016). Therefore, Care- and Fairness-driven PSM may increase the likelihood to make public decisions with consequentialist reasoning, such as cost-benefit and welfare analysis. Future studies could investigate the interaction between intuitive and deliberative processes, which will be helpful to uncover the role of reasoning in reappraising moral intuitions and develop interventions to mitigate the dark side of PSM.

[7] As an extreme example, totalitarian regimes such as that of the Nazis rely heavily on binding foundations to construct a public service identity that is normatively evil but felt righteous among officials and followers. Acknowledging the positive existence of binding foundations does not normatively recognize or justify their biases. Instead, it allows us to investigate their dark side, and to identify limitations and dangers of a behavior's moralization.

2.8 Conclusion

PSM is a motivational model built on a logic of appropriateness: Self-identity can interact with contextual stimuli, and can define individuals' perception of situations they face in their organization (Perry, 2000; Vandenabeele, 2007). MFT delineates five moral intuitions that humans have evolved since our ancestors faced a diverse set of longstanding adaptive challenges to organize social lives. We illustrate how PSM can be constructed through the lens of cognitive science, and then show how moral foundations can disaggregate the construct of PSM. As a multi-dimensional construct, PSM is related to a pluralistic set of moral concerns that people can associate with their life experiences and environmental exposures in order to establish a sense of public morality. Public values endorsed in the modern, democratic institutions are mostly consistent with the individualizing foundations of Care and Fairness. However, people who feel motivated to contribute to the public good can regard public service not merely as compassionate and just, but also as respectable, patriotic, and transcendent. By taking the full range of moral intuitions in accounts, MFT provides psychological microfoundations in explaining a broad range of PSM behaviors.

Chapter 3

An Empirical Examination of Moral Theory of Public Service Motivation

3.1 Introduction

Public Service Motivation (PSM) is a contextually dependent disposition that motivates individuals to act in ways that are consistent with their moral self-concept, including their internal value system and cultural identity (Perry, 2000). Moral Theory of PSM argues that PSM is the result of a mental representation that links innate moral intuitions with stimuli grounded in the public institutions to engender a logic of appropriateness. By referring to Moral Foundation Theory, we open the door to the re-examination of the functional content of human intuitive responses regarding moral issues, and to expand the moral domain beyond altruism and fairness. Different moral foundations, particularly Care, Fairness, Authority, Loyalty, and Sanctity, can be associated with institutional and contextual stimuli to engender a logic of appropriateness, and to activate public employees' motivation to perform public services. In the current study, we provide the first empirical evidence for the influential role of moral foundations in shaping PSM, as well as behavioral consequences.

PSM has been linked to a variety of prosocial behaviors, such as volunteering and donating (Clerkin et al., 2009; Coursey et al., 2008; Houston, 2006; Lee, 2012; Perry et al., 2008). Volunteering involves a contribution of time or resources for the benefit of people in need or the community at large. Individuals perform voluntary services or charitable acts to satisfy a need of or benefit the needy, contribute to the community, and produce public goods (Clerkin et al., 2009). Lee (2012) finds in a survey that employment within the public, semi-public or private sector influences volunteering for different types of organizations, implying that PSM may involve different motivational dimensions across various organizational forms and volunteering activities. Like PSM, volunteering involves different types of activities and multifaceted motivations as well, and both PSM and volunteering share the same emphasis on prosocial values and beliefs (Lee, 2012).

Volunteering is a social construction and subject to cultural change, which can be investigated by exploring the variation in moral meaning (Hart and Sulik, 2014). For instance, by exploring the semantic similarity of volunteering with each moral foundation in book publications between 1900 and 2008 in the United States, Hart and Sulik (2014) demonstrate that volunteering used to be connected with the moral foundation of Sanctity in the 1950s and 1960s, but sympathy-induced helping of others (Care) became dominant in the conception of volunteering during the late 20th century. Moral foundations have been found to influence the decision to donate to a series of social organizations (Nilsson, Erlandsson, and Västfjäll, 2016). Since PSM is related to a pluralistic set of moral foundations that people can associate with their life experiences and social environment, we develop hypotheses as to how PSM and moral foundations can interact to affect volunteering and donation to different types of social organizations.

Our article is organized as follows. First, we develop hypotheses linking moral foundations to PSM and its four dimensions: Compassion (COM), Self-Sacrifice (SS), Attraction to Public Services (APS), and Commitment to Public Values (CPV). We then explore their behavioral implications regarding different types of social organizations. Second, after developing what we refer to as Moral Theory of PSM, we empirically examine the relationship of PSM with moral foundations and participation in social organizations. We collected survey responses in August 2018 from members of the Longitudinal Internet Studies for the Social Sciences (LISS) panel that consists of 4,500 Dutch households. Our sample includes respondents who work in the private and (semi-)public sector, which provides an ideal context to explore the impact of institutional differences in PSM, its dimensions, and its antecedents and consequences. Finally, we conclude with a discussion of our findings, and how these may feed into future research.

3.2 Hypotheses

3.2.1 Moral Foundations and PSM Dimensions

According to the Moral Theory of PSM, a pluralistic set of moral foundations, from empathy and justice to hierarchical authority, group loyalty, and spiritual purity, can be linked to the concept of public service to explain the motivation to perform such service. In this section, we will hypothesize

how moral foundations are associated with PSM subscales. Table 3.1 summarizes the proposed relationships between PSM and MFs.

Table 3.1 The Proposed Relationship between MFs and PSM

Moral Foundation	Public Service Motivation				
	Overall	COM	SS	APS	CPV
INDV	+	+	+	+	+
Authority	+			+	+
Loyalty	+		+		+
Sanctity	+		+	+	

Individualizing foundations, comprising Care and Fairness, are primarily concerned with beneficence and justice. Care involves an ability to feel the pain of others, and promotes the idea of non-maleficence (avoiding harm) and compassion (alleviating suffering). Fairness enables individuals to recognize kindness and feel indebted to the other, endorsing the idea of reciprocity, cooperation, and equity. Caring for others and feeling sensitivity toward others' well-being is essential for developing compassion and the idea of public values – qualities that make public employees feel committed to serving citizens and to consider their welfare (Hsieh, Yang, & Fu, 2012; Perry et al., 2008). From the social cognition process of PSM we presented in Chapter 2, Care and Fairness can engender relevant PSM concepts and values such as compassion, benevolence, equality, equity, and individual rights, all of which are fundamental to affective and normative motives of PSM. For instance, COM and CPV both reflect common values such as equality and concern for future generations (Kim et al., 2012), and citizens with higher PSM are more concerned about administrative equality (Pedersen et al., 2017).

Bagozzi and Moore (1994) present evidence that public service advertisement can induce prosocial behavior by stimulating emotions and sympathies toward the suffering of others. Observing another person being unfairly treated or in distress can evoke empathic and compassionate emotions and altruistic motivations to sacrifice personal interests and, ultimately, to provide help (Bagozzi & Moore, 1994; Kalshoven, Den Hartog, & De Hoogh, 2013). Therefore, individualizing foundations can be associated with self-sacrifice motivation of PSM. Also, research has shown that individualizing foundations require abstract and analytic thinking (Napier & Luguri, 2013; Pennycook et al., 2014; Yilmaz & Saribay, 2017). Such cognitive ability is linked to the rational motive associated with PSM. Policy-making involves a variety of social relationships such as negotiating, bargaining, and competing (DeHart-Davis, Marlowe, & Pandey, 2006). People with a

stronger individualizing foundation may find the "give-and-take character" of politics attractive and, hence, might be more likely to engage in social exchange and reciprocal cooperation. For instance, Eldor (2017) finds a positive association between compassion and collaborative behavior in the public sector, and argues that affective expressions embedded in compassion are essential for individuals to develop reciprocal relationships because psychological benefits such as trust and consideration can be provided, identified, and exchanged. Therefore, individuals who are motivated to serve the public interest tend to endorse public values that are based on equality and reciprocity (Esteve et al., 2016; Kim et al., 2012; Pedersen et al., 2017). In short, we propose that the individualizing foundations are highly relevant to the concept of PSM, being linked to affective, normative, and rational dimensions of PSM.

Hypothesis 1: The individualizing foundations, including Care and Fairness, are positively associated with PSM and all subscales.

Authority is a psychological ability to improve the efficiency of social learning and cultural transmission by identifying and preferentially imitating role models who are likely, or hopefully, to be skilled and knowledgeable (Henrich & Gil-White, 2001). Authority facilitates labor division within hierarchies by engendering deference to legitimate authority and respect for tradition. According to the Moral Theory of PSM, Authority can be associated with Weberian bureaucratic behavior, including accountability, rule-abidance, and due process, and these public values are strongly related to CPV (Andersen et al., 2013). Prior research also has found a link between hierarchical authority and PSM (G. A. Brewer et al., 2000; Bright, 2005; Camilleri, 2007; Desmarais & Gamassou, 2014; Moynihan & Pandey, 2007b). For instance, Moynihan and Pandey (2007) report that the perceived hierarchical authority in the organization is a significant predictor of employees' PSM through an increase in CPV and APS.

Some of public employees are attracted to public sector because they believe that their superior virtues and professional skills entitle them the privilege of performing public service (G. A. Brewer et al., 2000; Kim, 2009). Hierarchical position thus plays a role in promoting responsibility and accountability, and in defining values that are essential to the organizational cultures (Desmarais & Gamassou, 2014). Hierarchical authority allows managers to take responsibilities and exercise an influential role in performing public services. It makes public service careers more attractive not only by providing the potential for promotion (extrinsic motivation), but also by developing a sense of professional status among employees (intrinsic motivation).

Hypothesis 2: Authority is positively associated with PSM, particularly with CPV and APS.

Loyalty evolved as a response to the adaptive changes of forming a cohesive coalition to compete for limited resources with other groups of people (Graham et al., 2011). It triggers a sense of community to motivate individuals to make personal sacrifices, and to derive utilities from activities and objects that benefit the in-group or support the group's identity. As argued in Chapter 2, the Loyalty foundation can elicit the sense of group identity such as patriotism and citizenship, stimulating group-based self-sacrifice or parochial altruism. In the name of loyalty, people tend to limit the scope of individualizing foundations toward outsiders (E. Fehr et al., 2008), and they are willing to sacrifice their own resources for their group while ignoring harm and injustice inflicted on outsiders (Baron et al., 2013).

Moynihan and Pandey (2007a) present evidence for the effects of group culture on organizational commitment and job involvement. They argue that an emphasis on cohesion and morale creates a sense of mutual expectation and a shared commitment to exemplify the group. Also, the sense of community can stimulate a sense of mutual expectation and a shared commitment to exemplify the group, making public employees align their self-identity more closely with the public values that are endorsed by the affiliated organizations (Brænder & Andersen, 2013). By triggering the sense of belonging, a public employee aligns her or his self-identity more closely with the public values that are embedded in the affiliated institutions or community, which serves as a commitment to take community responsibility or to engage in activities that are congruent to this identity (Ashforth & Mael, 1989; N. Boyd et al., 2018; Perry, 2000).

***Hypothesis 3*: Loyalty is positively associated with PSM, particularly with SS and CPV.**

Sanctity relates to a sense of purpose in life by creating the feeling of being connected to an elevated, less carnal, whole existence. It diminishes the self and enhances organizational commitment by providing a sense of meaning and interconnectedness for employees to feel passionate and abundant (Karakas, 2010). According to the Moral Theory of PSM, Sanctity can engender relevant PSM-concepts such as temperance and a sense of calling to public service, connecting the self to collective and transcendent purposes, and stimulating sacrifice for a higher cause beyond self. Public employees are expected to preserve the sanctity of life (Denhardt 1988, p. 58), and may perceive the abuse of power and corruption to be detrimental to society, which triggers Sanctity to motivate individuals to sacrifice their personal gain for a higher calling, and blow the whistle for preserving the integrity of public service (G. A. Brewer & Selden, 1998; Caillier, 2015). Public service as a noble and spiritual calling is found to attract a particular type of individuals into the public sector and performing public service (Bruce, 2000; Ferguson & Milliman, 2008; Houston & Cartwright, 2007;

Pattakos, 2004; Perry, 1996). Public employees are expected to preserve the sanctity of life (Denhardt 1988, p. 58), and may perceive the abuse of power and corruption to be detrimental to society, which triggers Sanctity to motivate individuals to sacrifice their personal gain for a higher calling, and blow the whistle for preserving the integrity of public service (Caillier 2015; Brewer and Selden 1998).

***Hypothesis 4*: Sanctity is positively associated with PSM, particularly with APS and SS.**

3.2.2 Participation in Social Organizations

Above, we have argued how individuals can (intuitively) associate moral foundations with each dimension of PSM. The next step is to argue that specific moral foundations can have specific implications for specific prosocial and pro-organizational behaviors (R. Fehr et al., 2015). In a similar vein, PSM has long been associated with different prosocial behaviors, such as volunteering and donating (Clerkin et al., 2009; Coursey et al., 2008; Houston, 2006; Lee, 2012; Lee and Jeong, 2015; Perry et al., 2008). Social and public organizations can instill stimulus and experiences in an institutional environment that trigger PSM and motivate volunteering or donation (Clerkin et al., 2009). However, volunteering involves various types of activity that can serve different functions for different types of organizations (Lee and Jeong, 2015; Segal and Weisbrod, 2002), and PSM and its subdimensions are also found to vary across different social organizations (Coursey et al., 2011).

From the perspective of Moral Foundations Theory (MFT), social organizations can utilize different configurations of moral foundations to provide — and attract — individuals with different codes of conduct, social identities, and motivational vocabularies. Therefore, exploring moral justifications and social stimuli behind various PSM-related behaviors can provide more practical implications on how to stimulate specific prosocial behaviors in the public sector. In the current section, we develop hypotheses on the behavioral implications regarding participation, donation and volunteering in different types of social organizations,[8] from environmental and humanitarian organizations via religious organizations and political parties to the community-oriented organizations such as sports clubs.

[8] Our social organization typology follows the classification of the Dutch Longitudinal Internet Studies for the Social Sciences (LISS) panel, which classifies social organizations into 12 types: sports clubs, trade unions, professional business associations, consumer organizations and automobile clubs, human rights organizations, environmental and peace organizations, religious organizations, political parties, education organizations, social clubs, and other social organizations.

Environmental and humanitarian organizations dedicate their efforts to provide aid and relief to suffering victims, to defend human and animal rights, to promote equality and justice, and to protect the environment against misuse or degradation from human forces. These organizations focus on public service missions that are well-matched with individualizing moral foundations, including Care and Fairness, which are primarily concerned with harm avoidance, individual rights, and equality. For instance, individualizing moral foundations are found to be associated with increased climate-friendly choices (Dickinson et al., 2016; Jansson and Dorrepaal, 2015; Markowitz and Shariff, 2012; Vainio and Mäkiniemi, 2016). These values and moral obligations are also compatible with the public values and affective commitment that PSM entails, such as equity, concern for future generations, and caring about the needs and suffering of individuals (Kim & Vandenabeele, 2010). Azhar and Yang (2019) find that PSM is positively associated with pro-environmental behaviors that seek to minimize the negative impact of one's action on the natural environment. Therefore, we hypothesize that both individualizing foundations and PSM are positively associated with participation in environmental and humanitarian organizations.

***Hypothesis 5a*: PSM and individualizing foundations are positively associated with participation in environmental and humanitarian organizations.**

In line with Moral Theory of PSM, we argue that PSM is a higher-order motivation that links experiences and the social environment with moral foundations to establish a sense of public morality. PSM thus may take a mediating role in the relationship between individualizing foundations and volunteering in environmental and humanitarian organizations. In other words, higher endorsement of individualizing moral foundations alone is not sufficient to motivate individuals to perform corresponding public services, as such a relationship is indirect and mediated by the extent to which individuals can associate public service with relevant stimuli that trigger individualizing moral foundations.

***Hypothesis 5b*: PSM mediates the relationship between individualizing foundations and participation in environmental and humanitarian organizations.**

PSM has long been associated with religious activities (Freeman and Houston, 2010; Houston and Cartwright, 2007; Perry, 1997; Perry et al., 2008). Freeman and Houston (2010) argue that religions and public institutions share the same emphasis on communal values, such as compassion and the sense of community, providing opportunities for individuals to make personal sacrifices for charitable causes. Like religion, public service as a calling echoes with Sanctity as well: Public service fulfills individuals' need to live in an elevated way and to achieve a spiritual purpose (Houston and

Cartwright, 2007). For these reasons, Perry (1997) finds partial support that "closeness to God" is positively correlated to individuals' PSM. Therefore, we argue that both PSM and Sanctity are related to the increased participation in religious organizations, such as churches and mosques. Such religious organizations motivate individuals by triggering the Sanctity foundation. Religious organizations, unlike public institutions, are devoted to a deep faith in God, rather than merely in public service. We therefore expect that Sanctity takes a mediating role in the positive association between PSM and religiosity. In other words, it is Sanctity, rather than PSM, that has a direct effect on religious activities.

Hypothesis 6a: PSM and Sanctity are positively associated with participation in religious organizations.

Hypothesis 6b: Sanctity mediates the relationship between PSM and participation in religious organizations.

PSM is a public administration concept, but may also have behavioral implications regarding political behaviors. Vandenabeele (2011) finds that left-wing and central-right voters score higher on PSM than extreme right voters and non-voters. Taylor (2010) finds that high-PSM individuals are more frequently engaged in non-electoral political activities such as making a political donation, signing a petition, and taking part in a demonstration. Therefore, we expect that PSM has a positive association with participation in political parties. In a free democracy, where party competition usually involves a broad political spectrum, we do not expect a specific set of moral foundations to be associated with participation in political parties, except the Loyalty foundation that may be triggered by party competition.

Hypothesis 7a: PSM is positively associated with participation in political parties.

Hypothesis 7b: Loyalty is positively associated with participation in political parties.

As argued above, intergroup competition acts as an essential trigger of the Loyalty foundation. Hence, we conjecture that the Loyalty foundation can be positively associated with participation in sports clubs. However, since sports clubs are less relevant to public service *per se*, their relationship with the Loyalty foundation is less likely to be mediated by PSM. We form the following two hypotheses to substantiate that moral foundations and PSM are related, but still two different constructs. The Loyalty foundation can engender a sense of common fate with fellow members in various organizations, from a sports team and a private organization to a local community and a nation-state. However, PSM has behavioral influences only when a stimulus is associated with moralized public services.

***Hypothesis 8a**: Loyalty is positively associated with participation in sports clubs.*

***Hypothesis 8b**: PSM is not associated with participation in sports clubs.*

3.3 Method

3.3.1 Data Source

To obtain data to test our hypotheses, we conducted a survey with the Dutch Longitudinal Internet Studies for the Social Sciences (LISS) panel in August 2018.[9] The LISS panel consists of 4,500 Dutch households, comprising 7,000 individuals. The panel is based on a true probability sample of households drawn from the population register maintained by Statistics Netherlands (CBS). Households that could not otherwise participate are provided with a computer and Internet connection. Panel members complete online questionnaires every month, each time taking about 15–30 minutes in total, and are paid for each completed questionnaire.

For Hypothesis 1-4, a potential downside of our one-time participation in the LISS is that our information to measure MFT and PSM (our independent and dependent variables) is collected through single-respondent questionnaires, which may be associated with common-method variance (CMV) that might bias regression analyses. To counter this, our explanatory and control variables have different scale endpoints, and we randomize the order of the questions (Chang, van Witteloostuijn, and Eden, 2010). Ex post Harman's single-factor test (Schriesheim, 1979) of our PSM and MFT combined items indicates that a low 22.8% of the variance could be attributed to a single factor, suggesting that CMV is not a serious problem in our study. For Hypothesis 5-8, CMV is not a concern since information on dependent variables was not collected at the same time. Of course, even then, our design is correlational, implying that we cannot claim to find any causal evidence.

We added the MFT and PSM scales as modules to the LISS panel, which was administered to a selection of panel members of 16 years or older working across the private and public sector, and who had answered the LISS Work and Schooling Survey, Willingness to Compete Survey and the Dutch Skill Survey (NSS) in 2017. In August 2018, our questionnaire was added and presented to

[9] For documentation and data, see http://www.lissdata.nl/lissdata/.

775 selected panel members, with 635 respondents fully completing the questionnaire, implying a high response rate of 81.9%. The non-respondents are five year younger, on average (two-sample *t*-test, $p = 0.00$). No other characteristics (such as gender, education, income, and public-sector employment) are significantly correlated to non-response.

3.3.2 Measurement

Public Service Motivation variables. Regarding PSM motives, we work with Perry (1996)'s multidimensional conception, comprised of four dimensions: APS, CPV, COM, and SS. We use Kim et al. (2012)'s international scale (16 items) to measure these four dimensions of PSM on a five-point Likert-type scale. The Composite Reliability (McNeish, 2017) ω (total) = 0.9 for the overall PSM scale (referred to as PSM Overall), and ω = 0.82 for COM, ω = 0.78 for APS, ω = 0.76 for CPV, and ω = 0.74 for SS.[10] These values for Composite Reliability are similar to reported by Kim et al. (2012) (ranging from 0.716 to 0.824).

Moral Foundation Variables. We measure moral foundations with the 30-item Moral Foundations Questionnaire (MFQ30; Graham et al., 2011). The MFQ30 is comprised of two sections: one in which respondents are asked about the moral relevance of various considerations when deciding whether something is right or wrong (from 1 = 'not at all relevant' to 6 = 'extremely relevant'); and a second one asking about the extent of agreement with a series of moral statements (from 1 = 'extremely disagree' to 6 = 'extremely agree'). Sample items include: "Whether or not some people were treated differently than others" (Fairness, relevance section) and "People should not do things that are disgusting, even if no one is harmed" (Sanctity, agreement section). Scores for each moral foundation are computed by averaging the corresponding items across the two sections. Figure 3.1 reports the ideological differences in moral foundation endorsement across two different sections. Like Graham, Haidt, and Nosek (2009), we find that progressives endorse Care and Fairness more than the other three foundations, and conservatives endorse all five moral foundations equally, implying that moral foundations can explain ideological differences in the Netherlands.

[10] The reliability coefficients (Cronbach's α) of the overall PSM scale was α = 0.9, and α = 0.82 for COM, α = 0.78 for APS, α = 0.76 for CPV, and α = 0.72 for SS. All the reported estimates of internal consistency reliability assume that items can be measured in interval levels.

