

# **Strength in numbers? Understanding the effect of team-level PSM on team effectiveness.**

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## **Abstract**

To date, public service motivation (PSM) has been investigated only as an individual-level phenomenon. We argue that, in order better to understand team effectiveness in public organizations, it is essential that team characteristics are also taken into consideration. This study provides a key contribution to public management research by exploring the relationship between PSM and team effectiveness at the group level. Specifically, we introduce the concepts of team-level PSM, which describes the average level of PSM within a team, and PSM differentiation, which refers to the variance in PSM that exists across different members of a team. The data used for this study are based on a two-wave survey of 122 teams of public sector employees in Switzerland. Findings show that team-level PSM is indirectly related to team effectiveness through the process of team identification and that this relationship is strengthened when there is less variability in PSM within the team. The implications of our findings for theory and practice are discussed.

## Introduction

A vast amount of literature has demonstrated that public service motivation (PSM), or the motivation to give back to society, is associated with higher levels of work performance amongst public sector employees (Ritz, Brewer, and Neumann 2016). The theoretical link between PSM and performance is based on the notion that different types of jobs (e.g. within the public sector) provide different opportunities for employees to internalize their public service motives. The internalization of these motives provides meaning to the work employees do, and they become motivated to perform this work to a high degree (Perry and Wise 1990). As a consequence, the majority of research to date has taken an individual-level perspective and advanced our understanding of the mechanisms through which an employee's PSM is related to his or her performance (Petrovsky and Ritz 2014; Ritz, Vandenabeele, and Vogel, forthcoming)

However, research has largely ignored the possibility that team members' individual PSM might influence each other such that PSM develops collectively within teams (Ritz, Vandenabeele, and Vogel, 2021). This is an important omission given that public sector organizations are increasingly structuring their work around teams (Chin 2015; Foldy and Buckley 2010), especially in the context of digitalization and agility government approaches (Mergel, Ganapati, and Whitford 2020). Despite this, there has been little research exploring the implication of teams for conceptualizing and understanding PSM. Research in this field is essential as the dynamics that exist between coworkers' values and beliefs is an important factor in the work environment that ultimately drives team performance (Mathieu et al. 2008). We address this gap by introducing the concepts of team-level PSM and PSM differentiation. We define team-level PSM as the average PSM within a particular work team, while PSM differentiation indicates the diversity of PSM motives within a team and is conceptualized as the within-group standard deviation of PSM (Petrovsky and Ritz 2014).

The aim of this paper is to explore the mechanisms through which team-level PSM is related to team effectiveness. Following Mathieu et al. (2008) we understand team effectiveness as a blended performance composite measure which includes team members' skill use, their ability to generate new ideas and to complete assigned work. We argue that team-level PSM will have both a direct and indirect relationship to team

effectiveness (Ritz, Vandenabeele, and Vogel, 2021.; Ritz, Brewer, and Neumann 2016). More specifically, we propose that the relationship between team-level PSM and team effectiveness is mediated by team identification because high-PSM teams share a sense of purpose in terms of serving society. This increases the quality of collaboration and the extent to which they identify with one another, which ultimately drives team effectiveness (Marks, Mathieu, and Zaccaro 2001; Mathieu et al. 2008). Moreover, we suggest that this relationship is moderated by PSM differentiation such that teams with lower levels of PSM differentiation will have a stronger identity compared to teams with higher differentiation.

This paper contributes to the literature in several ways. First, this is one of the first studies to conceptualize and empirically examine how PSM unfolds within teams. This is particularly important given that PSM theorists have stressed the relevance of institutional environments when attempting to explain the development of PSM (Vandenabeele 2007). A considerable amount of empirical research has examined the relationship between individual level PSM and public organizational characteristics (Stritch and Christensen 2014b; Koumenta 2015; Taylor 2008; Bright 2007; Jacobson 2011; Stritch and Christensen 2014a; Desmidt and Prinzie 2019; Shim and Faerman 2017), as well as individual level PSM and leadership behaviors (Andersen et al. 2018; Jensen and Bro 2018; Park and Rainey 2008; Leisink and Steijn 2015), while there is very limited evidence regarding the way PSM operates at the team level (see for example Shim and Park 2019).

Second, while work group dynamics such as those related to demographics (gender, age, race) and job-related (job expertise, or tenure) diversity have been explored (e.g Moon 2018; Moon and Christensen 2020), thus far, understanding values related to serving society at the team level has not been examined in the public management literature, nor in the general management literature. By theoretically developing the concepts of team-level PSM and PSM differentiation, our study thus contributes to a more nuanced understanding of group dynamics and value-based diversity within public sector teams.

Our third contribution lies in understanding the mechanisms through which team-level PSM constructs are related to team effectiveness. This is important because team level outcomes often differ from individual-level outcomes (Marks, Mathieu, and

Zaccaro 2001), yet little is known about the mechanisms at play at the team level. The study therefore introduces a new angle from which the PSM/performance relationship can be studied. Finally, while the study contributes to the growing literature focusing on team outcomes, it is one of the first to do so in a public sector context.