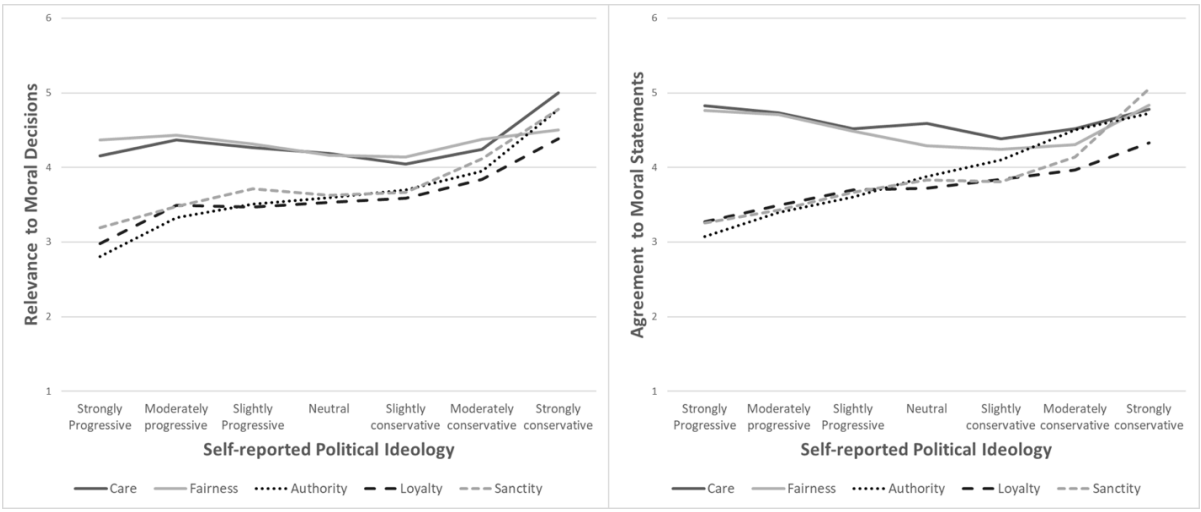


Figure 3.1 Ideological Differences in Moral Foundation Endorsement

The estimated five-factor model produces a non-positive definite covariance matrix of latent variables because Care and Fairness are extremely correlated (completely standarized $\rho = 0.992$). Therefore, we combine Care and Fairness into one latent variable, referred to as the individualizing moral foundations INDV. The resulting four-factor model – with χ^2 (399) = 2168.4, CFI = .670, and RMSEA = .084 (95% CI [.080, .087]) – is significantly better [$\Delta\chi^2$ (5) = 53.3, $p < .001$] than the two-factor model – χ^2 (404) = 2221.7, CFI = .661, and RMSEA = .084 (95% CI [.081, .088]) – in which three binding foundations Authority, Loyalty, and Sanctity are combined. The four-factor model is also significantly better [$\Delta\chi^2$ (3) = 23.9, $p < .001$] than three factor model – χ^2 (402) = 2192.3, CFI = .666, and RMSEA = .084 (95% CI [.080, .087] – in which only Authority and Loyalty are combined. The fit estimates are lower than those in Graham et al. (2011), but similar to Nilsson and Erlandsson (2015)'s findings, which uses a Swedish sample.[11] The Composite Reliability (McNeish, 2017) is $\omega = 0.8$ for INDV, $\omega = 0.62$ for Loyalty, $\omega = 0.63$ for Authority, and $\omega = 0.66$ for Sanctity. The reliability of binding foundations was not high, but not very different from the range previously obtained (from 0.65-0.84), which could be due to the MFQ30's goal of capturing the widest scope of moral concern for each moral foundation (Graham et al., 2011).[12]

[11] The sources of misfit come from the covariance between error terms of items, and one Fairness item with low factor loading (the attitude towards inheritance: "I think it's morally wrong that rich children inherit a lot of money while poor children inherit nothing").

[12] The Revelle's omega total can be an ideal estimate of internal reliability in this case (McNeish, 2017). To cope with the violation of unidimensionality, the Revelle's omega total employs a Schmid-Leiman rotation (Schmid and Leiman, 1957), which rotates the factor solution to a bi-factor model that includes one general factor and several minor factors.

***Social Organization Participation Variables*.** The LISS panel conducts annually the Social Integration and Leisure survey, which contains observations of participation in a wide variety of social organizations. We use the 10th wave of The Social Integration and Leisure survey, which was conducted in October and November 2017. The survey asked about whether the respondents have donated money, have participated in an activity, have been a member, have performed voluntary work, or have no connection with 12 types of organizations.[13] We create a binary variable for each type of organization with value 0 if the respondent has no connection, and with value 1 if the respondent has participated in the organizations in any way mentioned above. The types of organizations included in this study are environmental organizations (for environmental protection, peace organization or animal rights), humanitarian organizations (for humanitarian aid, human rights, minorities, or migrants), religious or church organization, political parties, and sports clubs (for sports and outdoor activities).[14]

Control Variables. In line with prior work on the antecedents of PSM (Perry, 1997; Perry et al., 2008; Moynihan and Pandey, 2007b; van Witteloostuijn, Esteve, and Boyne, 2016), we include six control variables: gender (1 = female), age (in years), education, religiosity, income, and working in the (semi-)public sector.[15] Education is a categorical/nominal variable with six categories: primary education (BASIS), pre-vocational training (VMBO), higher general secondary education/pre-university education (HAVO/VWO), vocational training (MBO), professional education (HBO), and university education (WO). Religiosity is a categorical variable indicating whether the respondent considered her or himself to be a member of a certain religion or church community (Yes / No / I do not know). Income is a categorical variable with five categories: personal net monthly income of €1,500 or less, between €1,501 and €3,000, €3,001 or more, "I do not know," and "I do not want to answer."

The Revelle's omega total for INDV, Loyalty, Authority, and Sanctity is 0.84, 0.83, 0.75, 0.73, and 0.76, respectively. This indicates that the MFQ measures are reliable if we relax the assumption of unidimensionality.

[13] The variables we use are from csj17003 to csj17062.

[14] We do not expect MFs and PSM to have specific relationship with participation in trade unions, business organizations, and hobby clubs. Consumer organization and automobile clubs are classified in the same category, but advocacy groups and hobby clubs serve different purposes and missions. Therefore, we do not include above organizations in the current study.

[15] Religiosity is the variable cr17j002 from the LISS Religion and Ethnicity survey, measured in August 2017. Working in the (semi-)public sector is the variable cw18k122 from the LISS Work and Schooling survey, measured in April and May 2018.

Table 3.2 and Table 3.3 present the descriptive statistics and bivariate correlations. PSM has a mean of 3.87 for the whole sample, 3.76 for the respondents working in the private sector, and 3.99 for the respondents working in the (semi-)public sector, respectively, which is similar to other studies (Kim, 2010, 2017). INDV is at a mean of 4.35, Authority at 3.71, Loyalty at 3.63, and Sanctity at 3.71. In our study, the binding foundations have higher means and slightly lower standard deviations than in Graham et al. (2011). The correlations between the independent variables (MFs) ranges from 0.31 to 0.67.

Table 3.2 Descriptive Statistics and Bivariate Correlations

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
PSM	3.87	0.52	1.00											
APS	3.87	0.64	0.87**	1.00										
CPV	4.31	0.58	0.75**	0.56**	1.00									
COM	4.01	0.62	0.86**	0.67**	0.60**	1.00								
SS	3.29	0.69	0.79**	0.61**	0.36**	0.55**	1.00							
INDV	4.35	0.63	0.61**	0.51**	0.57**	0.60**	0.32**	1.00						
Authority	3.71	0.73	0.16**	0.16**	0.15**	0.15**	0.07	0.37**	1.00					
Loyalty	3.63	0.69	0.30**	0.27**	0.19**	0.27**	0.24**	0.46**	0.58**	1.00				
Sanctity	3.71	0.78	0.35**	0.32**	0.24**	0.35**	0.22**	0.54**	0.62**	0.59**	1.00			
Gender (Female)	0.54	0.50	0.15**	0.17**	0.09*	0.23**	0.02	0.18**	0.01	0.01	0.12**	1.00		
Age	47.03	13.34	0.13**	0.06	0.19**	0.11**	0.08*	0.18**	0.05	0.08*	0.06	-0.07	1.00	
(Semi-)Public Sector	0.49	0.50	0.22**	0.21**	0.17**	0.15**	0.17**	0.15**	0.03	0.05	0.07	0.11**	0.12**	1.00

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

Table 3.3 Descriptive Statistics and Bivariate Correlations (Cont.)

	M	SD	PSM	COM	SS	APS	CPV	INDV	Authority	Loyalty	Sanctity
Environmental Org.	0.24	0.43	0.19**	0.12**	0.14**	0.18**	0.18**	0.08*	-0.13**	-0.08	-0.07
Humanitarian Org.	0.21	0.41	0.24**	0.19**	0.20**	0.24**	0.17**	0.08*	-0.07	-0.04	-0.03
Religious Org.	0.23	0.42	0.17**	0.13**	0.17**	0.14**	0.09*	0.09*	0.16**	0.15**	0.31**
Political Party	0.05	0.21	0.08*	0.01	0.14**	0.10	0.01	-0.04	-0.05	0.04	-0.02
Sports Club	0.49	0.50	0.07	0.05	0.07	0.08	0.04	-0.02	-0.07*	0.01	-0.05
Education - BASIS	0.04	0.19	-0.01	0.04	-0.02	-0.01	-0.05	0.02	0.04	-0.01	0.02
Education - VMBO	0.14	0.35	-0.10*	-0.02	-0.10**	-0.11**	-0.07	0.03	0.06	0.04	0.07
Education - HAVO/VWO	0.11	0.31	0.02	-0.01	0.02	0.03	0.01	0.00	0.06	0.03	0.04
Education - MBO	0.26	0.44	-0.20**	-0.15**	-0.12**	-0.19**	-0.21**	-0.06	0.04	0.02	0.03
Education - HBO	0.29	0.46	0.07	0.04	0.01	0.10*	0.09*	-0.02	-0.05	-0.05	-0.07
Education - WO	0.16	0.37	0.23**	0.14**	0.21**	0.19**	0.22**	0.06	-0.11**	-0.02	-0.06
Religiosity - No	0.68	0.47	-0.11**	-0.11**	-0.08	-0.11**	-0.06	-0.10*	-0.26**	-0.18**	-0.38**
Religiosity - YES	0.30	0.46	0.12**	0.12**	0.08	0.12**	0.08*	0.11**	0.26**	0.18**	0.39**
Religiosity - I don't know	0.02	0.13	-0.03	-0.01	0.00	-0.02	-0.08	-0.04	-0.01	0.01	0.00
Income - €1,500 or less	0.26	0.44	-0.07	-0.02	-0.03	-0.05	-0.16**	0.06	0.06	0.03	0.11**
Income - €1,501 - €3,000	0.57	0.49	0.08*	0.06	0.00	0.07	0.15**	0.00	-0.06	-0.03	-0.06
Income - €3,001 or more	0.09	0.29	0.12**	0.04	0.14**	0.11**	0.11**	0.01	-0.01	0.04	-0.07
Income - Do not know	0.02	0.15	-0.09*	-0.06	-0.07	-0.08	-0.08	0.08*	0.04	-0.01	-0.01
Income - Do not answer	0.05	0.22	-0.14**	-0.11**	-0.09*	-0.14**	-0.12**	-0.05	0.00	-0.04	0.01

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

3.4 Evidence

3.4.1 Study 1: Moral Theory of PSM (Hypothesis 1-4)

To test hypotheses 1-4, we use PSM and its subscales as the dependent variable and four-factor MFs as independent variables. The Breusch-Pagan/Cook-Weisberg test for heteroscedasticity has a *p*-value ranging from 0.0000 to 0.0002 (except Model 1-3b, for which the *p*-value is 0.1151), indicating that some of the models may suffer from heteroscedasticity. Therefore, we apply the so-called heteroscedasticity-corrected covariance matrices linear model (HC_3), as suggested by Davidson and MacKinnon (1993, 2004), to test our hypotheses.[16]

In Table 3.5, Model 1-1a only includes the control variables to explain PSM Overall, while Model 1-1b adds the four-factor MFs to estimate their correlation with PSM Overall. Following van Witteloostuijn, Esteve, and Boyne (2016), we classify PSM's dimensions into two categories of motives: affective PSM (COM and SS) in Table 3.6, and non-affective PSM (APS and CPV) in Table 3.7. Likewise, Models 1-2a, 1-3a, 1-4a, and 1-5a include only the control variables, and Models 1-2b, 1-3b, 1-4b, and 1-5b add the four-factor moral foundation variables. The variance inflation factors (VIFs) of explanatory variables, testing for multicollinearity, are between 1.68 and 2.46, which is considerably below the common threshold value of 10 (Neter, Kutner, Nachtsheim, and Wasserman, 1996).

As shown in Table 3.5, the control variables explain only 17.6% variation in PSM Overall, but the R^2 rises substantially to 46.3% after the four-factor MFs are included. We also observe such a noticeable increase in R^2 across all specifications in Table 3.6 and Table 3.7, especially for COM, APS and CPV. Model 1-1b shows that INDV and Sanctity are significantly and positively associated with PSM Overall ($p < 0.001$ and $p = 0.045$ respectively), with the effect size (standardized beta) one time larger than that of working in the public sector. An effect size lager than the effect of working in the public sector indicates that INDV is very relevant to PSM, given that PSM is usually considered to be grounded in public organizations. Loyalty is positively associated with PSM Overall ($p = 0.089$), with the effect size about that of working in the public sector. Contrary to our hypotheses, Authority

[16] We checked for different formulations of the heteroscedasticity-consistent covariance matrix, including the original formulation used in White (1980) – i.e., standard errors (HC_0) and HC_2. The results are similar (available upon request), with HC_3 giving slightly more conservative confidence intervals.

is found to be significantly and negatively associated with PSM Overall (p = 0.003), with the effect size being larger than that of working in the public sector.

In Table 3.6 and Table 3.7, INDV is significantly and positively associated with all PSM subscales ($p < 0.001$); Thus, Hypothesis 1 is supported. Authority is negatively associated with COM, SS and APS (p = 0.005, 0.002, and 0.023 respectively), but not associated with CPV (p = 0.729); so, Hypothesis 2 is rejected. Loyalty is positively associated with SS (p = 0.003), but not positively with CPV (p = 0.102), implying that Hypothesis 3 is only partially supported. Sanctity is positively associated with SS and APS (p = 0.028 and 0.028, respectively); hence Hypothesis 4 is supported. The empirical relationships between PSM and MFs are summarized in Table 3.4.

Table 3.4 The Empirical Relationship between MFs and PSM

Moral Foundation	**Public Service Motivation**				
	Overall	COM	SS	APS	CPV
INDV	+ $p < 0.001$	+ $p < 0.001$	+ $p < 0.001$	+ $p < 0.001$	+ $p < 0.001$
Authority	- $p = 0.003$	- $p = 0.005$	- $p = 0.002$	- $p = 0.023$	+ $p = 0.729$
Loyalty	+ $p = 0.089$	+ $p = 0.418$	+ $p = 0.003$	+ $p = 0.065$	- $p = 0.102$
Sanctity	+ $p = 0.045$	+ $p = 0.074$	+ $p = 0.028$	+ $p = 0.028$	+ $p = 0.493$

Note: p-value is evaluated in the two-tailed test.

Table 3.5 Regression Results for PSM Overall

Dependent variable	Model 1-1a PSM Overall				Model 1-1b PSM Overall			
Independent variables	Coef.	Std.	t	Beta	Coef.	Std.	t	Beta
INDV					0.418***	0.037	11.25	0.509
Authority					-0.084**	0.028	-2.97	-0.118
Loyalty					0.052+	0.031	1.70	0.069
Sanctity					0.067*	0.034	2.01	0.101
Gender (female)	0.179***	0.045	3.96	0.172	0.089*	0.036	2.48	0.085
Age	0.005***	0.002	3.43	0.135	0.002	0.001	1.13	0.039
(Semi-)public sector	0.134***	0.041	3.27	0.129	0.071*	0.034	2.08	0.068
Education								
VMBO	-0.113	0.127	-0.89	-0.076	-0.109	0.099	-1.1	-0.073
HAVO/VWO	0.068	0.129	0.53	0.041	0.060	0.103	0.58	0.036
MBO	-0.169	0.121	-1.39	-0.143	-0.126	0.096	-1.3	-0.106
HBO	0.013	0.120	0.11	0.011	0.049	0.097	0.51	0.043
WO	0.243+	0.126	1.93	0.174	0.203*	0.102	2.00	0.145
Religiosity								
Religious	0.108**	0.041	2.62	0.096	0.048	0.038	1.24	0.042
I don’t know	-0.084	0.177	-0.47	-0.021	-0.019	0.116	-0.17	-0.005
Income								
EUR 1501-3000	0.039	0.057	0.69	0.037	0.067	0.042	1.58	0.064
EUR 3001 or more	0.169+	0.089	1.89	0.095	0.201**	0.069	2.90	0.113
Do not know	-0.129	0.129	-1.00	-0.034	0.025	0.126	0.20	0.007
I don't want to answer	-0.221*	0.097	-2.28	-0.096	-0.135+	0.075	-1.81	-0.059
Constant	3.424***	0.148	23.10		1.706***	0.176	9.69	
F-statistic	10.89***				25.09***			
Adjusted R2	0.176				0.463			
ΔR2					0.287			

Note: Robust SEs are reported; $N = 612$; + $p \leq .0.1$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$, two-tailed test.

Table 3.6 Regression Results for Affective Motives of PSM

	Model 1-2a		**Model 1-2b**		**Model 1-3a**		**Model 1-3b**	
Dependent variable	COM		COM		SS		SS	
Independent variables	Coef.	Std.	Coef.	Std.	Coef.	Std.	Coef.	Std.
INDV			0.531***	0.044			0.219***	0.059
Authority			-0.110**	0.039			-0.150**	0.048
Loyalty			0.034	0.042			0.161**	0.055
Sanctity			0.076+	0.042			0.120*	0.054
Gender (female)	0.317***	0.055	0.203***	0.045	0.022	0.061	-0.037	0.058
Age	0.004*	0.002	0.000	0.002	0.005*	0.002	0.003	0.002
(Semi-)public sector	0.102*	0.051	0.024	0.042	0.184***	0.058	0.140*	0.056
Education								
VMBO	-0.210	0.139	-0.207*	0.095	-0.117	0.205	-0.125	0.197
HAVO/VWO	-0.156	0.141	-0.166	0.103	0.128	0.206	0.112	0.198
MBO	-0.340*	0.132	-0.288**	0.092	-0.064	0.196	-0.046	0.189
HBO	-0.194	0.131	-0.157+	0.093	0.051	0.195	0.079	0.188
WO	-0.018	0.140	-0.078	0.102	0.376+	0.196	0.344+	0.189
Religiosity								
Religious believer	0.134*	0.052	0.074	0.050	0.096	0.061	0.019	0.065
I don’t know	-0.025	0.255	0.063	0.167	0.057	0.136	0.061	0.136
Income								
EUR 1501-3000	0.080	0.070	0.114*	0.055	-0.108	0.074	-0.088	0.067
EUR 3001 or more	0.168	0.111	0.212*	0.088	0.105	0.119	0.124	0.112
Do not know	-0.202	0.170	-0.006	0.166	-0.177	0.181	-0.062	0.184
I don't want to answer	-0.201+	0.112	-0.099	0.084	-0.282*	0.125	-0.212+	0.114
Constant	3.703***	0.163	1.684***	0.199	2.949***	0.218	1.685***	0.275
F-statistic	6.57***		25.09***		7.98***		10.86***	
Adjusted R^2	0.123		0.463		0.089		0.189	
ΔR^2			0.340				0.100	

Note: Robust SEs are reported; $N = 612$; + $p \leq .0.1$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$, two-tailed test.

Table 3.7 Regression Results for Non-affective Motives of PSM

Dependent variable	Model 1-4a APS		Model 1-4b APS		Model 1-5a CPV		Model 1-5b CPV	
Independent variables	Coef.	Std.	Coef.	Std.	Coef.	Std.	Coef.	Std.
Fairness			0.392***	0.046			0.528***	0.042
Authority			-0.087*	0.038			0.012	0.036
Loyalty			0.073+	0.039			-0.058	0.035
Sanctity			0.099*	0.045			-0.025	0.036
Gender (female)	0.214***	0.055	0.125*	0.048	0.164 **	0.052	0.063	0.039
Age	0.003	0.002	-0.001	0.002	0.009 ***	0.002	0.005**	0.002
(Semi-)public sector	0.174***	0.051	0.110*	0.045	0.077	0.047	0.008	0.040
Education								
VMBO	-0.153	0.163	-0.148	0.137	0.028	0.130	0.043	0.109
HAVO/VWO	0.102	0.166	0.093	0.140	0.198	0.124	0.199+	0.104
MBO	-0.205	0.156	-0.162	0.132	-0.065	0.121	-0.006	0.102
HBO	0.042	0.157	0.087	0.135	0.154	0.119	0.189+	0.100
WO	0.220	0.167	0.190	0.143	0.397 ***	0.124	0.356***	0.106
Religiosity								
Religious believer	0.146**	0.051	0.063	0.052	0.057	0.045	0.035	0.043
I don’t know	-0.046	0.226	0.006	0.175	-0.321	0.210	-0.207	0.132
Income								
EUR 1501-3000	0.043	0.068	0.072	0.056	0.142 *	0.067	0.170***	0.052
EUR 3001 or more	0.206+	0.116	0.238*	0.098	0.197 *	0.098	0.231**	0.084
Do not know	-0.082	0.185	0.068	0.193	-0.054	0.145	0.103	0.114
I don't want to answer	-0.264*	0.118	-0.176+	0.099	-0.134	0.119	-0.051	0.097
Constant	3.499***	0.182	1.706***	0.218	3.547 ***	0.155	1.750***	0.213
F-statistic	9.6***		18.73***		9.63***		22.07***	
Adjusted R^2	0.153		0.358		0.166		0.424	
ΔR^2			0.205				0.258	

Note: Robust SEs are reported; $N = 612$; + $p \leq .0.1$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$, two-tailed test.

Regarding control variables, female and age are significantly and positively related to PSM across most of the models that do not include moral foundation variables. We notice that MFs mediate the positive relationship of age with affective motives COM and SS: The positive correlation disappears after we include moral foundation variables. The positive association of gender with COM and APS remains significant after we include moral foundation variables. We also find MFs to mediate the positive linkage of religiosity with PSM Overall and its subscales COM and APS. The positive correlation of working in the (semi-)public sector with SS and APS remains significant and sizable with or without including MF variables, whereas its relation with COM is mediated by MFs. University education (WO) and middle and higher income (monthly income higher than €1,500) is found to significantly and positively associated with CPV. The above relationships are summarized in Table 3.8.

Table 3.8 Direct and Indirect Effects of Control Variables on PSM

Controls	Public Service Motivation				
	Overall	COM	SS	APS	CPV
Gender	++	++		++	+
Age	+	+	+		++
(Semi-)public Sector	++	+	++	++	
Religious	+	+		+	
WO (University Education)	#				++
High Income	#	#		#	++

Note: ++ direct effect on PSM; + indirect effect on PSM (mediated by moral foundations); # significant after moral foundations is included; $p \leq 0.05$.

We further investigate moral heterogeneity for gender, sector, and religiosity to see whether demographic factors can explain the relationship between PSM and MFs. On the one hand**,** although the working-in-the-(semi-)public-sector dummy variable becomes insignificant after interaction with MFs, we do not find significant cross-sector (private/public) differences in the effect of MFs on PSM. On the other hand, we find evidence for moral foundational heterogeneity for religiosity (Table 3.9) and gender (Table 10).[17]

[17] In Tables 9 and 10, we only report models with significant moral foundational heterogeneity for religiosity and gender ($p < 0.05$).

Table 3.9 Heterogeneity in Religiosity

Dependent variable	**Model 1-6** PSM overall		**Model 1-7** SS	
Independent variables	Coef.	Std.	Coef.	Std.
INDV				
non-believers	0.441***	0.043	0.285***	0.065
religious believers	0.306***	0.076	-0.030	0.133
Authority				
non-believers	-0.074*	0.033	-0.113*	0.056
religious believers	-0.130*	0.058	-0.245*	0.097
Loyalty				
non-believers	0.045	0.037	0.135*	0.065
religious believers	0.106+	0.057	0.300**	0.107
Sanctity				
non-believers	0.040	0.041	0.029	0.064
religious believers	0.159*	0.064	0.353***	0.107
Religiosity (religious)	0.153	0.331	0.014	0.536
F-statistic	19.40***		8.10***	
Adjusted R^2	0.464		0.198	

Note: Robust SEs are reported; N = 612; explanatory variables are evaluated with a two-tailed test; control variables are included in the model but not reported in the table*;* + $p \leq .0.1$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$, two-tailed test.

In Table 3.9, Sanctity is positively associated with PSM Overall and SS for religious believers (p = 0.013 and 0.001), but not for nonbelievers (p = 0.327 and 0.649), and the difference is very significant for SS [$F(1, 585) = 6.88$; $p = 0.009$], but not for PSM Overall [$F(1, 585) = 2.88$; $p = 0.111$]. INDV is positively associated with SS for non-believers (p = 0.000), but not for believers (p = 0.823), and the difference is significant [$F(1, 585) = 4.75$; $p = 0.030$].

As Tables 3.4-3.6 indicate, the association of female with PSM Overall, COM, and APS is consistently positive and robust regarding including moral foundational heterogeneity in gender. The association with CPV, by contrast, becomes insignificant when including the moral foundations. In , Loyalty is positively related to PSM Overall for males and APS (p = 0.019 and 0.023), but not for females (p = 0.833 and 0.945), although the difference is not very significant [$F(1, 589) = 3.35$ and 2.57, and $p = 0.068$ and 0.110, respectively]. Loyalty is found to be negatively correlated to CPV for females (p = 0.003), but not for males (p = 0.864), and the difference is significant [$F(1, 589) = 4.34$, $p = 0.038$]. Sanctity is found to be positively related to PSM Overall and SS for females (p = 0.011 and 0.003), but not for males (p =0.649 and 0.715), although the difference is not very significant [$F(1, 589) = 2.22$ and 3.21, and $p = 0.137$ and 0.074 respectively]. In all, this set of findings suggests that gender matters.

Table 3.10 Heterogeneity in Gender

	Model 1-8		**Model 1-9**		**Model 1-10**		**Model 1-11**	
Dependent variable	PSM overall		SS		APS		CPV	
Independent variables	Coef.	Std.	Coef.	Std.	Coef.	Std.	Coef.	Std.
INDV								
male	0.485***	0.052	0.327***	0.079	0.420***	0.066	0.596***	0.062
female	0.340***	0.044	0.101	0.076	0.356***	0.058	0.450***	0.048
Authority								
male	-0.081+	0.046	-0.100	0.076	-0.099	0.062	0.033	0.055
female	-0.079*	0.036	-0.181**	0.063	-0.074	0.050	0.002	0.047
Loyalty								
male	0.104*	0.044	0.170*	0.079	0.131*	0.058	0.009	0.053
female	-0.009	0.043	0.141+	0.079	0.004	0.055	-0.140**	0.048
Sanctity								
male	0.021	0.047	0.028	0.078	0.096	0.060	-0.080	0.054
female	0.115*	0.045	0.208**	0.070	0.109+	0.064	0.034	0.048
Gender (female)	0.772*	0.298	0.693	0.435	0.726+	0.371	0.929**	0.349
F-statistic	21.76***		9.15***		16.25***		19.27***	
Adjusted R^2	0.470		0.193		0.360		0.440	

Note: *Robust SEs are reported; N=612; explanatory variables are evaluated with a two-tailed test; control variables are included in the model but not reported in the table;* + $p \leq .0.1$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$, two-tailed test.

3.4.2 Study 2: Social Organization Participation (Hypothesis 5-8)

To test Hypotheses 5-8, we use the information as to whether the survey participants are active in or for a social organization. In what follows, we use these binary Social Organization Participation variables as dependent variables, and both PSM and four-factor MFs as explanatory variables. Since our dependent variables are binary, we employ probit regressions with robust standard errors. In Table 3.11, all models have three sub-models *a*, *b*, and *c*: the sub-model *a* includes only PSM Overall as the explanatory variable, the sub-model *b* includes only MFs, and sub-model *c* includes both PSM Overall and MFs. All sub-models include the control variables gender, age, education, religiosity, income, and working in the (semi-)public sector. The variance inflation factors (VIFs) of explanatory variables in all models are between 1.68 and 2.47, so multicollinearity is not a concern.

First, Models 2-1 and 2-2 show that PSM and INDV are positively associated with participation in environmental and humanitarian organizations, although the significance is weak for PSM in Model 2-1a (p = 0.052). Models 2-1c and 2-2c reveal that the relationship with INDV disappears after we include PSM Overall. Therefore, Hypotheses 5a and 5b are supported. The average marginal effect of PSM on participation in environmental and humanitarian organizations is 9.7% (p = 0.028, Model 2-1c) and 17.7% (p = 0.000, Model 2-2c), respectively.

Second, similarly, participation in religious organizations is found to be weakly and positively associated with PSM (p = 0.079, Model 2-3a), with a strongly positive and significant association between Sanctity and religious activities (p = 0.007, Model 2-3b). Model 2-3*c* shows that the relationship between PSM and religious activities becomes insignificant in the full model (p = 0.219, Model 2-3*c*). The average marginal effect of Sanctity on religious activities is 5.3% (p = 0.012, Model 2-3*c*); the small marginal effect can be attributed to the fact that, unsurprisingly, religiosity is strongly correlated with the participation in religious activities [$\chi^2(2) = 274.19$, $p < 0.001$]. In Table 3.12 we exclude religiosity from the regression. Then, PSM is strongly and positively associated with participation in religious organizations (p = 0.003, Model 2-6*a*), and we still find a mediating role of Sanctity. Therefore, Hypothesis 6a and 6b are supported. When not controlling for religiosity, PSM has an average marginal effect of 11.3% (p = 0.002, Model 2-6a), and Sanctity has an average marginal effect of 21.8% ($p < 0.001$, Model 2-6c).

Table 3.11 Probit Regression Results for Social Organization Participation

Dependent Variable	**Model 2-1** Environmental Org.		**Model 2-2** Humanitarian Org.		**Model 2-3** Religious Org.		**Model 2-4** Political Party		**Model 2-5** Sports Club	
Independent variables	Coef.	Std.	Coef.	Std.	Coef.	Std.	Coef.	Std.	Coef.	Std.
Sub-model a: PSM and controls										
PSM Overall	0.264+	0.136	0.558***	0.146	0.293+	0.167	0.228	0.237	0.095	0.110
Sub-model b: MFs and controls										
INDV	0.281*	0.126	0.253*	0.129	-0.156	0.178	-0.199	0.250	-0.022	0.107
Authority	-0.185	0.113	-0.092	0.117	-0.328*	0.136	-0.319+	0.192	-0.175+	0.098
Loyalty	-0.109	0.121	-0.104	0.119	0.213	0.151	0.325+	0.194	0.206*	0.104
Sanctity	-0.170	0.119	-0.054	0.120	0.376**	0.140	-0.117	0.204	-0.111	0.106
Sub-model c: PSM, MFs, and controls										
PSM Overall	0.363*	0.167	0.699***	0.161	0.254	0.207	0.603*	0.264	0.201	0.140
INDV	0.141	0.145	-0.027	0.143	-0.254	0.201	-0.433+	0.243	-0.107	0.122
Authority	-0.160	0.115	-0.049	0.121	-0.304*	0.138	-0.286	0.194	-0.160	0.099
Loyalty	-0.122	0.121	-0.123	0.120	0.204	0.151	0.324+	0.191	0.197+	0.104
Sanctity	-0.197+	0.119	-0.100	0.121	0.351*	0.142	-0.159	0.196	-0.124	0.107
Gender (female)	0.321**	0.136	0.028	0.137	0.129	0.174	0.148	0.221	0.089	0.117
Age	0.020***	0.005	0.007	0.005	0.008	0.007	0.017*	0.008	-0.000	0.004
(Semi-) public sector	0.082	0.126	0.140	0.133	-0.117	0.169	-0.258	0.222	0.130	0.112
Religious believer	0.141	0.148	0.073	0.153	2.235***	0.178	0.728***	0.216	0.167	0.131
Constant	-2.002**	0.684	-3.011***	0.780	-3.591***	0.912	-2.472*	1.104	-0.213	0.555
Observations	586		596		596		485		596	
Wald Statistics	87.67**		77.96**		238.8**		37.2**		27.97*	
Pseudo R2	0.133		0.121		0.480		0.152		0.04	

Note: All models include control variables: gender (1 = female), age (in years), education, religiosity, income, and working in the (semi-)public sector. Some of observations are dropped because of perfect predictions of some control variables: in Model 11 the Religion variable “I don’t know” perfectly predicts failures, and in Model 13 the Education variable “VMBO” and the income variable “I don’t want to answer” perfectly predict failures.
Robust SEs are reported; N = 612; + p ≤ .0.1; * p ≤ .05; ** p ≤ .01; *** p ≤ .001, two-tailed test.

Table 3.12 Probit Regression Results for Religious Organization Participation (excluding religiosity from control variables)

Dependent Variables	**Model 2-6a** Religious Org.		**Model 2-6b** Religious Org.		**Model 2-6c** Religious Org.		**Model 2-6d** Religious Org.	
Independent variables:	Coef.	Std.	Coef.	Std.	Coef.	Std.	Coef.	Std.
PSM Overall	0.399**	-0.133			0.323+	-0.175	0.317+	-0.173
Sanctity			0.905***	-0.126	0.871***	-0.126	0.836***	-0.13
PSM X Sanctity							0.21+	-0.109
INDV			-0.502***	-0.129	-0.631***	-0.149	-0.599***	-0.153
Authority			-0.08	-0.116	-0.052	-0.117	-0.034	-0.117
Loyalty			0.031	-0.121	0.017	-0.121	0.002	-0.121
Gender (female)	0.141	-0.128	0.201	-0.141	0.186	-0.142	0.203	-0.142
Age	0.015**	-0.005	0.02***	-0.005	0.019***	-0.005	0.019***	-0.005
(Semi-) public sector	0.011	-0.124	0.031	-0.129	0.004	-0.131	-0.013	-0.131
Constant	-2.134***	-0.444	-0.343	-0.795	0.211	-0.869	-0.036	-0.898
Observations	616		616		616		616	
Wald Statistics	41.34***		93.94***		97.80***		108.82***	
Pseudo R2	0.064		0.167		0.173		0.178	

Note: All models include control variables of education and income.
Robust SEs are reported; $N = 612$; + $p \leq .0.1$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$, two-tailed test.

Third, participation in political parties turns out to have no direct relationship with PSM (p = 0.334, Model 2-4a), but a significantly positive relationship shows up after including MFs (p = 0.022, Model 2-4c). Therefore, Hypothesis 7a is partially supported. The relationship seems to be confounded with INDV, which has a negative indirect relationship with participation in parties only in a full model (p = 0.427, Model 2-4b; p = 0.075, Model 2-4c).[18] Also, Authority has a negative indirect relationship (p = 0.097, Model 2-4b; p = 0.141, Model 2-4c) that is mediated by PSM. Connection with political parties is weakly and positively correlated to Loyalty (p = 0.095, Model 2-4b; p = 0.090, Model 2-4c). So, Hypothesis 7b is weakly supported.

Fourth and finally, participation in sports clubs is significantly associated with Loyalty (p = 0.047, Model 2-5b; p = 0.059, Model 2-5c). We do not find any significant relationship with PSM (p = 0.387, Model 2-5b; p = 0.151, Model 2-5c). Therefore, Hypothesis 8a and 8b are supported.

[18] Demeaning PSM and INDV, and adding an interaction term of the two demeaned variables into Model 2-4c gives a significantly positive coefficient for PSM Overall (β = 0.722, S.E. = 0.277, p = 0.009) and a negative coefficient for INDV (β = -0.478, S.E. = 0.241, p = 0.047). However, the interaction term is positive but not significant (β = 0.393, S.E. = 0.2501, p = 0.116).

3.5 Discussion

Overall, we find that moral foundations play an essential role in explaining PSM. Except for the MFT dimension of Authority, we find comprehensive support for our hypotheses: individualizing foundations have a pervasive association with all four dimensions of PSM, and Loyalty and Sanctity are positively related to a number of PSM's dimensions. Our first contribution is that we identify moral foundations that may be important antecedents of PSM. In Study 1, our model explains a substantial 19 to 46% of the variance in PSM Overall and its sub-dimensions. Particularly, there is a noticeable increase (10 to 34%) in explained variance (R^2) when the models include MFs as independent variables to explain PSM – an impressive result in comparison to many studies on antecedents of PSM (van Witteloostuijn, Esteve, and Boyne, 2016; Perry, 1997; Moynihan and Pandey, 2007b). Therefore, we provide evidence that PSM is linked to multiple combinations of moral foundations: Individuals can hold different moral views, but still feel motivated to perform public services (G. A. Brewer et al., 2000). We also explore the role of PSM and MFs in explaining participation in different types of organizations, showing that moral foundations can have different behavioral implications ─ and hence are conceptually different from PSM ─ for volunteering and participation in different social organizations.

On the one hand, we find that the individualizing foundations are highly relevant to the concept of PSM. Care and Fairness are essential for individuals to participate in reciprocal relationships: Care engenders affective sympathies that help individuals identify with the welfare of others, while Fairness enables the evaluation of welfare that elicits the concept of public values such as right, justice, and equality. Both foundations work in tandem to motivate people to sacrifice themselves for the welfare of others by making public service more valuable, meaningful, and attractive. Individualizing foundations are found to mediate the relationship between PSM and participation in environmental and humanitarian organizations, providing strong support for the role of individualizing foundations in motivating individuals to perform public services. However, INDV is confounding the relationship between PSM and non-electoral political activities. Individuals with high INDV are less likely to engage in non-electoral political activities, but they tend to develop a high level of PSM that can motivate them to participate in politics.

On the other hand, the binding foundations of Authority, Loyalty, and Sanctity are associated with the narrower concept of PSM. In particular, CPV is not positively associated with any binding morality, implying that the concept of public value may be primarily constructed by individualizing

foundations. However, Loyalty is found to have a significant positive relationship with SS, and the effect size is comparable to INDV [$F(1, 593) = 0.44$, $p = 0.5083$], suggesting that the scope of concern that SS refers to can be individualistic and collective (G. A. Brewer et al., 2000). In addition, we do find that males tend to reveal an association of Loyalty with PSM Overall and APS, while females appreciating Loyalty are less likely to be committed to public value, which could be due to a historical separation of the public and private sphere for men and women (DeHart-Davis, Marlowe, and Pandey, 2006). For instance, family loyalty may relegate females to the realm of domestic life, discouraging females' commitment to public service.

Consistent with our hypotheses, Sanctity is positively related to SS and APS. Sanctity is often related to the concept of religion (Preston and Ritter, 2012), activating the psychological feeling of revering the sacred and averting depravity, creating a sense of seeming necessity and obligation to promote long-term group cooperation and commitment (Sosis and Alcorta, 2003). Therefore, Sanctity could elevate public service as a noble calling and a sanctified deed, eliciting the attraction to performing public service and making a personal sacrifice. This piece of evidence concurs with Houston and Cartwright's (2007) call for realizing spirituality as an important foundation of PSM.

We also find that religious believers tend to feature a link of Sanctity with PSM Overall, and predominately with SS. Also, the relationship between PSM and participation in religious organizations is mediated by Sanctity, implying that Sanctity plays an important role in motivating both public services and religious activities. This evidence of correlational heterogeneity implies that PSM is the result of interaction between innate morality and the institutional environment. Different institutional environments 'produce' PSM by associating moral foundations with different social experiences and social stimuli that are path-dependent and institutionally specific. For example, religion could provide moral codes regarding the social world that may help to promote public service as a noble calling (the Sanctity foundation) and motivate individuals to make personal sacrifices. Without this institution-specific socialization, non-believers may tend to construct PSM by relating to sympathy and caring (the Care foundation). In other words, the commonly observed relationship between PSM and religion may be due to the fact that both organizations utilize Sanctity to motivate to perform services for God or the public by engendering a sense of higher calling and elevated fulfillment that connects to a sacred, non-materialistic whole.

However, not all moral foundations are positively associated with PSM. Authority is found to be negatively associated with PSM and its subscales, except for CPV. Dutch culture scores high on egalitarianism, and low on hierarchy and embeddedness (Schwartz, 2006). Moreover, in the Dutch

political decision-making process, large emphasis is on consensus, consultation, and compromise (Hendriks, 2017). Therefore, in the Netherlands, those who devalue Authority, and emphasize the sharing of power and responsibility, are more likely to be motivated to perform public service.

Lastly, even though we theoretically argue and empirically reveal that PSM and MFs are correlated, we show that they are still different (sets of) concepts. Intergroup competition triggers Loyalty and motivates participation in sports clubs, but PSM plays no role in such a relationship. PSM is stimulated only when organizations construct an institutional environment that moralizes the conception of public service. In other words, public service is associated with innate moralities to generate a logic of appropriateness that motivates and regulates individuals to contribute to the community or society.

3.6 Conclusion

In this article, we develop and test a moral theory of PSM. Specifically, we suggest hypotheses on how different moral foundations can shape an individual's desire to serve the public interest and influence participation in social organizations. We then provide empirical evidence on the influential role of moral foundations in engendering PSM and its behavioral consequences. PSM, as a pluralistic construct, is related to a pluralistic set of moral concerns that people can associate with their life experiences and social environment in order to establish a sense of public morality. Future studies could contribute to further our understanding of the evolution of PSM by identifying social stimuli embedded in institutional environments that can trigger moral foundations, investigating the socialization processes that may reinforce the association of PSM-relevant beliefs and behaviors with those stimuli.

However, this study, as any other, is associated with limitations that point to future research avenues. For one, our sample includes only Dutch citizens. Hence, our empirical results cannot be blindly extrapolated to other cultures, as Kim et al. (2012) suggest that the meaning and scaling of PSM dimensions could differ across cultures and languages. Future research could investigate how the configuration of moral foundations differs in constructing PSM across cultures, geographies, and languages. Our study shows that different (combinations of) moral foundations could be useful to develop a disaggregated view on the antecedents of the different PSM dimensions, which could improve our understanding of moral variations across cultures and institutions regarding the PSM construct.

Finally, we have shown that various social organizations rely on particular configurations of moral foundations to attract and motivate people to participate, volunteer, and donate. Public service, like volunteering, also involves different types of functions or sectors: security, military, social care, education, courts, et cetera. Different sectors of public service may rely on particular sets of moral foundations to shape PSM. For instance, military service may emphasize Loyalty and Authority, education and social care stress Care, and courts endorse Fairness. Moreover, moral foundations have been found to affect people's political behavior, such as motivation to invest in climate change (Dickinson et al., 2016), punitive attitudes (Silver and Silver, 2017), and whistle-blowing behavior (Waytz et al., 2013). Relying on certain moral foundations may make individuals inevitably bring their "cognitive bias" into public administration. Future work might explore the impact of moral foundations and PSM dimensions on e.g., leadership, bureaucratic behavior, and decision-making, providing practical and nudging tools to govern PSM-relevant behaviors.

Appendix 3.A Questionnaire

3.A.1 Moral Foundations Questionnaire

Five moral foundations are measured with six items each, with two types of responding:

Relevance [Rel.]: responded to using the following response options: not at all relevant, not very relevant, slightly relevant, somewhat relevant, very relevant, extremely relevant);

Agreement [Agr.]: responded to using the following response options: strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, strongly agree.

Care Foundation:

EMOTIONALLY [Rel.] - Whether or not someone suffered emotionally

WEAK [Rel] - Whether or not someone cared for someone weak or vulnerable

CRUEL [Rel] - Whether or not someone was cruel

COMPASSION [Agr.] - Compassion for those who are suffering is the most crucial virtue.

ANIMAL [Agr.] - One of the worst things a person could do is hurt a defenseless animal.

KILL [Agr.] - It can never be right to kill a human being.

Fairness Foundation:

TREATED [Rel.] - Whether or not some people were treated differently than others

UNFAIRLY [Rel.]- Whether or not someone acted unfairly

RIGHTS [Rel.]- Whether or not someone was denied his or her rights

FAIRLY [Agr.] - When the government makes laws, the number one principle should be ensuring that everyone is treated fairly.

JUSTICE [Agr.] – Justice is the most important requirement for a society.

RICH [Agr.] - I think it's morally wrong that rich children inherit a lot of money while poor children inherit nothing.

Authority Foundation:

RESPECT [Rel.] - Whether or not someone showed a lack of respect for authority

TRADITIONS [Rel.] - Whether or not someone conformed to the traditions of society

CHAOS [Rel.] - Whether or not an action caused chaos or disorder

KIDRESPECT [Agr.] - Respect for authority is something all children need to learn.

SEXROLES [Agr.] - Men and women each have different roles to play in society.

SOLDIER [Agr.] - If I were a soldier and disagreed with my commanding officer's orders, I would obey anyway because that is my duty.

Loyalty Foundation:

LOVECOUNTRY [Rel.] - Whether or not someone's action showed love for his or her country

BETRAY [Rel.] - Whether or not someone did something to betray his or her group

LOYALTY [Rel.] - Whether or not someone showed a lack of loyalty

HISTORY [Agr.] - I am proud of my country's history.

FAMILY [Agr.] - People should be loyal to their family members, even when they have done something wrong.

TEAM [Agr.] - It is more important to be a team player than to express oneself.

Sanctity Foundation:

DECENCY [Rel.] - Whether or not someone violated standards of purity and decency

DISGUSTING [Rel.] - Whether or not someone did something disgusting

GOD [Rel.] - Whether or not someone acted in a way that God would approve of

HARMLESSDG [Agr.] - People should not do things that are disgusting, even if no one is harmed.

UNNATURAL [Agr.] - I would call some acts wrong on the grounds that they are unnatural.

CHASTITY [Agr.] - Chastity is an important and valuable virtue.

3.A.2 Public Service Motivation Questionnaire

Public Service Motivation is composed with four subscales with four items of statement each.

Attraction to Public Service (APS):

I admire people who initiate or are involved in activities to aid my community.

It is important to contribute to activities that tackle social problems.

Meaningful public service is very important to me.

It is important for me to contribute to the common good.

Commitment to Public Value (CPV):

I think equal opportunities for citizens are very important.

It is important that citizens can rely on the continuous provision of public services.

It is fundamental that the interests of future generations are taken into account when developing public policies.

To act ethically is essential for public servants.

Compassion (COM):

I feel sympathetic to the plight of the underprivileged.

I empathize with other people who face difficulties.

I get very upset when I see other people being treated unfairly.

Considering the welfare of others is very important.

Self-Sacrifice (SS):

I am prepared to make sacrifices for the good of society.

I believe in putting civic duty before self.

I am willing to risk personal loss to help society.

I would agree to a good plan to make a better life for the poor, even if it costs me money.

Chapter 4

Pro-Social Risk-Taking and Intergroup Conflict: A Volunteer's Dilemma Experiment

4.1 Introduction

The volunteer's dilemma is a social dilemma game in which a public good is produced if and only if (at least) a volunteer makes a costly investment (Diekmann, 1985). The volunteer's dilemma is pervasive in social and economic life, and applies in any setting where the responsibility is not contractible or is diffused among multiple agents. For example, which family members will volunteer to perform housework such as taking out the garbage, which bystanders will decide to help a victim of emergency, which soldiers risk their lives to advance or defend on the front line, and which software engineers may contribute code to an open-source project? Altruistic punishment also requires volunteers to make personal sacrifices to punish norm violators (Przepiorka and Diekmann, 2013). For instance, whistle-blowers take the personal career risk to come forward with information to the public or the authority about unethical activities or wrongdoings.