The paper begins by introducing the key concepts of the study and by developing the hypothesized relationships of our theoretical framework. The data collection, analysis, and results are then presented, followed by a discussion of our findings and the implications for future research.

## **Theoretical background**

### *PSM as a group-level phenomenon*

PSM is based on the concept of serving society by providing public services that adhere to the public interest (Schott, van Kleef, and Steen 2014). At the core of the theoretical conceptions of PSM, and within its empirical operationalization, are motives directed towards serving public interest that transcend the individual and compel them to act for the benefit of society (Vandenabeele 2007; Perry and Hondeghem 2008). While the application of PSM in the literature has generally been focused on understanding its effect on workplace-related attitudes and behaviors, and the interaction between PSM and organizational values, missions and behaviors (Wright, Hassan, and Christensen 2017), research has ignored how PSM can be understood at the team level.

We draw from a range of theoretical approaches to develop our notion of team-level PSM, which we conceptualize as the average level of PSM motives within a team. As we are interested in understanding the extent to which PSM is present within teams, rather than shared, we follow Chan (1998) and Glick (1985) and use an additive approach to develop our notion of team-level PSM. Specifically, the appropriate level from which to collect data, and hence the empirical level of origin for PSM, is the individual, as this enables us to capture the absolute values of individual team members' levels of PSM. The theoretical level of team-level PSM is derived by means of conceptual arguments about how the lower-level construct aggregates to the higher-level concept. In the additive model, Chan (1998) argues that the "higher level unit is the summation of the lower level units regardless of the variance among these units" (pg. 236).

There are several theoretical arguments which justify this approach. First, person-group fit literature argues that team composition, or the compatibility of individuals within a group, is contingent upon psychological variables such as individual value systems, which are perceived by others in the group (Kristof-Brown, Zimmerman, and Johnson 2005; Werbel and Johnson 2001). Higher levels of PSM among a group may signal strong supplementary fit, or how well team members' values, motives and/or goals related to serving society fit with one another, which may result in stronger levels of social cohesion (Seong et al. 2015).

Second, individuals who are attracted to organizations are both selected and remain because of the similarities they share with their co-workers and with the organization (Schneider and Reichers 1983). This means that people with the same value sets will likely work together within a team because they are attracted to one another. If these team values are based upon PSM, then higher individual levels of PSM within the team itself could reflect the extent to which team members have adopted similar motives, needs and goals related to serving society.

Third, work teams are highly dependent on social context (Hackman 2002). Social groups such as teams can develop a particular set of attributes that differentiate them from others (Hogg 2014). These attributes establish 'group prototypes' that individuals use to transform their own identity to that of the group. According to Hogg (2014), "because group prototypes are largely shared, this process attracts consensual validation of who we are and of our attitudes, feelings, and behaviors from fellow in-group members..." (pg. 2339). As a result of this, groups establish rules and standards that are accepted as guiding measures for members of a group, that are situationally dependent. These values can become salient when individuals come together as a team and are reinforced through the behaviors of the team members (Gardner, Gabriel, and Lee 1999; Hackman 1992). In the context of PSM, high-PSM team members can reinforce norms and behaviors associated with PSM, and through the process of positive reinforcement among team members, the importance of PSM as a defining aspect of a team can be enhanced. Because teams can interpret and implement policies in their own unique way, this results in the development of a joint feeling for serving society that differs among

teams depending on how their team goals and work-related tasks are linked to serving society (for example, varying levels of exposure to beneficiaries, see Ritz et al. 2020). As a result of this, group-level PSM may differ depending on the team, as each team represents a specific set of values interacting with work tasks related to serving society.

Hence, when average PSM within the team level is high, motives related to serving society are more likely to be reinforced amongst team members, making them a salient source of motivation. In contrast, in teams with lower levels of PSM, PSM may not be a salient source of collective motivation, which means that the group may be motivated by alternative motives or engage in self-interested behaviors (Hu and Liden 2014).

### *Team-Level PSM and Team Identification*

Social identity theory (Tajfel 1978) argues that similar values and beliefs are likely to motivate people to interact with one another, which enhances the strength of their own value system through the process of convergence. Throughout this process, individuals begin to identify with a group and integrate their sense of self with that of the group (Ashforth and Mael 1989). Team identity can be developed and reinforced at the collective level as individuals within teams build and develop social rapport based on a set of shared experiences, pushing behaviors towards team objectives rather than individual goals (van Veelen and Ufkes 2019; Lembke and Wilson 1998). Team identity also reflects the way individual members of a team relate to one another and develop an emotional attachment to being a part of their team, or a sense of ‘oneness’ with others (Henry, Arrow, and Carini 1999; Janssen, Huang, and Xu 2008; Gundlach, Zivnuska, and Stoner 2006).

**From the perspective of** social identity theory, for team identification to occur, individual and team values need to converge within a particular social context (Brunetto and Farr-Wharton 2002). Because high levels of PSM to a large extent represent a sense of strong motivation to serve society amongst individual team members, it is likely that it is also a driving factor in the development of team identification. This is because PSM can promote team identity, as values are a core component of identity development which helps to develop in and out-group schemas that define the team itself (Brunetto and Farr-

Wharton 2002). By possessing similar motives, team members can relate to each other to a higher degree through mutual interactions and understanding. As a result of this, PSM motives can become salient within the team and individual members may begin to behave in a way that is consistent with this. This can cause team members to become more “psychologically intertwined” within the group such that their own identity evolves to include that of being team member (Ashforth and Mael 1989; Brewer 2001).