In a volunteer's dilemma game (VDG), individuals face the decision to either make personal sacrifices for the benefit of the group, or to freeride on others' sacrifice. Each group member is better off when there is at least one volunteer than when there is no volunteer. As in other social dilemmas, such as the prisoner's dilemma, an individual has to choose between a defective strategy that favors her or himself and a cooperative strategy that benefits the other person or the whole group, and the individual and collective outcome of mutual cooperation is better than that of mutual defection. However, in a VDG, there is no dominant pure strategy, and the best outcome is attained when only one person opts for a cooperative strategy. Since pure strategy Nash equilibria are asymmetric and require coordination, research focuses on symmetric mixed strategy Nash equilibria. In a VDG, the probability of volunteering in the symmetric mixed strategy Nash equilibrium is a decreasing function

of group size, in line with a well-known psychological phenomenon referred to as the bystander effect or the diffusion of responsibility (Darley and Latane, 1968).

VDGs are investigated widely across a range of disciplines. VDGs have been extended and investigated to include cost sharing (Weesie and Franzen, 1998), decision of timing (Otsubo and Rapoport, 2008; Weesie, 1993), asymmetric costs or preferences (Diekmann, 1984; A. J. Healy & Pate, 2018; A. Healy & Pate, 2009; Weesie, 1993), relatedness (Archetti, 2009b), social norm enforcement (Przepiorka and Diekmann, 2013), and social projection (Krueger, Ullrich, and Chen, 2016). In evolutionary biology, the volunteer's dilemma is shown to better describe most social dilemmas in the investigation of the evolution of cooperation than the prisoners' dilemma (Archetti, 2009a). Archetti and Scheuring (2011) further demonstrate that the volunteer's dilemma and the N-person prisoners' dilemma are the two opposite extremes of a general public goods game, and all intermediate cases can have a mixed equilibrium like a VDG, where cooperators and defectors can coexist in the absence of iterations, relatedness, or external enforcement. Therefore, the volunteer's dilemma is an ideal example to examine the antecedents of pro-social behavior. Laboratory VDG experiments often observe a large degree of heterogeneity across players in their volunteering (Goeree, Holt, and Smith, 2017; Otsubo and Rapoport, 2008). Goeree, Holt, and Smith (2017) show that the estimation of a heterogeneous equilibrium model with a distribution of "warm glow" propensity does better fit the empirical data, implying that some individuals may derive more utility from doing volunteering work than others.

In the present study, we use the standard VDG as the baseline model, and extend extant literature by varying treatments across two dimensions: risk-taking and intergroup competition. The first dimension explores pro-social risk-taking behavior, which involves the act of engaging in a risky decision to provide public goods. Indeed, in real-life settings, pro-social behavior often involves a certain degree of risk-taking. For instance, helping a victim in case of an emergency could turn out to be unsuccessful, or wrongdoing could be covered up even if a whistle-blower risks her career and reputation. Although Brennan et al. (2008) find no relation between risk attitudes and other-regarding concerns, no research has been done to investigate how the two predispositions interact to affect pro-social risk-taking. Doing so is our first contribution to the literature.

The second dimension, intergroup competition, may have a positive effect on volunteering in the absence of leadership and communication. Intergroup conflict often involves individuals who voluntarily cooperate to make personal sacrifices so as to provide collective benefits (Hugh-Jones and Zultan, 2013; Olson, 1965). As Darwin (1871) argues, intergroup conflict may make natural

selection act in favor of the readiness "to give aid to each other, and to sacrifice themselves for the common good." Theoretical models show that the evolution of altruism can be explained by multi-level selection via intergroup competition under specific conditions (Bowles, 2006; Choi and Bowles, 2007), but whether multi-level selection actually led to the human evolution of altruism is still contested. But if ingroup altruism originally responded to the adaptive challenges of forming a cohesive coalition to compete for resources with other groups of people, then intergroup competition could trigger such an innate psychological trait and engender a sense of obligation for members to serve the interest of the ingroup (M. B. Brewer, 1979).

We design a novel treatment where groups compete for the public good in a sequential move: the second movers can make decisions to volunteer or not, contingent on the volunteering outcome of the first-moving group. Sequential moves provide the opportunity to set up corresponding treatments that are identical to the subgame of the second stage (the decision node for the group of the second movers). Hence, we can investigate the effect of intergroup competition without having to operate with multiple payoff matrices resulting from intergroup competition. In other words, we can identify the exact effect of intergroup competition in engendering group identity and stimulating cooperative behavior. We find that intergroup competition can increase the tendency to cooperate in a VDG and can sustain cooperation when pro-social behavior involves risk-taking. This is our second contribution to the literature.

Lab experiment evidence reveals a positive effect of intergroup competition on intragroup cooperation. Bornstein, Erev, and Rosen (1990) were among the first to run a lab experiment with the opportunity to win a reward for outperforming the rival group. Employing the give-or-take-some game, a multi-person prisoner's dilemma game where a dominant strategy results in mutual defection, they find that this competition element improves intragroup cooperation. Since then, laboratory studies employing intergroup competition for winning a group reward observe an increase in intragroup cooperation in the prisoners' dilemma game (Bornstein and Ben-Yossef, 1994; Erev, Bornstein, and Galili, 1993; Gunnthorsdottir and Rapoport, 2006; Halevy, Bornstein, and Sagiv, 2008), the coordination game (Bornstein, Gneezy, and Nagel, 2002), and the public goods game (Cárdenas and Mantilla, 2015; Puurtinen and Mappes, 2008; Rapoport and Bornstein, 1989; Sääksvuori, Mappes, and Puurtinen, 2011; Tan and Bolle, 2007).

Three possible mechanisms may explain the role of intergroup competition. Firstly, the majority of studies devise an intergroup competition treatment with an additional collective prize for the winning group, transforming the payoff structure by making the individual payoff interdependent on

other members to win a collective prize (Tan and Bolle, 2007). Such interdependence increases individual self-efficiency (the perceived collective benefits from cooperation), and thus the willingness to cooperate (Bornstein and Ben-Yossef, 1994). Therefore, intergroup competition helps to alleviate the conflict of interests between individuals and the group. Secondly, winning the competition against the outgroup could constitute a focal point that facilitates coordination, making team members give more attention to the ingroup's welfare (Bornstein and Ben-Yossef, 1994; Bornstein et al., 2002). Hence, competition may induce a motivational effect by creating a common fate among ingroup members, thus enhancing group identification (Bornstein and Ben-Yossef, 1994; Tan and Bolle, 2007). Thirdly, Tan and Bolle (2007) find that the mere group comparison without any monetary incentive can induce cooperation for strangers in the public goods game. Tan and Bolle (2007) observe that contributions decrease (increase) in response to wins (losses), suggesting that the increase in cooperation could be due to benchmarking. Similarly, Jordan, Jordan, and Rand (2017) find that a threshold effect, not motivational change, increases cooperation in the public goods game with intergroup competition: A prize competition creates a need for the group to win a public good prize by contributing more than a threshold that is set out by another group.

In the present study, we devise an intergroup competition treatment that can avoid any transformation of payoff structure (i.e., no need for an additional prize) when we make a comparison with the standard VDG, identifying the exact motivation effect of intergroup competition on cooperation. Also, we can exclude the possibility of benchmarking, since competition for the public good is not based on the number of contributions (only one volunteer is sufficient), and because we do not provide players with information about the number of volunteers in the own group or the rival group. As a result, we are able to identify the exact motivational change due to intergroup competition and rule out all other possible explanations, shedding light on the evolutionary interplay of intergroup conflict and altruism. Our treatment design implies a third contribution to the literature.

4.2 Model

The baseline model (the control treatment, or *CT*) is a standard volunteer's dilemma where players decide whether or not to incur a personal cost to provide a public good (Diekmann, 1985). We vary treatments across two dimensions to examine the effect of risk-taking (*RK* treatment) and intergroup competition (*GC* treatment). The first dimension introduces the risky production of public goods: There is a 50% chance of failing to produce a public good. The second dimension involves an

intergroup competition treatment, where two groups compete for a public good sequentially: A group with one or more volunteers wins a public good against another group with no volunteer. There is a 50% chance of winning in case of a tie, when both groups have at least one volunteer. Sequential moves result in three subgames group plays: the first mover group *GC-Lead* decides in the first stage, and the following group plays *GC-CT* and *GC-RK*, with a payoff structure identical to *CT* and *RK*, respectively. An overview of the resulting treatments is provided in Table 4.1. Instructions for the treatments and illustrations of game trees are provided in Appendix 4.B.

Table 4.1 Overview of treatments

	Single Group Production		Intergroup Competition		
			Second Mover	Second Mover	First Mover
	No Risk	Risk	No Risk	Risk	Risk
Treatment acronym	*CT*	*RK*	*GC-CT*	*GC-RK*	*GC-Lead*

4.2.1 The Control Treatment (*CT*): The baseline

Each player decides whether or not to make a personal sacrifice C and to volunteer to produce a public good. Everyone receives a high payoff value of V if at least one player volunteers, and a lower payoff L otherwise. In addition, $V - C > L$, so all players choosing not to volunteer cannot be a Nash equilibrium. There are many asymmetric pure strategy equilibria in which one group member volunteers while the others do not. In such an equilibrium, the volunteer forms the belief that the public good would not be produced if she did not volunteer. Since the asymmetric equilibrium in pure strategies requires coordination, most of research on a one-shot VDG focuses on the symmetric Nash equilibria in mixed strategies, in which each player volunteers with a certain probability.

In a symmetric Nash equilibrium, each person must be indifferent and therefore willing to randomize between volunteering and freeriding, since otherwise to play the preferred action is rational. Let p be the probability of volunteering. A decision to volunteer guarantees a payoff of $V - C$. A decision not to volunteer results in a payoff of V if at least one other player volunteers or L otherwise. The probability of getting at least one other player volunteering is $1 - (1 - p)^{N-1}$. Therefore, for each person to be willing to randomize, we must have

$$V - C = V[1 - (1 - p)^{N-1}] + L(1 - p)^{N-1}, \quad (1)$$

where the left-hand side is the sure payoff of volunteering and the right-hand side is the expected payoff of not volunteering.

Solving Equation (1) for p, the symmetric Nash equilibrium probability of volunteering in the *CT* treatment under the assumption $V - L$ is:

$$p^{CT} = 1 - \left(\frac{C}{V-L}\right)^{\frac{1}{N-1}}, \tag{2}$$

which is increasing in the added value of the public good $V - L$, and decreasing in the cost of volunteering C and the number of people N (the bystander effect). All this is true under the risk neutrality assumption. If players are risk averse, the collective risk of no volunteering (with probability $(1 - p)^{N-1}$) would encourage them to volunteer more in order to secure a sure payoff $V - L$. Hence, the volunteering rate in a VDG increases with the degree of risk aversion (see Appendix 4.A.1).

4.2.2 Risk Treatment (*RK*): Risky volunteering

The *RK* case is similar to *CT* treatment except that there is a 50% chance of producing a public good with value V. So, volunteers need to take a risk that their contributions may not pay off. A decision to volunteer yields the expected payoff $\frac{V+L}{2} - C$. Let p be the probability of volunteering. A decision not to volunteer results in the expected payoff $\frac{V+L}{2}$ if at least one other player volunteers or L otherwise. We further assume $\frac{V+L}{2} - C > L$ so that not volunteering cannot be a Nash Equilibrium. For each player to be willing to randomize, we must have

$$\frac{V+L}{2} - C = \left(\frac{V+L}{2}\right)[1 - (1-p)^{N-1}] + L(1-p)^{N-1}. \tag{3}$$

Solving Equation (3), the symmetric Nash equilibrium probability of volunteering in the *RK* treatment is:

$$p^{RK} = 1 - \left(\frac{2C}{V-L}\right)^{\frac{1}{N-1}}. \tag{4}$$

The risk of failing to produce the public good reduces the expected benefits of volunteering. Hence, the equilibrium probability to volunteer is lower than the one in the *CT* treatment ($p^{CT} > p^{RK}$). Further comparative statics under risk neutrality remain equivalent to the analysis of the *CT* treatment (i.e., with a positive marginal effect from the value of public good ($V - L$), a negative marginal effect from cost of volunteering (C), et cetera).

Note that this *RK* treatment involves two types of risk: the risk of no volunteering and the risk of unsuccessful volunteering. The risk of no volunteering encourages risk-averse players to volunteer more than risk-neutral players in order to avoid the consequence of collective inaction, which is also the case in *CT* treatment. By contrast, the risk of unsuccessful volunteering induces risk-averse individuals to not volunteer and secure their endowment (*L*). In the *RK* treatment, individuals trade off these two risks when making risky decisions, so the relationship between risk aversion and risky volunteering is an inverted-U shaped curve (see Appendix 4.A.2 for a theoretical discussion and 4.A.3 for a numerical simulation). Unlike in the *CT* treatment, where risk-averse players tend to volunteer more, highly risk-averse individuals would rather lose the chance to produce a public good than take the risk of unsuccessful volunteering in the *RK* treatment, exhibiting a lower volunteering rate than with risk-neutral players.

4.2.3 Intergroup Competition Treatment (*GC*)

In the *GC* treatment case, two groups (Team *A* and Team *B*) play volunteer's dilemma games within each group and compete for a winner-takes-all prize, which gives the value of *V* to each member of the winning group. For each group, the probability of winning depends on whether at least one member decides to volunteer. One group can win the prize for sure if the group has at least one volunteer, while the other group does not. If both groups have at least one volunteer, then the winning chance is 50 per cent. Unlike other intergroup competition experiments, we make the competition sequential. Members of Team *A* move first in stage 1, deciding whether to volunteer or not. In stage 2, members of Team *B* can decide to volunteer or not, contingent on the outcome of the stage 1. Sequential moves provide the opportunity to design corresponding treatments that are identical to the subgame of the second stage (the decision node for Team *B*), as illustrated in Figure 4.1. If no first mover volunteers, the subgame of the second movers (*GC-CT*) is identical to the *CT* treatment: The probability of winning the prize is 1.

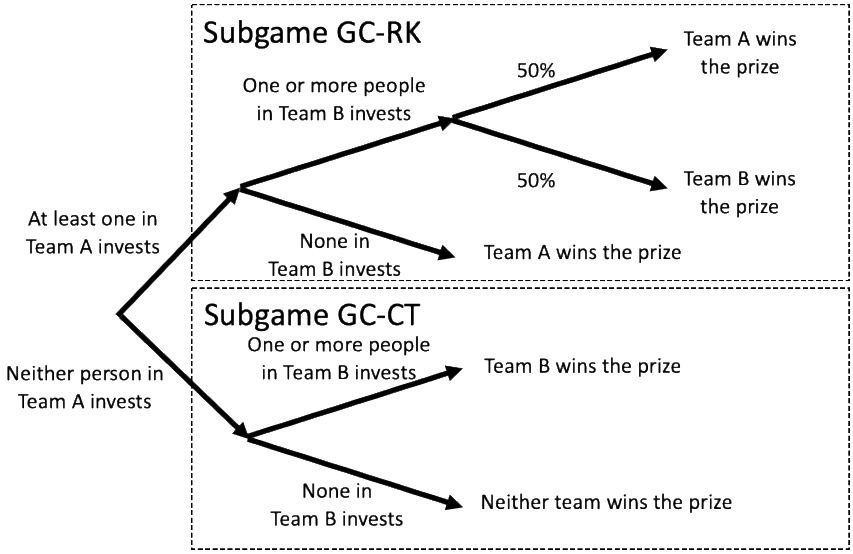


Figure 4.1 The Game Tree of the GC treatment

The equilibrium probability to volunteer for Team *B* is the same as the one in the *CT* treatment $p_B^{GC-CT} = p^{CT}$ if nobody in Team *A* volunteers, and the same as the one in the *RK* treatment $p_B^{GC-RK} = p^{RK}$ if at least one member in Team *A* volunteers. Therefore, the set-up not only maintains the intragroup structure of a social dilemma, but also can make the payoff structure identical between two subgames of the *GC* treatment (*GC-CT* or *GC-RK*) and the single group treatments (*CT* or *RK* treatment): The counterparts for comparison face the exact identical game when Team *B* can make contingent responses. Hence, we can identify the exact motivational effect of intergroup competition on self-sacrificial behavior whilst keeping the whole payoff structure intact, unlike prior studies where the intergroup competition treatment introduces a collective consequence that impacts the intragroup payoff structure, and hence changes the expected benefit of cooperation.

In the sequential team competition, members of Team *A* first decide whether or not to volunteer in stage 1 (*GC-Lead*), and then members of Team *B* make their decisions at stage 2, contingent on the prior action of Team *A*. As said, at the second stage, players in Team *B* face the same subgame as in the *RK* treatment if at least one member of Team *A* volunteers, and as in the *CT* treatment if nobody of Team *A* volunteers. For players in Team *B*, the mixed strategy equilibrium for volunteering in each case is Equation (4) and (2), respectively. At stage 1, let p_A be the probability of volunteering for the members of Team *A*. On the one hand, the decision for players in Team *A* to volunteer transforms the second-stage subgame into an equivalent of the *RK* treatment. The equilibrium probability of no volunteer in Team *B* is $q_B \equiv (1 - p_B^{GC-RK})^N = (1 - p^{RK})^N$, and this event yields a payoff of $V - C$ for members of Team *A*. The possibility that at least one in Team *B* volunteers results in an expected

payoff of $\frac{V+L}{2} + C$ under the tiebreak rule of 50% chance of winning. In all, the expected payoff of volunteering in the first stage therefore is:

$$(V - C)q_B + \left(\frac{V+L}{2} - C\right)(1 - q_B). \tag{5}$$

On the other hand, the decision not to volunteer results in a payoff of L if no other member of Team *A* volunteers, and the probability of such an event is $q_A \equiv (1 - p_A)^{N-1}$ under the symmetric equilibria. If another member of Team *A* volunteers, the second-stage subgame becomes equivalent to the *RK* treatment, and the expected payoff is Equation (5) without cost incurred. Therefore, the expected payoff of not volunteering in the first stage is:

$$Lq_A + \left[Vq_B + \left(\frac{V+L}{2}\right)(1 - q_B)\right](1 - q_A). \tag{6}$$

For each person in Team *A* to be willing to randomize, we must have Equation (5) equal to Equation (6), which gives the Nash equilibrium probability of volunteering in the first stage by solving p^A:

$$p_A^{GC} = 1 - \left[\left(\frac{2C}{V-L}\right)\left(\frac{1-q_B}{1+q_B}\right)\right]^{\frac{1}{N-1}}, \tag{7}$$

where $q_B \equiv (1 - p^{RK})^N$ is the equilibrium probability of no volunteer in Team *B* or in the risk treatment. Note that p_A^{GC} is decreasing in p^{RK}, implying that the (belief on the) followers' likelihood to volunteer has a negative effect on leaders' volunteering rate.

4.3 Procedures

We conducted the experiment in the CentERlab[19] at Tilburg University, in the Netherlands, inviting 126 participants between September 2018 and November 2018: 53.4% are female, and they are 22.6 (s.d. = 3.20) years old, on average. Participants were divided into seven sessions, and were given written instructions of the experiment. The number of participants per session ranges from 12 to 24,

[19] The procedure of the experiment was examined and approved by CentERlab and abide by the ethical rules of using human subject in research. All experiments were conducted with the informed consent of healthy adult subjects who were free to withdraw from participation at any time. Only individuals who voluntarily entered the experiment recruiting database were invited, and informed consent was indicated by electronic acceptance of an invitation to attend an experimental session. The experiments were conducted following the procedures established by Tilburg University's CentERlab. Our study went through an open peer review meeting that is mandatory for all scholars wishing to use the CentERlab facilities.

but always with a multiplier of 3. All participants first participated in the Holt-Laury risk task to measure their risk aversion (Holt and Laury, 2002), and then participated in the *CT* treatment in ten consecutive decision periods. Afterward, 48 participants of three sessions played the *RK* treatment in ten consecutive decision periods, and the other 78 participants of four sessions played the *GC* treatment in ten consecutive decision periods. To make sure that they understood the game structure, participants had to correctly answer a few test questions before making their decisions.

Participants were randomly assigned to a group of three ($N = 3$). The *GC* treatment employs stranger matching with fixed roles: the role assignment into Team *A* (leaders) or Team *B* (followers) is fixed throughout the entire treatment. Also, we employ the strategy method for Team *B* in order to collect more observations at two decision nodes (whether someone in Team *A* invests or not), as Fischbacher, Gächter, and Quercia (2012) found that the strategy method often produces results consistent with the direct response method in games involving voluntary cooperation. Across all treatments, the benefit to every member of the group when the public good was attained is €12 ($V = 12$), and the personal cost of volunteering is €2 ($C = 2$) for each volunteer. When the public good was not attained, each person in the group earned €4 ($L = 4$). There was no feedback to participants on the number of volunteers. Participants were only informed after each round about the binary outcome of public good production (whether one or more people in the own group invested), the outcome of the lottery in the *RK* treatment, and the outcome of the team competition in the *GC* treatment.

We designed and ran the experiment using *z-Tree* (Fischbacher, 2007). Participants received their pay-out of one randomly drawn game from the 20 decision rounds, plus the pay-out of the Holt-Laury risk task. The experiment lasted approximately 50 minutes (including instructions), and participants earned about €12, on average, and were paid in cash at the conclusion of the experiment. Below, we first report descriptive statistics of individual risk attitudes and the average volunteering rate per treatment. Then, we utilize individual decision data to examine treatment effects, and heterogeneous treatment effects of risk aversion and gender by estimating a mixed-effects linear regression model.

4.4 Results

4.4.1 Descriptive Statistics

Table 4.2 displays the results from the Holt-Laury risk task from 128 participants. The mean of the Holt-Laury risk task is 4.72 and the majority (71.42%) of people are risk averse. Table 4.3 shows the average rate of volunteering by sessions, treatment average, and the Nash equilibrium across treatments. We have 128 participates playing the *CT* treatment, 48 participants the *RK* treatment, and 39 participants both the *GC-CT* and *GC-RK* treatment. The observations in the *GC* treatment of leading group (Team *A*) are dropped from the further analyses since the *GC-Lead* treatment is not the focus of our study.

Table 4.2 The experimental results from Holt-Laury risk task and implied level of risk aversion

# of Safe Choice	Implied CRRA	Implied CARA	Risk Preference	Percentage
0	r<-1.54	r<-0.58	extremely risk seeking	6.35
1	-1.54<r<-0.70	-0.58<r<-0.27	highly risk seeking	1.59
2	-0.70<r<-0.15	-0.27<r<-0.16	risk seeking	3.17
3	-0.15<r<0.29	-0.06<r<0.12	risk neutral	13.49
4	0.29<r<0.70	0.12<r<0.28	risk averse	22.2
5	0.70<r<1.01	0.28<r<0.45	very risk averse	19.84
6	1.01<r<1.54	0.45<r<0.64	highly risk averse	15.87
7	1.54<r<2.06	0.64<r<0.87	extremely risk averse	8.73
8	2.06<r<2.85	0.87<r<1.23	extremely risk averse	3.17
9, 10	2.85<r	r>1.23	extremely risk averse	5.56

Table 4.3 Rate of volunteering

Treatment	*CT*	*RK*	*GC-CT*	*GC-RK*	*GC-Lead*
	No-Risk, single group	Risk, single group	No-risk, intergroup, second mover	Risk, intergroup, second mover	Risk, intergroup, first mover
Number of Obs.	126	48	39	39	39
Session	1, 2, 3, 4, 5, 6, 7	1, 4, 5	2, 3, 6, 7	2, 3, 6, 7	2, 3, 6, 7
Obs. per Session	21, 18, 24, 12, 15, 18, 18	21, 12, 15	9, 12, 9, 9	9, 12, 9, 9	9, 12, 9, 9
Session Average	0.49, 0.38, 0.50, 0.58, 0.33, 0.53, 0.44	0.33, 0.33, 0.31	0.5, 0.58, 0.48, 0.76	0.44, 0.38, 0.42, 0.5	0.37, 0.38, 0.37, 0.28
Treatment Average	0.46	0.33	0.58	0.43	0.35
Treatment Std. Err.	0.029	0.038	0.056	0.054	0.049
Nash Equilibrium	0.5	0.29	0.5	0.29	0.51

In Figure 4.2, bars show the treatment averages of volunteering, and whiskers indicate the 95% confidence intervals (at the level of individuals). The observed average volunteering rate is 46% when no risk and intergroup competition are involved, slightly lower than what the Nash equilibrium predicts. When producing public goods is risky, the volunteering rate drops to 33%, as predicted by the Nash equilibrium. Intergroup competition increases the volunteering rate by around 10%, either with or without risk, above the Nash equilibrium probability. Figure 4.3 shows that intergroup competition shifts the cumulative distribution function of the *CT* and *RK* treatment to the right, particularly increasing the median of safe volunteering and the upper quartile of risky volunteering.

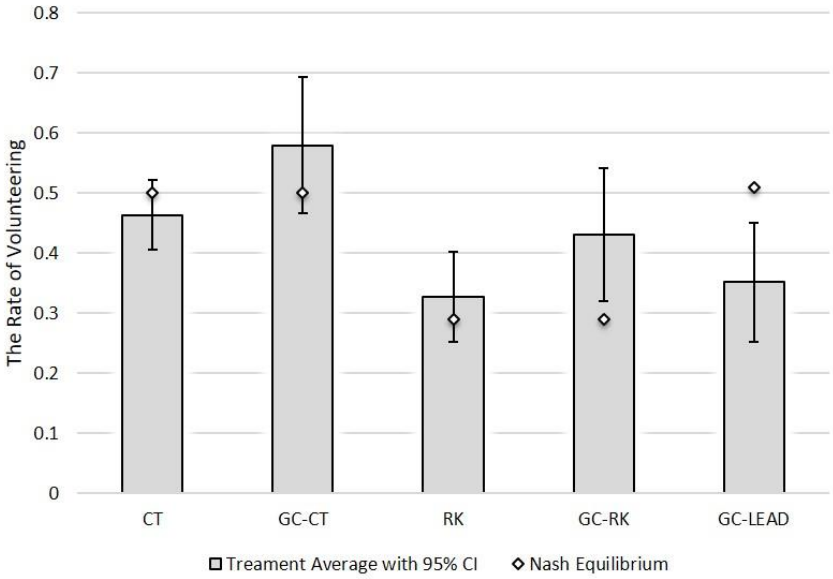


Figure 4.2 Volunteer probabilities

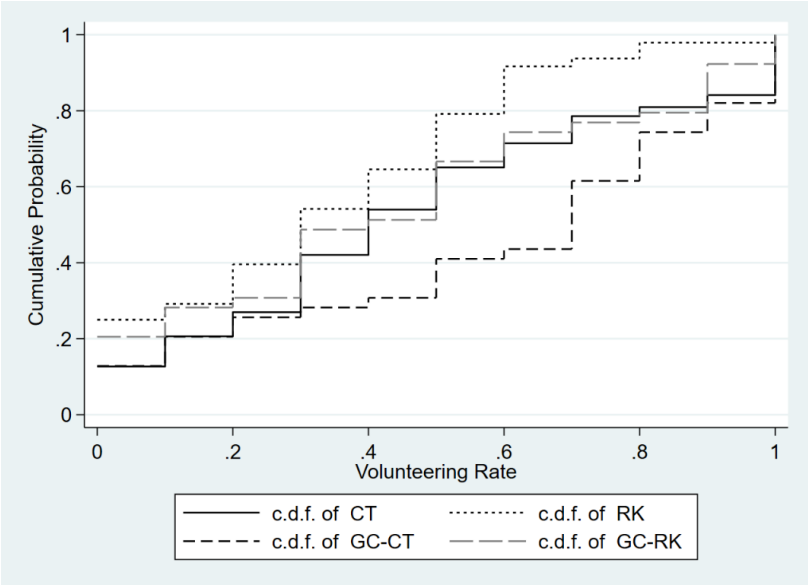


Figure 4.3 Cumulative distribution of volunteering rate

4.4.2 Regression Analysis

Strictly speaking, we only have 7 (*CT* treatment), 3 (*RK* treatment), and 4 (*GC* treatment) independent observations, since all participants in one session were connected. We therefore employ a mixed-effects (ME) linear model with repeated measures for our analysis. The 2×2 treatment effects are modeled as binary fixed effects, and sessions and participants within each session are modeled as random effects. Table 4.4 reports regression estimates aimed to test the effect of intergroup competition and risky production on volunteering. Because there could be substantial variation in volunteering across sessions resulting from the random stranger matching within each session, we generalized the error structure to include heteroskedastic variances across individuals and sessions.

The dependent variable in Model 1 is the average volunteering rate across ten rounds for each observation. In Models 2, 3, and 4, the dependent variable is the binary volunteering decision (1 = to invest/volunteer) in each round.[20] Models 2, 3, and 4 control for experience (the number of rounds played), and previous win (whether the group won or successfully produced a public good in the previous round). All models control for gender,[21] risk aversion (the number of safe choices chosen in the Holt-Laury risk task, centered at three choices, or risk-neutral individuals), and Models 3 and 4 allow for heterogeneous effects of risk aversion across treatments.

On the one hand, group competition increases the volunteering rate or likelihood by 13-15% from the baseline volunteering rate of 47-51%. On the other hand, risky production decreases the volunteering rate or likelihood by 13-19%, consistent with the theoretical prediction that risk reduces the expected benefit of volunteering and thereby discourages volunteering. Intergroup competition can mitigate the negative impact of risk and maintain the volunteering rate: The estimated coefficient difference between *RK* and *GC-RK* is significant (from mildly to strongly across models; test statistics are shown in the last row of Table 4.4). In short, the tendency to volunteer increases in response to intergroup competition, even if there is no payoff transformation or monetary incentive. Regarding other controls, females are more likely to volunteer than males, though the evidence is mild ($p = 0.087$ in Model 1 and $p = 0.098$ in Model 2). We do not find any evidence that volunteering decisions respond to experience or previous success of producing a public good.

[20] We found no significant time trend of the volunteering decision across treatments. The Spearman's rank correlation test reports: $\rho=-0.042$, $p = 0.140$ in the *CT* treatment; $\rho=-0.005$, $p = 0.906$ in the *RK* treatment; $\rho=-0.036$, $p = 0.476$ in the *GC-CT* treatment; and $\rho=-0.018$, $p = 0.723$ in the *GC-RK* treatment.
[21] One participant marked a third gender and was dropped from the regression analysis.

Table 4.4 Regression results: Treatment effect

Dependent Variable:	Decision(s) to volunteer			
	(1) Treatment Average	(2) Decision per round	(3) Decision per round	(4) Decision per round
Treatment (*CT* as the baseline)				
GC-CT	0.132***	0.154***	0.133***	0.132***
	(0.051)	(0.032)	(0.039)	(0.039)
RK	−0.136***	−0.132***	−0.197***	−0.192***
	(0.047)	(0.029)	(0.037)	(0.041)
GC-RK	−0.017	0.023	−0.002	−0.002
	(0.051)	(0.032)	(0.039)	(0.039)
Risk aversion	0.014	0.011	0.002	−0.001
	(0.011)	(0.012)	(0.012)	(0.017)
× *GC-CT*			0.012	0.064***
			(0.014)	(0.025)
× *RK*			0.038***	0.041**
			(0.014)	(0.017)
× *GC-RK*			0.014	0.014
			(0.014)	(0.025)
Risk aversion squared				0.001
				(0.004)
× *GC-CT*				−0.011**
				(0.004)
× *RK*				−0.001
				(0.005)
× *GC-RK*				0.000
				(0.004)
Gender (male= 1)	−0.082*	−0.083*	−0.080	−0.081
	(0.048)	(0.050)	(0.050)	(0.051)
Experience (Round)		−0.002	−0.002	−0.002
		(0.003)	(0.003)	(0.003)
Previous win		−0.022	−0.024	−0.024
		(0.021)	(0.021)	(0.021)
Constant	0.473***	0.497***	0.513***	0.512***
	(0.042)	(0.050)	(0.051)	(0.050)
Observations	251	2259	2259	2259
Obs per subject	1,2,3	9,18,27	9,18,27	9,18,27
Log likelihood	−55.917	−1393.174	−1388.948	−1384.852
Wald statistic	24.392***	57.520***	66.193***	74.652***
Test statistic on $\beta^{GC-RK} > \beta^{RK}$	3.504*	14.594***	14.111***	12.050***

Note: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$. Standard errors in parentheses. Mixed-effects linear regression models are estimated. Standard errors are clustered at the session and individual. Risk aversion is centered at 3. Previous win = 1 if group won or successfully produced a public good in previous round and = 0 if otherwise.

Regarding risk aversion, expected utility theory predicts a positive relationship between risk aversion and volunteering in the *CT* and *GC-CT* treatments, and an inverted U-shaped relationship in the *RK* and *GC-RK* treatments. Models 1 and 2 reveal no robust evidence for a relationship between risk aversion and volunteering, unless volunteering involves only risky production (Model 3). By including a squared term for each risk aversion variables, an inverted-U shape relationship is found in Model 4 between risk aversion and volunteering in the *GC-CT* treatment (joint significance $\chi^{\sim 2}(2) = 7.25$, $p = 0.026$), and the positive effect peaks at highly risk-averse individuals (the number of safe

choices = 5.91). In the *RK* treatment, the relationship remains significantly positive. Figure 4.4 plots the probability of volunteering predicted using Model 4 across different levels of risk aversion. The above findings are inconsistent with expected utility theory: Risk-averse individuals are more likely to volunteer than risk-neutral people in the *RK* treatment, and extreme risk aversion reduces the rate of volunteering in the *GC-CT* treatment. Moreover, there is no linear or quadratic relationship found in the *CT* and *GC-RK* treatments.

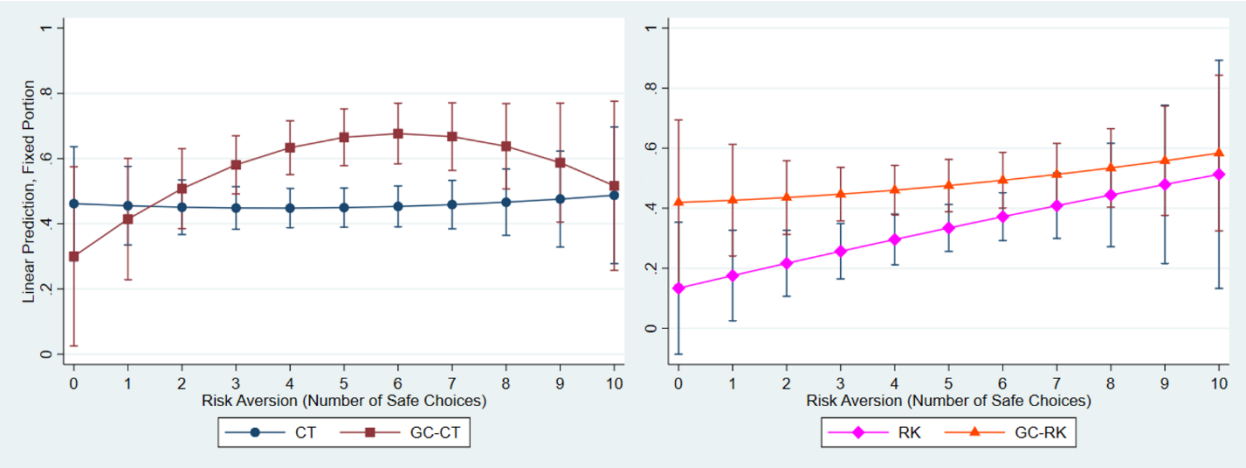


Figure 4.4 Linear prediction of Model 4 with 95% confidence intervals

When examining differences in volunteering between male and female participants per treatment, we do find significant patterns. In Table 4.5, we take a closer look at the gender effect across the respective treatments, and Figure 4.5 shows the predicted probability of volunteering using Model 6 across treatments. On average, males volunteer more than females in the *GC-RK* treatment, while females volunteer more in the other three treatments. On the one hand, in response to intergroup competition, females increase no-risk volunteering by 20.19% ($z = 4.88$, $p = 0.000$, Model 7), but not risky volunteering ($\tilde{\chi}^2(1) = 0.69$, $p = 0.406$, Model 7). On the other hand, in response to intergroup competition, males increase risky volunteering significantly by 30.42% ($\tilde{\chi}^2(1) = 23.76$, $p = 0.000$, Model 7) and increase no-risk volunteering mildly by 9.24% ($\tilde{\chi}^2(1) = 3.16$, $p = 0.076$, Model 7). Males over-volunteer under the risk of failure when facing intergroup competition: Males' volunteering tendency in the *GC-RK* treatment is even significantly higher than in the *CT* treatment ($\tilde{\chi}^2(1) = 8.72$, $p = 0.003$, Model 7).

Table 4.5 Regression results: Heterogeneous treatment effect across genders

Dependent Variable:	Decision(s) to volunteer		
	(5)	(6)	(7)
	Treatment Average	Decision per round	Decision per round
Treatment (*CT* as the baseline)			
GC-CT	0.208***	0.202***	0.202***
	(0.066)	(0.041)	(0.041)
RK	−0.127**	−0.110***	−0.110***
	(0.059)	(0.036)	(0.036)
GC-RK	−0.083	−0.066	−0.066
	(0.066)	(0.041)	(0.041)
Male	−0.075	−0.082	−0.081
	(0.056)	(0.053)	(0.054)
× *GC-CT*	−0.248**	−0.191***	−0.190***
	(0.096)	(0.073)	(0.073)
× *RK*	−0.097	−0.139**	−0.137**
	(0.088)	(0.069)	(0.069)
× *GC-RK*	0.079	0.122*	0.123*
	(0.096)	(0.072)	(0.073)
Risk aversion	0.014	0.011	0.013
	(0.011)	(0.011)	(0.017)
Risk aversion squared			−0.001
			(0.003)
Experience (Round)		−0.002	−0.002
		(0.003)	(0.003)
Previous win		−0.023	−0.022
		(0.021)	(0.021)
Constant	0.470***	0.498***	0.498***
	(0.044)	(0.051)	(0.051)
Observations	251	2259	2259
Obs per subject	1,2,3	9,18,27	9,18,27
Log likelihood	−51.904	−1380.438	−1380.422
Wald statistic	33.558***	83.790***	83.822***

Note: Mixed-effects linear regression models are estimated. Standard errors are clustered at the session and individual. Risk aversion is centered at 3. Previous win = 1 if group won or successfully produced a public good in previous round and = 0 if otherwise. * p < 0.1, ** p < 0.05, and *** p < 0.01. Standard errors in parentheses.

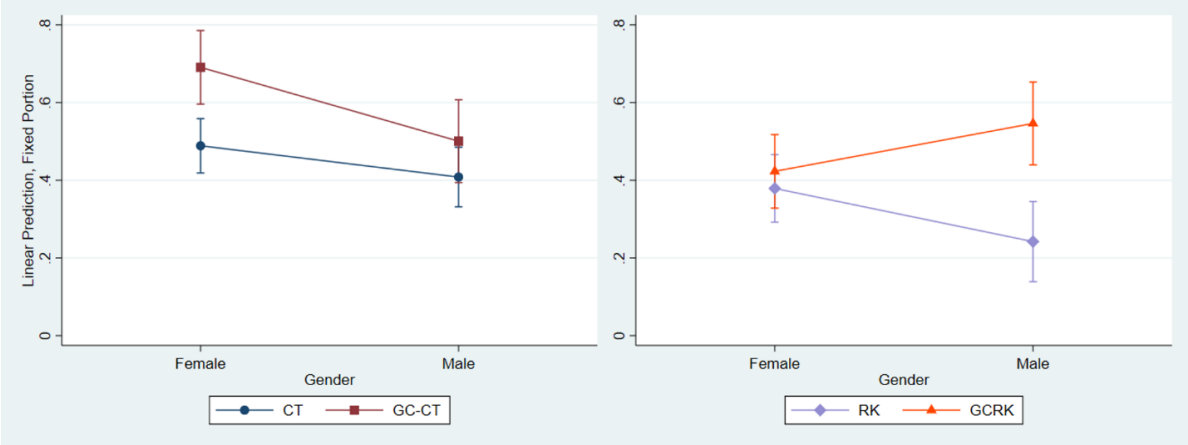


Figure 4.5 Linear prediction of Model 6 with 95% confidence intervals

4.5 Discussion and Conclusion

We extend the classic volunteer's dilemma game and develop novel treatments to examine pro-social risk-taking and competitive behavior. We find that individuals respond to intergroup competition even if there is no payoff structure transformation or additional monetary incentive. Intergroup competition can increase the tendency to volunteer and sustain cooperation when volunteering involves the risk of failure. Previous experiments link monetary incentives to competition, and such payoff interdependence creates a threshold effect that motivates individuals to contribute to public goods and win a prize (Jordan, Jordan, and Rand 2017). Our *GC* and *RK* treatments avoid additional monetary incentives: No additional group bonus or prize is provided, so the treatments for comparison have identical payoff structures. Therefore, we can identify the exact motivational effect resulting from intergroup competition. Also, there is no need for benchmarking of the rival group's performance in the volunteer's dilemma because a single volunteer is sufficient for public good production, and because players do not have information on the number of volunteers.

Our experiment shows that intergroup competition can act as a payoff-irrelevant focal point that increases the salience of group identity. Intergroup rivalry may enhance the salience of a collective social identity, motivating individuals to allocate greater weight to the joint welfare over individual gains alone (M. B. Brewer and Kramer, 1986; Tan and Bolle, 2007). However, intergroup competition engenders an important behavioral trait – parochial altruism – that spurs individuals to make personal sacrifices for the ingroup welfare, and to be hostile towards competing outgroups (Bernhard et al., 2006; Choi and Bowles, 2007; Schelling, 1958). In other words, intergroup competition can stimulate cooperative behavior that comes with ingroup favoritism and outgroup hostility[22] (Balliet, Wu, & De Dreu, 2014). Bernhard, Fischbacher, and Fehr (2006) find that third-party punishers protect ingroup victims, who suffer from a norm violation, more when they belong to the same group. Therefore, human altruism can be parochial and responsive to intergroup conflicts, implying that individuals are more likely to volunteer and benefit ingroup members in the presence of outgroup threats.

We also extend the volunteer's dilemma game to involve pro-social risk-taking. In many real-life settings, volunteers take not only personal efforts, but also the risk of a useless sacrifice. Like

[22] Normatively speaking, parochial altruism is prosocial from the in-group perspective but anti-social in terms of the society as a whole, so this innate predisposition is a biased prosocial behavior (Diesendruck & Benozio, 2012) or what Haidt & Graham (2007) refer to the Loyalty foundation.

Brennan et al. (2008), who find no evidence for the association between risk attitudes and other-regarding preferences, we do not find any evidence for this in the standard volunteer's dilemma game. However, our study reveals a positive relationship between risk aversion and risky volunteering, showing that risk attitudes can influence the decision to provide a public good in specific cases. This finding is inconsistent with expected utility theory, which suggests that risk aversion should discourage individuals from performing risk volunteering. Brewer and Kramer (1986) offer the intuition that risk-averse individuals are more sensitive to collective risk, whereas risk-seekers respond more to the risk associated with self-interested behavior. The bias toward attending to the collective risk could mitigate the negative effect of risk of failure, and hence increase the tendency to take risk and volunteer. However, no single explanation can account for the entire pattern of the relationship between volunteering and risk attitudes across all treatments. Safe volunteering under intergroup competition (the *GC−CT* treatment) is positively associated with risk aversion except for extremely risk-averse people, implying that the effect of intergroup competition on safe volunteering mainly comes from people who are moderately risk averse.

Gender differences are another prominent aspect of investigating risk attitudes, cooperation and competition in the economics and psychology literatures. Females are found to be more risk averse, more averse to competition, and more context-sensitive in their other-regarding preferences (Gneezy and Rustichini, 2004; Croson and Gneezy, 2009). Our study shows that males are responsive to intergroup competition when volunteering involves risk of failure (the *GC-RK* treatment), while females respond to intergroup competition only when volunteering guarantees the success of producing public goods (the *GC-CT* treatment). The presence of gender-heterogeneous treatment effects could be attributed to three sources of differences: i.e., gender differences regarding (i) preference for risky investment, (ii) competitiveness, and (iii) attitudes toward outgroup members.

First, males are more likely to see risky situations as a challenge that evokes approach behavior and intervention, while females tend to perceive these as a threat that initiates avoidance behavior (Arch, 1993). Intergroup competition therefore could stimulate men's motivation to volunteer in order to cope with risky/challenging situations. Second, unlike the *GC-CT* treatment, the *GC-RK* treatment puts two competing groups into a winner-takes-all lottery if someone from the second-mover group decides to volunteer. In a laboratory experiment, Gneezy, Niederle, & Rustichini (2003) find that a more competitive environment such as a winner-takes-all tournament increases the performance of men, but not of women, in solving mazes on a computer. Hence, the intergroup competitiveness in *GC-RK* could stimulate men to volunteer and make a risky investment.

Third, males could be more hostile toward the welfare of outgroup members in the *GC-RK* treatment. Evolutionary psychologists propose the "male warrior hypothesis", arguing that males are more attentive to cues of outgroup threat, and more likely to exhibit ingroup solidarity and outgroup hostility (McDonald et al., 2012; Vugt et al., 2007; Sugiura et al., 2017). In other words, parochial altruism triggered by an outgroup threat cue is specific to males (Sugiura et al., 2017). Unlike in the *GC-CT* treatment, in which the payoff of outgroup members (first movers) are already determined and certain, the decision to volunteer in the *GC-RK* treatment has payoff consequences for both ingroup and outgroup members. Such payoff interdependence could be perceived as an outgroup threat, and engender an aggressive response among males to opt for risky volunteering, and to prevent the no-volunteer outcome in which the outgroup wins the public good prize with no roadblocks (i.e., without facing a lottery). Alternatively, females could be more other-regarding toward outgroup members, refraining from increasing their rate of volunteering and competing for resources.