Similarly, from a person-organization fit perspective (Kristof-Brown, Zimmerman, and Johnson 2005) we argue that team identification likely also emerges based on the extent to the individuals collectively share the mission, norms and values of their organization, signally a strong fit between individual and organizational value systems. Because public organizations to a large extent model and transmit values related to PSM (Vandenabeele 2007), team identification can be derived from shared PSM values that emerge from the organizations themselves. This value congruence based on institutional expressions of PSM may therefore act as a fit mechanism through which individuals relate to and identify with one another (Moynihan and Pandey 2008).

We therefore hypothesize that:

*H1: Team-level PSM will be positively related to team identification.*

#### *The moderating effect of PSM Differentiation*

While team-level PSM reflects the average levels of PSM within a team, a second important concept relates to the variance of PSM within this team. In this research, PSM differentiation is a concept used to measure PSM differences within a team. Large variations in PSM within teams can cause friction and conflict among team members, challenging their ability to create a social identity within the team (Mello and Rentsch 2015; Jehn 1994; Tajfel 1978). In effect, PSM differentiation reflects heterogeneity in terms of PSM values. A team with diverse PSM levels is limited in the extent to which team members interpersonally relate to one another based on shared PSM values. For example, if

individuals have different beliefs regarding serving society, they may not develop a collective understanding and identify with each other. PSM differentiation therefore conditions the salience, or importance, of team-level PSM, such that highly PSM homogeneous teams are more likely to experience PSM as a source for team identification compared to more diverse PSM teams. Salience plays an important role in social identity theory because the more prominent a particular characteristic is within a team, the more likely it is to be used as a source of group identification (Brunetto and Farr-Wharton 2002, 540). Thus, highly PSM homogeneous teams are more likely to experience a salient team-level PSM that is a source for team identification compared to more diverse PSM teams. Hence, highly diverse PSM teams are more likely to have low PSM salience, which means that they do not draw from PSM values as a source to build identity with one another. We therefore hypothesize that:

*H2: PSM differentiation will moderate the relationship between team-level PSM and team identification, such that higher PSM differentiation will weaken the relationship between team-level PSM and team identification.*

#### *Team-Level PSM, Team Identification, and Team Effectiveness*

Teams with high PSM are driven by a meaningful purpose of serving society. When groups have high levels of PSM, team members collectively possess high motives related to serving society (Hu and Liden 2014). As team members share the same motivation, goal and vision, they are more likely to collaborate, share ideas, and discuss different viewpoints in order to achieve the collective goals of the team which are centered on serving others (Hu and Liden 2014). Indeed, scholars have found that high levels of PSM are associated with a willingness to collaborate (Esteve, van Witteloostuijn, and Boyne 2015). Others have also demonstrated the importance of PSM in collaborative projects and argued that this is because of a common understanding of improving society (Torfing 2019; Neumann et al. 2019). This would suggest that teams with higher levels of PSM are more likely to successfully work together compared to teams that have lower levels of



PSM because they are more ‘other’ oriented (Hu and Liden 2014). Hence, team members with PSM motivation focus on how their work helps others. As a result of this, they focus less on their own benefits and increase their commitment to the shared team goal. This then positively influences team effectiveness.

Working together in a group of high-PSM colleagues also helps team members to understand and predict the behaviors of others within the group, which improves their coordination capacity (Meglino and Ravlin 1998) and their abilities to work together effectively. This suggests that collective motives related to serving society can reinforce positive behaviors within the group (Hackman 1992), which ultimately enables teams to carry out their tasks more effectively. This is line with recent research examining the positive impact of PSM in a collaborative team environment (Choi and Robertson 2019), and research that has shown that ‘other oriented’ individuals are more likely to engage in team work (Batson 1998; De Dreu and Nauta 2009; De Dreu 2006). Hence, we hypothesize that:

*H3: Team-level PSM will be positively related to team effectiveness.*

Scholars have suggested that team identification has a variety of positive implications for teams and organizations. These include increased creativity and citizenship behaviors within a team (Janssen, Huang, and Xu 2008), and enhanced performance and team effectiveness outcomes (Van Der Vegt and Bunderson 2005; van Veelen and Ufkes 2019; Solansky 2010). According to social identity theory, when individuals develop a strong identification with their teams, there is a fusion of their own values, goals and self-worth to that of the team (Van Dick et al. 2008; Brunetto and Farr-Wharton 2002). This means that they are more likely to perform better as a team than individually because doing so reinforces their own self-worth. This results in a source of shared coordination for team level behaviors and promotes behaviors that reinforce the team identity, rather than their individual identity, which leads to the development of collective team-level interests such as enhanced performance (Haslam, Powell, and Turner 2000; Haslam 2001). As a result of this, team members are motivated to perform well as a team because failing to do so would impact their own self-worth. Specifically, team identification is what binds

team members together. It also motivates them to follow group norms, and to act to achieve team-related performance goals (Chen and Kanfer 2006; Van Der Vegt and Bunderson 2005). Therefore, we expect that:

*H4a: Team identification will have a positive relationship with team effectiveness.*

*H4b: Team identification will mediate the relationship between team-level PSM and team effectiveness.*

*A moderated mediation model of team-level PSM, PSM differentiation, team identification and team effectiveness*

Overall, we suggest that team-level PSM influences the process of team identification and further team effectiveness. From the basis of social identity theory, high levels of PSM may activate the salience of PSM within a group that is essential for individuals to develop a sense of team identification. The stronger the PSM, the more salient it becomes as a source of team identification. In doing so, individuals can integrate their own self concepts with that of the team, which drives them to perform effectively as a team because doing so reinforces their own self-worth. However, differences in PSM within the team are likely to impact the extent to which team identification mediates the relationship between team-level PSM and team effectiveness, because large within-team differences in PSM signal a lack of PSM cohesive values, which may reduce the extent to which team-level PSM can act as a source in the identification process. By testing these within-team differences, we therefore evaluate the boundary conditions of team-level PSM and propose a moderated mediated model, which leads to our final hypothesis:

*H5: There is a conditional indirect (moderated mediation) effect such that the interactive effect of team-level PSM and PSM differentiation on team effectiveness is mediated by team identification.*

## Methods

### *Sample and Data Collection*

The sample used for this research was taken from a questionnaire survey involving the tax office ('Steuerverwaltung'), and the prison services agency ('Amt für Freiheitsentzug und Betreuung') of the Swiss canton of Bern. This multi-wave survey was undertaken in February and March of 2014 and again in February and March 2015. The first survey measured participants' PSM and team identification. Team effectiveness was measured in the second survey. The survey was undertaken via an online platform. Participants were invited to participate via an email sent directly to them at work. To increase response rates, two reminder emails were also sent per survey.

To minimize biases inherent to survey research, several approaches proposed by Podsakoff et al. (2003) were implemented. First, participants were told very little about the exact purpose of the survey. Second, they were asked to answer clearly and honestly and were assured confidentiality. Third, the Likert scales within the survey were periodically changed to avoid fatigue and to create temporal, psychological and proximal demarcations within the survey itself (Podsakoff et al. 2003). Finally, to ensure temporal separation, data used to assess the independent, mediator and moderator variables were taken from the 2014 wave and the dependent variable, team effectiveness, was measured in the 2015 wave. 1785 individuals were asked to complete the questionnaire over the two waves. Due to missing values, our final sample included 363 individuals who participated in both waves, which is a final response rate of 20%. A total of 50% of respondents were male, the average age was 43.7 years and the average tenure was 11.4 years. There were only slight differences at the team level compared to the individual level. The teams were on average 55% male, the average age was 43.4 years and the average tenure was 11.6 years.

Teams in the tax office refer to the sixth and lowest level of the hierarchy. They are typically involved in production processes such as tax assessment of individuals or corporations. Teams in the prison services agency refer to the fourth and lowest level of the hierarchy. Teams in the prison service agency mostly focus on maintaining jail security, surveillance of inmates as well as organizing and coordinating daily jail activities. In both organizations, team members need to work together and collaborate in order to

complete the tasks assigned to the team. Teams were independent in that there were no individuals who were part of two different teams.

Before starting our data collection, both study organizations provided us with information about the organizational structure and organizational charts. This enabled us to derive the team structure (i.e., which individuals formed a team) and the respective supervisor. This information was cross validated in the survey in that we asked each individual to provide their team number (or name) and the name of the supervisor. Individuals whose self-report information did not match the information given by the organization were excluded from the data analysis. Discrepancies occurred because individuals had recently changed their role within the organization or left the organization.

We removed all teams whose response rates were fewer than two, so that a total of 122 teams were included in our data analysis. Respondents within the teams ranged from two to eight employees with a mean and median size just under three ( $\bar{x}=2.98$ ,  $SD=1.30$ ). The average response rate per team included in the sample was 45% (min=13%, max=87%, median=40%), which is in line with drop-out rates in time-lagged studies (Ribisl et al. 1996).

Although our response rate is acceptable considering that participants were contacted by e-mail alone (Kaplowitz, Hadlock, and Levine 2004), we employed three established methods for estimating nonresponse bias and to ascertain whether the profile and attitudes of the non-respondents differed significantly from the employees who took part in our survey. First, we compared our data to the team data provided by the study organizations. There were 278 teams, with a range of two to 28 employees, and mean and median team sizes of six, suggesting that the average team sizes in the organizations were relatively small. The results of Little's (1988) MCAR test were not significant, suggesting all missing variables were missing at random, thereby reducing the threat of response bias related to the dropout rates.

Second, we compared our sample to the overall known population of the public sector employees in the Canton of Bern (Armstrong and Overton, 1977). We found that the profile of our respondents was very similar to the personnel data provided by the Canton of Bern (49% males, average age of 44.6 years and tenure of 11.7 years) suggesting

that our sample is representative of the canton on key criteria such as gender, age and tenure.

Third, we tested for systematic bias between our respondents and those who decided not to participate in our survey using an established procedure recommended by Armstrong and Overton (1977). Specifically, we sorted our data according to the date and time of the respondents' survey submission. The first 50 percent of the respondents were categorized as early respondents, while the other 50 percent were categorized as late respondents. We compared these two groups across all study variables using a series of independent samples *t*-tests. Individuals who responded to our survey early did not differ significantly from those who responded later in any of the study variables. Based on the assumption that late respondents tend to be similar to non-respondents (Armstrong and Overton 1977), we are confident that our results are not unduly influenced by nonresponse bias and that the profile and attitudes of non-respondents are similar to the profile of those employees who participated in our study.

### *Measures*

Since the survey items were derived from English sources but the survey was conducted in two different languages (German and French), the survey items were translated and back-translated by the researchers to ensure semantic equivalence (Schaffer and Riordan 2003). Unless otherwise noted, all items were measured on a scale from 1 = strongly disagree to 7 = strongly agree.

*Team Effectiveness* was measured using a four-item scale based on Mathieu (2012) that asked respondents to answer the following questions: "My team is very effective in making use of the skills of the different team members", "My team is very effective in generating new ideas", "My team is very effective in coordinating our daily tasks" and "My team is very effective in completing our work". The Cronbach Alpha score for this scale was .88.

*Team identification* was measured using a four-item scale developed by Van der Vegt et al. (2003). As one item was reverse coded and demonstrated poor psychometric properties ( $\alpha = .51$ ), it was removed, leaving a three-item scale. Cronbach Alpha for the final scale was .78.

*Team-level PSM*: Team-level PSM was constructed in two steps. First, we asked survey respondents to complete the 16-item PSM measurement scale developed by Kim et al. (2013). Cronbach Alpha for the scale was .93. Second, following the additive approach outlined by Chan (1998), we aggregated individual PSM scores to compute team-level PSM values.

*PSM Differentiation* was computed using the within-group variance of each team's collective PSM. This follows the dispersion model outlined by Chan (1998) and is also in line with diversity and differentiation researchers (Woehr, Arciniega, and Poling 2013; Li et al. 2016; Erdogan and Bauer 2010). The higher the SD, the more diverse the team is in terms of their PSM. Following Chan (1998), an examination of the data revealed no evidence of multimodality, which rules out subgroups within teams.

*Controls*: We controlled for the office in which the team works (prison vs. tax office) since differences in team effectiveness could reflect the type of work performed by the team in question (Breugh, Ritz, and Alfes 2018). We also controlled for tenure since previous research had shown a relationship between tenure and PSM (Jensen and Vestergaard 2017). Finally, a dummy variable was used to control for team size (0=teams of 2, 1=3+).

## **Results**

### *Data Aggregation*

In order to create team-level variables, individual scores were aggregated to the team level as per organizational diagrams provided by the survey organizations. We defined teams as two or more individuals working interdependently under the same supervisor within an organization (Salas et al. 1992). The aggregation of individual-level variables is standard practice in team research, as scholars have argued that the pooled value is important for team-level outcomes, regardless of the individual distribution (Barrick et al.

1998). Following recent public management scholars (i.e. van der Hoek, Groeneveld, and Kuipers 2018), we calculated team level ICC1 and ICC2 scores, as an indication of the inter-rater reliability of the scales. Given our conceptualization of team-level PSM as the average of individual PSM scores, ICC1 and ICC2 scores for PSM were included for completeness and transparency. The ICC(1) scores indicate a medium-size effect for team effectiveness (ICC(1)= .19) and team identification (ICC(1)=.24) and a smaller effect for team-level PSM (ICC(1)=.02) (LeBreton and Senter 2008). The ICC (2) scores for team effectiveness (ICC (2) = .41), team identification (ICC (2) =.48), and PSM (ICC2=.04) were all acceptable given the relatively small team sizes. Because ICCs may underestimate the level of agreement within teams when sizes are small, following O'Neill (2017) we examined inter-rater agreement by assessing the within-team agreement using  $r_{WG}$  (L. R. James, Demaree, and Wolf 1984). The within-group agreement for team effectiveness was .90, .82 for team identification and .88 for team-level PSM, which all exceed the recommended cut-off point of .70 suggested in the literature (Grawitch and Munz 2004; L. R. James, Demaree, and Wolf 1984). Researchers have suggested that these scores are more valid estimates compared to the ICCs because ICC scores can suffer from restricted ranges when there are higher levels of agreement (Grawitch and Munz 2004).

### *Measurement Model*

In order to assess construct distinctiveness, a confirmatory factor analysis was conducted using data at the individual unit of analysis in line with Ellwart et al (2014). Specifically, PSM, team identification and team effectiveness were all loaded onto their intended constructs. According to Hu and Bentler (1999), the results showed a good fit with the data. The Chi-square to degrees of freedom ratio was 2.49 ( $\chi^2(df) = 102.12(41)$ ), indicating a good fit with the data (Schermelleh-Engel, Moosbrugger, and Müller 2003). The root-mean error of approximation (RMSEA) was below .07 (RMSEA= .06); the comparative fit and the Tucker Lewis indices were both above .90, (CFI = .97; TLI=.96). The standardized root mean squared residual was .04, which is well below the .08 cut-off level. In order to test the robustness of the model, alternative models were tested and sequential  $\chi^2$  difference tests conducted.