Dekel and Scotchmer (1999) develop an evolutionary model of preference formation to examine to what extent evolution leads to risk-taking and competitive behavior in winner-takes-all environments, and argue that males will evolve to be risk-takers under the pressure of reproduction that resembles a winner-takes-all game. Therefore, men are more likely than women to engage in risky and heroic forms of helping (Eagly and Crowley, 1986). Our study provides experimental evidence for this gender-differentiated helping behavior in response to the-winner-takes-all competition. We find that females tend to volunteer more than males in all except the *GC-RK* treatment, and that women tend to increase their rate of volunteering in response to intergroup competition if public good provision is certain and not competitive. Males, in contrast, over-volunteer when public good provision is risky and competitive. This finding can provide a rationale for the phenomenon that females at work volunteer more than males for a task with low promotability (Babcock, Recalde, Vesterlund, & Weingart, 2017): A task with high promotability and promotion per se usually entails a zero-sum or the-winner-takes-all game that females tend to shy away from, and women tend to volunteer to provide public goods that involve less rivalry. The broader social science literature mainly focuses on masculine actions in intergroup conflict, such as dominant and competitive behavior. Future research can further explore the role of females in intergroup conflict, and investigate how both genders differ in their responses to intergroup conflict.

The volunteer's dilemma is a game of anti-coordination: Players have an incentive to choose opposite strategies, so they are more willing to make personal sacrifices and produce a public good if others are more likely to free ride. In other words, volunteering to provide a public good is a game

of strategic substitutes. Cantoni et al. (2019) find consistent evidence from Hong Kong's anti-authoritarian movement that protest participation exhibits strategic substitutability, rather than strategic complementarity that many recent models of protest participation assume. Protest involves a threshold of participation to produce a political public good and a risk of government crackdown, which both can be captured by our extended model of the volunteer's dilemma. From our experiment, we observe over-volunteering under intergroup competition. Intergroup conflict may make individuals more alert to the outgroup threat, and to see others' participation as strategic complements that contribute to ingroup cohesion. Future work can investigate strategic considerations of volunteering under conflict and failure risk in VDGs to shed more light on political participation.

Finally, over-volunteering is socially inefficient. Intergroup competition stimulates unnecessary volunteering and risk-taking. Abbink et al. (2010) find that intergroup contests with punishment opportunities result in an extremely high level of costly punishment and voluntary contribution in the public goods game. As mentioned above, altruistic punishment in the public goods game can be conceived as a second-order freerider problem, which can be explained by VDGs without assuming punitive preferences (Przepiorka and Diekmann, 2013). Outgroup threat, therefore, may trigger a strong motive for ingroup cohesion, and thus may trigger an over-volunteering effect that leads to over-disciplining and wasteful investment. Even though parochial altruism is inefficient in some contexts, the lower fitness of altruists could be compensated with the higher survival of more altruistic groups if human ancestors have faced high levels of lethal intergroup conflicts, which resemble a winner-take-all, repeated one-shot game (Bowles, 2006; Choi and Bowles, 2007). Parochial altruism is a psychological trait designed through evolution that may serve specific survival functions in the ancestral environment, but might cause "human errors" in the current environment. The research paradigm developed in this study is useful to conduct further investigations of cooperation and competition in a risky environment. Future studies can rely on extended models to explore the role that individual heterogeneity plays in the evolution of parochial altruism.

Appendix 4.A Model with Expected Utility

4.A.1 The Control Treatment (*CT*): The Baseline

Let p be the probability of volunteering. A decision to volunteer guarantees a utility level $u(V-C)$. A decision not to volunteer results in a utility level $u(V)$ if at least one other volunteers or $u(L)$ otherwise. The probability of getting at least one volunteering decision is $1-(1-p)^{N-1}$. Therefore, for each person to be willing to randomize, we must have

$$u(V-C) = u(V)[1-(1-p)^{N-1}] + u(L)(1-p)^{N-1}, \qquad \text{(A.1)}$$

where the left-hand side is the sure utility of volunteering and the right-hand side is the expected utility of not volunteering. Solving (A.1), the symmetric Nash equilibrium probability of volunteering in the *CT* treatment under the assumption $u(V-C) > u(L)$ is:

$$p^{CT} = 1 - \left(\frac{u(V)-u(V-C)}{u(v)-u(L)}\right)^{\frac{1}{N-1}}, \qquad \text{(A.2)}$$

which is increasing in utility gain from the public good $u(V)-u(L)$, and decreasing in disutility from volunteering $u(V)-u(V-C)$ and the number of people N (the bystanders' effect). The ratio $\frac{u(V)-u(V-C)}{u(v)-u(L)}$ is decreasing in the degree of risk aversion, because risk aversion exhibits diminishing marginal utility (see Figure 4.6 for illustration). Therefore, risk-averse individuals tend to make a small personal sacrifice to avoid the risk of no volunteering, whereas risk-seeking individuals are willing to run the risk of no volunteering to benefit from freeriding.

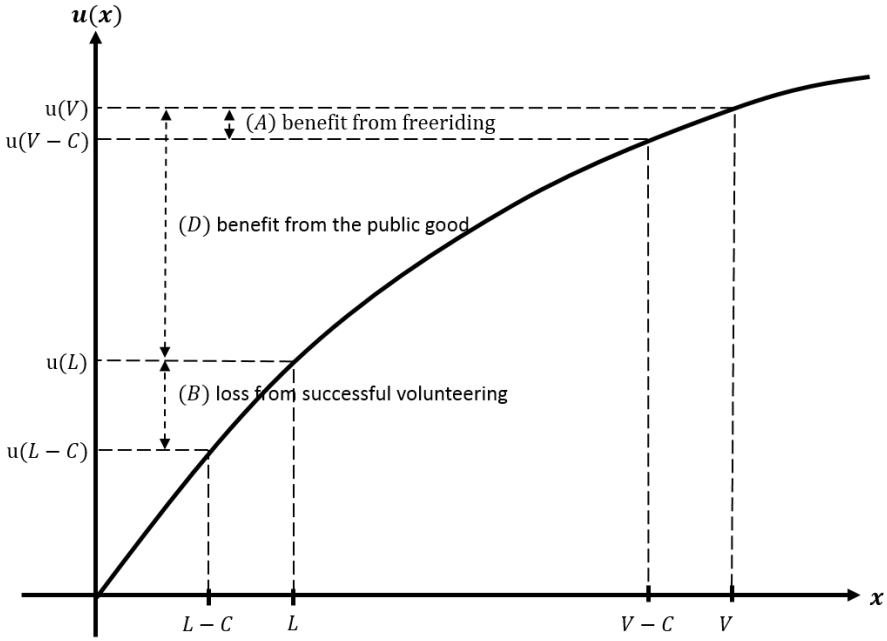


Figure 4.6 Utility function under risk aversion

$$\boldsymbol{p^{CT} = 1 - \left(\frac{(A)}{(D)}\right)^{\frac{1}{N-1}}, p^{RK} = 1 - \left(\frac{(A)}{(D)} + \frac{(B)}{(D)}\right)^{\frac{1}{N-1}}}$$

4.A.2 Risk Treatment (*RK*): VDG with Risky Production

A decision to volunteer yields the expected utility $u(V-C)+2u(L-C)$. Let p be the probability of volunteering. A decision not to volunteer results in the expected payoff $\frac{u(V)+u(L)}{2}$ if at least one other volunteers or L otherwise. Note that we need to assume $\frac{u(V-C)+u(L-C)}{2} > u(L)$ so that not volunteering could not become Nash Equilibrium. For each person to be willing to randomize, we must have

$$\frac{u(V-C)+u(L-C)}{2} = \left(\frac{u(V)+u(L)}{2}\right)[1-(1-p)^{N-1}] + u(L)(1-p)^{N-1}. \qquad \text{(A.3)}$$

Solving (A.3), the symmetric Nash equilibrium probability of volunteering in the *RK* treatment is:

$$p^{RK} = 1 - \left(\frac{u(V)-u(V-C)}{u(V)-u(L)} + \frac{u(L)-u(L-C)}{u(V)-u(L)}\right)^{\frac{1}{N-1}}. \qquad \text{(A.4)}$$

Comparing (A.4) to (A.2), the nominator includes a second term $\frac{u(L)-u(L-C)}{u(V)-u(L)}$ in the *RK* treatment, which is a ratio of a disutility from unsuccessful volunteering to utility gain from the public good. This ratio is increasing in the degree of risk aversion, demotivating risk-averse individuals to

volunteer because they prefer not risking their endowment for a public good lottery. Therefore, two types of risk have two opposing directional effects, and their total effect on volunteering exhibits an inverted U-shape relationship.

4.A.3 Numerical Simulation

We use the parameters set in the experiment for numerical simulation to show the relationship between risk attitudes and volunteering: $N = 3$, $V = 12$, $L = 4$, and $C = 2$. We do numerical simulation in Figure 4.7, assuming an exponential utility function (the left graph) or a power utility function (the right graph). The results show that p^{CT} is increasing monotonically in the degree of risk aversion, whereas p^{RK} shows an inverted U-shaped relationship. In the *RK* treatment, risk aversion, on the one hand, discourages individuals to volunteer for fear of unsuccessful volunteering. Risk seeking, on the other hand, can sustain the volunteering rate as in the *CT* treatment by increasing the willingness to invest in a public good lottery.

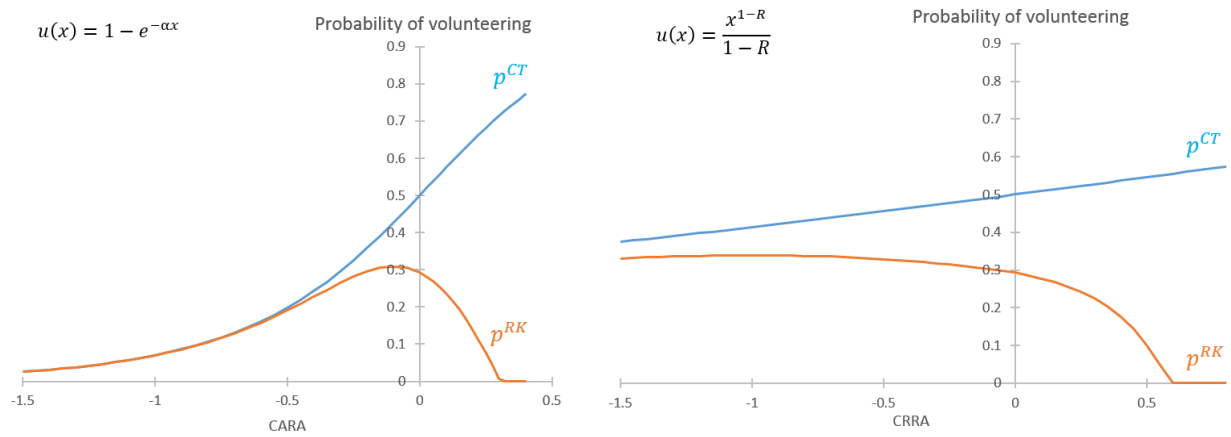


Figure 4.7 The relationship between risk attitudes and volunteering

Appendix 4.B Instructions

4.B.1 Holt-Laury risk task

(On Screen) During this experiment you will make up to 10 choices. Each choice consists of selecting one of two prospects. Option A will appear on the left part of the screen, and Option B will appear on the right part of the screen. Option A as well as option B can have two different realizations (€3 or €2 and €5 or €1) with varying probabilities over the ten decisions. To make your choice, click on the radio button corresponding to your preferred prospect.

At the end of the session (after Part 4), one of your choices will be used to calculate your earnings.

Click on continue to start making your choice.

Please Choose between Option A (on the left) or Option B (on the right) by clicking the correspondent radio button. The interface only allows a single switched choice between Option A and Option B. You can use calculator by clicking the bottom-right button.

	Option A	Option B
Decision 1:	10% chance of €3 and 90% chance of €2	10% chance of €5 and 90% chance of €1
Decision 2:	20% chance of €3 and 80% chance of €2	20% chance of €5 and 80% chance of €1
Decision 3:	30% chance of €3 and 70% chance of €2	30% chance of €5 and 70% chance of €1
Decision 4:	40% chance of €3 and 60% chance of €2	40% chance of €5 and 60% chance of €1
Decision 5:	50% chance of €3 and 50% chance of €2	50% chance of €5 and 50% chance of €1
Decision 6:	60% chance of €3 and 40% chance of €2	60% chance of €5 and 40% chance of €1
Decision 7:	70% chance of €3 and 30% chance of €2	70% chance of €5 and 30% chance of €1
Decision 8:	80% chance of €3 and 20% chance of €2	80% chance of €5 and 20% chance of €1
Decision 9:	90% chance of €3 and 10% chance of €2	90% chance of €5 and 10% chance of €1
Decision 10:	100% chance of €3 and 0% chance of €2	100% chance of €5 and 0% chance of €1

4.B.2 The CT treatment

[On paper] This is an experiment about decision-making. The instructions are simple. If you follow them carefully you might earn a considerable amount of money which will be paid to you privately and in cash at the end of today's session. The amount of money you earn depends on your decisions, on other participants' decisions and on random events. You will never be asked to reveal your identity

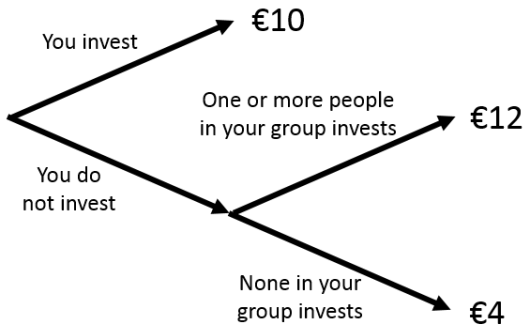
to anyone during the course of the experiment. Your name will never be associated with any of your decisions. In order to keep your decisions private, do not reveal your choices to any other participant.

There will be 10 rounds in Part 3 and 10 rounds in Part 4, and only one out of the total 20 rounds will be randomly drawn to determine your final earnings, to which the payoff of Part 2 is added. The following instructions explain Part 3. After finishing this part, you will receive further instructions for Part 4. None of your (or anyone else's) decisions for one part are relevant for your (or anyone else's) performance in the other part.

Part 3: In this task you will be randomly paired in each period with another two persons to form a group (of three) in this room.

Personal Investment Cost: In each period or "round", you will decide whether to make a costly decision, which we will refer to as an investment. If you decide to invest, you incur a cost of €2 in the current round. If your decision is not to invest, you incur no cost. You cannot see the others' decision while choosing yours, and vice versa.

Return from Investment: If one or more people in your group decides to invest, all people in the group will receive an amount of €8, irrespective of whether or not they invested in that round.



Endowment: All of you start with an earnings balance of €4 in each period.

Earnings: If one or more persons invest in your group, then a person who invests earns €10 (Endowment €4 + Investment Benefit €8 – Personal Cost €2), and a person who does not invest earns €12 (Endowment €4 + Investment Benefit €8). If none of your group invests, they all earn €4 (Endowment €4).

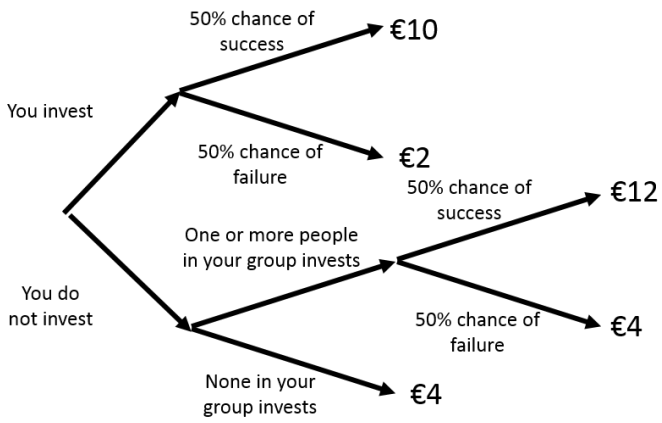
4.B.3 The RK treatment

[On paper] In this task you will be randomly paired in each period with another two persons to form a group (of 3) in this room.

Personal Investment Cost: In each period or "round", you will decide whether to make a costly decision, which we will refer to as an investment. If you decide to invest, you incur a cost of €2 in

the current round. If your decision is not to invest, you incur no cost. You cannot see the others' decision while choosing yours, and vice versa.

Return from Investment: If at least one person in your group decides to invest, there is a 50% chance that all people in the group will receive an amount of €8, irrespective of whether or not they invested in that round, and a 50% chance that the investment is not successful and all people in the group will receive nothing from the investment.



Endowment: All of you start with an earnings balance of €4 in each period.

Earnings: If at least one person invests and the investment turns out to be successful, then a person who invests earns €10 (Endowment €4 + Investment Benefit €8 – Personal Cost €2), and a person who does not invest earns €12 (Endowment €4 + Investment Benefit €8). If at least one person invests and the investment turns out to be unsuccessful, then a person who invests earns €2 (Endowment €4 + Investment Benefit €0 – Personal Cost €2), and a person who does not invest earns €4 (Endowment €4 + Investment Benefit €0). If neither person invests, they all earn €4 (Endowment €4).

4.B.4 The GC treatment

[On paper] In Part 4, all participants are randomly assigned to teams of three in each period and your team will be matched with another team. None of you will learn the identities of own team members or other team members.

Personal Investment Cost: In each period or "round", you will decide whether to make a costly decision, which we will refer to as an investment. If you decide to invest, you incur a cost of €2 in the current round. If your decision is not to invest, you incur no cost. You cannot see the others' decision while choosing yours, and vice versa.

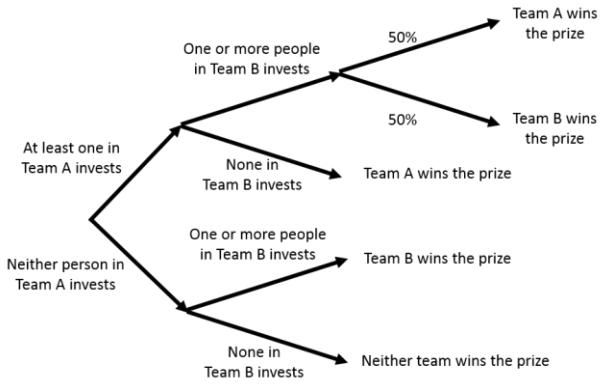
Return from Investment: Two teams make an investment in order to be qualified for a prize competition where all people in the winning team will receive an amount of €8, irrespective of whether or not they invested in that round. It is sufficient for only one team member to make an investment in order to make her/his own team qualify for the competition. One team can win the prize

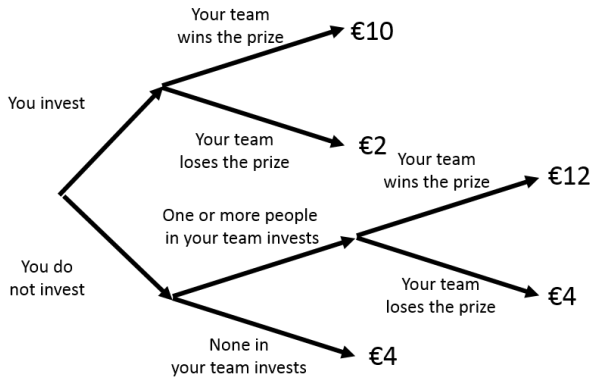
for sure if the team has at least one member investing while the other team does not. If both teams have at least one member investing, then each team is equally likely to win (50-50 chance to win).

Team A or Team B: There are two types of teams: Team A and Team B. Your type will be fixed throughout 10 rounds. Members of Team A make their decisions first, and members of Team B can make their decisions contingent on whether or not at least one person in Team A invests.

Endowment: All of you start with an earnings balance of €4 in each period.

Earnings: If at least one person in your team invests and your team wins the prize (either because no one in the other team invests or because your team wins the competition) then a person in your team who invests earns €10 (Endowment €4 + Investment Benefit €8 – Personal Cost €2), and a person in your team who does not invest earns €12 (Endowment €4 + Investment Benefit €8). If at least one person in your team invests and your team loses the prize, then a person in your team who invests earns €2 (Endowment €4 + Investment Benefit €0 – Personal Cost €2), and a person in your team who does not invest earns €4 (Endowment €4 + Investment Benefit €0). If neither person in your team invests, all persons of your team earn €4 (Endowment €4).





Chapter 5

Volunteering under Risk and Competition? An Experimental Examination of Public Service Motivation

5.1 Introduction

Understanding what motivates people to take social responsibility and to provide public services is central to Public Administration research. According to Public Service Motivation (PSM) theory, certain individuals have a strong desire to make personal sacrifices and serve the public interest (Perry, 1996; Perry & Wise, 1990). PSM motivates individuals to volunteer and refrain from shirking by embedding an outcome-oriented concern for the public welfare (Francois, 2000). People may develop a strong motivation to contribute to public goods not merely because they feel compassionate about others' wellbeing, but also because they are committed to the public interest and are attracted to policymaking (Perry & Wise, 1990). The sense of self-sacrifice is fundamental to the behavioral process of PSM: individuals are motivated to make personal sacrifices and serve the public in order to realize the instrumental, value-based, and identification motives of public service (Kim & Vandenabeele, 2010).

Previous empirical studies have associated PSM with prosocial behavior, such as volunteering and donating blood or money (Clerkin et al., 2009; Coursey et al., 2011, 2008; Houston, 2006; Lee, 2012; Lee & Jeong, 2015; Perry et al., 2008; Piatak & Holt, 2020). For instance, Clerkin, Paynter, and Taylor (2009) found that PSM can explain the decision to volunteer or donate among undergraduate students (but see Awan, Esteve, and van Witteloostuijn 2020). PSM is defined as a general predisposition to promote the public good, and act beyond personal and organizational interest (Vandenabeele, 2007). So, individuals may exhibit the PSM-relevant behaviors not only in the workplace, but in other areas of society as well (Lee and Jeong 2015).

Traditionally, PSM is assumed to feature four dimensions that capture rational, normative, and affective motives for performing public service: Compassion (COM), Attraction to Public Services (APS), Commitment to Public Values (CPV), and Self-Sacrifice (SS). Individuals may participate in volunteering activities because they empathize with persons in need (COM), have a great concern for the public policy process and desirable social outcomes (APS), feel responsible toward their community and society (CPV), and develop a strong sense of altruism (SS). Like PSM, the motivation to perform voluntary services or charitable acts does arise from a mixed motive of altruism and egoism (Piatak & Holt, 2020). Both PSM and the motivation to volunteer share the same emphasis on prosocial values, as well as beliefs regarding providing public services and supporting society (Lee 2012), and the motive for volunteering is multi-faceted, and value-laden attitudes play a key role in the decision to volunteer (Lee and Jeong 2015; Lee 2012; Wilson 2000). For instance, the multi-dimensional measurement of PSM has been found to better predict the decision to volunteer than altruism, which mainly focuses on an individual's desire to help others out of concern for others (Piatak & Holt, 2020).

Laboratory experimental research on the relationship between PSM and observed prosocial behavior is emerging. Using a survey in combination with a pseudo-experimental design, Esteve et al. (2016) observe a positive relationship between PSM and contributions to the public good, but such a relationship is found to be reciprocal, moderated by prosocial behaviors of the others. Similarly, people with higher PSM are found to more altruistic (contributing more) and more likely to undertake altruistic punishment (punish free riders more) in the public goods game (Prokop & Tepe, 2020). However, Tepe and Vanhuysse (2017) do not find PSM to be associated with a higher contribution in the public goods game. Other than the public goods game, PSM has also been found to be linked to equal division in the dictator game, less strategically fair behavior in the ultimatum game (Tepe & Vanhuysse, 2017), cooperation in the prisoner's dilemma game (Esteve et al., 2015), and trust behavior in the trust game (Tepe, 2016). In short, people with higher PSM tend to be more generous, more trustworthy, and more willing to contribute to public goods (including upholding social justice).