In model 1, to account for the possibility of conceptual overlap between identity and PSM, team identification was collapsed with PSM. This resulted in a significantly poorer fit ( $\chi^2(df) = 449.17 (42) = 10.42$ , RMSEA= .16, CFI=.80, TLI=.74, SRMR=.16). In model 2, team identification was collapsed with team effectiveness to ensure that the proposed mediator and outcome variable were not conflated. This also resulted in a significantly poorer fit ( $\chi^2(df) = 332.56 (43) = 7.3$ , RMSEA= .14, CFI=.85, TLI=.81, SRMR=.095). In model 3, all constructs were collapsed into one common factor, which, again, resulted in a significantly worse fit ( $\chi^2(df) = 1162.95(44) = 26.43$ , RMSEA= .27, CFI=.43, TLI=.29, SRMR=.22).

All factor loadings ranged between .64 to .89, which is above the commonly stated threshold of .60 (MacCallum et al. 1999). Next, average variance extracted (AVE) values were calculated for each latent construct. All were above the .50 threshold ranging between .62 and .66 and providing evidence of good convergent validity (Fornell and Larcker 1981). Finally, an examination of the squared correlations shows good discriminant validity as the AVEs for any two constructs exceeded their squared correlation (Fornell and Larcker 1981). This suggests that the three constructs in our model are conceptually distinct and that our results are not unduly influenced by common methods variance.

### *Descriptive statistics*

Descriptive statistics for all included measures can be found in Table 1. Prior to conducting our moderated mediation analysis, we examined the correlation between each of our measures. We found that there is a positive and significant relationship between team-level PSM and team identification ( $r=.20$ ,  $p<.05$ ) as well as team-level PSM and team effectiveness ( $r=.28$ ,  $p<.01$ ) and team identification and team effectiveness ( $r=.59$ ,  $p<.001$ ). There were significantly negative relationships between PSM differentiation and team-level PSM ( $r=-.22$ ,  $p<.01$ ), and PSM differentiation and team identification ( $r=-.21$ ,  $p<.02$ ).

(Insert Table 1 about here)



## *Hypotheses Testing*

In order to test our hypotheses, we computed two ordinary least squares regression analyses using the PROCESS macro developed by Hayes (2017) for use in SPSS. Following the procedure outlined by Preacher, Rucker and Hayes (2007), we tested hypothesis 1, 3, 4a and 4b using a mediation model (PROCESS model 4; see Table 2), and then tested hypotheses 2 and 5 using a moderated mediation model (PROCESS model 7). This approach was taken because it can directly test the significance of indirect effects. The results of both models are presented in Table 2, with a visual representation of the final model in Figure 1. All results are reported as unstandardized coefficients.

(Insert Table 2 about here)

The findings from the mediation model (PROCESS model 4) demonstrate that team-level PSM has a direct effect on team identification ( $b=.35$ ,  $t(4,117)=2.36$ ,  $p<.05$ ), supporting hypothesis 1. Second, there is a direct relationship between team-level PSM and team effectiveness ( $b=.26$ ,  $t(5,116)=2.24$ ,  $p<.05$ ) confirming hypothesis 3. Third, there is a direct relationship between team identification and team effectiveness ( $b=.57$ ,  $t(5,116)=8.95$ ,  $p<.000$ ) confirming hypothesis 4a. Fourth, based upon the 95% bootstrap confidence intervals (indirect effect = .20, 95% CI [.01; .41], team identification mediates the relationship between team-level PSM and team effectiveness, confirming hypothesis 4b.

(insert Figure 1 about here)

Based on moderated mediation model (PROCESS model 7, Figure 1), the results show a significant moderation effect of PSM differentiation on the relationship between team-level PSM and team identification ( $b=-.86$ ,  $t(6,115)=-2.26$ ,  $p<.05$ ). The test of the highest-order unconditional interaction indicates a significant increase to the variance explained in the model ( $\Delta R^2 = .04$ ,  $F(1, 115) = 5.13$ ,  $p < .05$ ). To be able to visualize this

moderation effect, the simple slopes were graphed based on the 16<sup>th</sup>, 50 and 84<sup>th</sup> percentiles. Overall, the relationship between team-level PSM and team identification significantly increases in strength when PSM differentiation is low ( $b=.19$ ,  $p<.05$ ) compared to when it is average. The relationship between team-level PSM and team identification is not significant when PSM differentiation is high ( $b=1.06$ ), partially confirming hypothesis 2.

(Insert Figure 2 about here)

To test our full model, we examined moderated mediation using bootstrap sampling with a repetition of 5000, producing an overall ‘index of moderated mediation’ from PROCESS model 7. A significant effect occurs when the confidence intervals do not exceed zero. Overall, results indicate a significant moderated mediation ( $\omega = -.49$ , 95% CI [-1.01; -.01]), where the conditional indirect effect is significant when PSM differentiation is low (indirect effect (low PSM differentiation)=.37, 95% CI [.07; .66]), rather than high (indirect effect+1SD = -.06, 95% CI [-.39; .22]). The overall regression model was significant, accounting for 42% of the variance in team effectiveness ( $F(5,116) = 16.65$   $p>.001$ ; see Table 3). This confirms hypothesis 5.

We carried out additional robustness checks, where we removed all teams of two and re-ran our analysis. While the relationships were all in the hypothesized direction supporting the robustness of our findings, they did not achieve significance because the sample size was very low ( $N=62$ ) and likely underpowered. We believe that the additional robustness checks increase the confidence that we can have in our data, despite the small team sizes included in the analysis.

(Insert Table 3 about here)

## Discussion

Studying teams is rare within public management research despite its growing relevance in public sector organizations (van der Hoek, Groeneveld, and Kuipers 2018). This study introduced the concepts of team-level PSM and PSM differentiation to expand

the application of PSM theory. Our results showed that team-level PSM was related to team effectiveness through the process of team identification, and this relationship was strengthened when PSM differentiation was low. Our study therefore contributes to the literature in three ways.

First, our study presents a novel theoretical framework for the study of PSM by outlining how team-level PSMs can be used as a new means of conceptualizing PSM. This is important as more and more public sector work environments and performance targets are linked to teamwork, where outcomes largely depend on how well a team works together, and the processes that lead to this. Understanding PSM at the team level is also essential given that teams can achieve particular performance related goals in ways that individuals cannot (West, Borrill, and Unsworth 1998). By introducing the concept of a team-level PSM, we are contributing to a better grasp of how teams may behave in public sector organizations by taking into consideration their collective drive to serve society. Because work teams are very strongly influenced by their social context (Hackman 2002), other oriented motives such as those associated with PSM may become an important building block in understanding team dynamics because they impact the way individuals within a team interact with one another.

Second, to our knowledge, this is the first study to test the relationship between PSM and performance beyond the individual level. We have found that when examining performance at the team-level, team-level PSM has a direct and indirect link to team effectiveness measured one year later. Our findings expand on the original proposition that PSM-motivated individuals are more driven to perform (Perry and Wise 1990) and also suggest that this link can be established through the influence that PSM has on other performance-enhancing factors (Perry and Vandenabeele 2008). By demonstrating this at the team level, we provide evidence to support the concept of homology between different PSM levels (Chen, Bliese, and Mathieu 2005; Seibert, Wang, and Courtright 2011) meaning the PSM at the team level may show similar characteristics and relationships as PSM at the individual level. The PSM literature has already attempted to link individual PSM motives to organizational level outcomes using value congruency between personal and organizational mission valence (Petrovsky and Ritz 2014). We take this one step further by showing that team-level PSM exists among groups of people, which means it can be

fostered and developed just as PSM can be at the individual level. This can be achieved through the process and development of a collective PSM social identity that emerges when individuals interact within a group.

The fact that team-level PSM is relevant for performance outcomes could also have implications for the way teams are brought together both within and across different organizations and sectors. As inter-organizational collaboration and innovation becomes more and more essential in addressing ‘wicked’ societal issues (Head and Alford 2015), assessing the extent to which these groups are able to establish an identity as a group based on a shared set of values, such as those related to PSM, is imperative.

Third, the importance of PSM differentiation within a team is novel to this study. The fact that less PSM heterogeneous teams tend to have stronger identification reflects, in part, the importance of environmental fit within the context of PSM (Steijn 2008). This may be a natural phenomenon within the public sector as individuals tend to enter public sector jobs with high levels of PSM (Christensen and Wright 2011). Alternatively, it may reflect the socialization processes that occur with new recruits when they enter a team (Kjeldsen 2013). In addition, high variation in team-level PSM did not enhance or deplete identification when team-level PSM was low. This would suggest that team differentiation in PSM is more sensitive and has a greater impact when the average level of PSM within a team is high, as similarly motivated team members leverage more from one another, compared to those who have different PSM levels. As a result of this, large variations in PSM within a team with high team-level PSM might be problematic as this could hamper their ability to integrate people who are different in their PSM values, which may cause dysfunctional team processes.

Because more homogenous PSM is positively related to team identification, it may lead to better absorption of newcomers who may have the same values. This underscores Schneider’s ASA hypothesis and the theories of contagion (Schneider, Goldstein, and Smith 1995; Barsade 2002). Our results therefore suggest that deep level characteristics such as similarity in PSM values are clearly important for team cohesion (Harrison, Price, and Bell 1998). On the surface, this conclusion may be problematic, especially as scholars warn of the potential insular nature of PSM, which may result in teams becoming too rigid or alienating members who lack a strong sense of PSM (Ritz, Brewer, and

Neumann 2016). However ‘job related’ diversity, such as experiences, education, functional backgrounds and ‘biodemographic’ diversity, such as gender, age and race may counter this by allowing individual team members to contribute their own unique background, knowledge, and skill set in decision-making processes and outcomes (Homan et al. 2008; Moon and Christensen 2020).