The current study explores the role of PSM in volunteering to make a personal sacrifice under risky and competitive conditions in a volunteer's dilemma experiment. The volunteer's dilemma is a social dilemma game in which a public good is produced if and only if (at least) one player volunteers to make a costly investment (Diekmann, 1985). In this game, an individual face the decision either to make a personal sacrifice to produce a public good, or to freeride in the hope that at least one other will decide to sacrifice. Real-word examples are a mammal sounding an alarm to its group, which

increases its personal risk of being attacked by a predator, or a bystander who decides to help a victim in case of an emergency. In the public sector, whistle-blowing behavior would be another prime example of the volunteer's dilemma: A whistle-blower discloses unethical or illegal activities or wrongdoing at the expense of taking personal career risks.

On top of examining the association between PSM and volunteering, we further extend the classic volunteer's dilemma game to include two additional contingencies: risk-taking and team competition. The first contingency investigates the role of pro-social risk-taking behavior, since volunteering involves a risky decision to provide public goods. As happens in real life, pro-social behavior not only involves a personal sacrifice, but also bears the risk of failure as well. Indeed, public decision-makers often face the dilemma of selecting alternatives among a risk spectrum. For instance, efforts to help a person in need could turn out to be a futile attempt, and a whistle-blower could fight a losing battle against corruption in a cover-up. The second novel contingency we introduce, is intergroup competition. Competition can serve as an extrinsic motivation with a positive effect on the act of volunteering. However, competition may also crowd out self-determined and intrinsic motivations such as PSM.

In all, by investigating the effect of PSM across a series of treatments, we demonstrate how task characteristics and social contexts can affect the role of PSM in stimulating prosocial behavior. The article is organized as follows. Section 5.2 presents the theoretical framework, and develops a set of hypotheses regarding PSM and the behavioral implications for volunteering, risk-taking, and competitive behavior. Section 5.3 presents the treatment design for the laboratory experiment. Section 5.4 describes the experimental procedure, the subject pool, and the measurement strategy. Section 5.5 presents the empirical results. Section 6 discusses and summarizes the study, and reflects on implications.

5.2 Theoretical Framework

Although whistle-blowing serves as a vivid example, the volunteer's dilemma is pervasive in human interactions, mostly without massive consequences. Examples are accepting task requests in work with low promotability (Babcock et al., 2017), sharing knowledge in organizations (Cabrera & Cabrera, 2002), and playing the role of devil's advocacy to facilitate deliberation and avoid groupthink (Janis 1972, p. 215), which all require someone who volunteers to make a personal sacrifice for the common good. For instance, an untenured assistant professor volunteers to serve on the student's

committee, a coworker volunteers to participate in a seminar to bring new knowledge back to the organization, a group member voices an unpopular view and critically challenges the majority position in a discussion during a meeting, and a department volunteers to be the first to experiment and adopt organizational reforms.

Unlike other social dilemma games such as the public goods games and the prisoner's dilemma, the volunteer's dilemma does not require collective action to achieve a common good. On the one hand, in both the public goods games and the prisoner's dilemma, mutual cooperation yields a better outcome, but defection is a dominant strategy, which leads to a Pareto-inefficient equilibrium of mutual defection. In these social dilemmas, the maintenance of mutual cooperation often relies on direct reciprocation, reputation, social norm-setting, and enforcement (Dixit, 2003). On the other hand, the volunteer's dilemma only requires one member of the group to produce the public good, implying that collective action is not only unnecessary, but also inefficient. The pure strategy equilibrium in the volunteer's dilemma is asymmetric: Volunteering is a dominant strategy if other players will not volunteer. In other words, one feels the need to volunteer and make a personal sacrifice under the belief that other players will not volunteer – hence, free-riders and cooperators coexist in a stable equilibrium (see Diekmann 1985; also Holt 2019).

Therefore, the volunteer's dilemma is fundamentally different from other social dilemmas. The problem in the volunteer's dilemma is not how cooperation is sustained, but who is willing to volunteer (individual differences) and how situational factors influence the willingness to volunteer (see Krueger, Ullrich, and Chen 2016; Healy and Pate 2018; Fischer et al. 2011). Moreover, often observed PSM-related behaviors such as social volunteering and blood donation can be better captured in the volunteer's dilemma game, because individuals usually do not expect direct reciprocity when performing these actions, unlike in the context of a public goods game where reciprocation plays a key role in sustaining cooperation. Thus, the volunteer's dilemma is an ideal game for establishing the link between PSM and self-sacrifice behavior in a laboratory experimental context.

People endowed with high PSM are outcome-oriented; they have a greater concern for the delivery of (public) services, and for the consequence of inaction for the welfare of others and society. Individuals endowed with high PSM often believe that there would be detrimental consequences for societal welfare were they not make personal sacrifices (Francois, 2000). This type of belief exactly characterizes the asymmetric pure strategy equilibrium in the volunteer's dilemma: Volunteering becomes a dominant strategy under the belief that other players will not volunteer. In other words,

individuals with higher PSM may feel more obliged to volunteer because they expect other members to be more reluctant to volunteer. Francois (2000) uses a principal-agent model to explain that such concern of collective inaction plays a key role for PSM in achieving better efficiency in government bureaucracy vis-à-vis private enterprises. PSM motivates individuals to volunteer and refrain from shirking by embedding an outcome-oriented concern that, "were she not to provide the effort, the level of service would fall" (Francois 2000, p. 277). As mentioned, PSM has been linked in empirical studies to self-sacrifice behaviors such as volunteering and donation, and self-sacrifice forms as the behavioral basis of PSM (Kim & Vandenabeele, 2010). What differentiates PSM from altruism is that PSM is beyond the concern of individual others, but involves the belief and attitudes towards public service (Piatak & Holt, 2020). In other words, high-PSM individuals are willing to perform public service not only because they care about other's individual welfare, but also because they feel meaningful or committed to making personal sacrifice and upholding public goods.

Hypothesis 1: PSM is positively associated with volunteering (i.e., the voluntary provision of public goods in the volunteer's dilemma).

The literature on the role of PSM in volunteering often focuses on safe decisions such as donating money, time, or blood. However, volunteering activities sometimes involve various types of risk-taking (Dong, 2015). Frequently, empirical studies find public sector employees to be risk averse (Bellante and Link, 1981; Bonin, Dohmen, Falk, Huffman, and Sunde, 2007; Buurman, Delfgaauw, Dur, and van den Bossche, 2012; Carlsson, Daruvala, and Jaldell, 2012; Dohmen and Falk, 2010), and risk averse individuals tend to sort into public sector employment for reasons of job security (Dong, 2017; Houston, 2000; Pfeifer, 2011). However, there is mixed evidence for the relationship between PSM and risk attitude. On the one hand, in a laboratory experiment, Tepe and Prokop (2018) find that MPA students do not behave more risk averse than MBA and Law students, whereas PSM is positively associated with risk aversion. On the other hand, in a survey experiment sampling experienced managers, Nicholson-Crotty, Nicholson-Crotty, and Webeck (2019) find no evidence for a correlation between PSM and risk preferences.

Despite the lack of a theoretical framework and empirical support regarding the risk dimension of PSM, a PSM-associated personality trait "agreeableness" may provide a clue as to potentially relevant behavioral implications (van Witteloostuijn, Esteve, and Boyne, 2016). On the one hand, agreeableness is the psychological trait of being unselfishly cooperative, and is found to be positively correlated with risk aversion (Borghans, Heckman, Golsteyn, and Meijers, 2009; Soane and Chmiel, 2005). On the other hand, the positive relationship between agreeableness and volunteering behavior

is reported to be partially mediated by prosocial value motivation (Carlo, Okun, Knight, and de Guzman, 2005; Vantilborgh et al., 2013). In short, volunteering risk may mitigate the positive effect of prosocial value motivation such as PSM as agreeableness does.

Hypothesis 2: Volunteering risk mitigates the positive effect of PSM on volunteering (i.e., the voluntary provision of public goods in the volunteer's dilemma).

Motivation Crowding Theory (or MCT) demonstrates that performance-based incentives can reduce intrinsic motivation, either through a change in preferences or a change in the perception of the performed task or task environment (Bénabou and Tirole, 2006; Deci, Koestner, and Ryan, 1999; Frey and Jegen, 2001). Since PSM has a higher reliance on intrinsic rewards over extrinsic ones (Crewson, 1997; Houston, 2000, 2011), external incentives (rewards/punishments) can lead to demoralization of public service, instead promoting self-interested behavior among employees who are intrinsically motivated by PSM (Georgellis, Iossa, and Tabvuma, 2011; Grand, 2010; Perry and Hondeghem, 2008). Although monetary rewards are often the focus of the MCT, competition may also serve as an external, performance-based incentive that crowds out intrinsic motivation (i.e., PSM).

Self-Determination Theory (or SDT; Ryan and Deci, 2000) is a multidimensional framework to explain the motivational change mechanisms associated with external stimuli. SDT offers insight into the crowding-out effect of extrinsic motivation by differentiating different sources of motivation based on the extent to which the motives are self-determined and intergraded into the self. From this perspective, PSM includes both intrinsic and extrinsic motivation (Houston, 2011; Neumann and Ritz, 2015). On the one hand, intrinsic motivation can be enjoyment-based or purely prosocial: People may have fun performing public service because they can accumulate new knowledge, interact with people, or derive meaning from being benevolent and kind by helping others. On the other hand, PSM has extrinsic components that are driven by external stimuli: Individuals may voluntarily perform public services because the tasks are instrumental to advance their ultimate goals (identified regulation), or because they integrate duties and obligations into their value system or identity (integrated regulation). However, the extrinsic components of PSM are still autonomous and integrated to the self, and may be subjected to the crowding-out effect from performance-contingent competition, which serves as

external regulation[23] and engenders the desire to attain a desired outcome or to avoid a threatened consequence.

Introducing choice and competition into the public sector is often considered as a strategy to encourage service providers to improve quality, efficiency, and responsiveness. However, such an approach is based on the assumption of self-interest and profit-maximization, which could compromise intrinsic motivation (Grand, 2010). Also, Bénabou and Tirole (2006) show that competition can lead to excessive participation in prosocial behaviors that are highly visible, but not really beneficial. Competition can provide either direct monetary rewards, or self-worthiness that is contingent on external performance. However, the locus of control may thereby shift from the inside to the outside of the person affected: Attention may divert from the concern for others or society at large to the outcome of the competition. If so, competition may crowd out intrinsic motivation, such as PSM.

Hypothesis 3: Competition crowds out the positive effect of PSM on volunteering (i.e., the voluntary provision of public goods in the volunteer's dilemma).

5.3 Experiment Design

The experimental design is the same as the previous chapter. The baseline model (the control treatment, or CT) is a standard volunteer's dilemma where players decide whether or not to incur a personal cost to provide a public good (Diekmann, 1985). To test the hypotheses, we vary treatments across our two contingencies to examine the effect of risk-taking (RK treatment) and intergroup competition (GC treatment). The first contingency introduces the risky production of public goods: There is a 50% chance of failing to produce a public good. The second contingency relates to an intergroup competition treatment, where two groups compete for a public good sequentially: A group with one or more volunteers wins a public good against another group with no volunteer. There is a 50% chance of winning in case of a tie, when both groups have at least one volunteer. Sequential moves result in three subgame groups: the first mover group GC-Lead decides in the first stage, and the following group plays GC-CT or GC-RK, with a payoff structure identical to CT and RK,

[23] External regulation in SDT corresponds to what the economics literature tends to term extrinsic motivation. Identified regulation and introjected regulation are considered to be extrinsic (with external goals or influences) in SDT, but may be regarded as intrinsic (i.e., without explicit external stimuli) in economics and other fields.

respectively. An overview of the resulting treatments is provided in Table 5.1. For the detailed description of treatments, the reader is referred back to Section 4.2.

Table 5.1 Overview of treatments

	Single Group Production		Intergroup Competition		
			Second Mover	Second Mover	First Mover
	No Risk	Risk	No Risk	Risk	Risk
Treatment acronym	*CT*	*RK*	*GC-CT*	*GC-RK*	*GC-Lead*

5.4 Procedures

5.4.1 Set-up

We conducted the experiment in the CentERlab at Tilburg University, in the Netherlands, inviting 126 participants between September 2018 and November 2018: 53.4% are female, being 22.6 (s.d. = 3.20) years old, on average. Participants were divided into seven sessions, and were given written instructions of the experiment. The number of participants per session ranges from 12 to 24, but always with a multiplier of 3. Before the experiment, all participants were asked to participate in a ten-minute online survey, measuring PSM. All participants first participated in the Holt-Laury risk task to measure their risk aversion (Holt and Laury, 2002), and then participated in the CT treatment in ten consecutive decision periods. Afterward, 48 participants of three sessions played the RK treatment in ten consecutive decision periods, and the other 78 participants of four sessions played the GC treatment in ten consecutive decision periods. All experiment sessions were conducted in English. To make sure that they understood the game structure, participants had to correctly answer a few test questions before making their decisions.

For the detailed description of procedures, the reader is referred back to Section 4.3. Participants received their pay-out of one randomly drawn game from the 20 decision rounds, plus the pay-out of the Holt-Laury risk task. The experiment lasted approximately 50 minutes (including instructions), and participants earned about €12, on average, paid in cash at the conclusion of the experiment. Below, we first summarize the variables used in this study. Then, in Section 5.5, we report descriptive statistics of included variables and treatment effects. Subsequently, we utilize

individual decision data to examine treatment effects, including heterogeneous treatment effects of PSM, by estimating a mixed-effects linear regression model.

5.4.2 Variables

Dependent variables: Volunteering decisions. Our central dependent variable is a yes-or-no (1 or 0) volunteering decision dummy for each individual in each round, for each session in each treatment. We have 128 participates playing 10 rounds of the *CT* treatment, 48 participants the *RK* treatment, and 39 participants the *GC-CT* or *GC-RK* treatment, respectively. The observations in the *GC* treatment of the leading group (Team *A*) are dropped from further analyses since the *GC-Lead* treatment is not the focus of our study.

***Explainable variables: Public Service Motivation*.** Regarding PSM and the underlying sub-motives, we work with Perry (1996)'s multidimensional concept, comprised of four dimensions: APS, CPV, COM, and SS. We use Kim et al. (2012)'s international scale (16 items; for the PSM questionnaire, see Appendix 3.A.2) to measure these four dimensions of PSM on a seven-point Likert-type scale. The Composite Reliability (McNeish, 2017) ω (total) = 0.84 for the overall PSM scale (referred to as PSM Overall), and ω = 0.67 for COM, ω = 0.70 for APS, ω = 0.56 for CPV, and ω = 0.78 for SS, respectively.[24] The composite reliability is similar to the one reported in Kim et al. (2012) (ranging from 0.716 to 0.824) for the overall PSM, APS, and SS, but lower for CPV.

Control variable: Risk Aversion. The measurement of risk aversion comes from the Holt-Laury risk task from 128 participants. In this task, participants are given a set of paired lottery options. These pairs are structured so that the lesser payoff in the safe Option A is always worth more than the lesser payoff in the risk Option B (i.e., the high payoff in Option A is €3 and the low payoff is €2, whereas the high payoff in B is €5 and the low payoff is €1; see the experiment's instructions and screen shot in Appendix A.1). Participants make ten decisions to choose between Option A and Option B, with the chance of the high payoff varying from 10% to 100%. Participations who are more risk averse will pick Option A over B unless the chance of getting the high payoff is large enough. Therefore, the number of safe options A selected in the ten lottery options indicates the level of risk aversion.

[24] The reliability coefficients (Cronbach's α) of the overall PSM scale is α = 0.84, and α = 0.66 for COM, α = 0.70 for APS, α = 0.56 for CPV, and α = 0.76 for SS, respectively. All the reported estimates of internal consistency reliability assume that items can be measured in interval levels.

Other control variables. In line with prior experimental work on PSM (Esteve et al., 2016; Prokop and Tepe, 2019), we include three personal-related control variables: gender (1 = female), age (in years), and religiosity (1 = religious believer). For the per-period regression analyses, we include two game-related control variables: experience (the number of rounds played), and previous win (= 0 if the group won or successfully produced a public good in the previous round and = 0 if otherwise.).

5.5 Results

5.5.1 Descriptive Statistics

Table 5.2 presents the summary statistics and bivariate correlations of key variables. We observe that 53.4% of participates are female, with an average age of 22.6 (s.d. = 3.20) years old, and that 54.0% are religious believers (19.8% Catholic, 15.0% Islam, 5.6% Protestant, 5.6% Orthodox, and 8% other religions). The mean of the Holt-Laury risk task is 4.72 and the majority (71.42%) of people are risk averse (see Table 4.2). We do not find risk aversion to be significantly correlated with PSM Overall (ρ = -0.018, p = 0.159).

Table 5.2 Descriptive Statistics and Bivariate Correlations

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
Gender	0.46	0.50	1.00											
Age	22.56	3.19	0.03	1.00										
Religiosity	0.54	0.50	-0.05**	0.20**	1.00									
PSM Overall	5.50	0.60	-0.16**	0.18**	0.13**	1.00								
PSM APS	5.66	0.77	-0.23**	0.16**	0.15**	0.83**	1.00							
PSM CPV	6.12	0.62	-0.14**	0.19**	0.01	0.71**	0.58**	1.00						
PSM COM	5.67	0.75	-0.23**	0.00	0.02	0.75**	0.49**	0.50**	1.00					
PSM SS	4.57	1.00	0.04**	0.19**	0.17**	0.75**	0.47**	0.26**	0.34**	1.00				
Vol. CT	0.46	0.33	-0.13**	0.09**	0.09**	0.25**	0.25**	0.13**	0.22**	0.16**	1.00			
Vol. RK	0.33	0.26	-0.17**	-0.06**	0.13**	0.17**	0.12**	0.01	0.35**	0.05*	0.25**	1.00		
Vol. GC-CT	0.58	0.35	-0.46**	-0.09**	0.02	-0.06*	0.02	0.00	0.05*	-0.21**	0.61**	N/A	1.00	
Vol. GC-RK	0.43	0.34	0.01	0.00	-0.01	-0.13**	-0.08**	0.09**	-0.10**	-0.20**	0.28**	N/A	0.38**	1.00
Risk Aversion	4.72	2.20	-0.21**	-0.28**	-0.08**	-0.02	0.03*	0.03*	0.02	-0.10**	0.07**	0.19**	0.27**	0.30**

Note: *$p \leq .05$; **$p \leq .01$. N/A: not applicable due to different treatment groups.

The observed average volunteering rate is 46% when no risk and intergroup competition are involved, which is slightly lower than what the

Nash equilibrium predicts. When producing public goods is risky, the volunteering rate drops to 33%. Intergroup competition increases the volunteering rate by around 10%, either with or without risk.

5.5.2 Regression Analysis

Strictly speaking, we only have seven independent observations, since all participants in one session were connected. Because there could be substantial variation in volunteering across sessions resulting from random stranger matching within each session, we generalized the error structure to include heteroskedastic variances across individuals and sessions. We, therefore, employ a mixed-effects (ME) linear model with repeated measures for our analysis. The 2×2 treatment effects are modeled as binary fixed effects, and sessions and participants within each session are modeled as random effects. Table 5.3 reports regression estimates aimed to examine the effect of PSM on volunteering across the respective treatments, and Table 5.4 reports regression estimates for the PSM subscales. [25]

The dependent variable in Models 1, 2, and 3 is the average volunteering rate across ten rounds for each observation. In Models 4 to 9, the dependent variable is the binary volunteering decision (1 = to invest/volunteer) in each round.[26] Models 4 to 9 control for experience (the number of rounds played), and previous win (whether the group won or successfully produced a public good in the previous round). The explanatory variable is PSM Overall in Models 2 to 5, and its four PSM subscales in Models 6 to 9. Models 3 and 5 to 9 allow for heterogeneous effects of PSM or its subscales across treatments. All models control for gender,[27] age, religiosity, and risk aversion (the number of safe choices chosen in the Holt-Laury risk task, centered at three choices, or risk-neutral individuals).

We do observe treatment fixed effect across models, even when PSM variables are included in the model. Across models, group competition increases the volunteering rate or likelihood by 13-15%, while risky production decreases the volunteering rate or likelihood by 12-14%, consistent with the theoretical prediction that risk reduces the expected benefit of volunteering and thereby discourages volunteering. Intergroup competition can mitigate the negative impact of risk and

[25] Since the PSM subscales show a very high pairwise correlation, we estimate separate regression models for each PSM subscale.
[26] We found no significant time trend of the volunteering decision across treatments. The Spearman's rank correlation test reports: ρ=−0.042, p = 0.140 in the *CT* treatment; ρ=−0.005, p = 0.906 in the *RK* treatment; ρ=−0.036, p = 0.476 in the *GC-CT* treatment; and ρ=−0.018, p = 0.723 in the *GC-RK* treatment.
[27] One participant marked a third gender and was dropped from the regression analysis.

maintain the volunteering rate: The estimated coefficient difference between *RK* and *GC-RK* is significant (from mildly to strongly across models; test statistics are shown in the last row of Table 5.3 and Table 5.4).

PSM has a significant positive effect across models (from mild to strong significance in Models 2 to 5, Table 5.3). Table 5.5 reports the average marginal effect of PSM and its subscales across treatments from the linear prediction of Models 5 to 9. For example, in Model 5, we find the average marginal effect of PSM on volunteering in the *CT* treatment to be significantly positive at 11.7% (1 unit or 1.67 s.d. increase in the level of PSM increases the likelihood to volunteer by 11.7%). This delivers robust support for Hypothesis 1.

Table 5.3 Regression results: PSM Overall

Dependent Variable:	Decision(s) to volunteer				
	(1)	(2)	(3)	(4)	(5)
Observation Unit	Treatment Average	Treatment Average	Treatment Average	Decision per round	Decision per round
PSM Overall (centered)		0.073*	0.126***	0.081**	0.117***
		(0.040)	(0.047)	(0.041)	(0.043)
×*GC-CT*			-0.139		-0.092
			(0.091)		(0.056)
× *RK*			-0.081		-0.080*
			(0.078)		(0.047)
× *GC-RK*			-0.177*		-0.119**
			(0.091)		(0.056)
Treatment (*CT* as the baseline)					
GC-CT	0.137***	0.144***	0.127**	0.160***	0.146***
	(0.051)	(0.051)	(0.052)	(0.032)	(0.033)
RK	-0.140***	-0.143***	-0.138***	-0.135***	-0.127***
	(0.047)	(0.046)	(0.046)	(0.029)	(0.029)
GC-RK	-0.012	-0.004	-0.028	0.029	0.011
	(0.051)	(0.051)	(0.052)	(0.032)	(0.033)
Risk aversion	0.019	0.018	0.019*	0.017	0.017
	(0.011)	(0.011)	(0.011)	(0.012)	(0.012)
Gender (male= 1)	-0.075	-0.063	-0.059	-0.062	-0.060
	(0.048)	(0.048)	(0.047)	(0.049)	(0.049)
Age	0.008	0.007	0.005	0.011	0.010
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Religiosity	.041	0.033	0.032	0.022	0.022
	(0.048)	(0.047)	(0.047)	(0.049)	(0.048)
Experience (Round)				-0.002	-0.002
				(0.003)	(0.003)
Previous win				-0.022	-0.021
				(0.021)	(0.021)
Constant	0.254	0.290	0.316*	0.223	0.244
	(0.188)	(0.188)	(0.186)	(0.190)	(0.189)
Observations	251	251	251	2259	2259
Obs per subject	1,2,3	1,2,3	1,2,3	9,18,27	9,18,27
Log-likelihood	-54.793	-53.146	-50.611	-1389.525	-1385.704
Wald statistic	26.868	30.536	36.281	65.257***	73.263***
Test statistic on $\beta^{GC-RK} > \beta^{RK}$	3.997**	4.713**	2.871*	16.276***	11.049***

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Mixed effects linear regression models are estimated. Standard errors are clustered at the session and individual level. Risk aversion is centered at 3. Previous win = 1 if group won or successfully produced a public good in previous round and = 0 if otherwise. Obs. per subject indicates the number of observations per participant, which vary because participants played different treatments across sessions.

Table 5.4 Regression results: PSM subscales

Dependent Variable:	Decision(s) to volunteer			
	(6) Decision per round	(7) Decision per round	(8) Decision per round	(9) Decision per round
PSM subscales (centered):	**COM**	**SS**	**APS**	**CPV**
	0.082**	0.046*	0.087***	0.055
	(0.034)	(0.026)	(0.033)	(0.042)
× *GC-CT*	-0.021	-0.040	-0.054	-0.110**
	(0.038)	(0.032)	(0.044)	(0.055)
× *RK*	0.001	-0.090***	-0.046	-0.003
	(0.040)	(0.029)	(0.035)	(0.041)
× *GC-RK*	-0.072*	-0.034	-0.108**	-0.043
	(0.038)	(0.032)	(0.044)	(0.055)
Treatment (*CT* as the baseline)				
GC-CT	0.157***	0.150***	0.150***	0.139***
	(0.032)	(0.032)	(0.033)	(0.033)
RK	-0.133***	-0.122***	-0.128***	-0.133***
	(0.029)	(0.029)	(0.030)	(0.029)
GC-RK	0.026	0.020	0.007	0.021
	(0.032)	(0.032)	(0.033)	(0.033)
Risk aversion	0.017	0.017	0.016	0.017
	(0.012)	(0.012)	(0.012)	(0.012)
Gender (male= 1)	-0.052	-0.077	-0.056	-0.070
	(0.050)	(0.050)	(0.050)	(0.050)
Age	0.013*	0.011	0.010	0.011
	(0.008)	(0.008)	(0.008)	(0.008)
Religiosity	0.026	0.028	0.019	0.034
	(0.048)	(0.050)	(0.049)	(0.049)
Experience (Round)	-0.002	-0.002	-0.002	-0.002
	(0.003)	(0.003)	(0.003)	(0.003)
Previous win	-0.022	-0.021	-0.021	-0.020
	(0.021)	(0.021)	(0.021)	(0.021)
Constant	0.163	0.217	0.236	0.213
	(0.187)	(0.194)	(0.189)	(0.193)
Observations	2259	2259	2259	2259
Obs per subject	9,18,27	9,18,27	9,18,27	9,18,27
Log-likelihood	-1387.220	-1385.420	-1385.852	-1388.914
Wald statistic	70.178***	73.511***	72.940***	66.374***
Test statistic on $\beta^{GC-RK} > \beta^{RK}$	15.542***	11.756***	10.333***	13.565***

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Mixed effects linear regression models are estimated. Standard errors are clustered at the session and individual level. Risk aversion is centered at 3. Previous win = 1 if group won or successfully produced a public good in previous round and = 0 if otherwise. Obs. per subject indicates the number of observations per participant, which vary because participants played different treatments across sessions.

The effect of PSM is heterogeneous across treatments: The interaction terms between PSM Overall and other treatments are negative, although not significantly so for the *GC-CT* treatment ($p = 0.101$ in the GC-CT treatment, $p = 0.087$ in the *RK*, and $p = 0.033$ in the *GC-RK*). The resulted average marginal effects of PSM Overall in the *GC-CT*, *RK*, and *GC-RK* treatments (Table 5.5) are also not significantly different from zero. Therefore, the positive effect of PSM disappears when the public good production involves risk and competition, supporting Hypotheses 2 and 3.

Table 5.5 Average marginal effects of PSM and its subscales on volunteering rate

	Average marginal effects (*dy/dx* across treatments)				
Model:	(5) PSM	(6) COM	(7) SS	(8) APS	(9) CPV
Treatment:					
CT	0.117	0.082	0.046	0.087	0.055
	(0.006)	(0.015)	(0.075)	(0.009)	(0.190)
GC-CT	0.026	0.061	0.007	0.033	-0.055
	(0.686)	(0.174)	(0.859)	(0.512)	(0.382)
RK	0.037	0.083	-0.043	0.041	0.052
	(0.512)	(0.076)	(0.208)	(0.531)	(0.309)
GC-RK	-0.002	0.010	0.012	-0.021	0.012
	(0.980)	(0.820)	(0.735)	(0.680)	(0.845)

Regarding PSM subscales, COM and APS have a significantly positive effect on volunteering in the *CT* treatments ($p = 0.015$ and 0.009 respectively, Table 5.4), except for SS and CPV ($p = 0.075$ and 0.190 respectively, Table 5.4). Likewise, in Table 5.5, both COM and APS have a significantly positive average marginal effect on volunteering in the *CT* treatment. Although weekly significant, the positive marginal effect with volunteering is found for COM in the *RK* treatment, and for SS in the *CT* treatment. No significant marginal effect can be seen in the treatments GC-CT and GC-RK for any PSM subscale.

5.6 Discussion and Conclusion

In line with prior incentivized laboratory experiments on the behavioral implications of PSM, we observe a strong relationship between PSM and prosocial behavior in a classical volunteer's dilemma. In theory, the volunteer's dilemma and the *N*-person prisoners' dilemma can be described as the two opposite extremes of a general public goods game, and all intermediate cases can have a mixed equilibrium like a volunteer's dilemma, where cooperators and defectors can coexist without iterations, relatedness, or external enforcement (Archetti and Scheuring, 2011). Therefore, the volunteer's dilemma is an ideal example to examine the antecedents of pro-social behavior in a social dilemma situation. Our study confirms prior evidence of a positive association between PSM and cooperative behavior.

Disassembling PSM into its subscales shows that COM and APS, reflecting affective and rational motives, are the main drivers of PSM-motivated volunteer behavior. This observation is consistent with Prokop and Tepe's (2019) findings that COM and APS play the main role in driving cooperative and punitive behaviors in the public goods game. Intriguingly, both types of prosocial

behavior can be seen as volunteering or the voluntary provision of public goods in the volunteer's dilemma. First, as mentioned above, the volunteer's dilemma is an extreme case of the public goods game (with a step-level contribution function). Second, altruistic punishment requires volunteers to make personal sacrifices to punish norm violators, which itself resembles a volunteer's dilemma game (Przepiorka and Diekmann, 2013). For instance, whistle-blowing serves as an ideal example, connecting volunteer and punitive behavior together: The public good that a volunteer is providing is social norm enforcement.

Although we do not find PSM to be associated with risk preferences, we do reveal that the positive effect of PSM on volunteering disappears when the performed task involves risk-taking, implying that task characteristics can moderate the PSM effect. Therefore, our study indicates that PSM alone is ineffective in stimulating prosocial behavior under risk. For example, the positive relationship between PSM and whistle-blowing, an exemplary type of prosocial risk-taking, is found to be indirect and mediated by organizational commitment (Caillier, 2015). For PSM to promote prosocial risk-taking, individuals may need to develop a sense of obligation to protect the organizational culture, or even assure that the risks they take will pay off in the long run and will not be in vein (Mesmer-Magnus and Viswesvaran 2005, p. 289). Given the lack of research regarding the relationship between PSM and risk-taking, we encourage future studies to investigate risk perception and its behavioral relationship with PSM by analyzing whistle-blowing behavior, innovative behavior, or risk-taking in the high-risk sectors such as health care, police, and firefighters.

Moreover, team competition increases the volunteering rate, but also crowds out the positive effect of PSM, implying that PSM can be strengthened or undermined by the institutional context. On the one hand, as a more self-determined motivation, PSM promotes the voluntary provision of the public good through the concern for social welfare. On the other hand, competition serves as a performance-related incentive, diverting attention from intrinsically motivated motives to a performance target that is being evaluated, which could compromise the role of PSM in stimulating desirable behaviors. The current study provides first laboratory evidence that a controlled motivation strategy such as intergroup competition crowds out PSM-motivated volunteer behavior. Replicating this evidence in a non-laboratory setting could have important practical implications regarding the introduction of competition in public services. For example, service providers would compete for performance indicators such as the amount of service and time of delivery, but may be less motivated to have concern for societal welfare. Further investigation of the crowding-out effect of external incentives may provide practical insights relevant for institutional and incentive design.

Like any other experimental research on PSM, this study cannot establish a direct causal link between PSM and prosocial behavior because we cannot manipulate the independent variable PSM with the random assignment (Esteve et al., 2016). However, the treatment intervention does allow establishing causal inference with regard to the two contextual factors: risk and competition. Another restrictive remark regards the external validity of laboratory experiments. Conducting an experiment in a highly controlled environment is very effective in abstracting from naturally occurring confounds, hence substantially increasing the internal validity of a study. At the same time, it may also abstract away some important complexity of the social environment, and may not capture the precise effect size we would otherwise expect to see outside a laboratory (Schram, 2005). For instance, the observed main drivers of COM and APS for prosocial behaviors in Prokop and Tepe's (2019) and our experiments might be overrated if CPV and SS need to be activated under certain social conditions. According to Self-Determination Theory, COM and APS are closer to the intrinsic motivations through the satisfaction of helping people and the enjoyment of performing public service. Commitment to the public value (CPV), instead, is less self-determined, requiring a certain level of cultural assimilation and social identification. Therefore, one may need to be cautious in generalizing experimental research findings to the situations or conditions outside the laboratory. Further research may explore other contextual factors in laboratory and field experiments to identify the role of PSM's subdimensions in stimulating prosocial behaviors. Such inquiry will be essential to deepen our understanding of the behavioral implications of PSM.

Chapter 6

Conclusion

My dissertation examines the antecedents of prosocial behavior in different social contexts, applying conceptual, experimental, and survey methodologies (and combinations thereof). This series of studies demonstrates how the complex and diverse interactions between psychological attributes and the social environment shape prosocial behavior. My dissertation responds to the urge to deepen extant understanding of prosocial behavior from a multilevel perspective, which recognizes the diverse motives to act for the benefit of others (or the self), as well as the various ways to manifest prosocial behavior (Eisenberg and Spinrad, 2014; Penner, Dovidio, Piliavin, and Schroeder, 2005). All four studies reflect on the cognitive process of prosocial motivation: Individuals construct a higher-order representation to represent the relationship between the self and social environment by linking relevant stimuli with innate psychological capabilities.

Chapter 2 presents the cognition process of Public Service Motivation (PSM) by referring to Moral Foundation Theory (MFT). This study demonstrates how various social stimuli trigger a diverse set of innate moral intuitions to construct a logic of appropriateness about the social relationships between the self and others, linking public service not merely to compassion and social justice, but also to professionalism, civic duty, or spatial endeavor. This study contributes to the current PSM literature by proposing a causal map that not only distinguishes PSM from related concepts such as altruism, but also disaggregates the PSM phenomenon by exploring its social stimuli, diverse moral emotions, different representations of social environments, and various types of prosocial behaviors. As the research on PSM has increased immensely in the past two decades, PSM is empirically associated with various outcomes, including job selection, work performance, job satisfaction, organization commitment, whistleblowing, volunteering, and citizenship behaviors (Ritz, Brewer, & Neumann, 2016). By incorporating insights from social psychology and cognitive science, Chapter 2 provides micro foundations that clarify the conceptual space of PSM and enhances our understanding of how PSM can entail a broad range of behavioral outcomes and results.

Chapter 3 contributes to the public administration literature by providing empirical evidence in the Dutch population on the influential role of moral foundations in engendering PSM and its behavioral consequences at the meso level. In particular, various organizational contexts employ

particular moral intuitions to moralize public service and motivate individuals to contribute to public goods. Moreover, individualizing foundations are found to be highly relevant to the concept of PSM, but binding foundations matter as well. Although the empirical findings are confined to the Dutch context, this study speaks to the institutional variation in the meaning and scaling of PSM dimensions in general. Adopting a pluralistic conceptualization of PSM not only helps to internationalize PSM research, but also allows us to explore diverse motives that stimulate various PSM behaviors.

The second part of the dissertation applies methods from experimental economics, investigating the effect of intergroup competition as a relevant trigger to engender prosocial motivation to make a personal sacrifice for the common good. Methodically, Chapter 4 contributes to the field of experimental economics by presenting a novel treatment design that can identify the exact motivational effect of intergroup competition. It also contributes to behavioral economics and evolutionary biology by extending the classical form of the volunteer's dilemma game to analyzing prosocial risk-taking and competitive behavior. Human psychological capabilities to make a personal sacrifice and contribute to common goods respond to our human ancestors' adaptive challenges of forming a cohesive coalition and competing for resources, so our altruistic behavior can be parochial and respond to intergroup competition. In this study, we also observe the gender-heterogeneous effect in response to intergroup competition, contributing to the male warrior hypothesis that intergroup conflict may have resulted in sex-specific psychological differences in the response to outgroup threat.

Building on the model and experimental design of Chapter 4, Chapter 5 interacts the variables generated by the experiment with variables collected by a questionnaire, exploring the effect of PSM in stimulating self-sacrifice under different social contexts. PSM stimulates individuals to serve the common good through self-sacrifice, but it may also be crowded out by external incentive schemes such as intergroup competition. This study contributes to the public administration literature by validating in a laboratory experiment the self-sacrifice behavior of PSM and the crowding-out effect of competition on a self-determined, intrinsic, and prosocial motivation such as PSM. In other words, the study demonstrates the role of contextual and institutional stimuli in influencing the behavioral consequences of PSM. PSM is the result of a mental representation that links innate dispositions with stimuli grounded in (but not confined to) the public institutions. Competition may shift the locus of control from the inside to the outside of the person, and divert attention from the concern for others or society to the outcome of the competition, compromising the intrinsic elements of PSM.

Beyond its theoretical contribution, the dissertation also suggests potentially important practical implications regarding prosocial behavior in public organizations. The social cognition

process of PSM proposed in Chapter 2 provides a framework for public organizations to think about ways to utilize and operationalize different configurations of moral foundations to nudge desirable behavior by providing individual employees with relevant codes of conduct, social identities, and motivational vocabularies. For instance, the public security and safety sector, such as the police and military, may place high priorities on service to the nation (Loyalty) and dedication to duty (Authority) when recruiting and training personnel. The health care and education sectors may rely on Care and Sanctity to promote create a sense of calling and commitment to public service.

However, relying on innate psychological capabilities to drive automatic response may make individuals inevitably bring their "cognitive bias" into public administration. The experimental findings in Chapter 4 show that intergroup competition acts as a powerful stimulus to increase public goods contribution to the ingroup, but also causes inefficient over-volunteering, a situation where high participation in volunteering leads to a waste of resources. Other lab experiments also find that public administration students tend to enforce a Fairness norm through unnecessarily excessive sanctions (Prokop & Tepe, 2020). Moralizing public service helps individuals to assign moral value to public service such as volunteering, maintaining social justice or order, or protecting the community, but ill can come out of good intention, and 'prosocial' motives to benefit others may lead to undesirable outcomes in some situations. Public managers should therefore consider the cognitive bias that moral foundations entail when moralizing or nudging public service.

Lastly, social motivations are interrelated, either as substitutes for or as complements to each other. The experimental findings in Chapter 5 show that competition cannot only lead to higher participation in prosocial behaviors, but may also crowd out intrinsic motivation by diverting attention from an intrinsically motivated state to an extrinsic performance target that is being evaluated. In times of budget restraints and fiscal austerity, public organizations and their managers often turn to nonmonetary incentives to stimulate desirable behavior, but nonmonetary incentives may crowd out intrinsic motivation just as monetary ones do. For instance, introducing competition may not only make service providers compete for performance indicators such as the amount of service and time of delivery, but may also demotivate service providers from having concern for societal welfare and public values. Public managers should consider such crowding out effect when devising incentive systems, particularly for tasks and jobs that are inherently tied to prosocial motivations.

In conclusion, this dissertation contributes to our knowledge of voluntary prosocial behavior. My dissertation incorporates and contributes to multiple disciplines ranging from public

administration, social psychology, and cognitive science to behavioral and experimental economics, and evolutionary biology. From the perspective of evolutionary biology, evolution has equipped human beings with multiple psychological and cognitive mechanisms to cope with various social interactions, develop diverse social relationships, and build complex societies. In Social psychology, Moral Foundation Theory stresses the important role of innate psychological capabilities in responding to stimuli and effecting prosocial behavior. Public administration scholars emphasize the multi-dimensionality of PSM, arguing that motivation to contribute to public goods entails not only affective motives, but also instrumental and normative ones. This dissertation then further incorporates cognitive science to connect these disciplinary streams of work, arguing that PSM is a higher-order mental representation of the social environment that mediates various relationships between innate psychological capabilities and behavioral outcomes. Using insights and methodologies from behavioral and experimental economics, experiments are developed that show that social behaviors and motivations are also interrelated, either as substitutes for or as complements to each other: An external incentive such as intergroup competition can have a motivational effect in stimulating altruism, but may also crowd out other self-determined motivations.

By incorporating insights from diverse disciplines, this dissertation opens several opportunities for future research. First, the social cognition process of PSM offers a framework that can guide future research on PSM-relevant stimuli and their motivational vocabularies. For instance, Moral Foundation Theory has developed the moral foundations dictionary for linguistic analyses (Graham et al., 2009; Matsuo, Sasahara, Taguchi, & Karasawa, 2019), which future research can use to investigate the effect of priming moral emotions on PSM-relevant behaviors at the micro level in experiments, or to examine the relationship between employees' PSM and the moral configuration of the organization at the meso level (e.g., moral conduct or mission statement). Public organizations provide sufficient opportunities for individuals to serve the public and satisfy their public service motives. Hence, public employees may be self-selected into public employment. However, an employee's moral identity may not be consistent with the organization's mission and value propositions, or employees may find the management culture or the ways of implementing public decisions contradictory to their conceptions of ideal public service (Wright and Pandey, 2008). Person-organization value congruence, therefore, can influence an individual's tendency to moralize public service in public organizations. On the other hand, a misfit between a public employer's moral constellation and the institutional environment may lead to a moral dilemma and inhibit the moralization of certain public service behaviors that leaders and the organization intend to promote

(Jensen, Andersen, and Jacobsen, 2019; Krogsgaard, Thomsen, and Andersen, 2014; O'Reilly and Chatman, 1986).

At the macro level, investigating moral variation across cultures and languages helps to further internationalize PSM research, particularly beyond Western democracies. PSM literature has documented the cultural variation in the meanings and connotations of subdimensions of PSM, which may result in different patterns of PSM across countries (Kim et al., 2012; van der Wal, 2015; Vandenabeele and van de Walle, 2008). By including a broader range of moral domains and encompassing the constellations of each moral values and social practices, this theoretical study demonstrates that different moral foundations could be useful to disaggregate the psychological antecedences of PSM, and to explore the cultural, institutional, and individual variations in the meaning of PSM. Also, it will be helpful to explore how the Western ideas of public values are reconciled with religious and social traditions in non-Western societies and semi-democracies to exhibit PSM. Even within Western societies, public institutions in cosmopolitan cities and provincial towns could rely on different sets of moral foundations to moralize public service. Exploring these differences, within and across countries, can help PSM theory to become more applicable in explaining public service beyond Western democratic societies, and shed some light on how to manage "culture wars" within the public domain in a more and more ideologically polarized society (Rosenbloom, 2010; for cross-culture adjustment in workplace, see also Giorgi et al., 2020).

Also, PSM is a higher-order representation of the social environment that entails both automatic and controlled processes, so PSM is a multidimensional construct in which automatic and controlled processes work in tandem to construct rational, affective, and normative motives. Future research should further investigate the interplay between the analytic and heuristic decision-making behind the PSM phenomenon. For instance, Stazyk and Davis (2015) show that public employees who lack advanced professional degrees are more likely to favor high-road ethics (rooted in personal intuitions and experiences) over low-road ethics (based on externally derived obligations) in the context of decision-making as PSM increases. Professional training may enhance the cognitive ability to reappraise features of the situations and regulate emotional reactions. Exploring the interaction between intuitive and deliberative processes will further improve the understanding of the causal mechanism behind PSM, and will provide practical tools to develop PSM and mitigate its dark sides.

The second part of the dissertation demonstrates how we can test a public administration theory in the setting of an economic experiment. Future studies may explore, both in the field or in the laboratory, how different external incentives and situational factors affect social behavior, and

what role PSM plays in mediating or moderating these relationships. Incorporating insights from behavioral economics and employing methodologies from experimental economics can help bridge PSM theory, which stresses the importance of the first-party system, with public choice theory, which focuses on the second-party and third-party system of governance. Future studies can examine the role of PSM in various models from public choice theory (e.g., principal-agent problems, and contracting). Investigating the interplay between different governance systems can offer a more comprehensive picture of economic governance and the motivational effect of institutional stimuli in driving social behavior.

Lastly, cognitive science on social cognition, learning, and memory provides neuroscientific evidence or counterevidence for existing psychological mechanisms, exploring the role of nonconscious, affective processing in decision-making and social behavior. Unlike strategy (Powell, 2011), leadership (Waldman, Balthazard, & Peterson, 2011), marketing (Fugate, 2007), organizational behavior (Becker, Cropanzano, & Sanfey, 2011), and political science (Jost, Nam, Amodio, & Van Bavel, 2014), the field of public administration has not yet drawn on neuroscience to study social motivation and behavior in the public sector. On the one hand, this dissertation makes an initial expedition into the way in which implicit social cognition affects public service motivation. People differ in their cognitive, emotional, and behavioral functioning in light of social stimuli, and such differences are the result of the recurrent interaction between innate psychological mechanisms and social exposures. On the other hand, we also show that human social cognition is malleable and systematically susceptible to the context of the institutional environment and human interactions. Future studies are encouraged to incorporate new and existing theories of public administration with neuroscientific theories, empirics, and methodologies to develop a research agenda in the field of behavioral and neuro public administration.

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The four essays collected in this Ph.D. dissertation concern prosocial motivations in different social contexts, applying conceptual, experimental, and survey methodologies to investigate how the complex and diverse interaction between psychological attributes and the social environment shapes prosocial behaviors. The first essay provides a conceptual framework on how cognition links relevant stimuli with innate moralities to construct Public Service Motivation (PSM) and guild various social behaviors. The second essay builds on the first essay and provides empirical evidence for the essential role of innate moralities in shaping Public Service Motivation and affecting behavioral consequences. The third and fourth essay apply methods from experimental economics to investigate the role of contextual stimuli in affecting prosocial motivation in a lab experiment of the volunteer's dilemma game. The third essay first extends the classic volunteer's dilemma game and develops novel treatments to examine pro-social risk-taking and competitive behavior in a lab experiment. The fourth essay then incorporates the PSM theory in the extended volunteer's dilemma game to explore the role of PSM in self-sacrifice behavior and its relationships with external contextual factors.

Tse-Min Wang (1988) received his Bachelor's degree in International Business at National Taiwan University in 2010 and was awarded with the Phi Tau Phi Scholastic Honor for his academic achievement. He obtained his Research Master's degree in Economics with distinction at Tilburg University in August 2016. He started in September 2016 as a Ph.D. candidate at the Department of Public Governance at TiSEM, Tilburg University.

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