### *Practical Implications*

This research gives rise to several practical implications. Managers should be aware that teams cannot be arbitrarily established and expected to perform well. For a team to be effective, it must establish a level of shared identification. This can be accomplished through team-building exercises, encouraging team members to interact with one another, and through constant reinforcement of team-level goals. Moreover, public managers and HR departments should be aware of the relevance of different motives that exist within teams. In a politico-administrative context this may even be more relevant because policy decisions are always value-infused and public employees are not apolitical. Because homogeneity and diversity in team value composition has different effects on team identification and team effectiveness, it is vital for team leaders to invest in identity building, creativity stimulation and conflict resolution along group decision processes.

### *Limitations and Future research*

Despite pushing PSM into a new avenue of research, there are also several methodological limitations that need to be acknowledged. The first is that we used an objective measure of differentiation by assessing the variation in PSM levels within a team rather than directly asking team members about their perceptions of PSM differences amongst team members. While objective measures are seen as a valid means of measuring differentiation because they are direct and less likely to suffer from bias (Harrison, Gavin, and Florey 2002), diversity research also suggests that employees’ subjective perceptions of the extent to which they feel similar or dissimilar from their team members are relevant in determining their attitudes and subsequent behaviors, as differences need to become salient in order for employees to notice them and adjust their reactions (James and James 1989). We therefore encourage future research to use perceptual scales, or

group consensus scales that directly ask team members about the extent to which they feel similar or different from their colleagues with regards to PSM values, and explore how team members' perceptions of PSM dissimilarity influences team effectiveness outcomes.

Second, the measure that we used for team effectiveness was derived by team members themselves. While this may be problematic due to self-serving biases, research has shown a significant relationship between team and team-supervisor performance ratings (Lester, Meglino, and Korsgaard 2002). In addition, to establish better causality, and avoid certain types of common method bias, team effectiveness was measured one year later. However, future research should consider measuring performance from different perspectives, for example by asking line managers to rate their teams, or by developing a 360-degree performance measure that takes into consideration a variety of different perspectives. A different type of research design, such as laboratory experiments in which teams are artificially created to accomplish a performance goal, could also resolve this issue. Finally, the team sizes that were included in the analysis ranged from two to eight people, making them all relatively small. Teams of this size may cause difficulties in measuring intended constructs, especially with regards to team-level PSM and PSM differentiation scores. This is also reflected in the small variation within team-level PSM, resulting in less clear-cut *distinct* team-level PSM values. However, this does not discount the importance of our study, as there were variations between teams. To further team PSM research, comparisons of team-level PSM between public vs. private sector teams, between team and organizational levels, or between the different dimensional levels of PSM should be explored.

Our study can serve as a springboard for more research aiming to understand PSM at the group level. First, future research could extend the theoretical underpinnings of team-level PSM by connecting this to the concept of organizational climates (Marinova, Cao, and Park 2019; Schneider 1975). Research on organizational climate generally studies group dynamics through stronger referent shift approaches (such as “my team members are dedicated to serving the public interest”) rather than the additive approach taken by this paper (see Wallace et al. 2016). Using a referent shift composition model may provide an additional layer of understanding of whether PSM at the group level shares

conceptual similarities to other climate constructs which tend to focus on aspects of the work environment, rather than individual values and motives.

Second, in this paper there is an underlying assumption that both high and low PSM operate in isolation of other motives and value sets. However, diversity-related fault lines suggest that different group-level characteristics impact group-level dynamics simultaneously, rather than in isolation from one another (Thatcher, Jehn, and Zanutto 2003). While this was beyond the scope of the current paper, future research should take into consideration different types of motives within a team environment that may interact with PSM, and support or impede the development of team identification and effectiveness. Relatedly, future research is warranted which explores the effects of heterogeneity in demographic characteristics (gender, age, race/ethnicity) and social indicators (education, wealth, etc.) in public sector teams. Specifically, it would be interesting to explore whether team members from different backgrounds are more likely to differ in their PSM-related values and assess the subsequent effect on team identity. Studying these types of faultlines could shed more light on the dimensions of diversity which are relevant in creating high functioning public sector teams (Lau and Murnighan 1998).

Third, it is acknowledged that, based on the introduction of new members or changing of work tasks or goals, team identity can be understood as an ongoing process or emergent state rather than a static state. Future research should attempt to capture this by using longitudinal research designs that track team members' identity evolution across a particular period of time (Mathieu et al. 2008).

Fourth, more theoretical linkages between team PSM and PSM sense of community could be established. We argue that team-level PSM refers to the strength of PSM motivation present within a group of people. As such, it reflects "...global dispositions towards public service" (Boyd et al 2017 pg. 15), rather than the social support and/or feelings of obligation a person may have towards their work community. As a result, it differs from the micro-level concept of sense of community (SOC) and sense of community responsibility (SOC-R), as these concepts focus on how particular communities of people help and support one another, and the feelings of obligation that may develop towards these groups of people (Boyd et al 2017). Because team-level PSM reflects public service-oriented values and SOC/SOC-R reflects individual dispositions within a certain

context, they may mutually influence one another (Nowell et al. 2016). Team-level PSM may re-orient SOC/SOC-R to focus on broader societal goals, while SOC/SOC-R may do the opposite by introducing a level of context within team-level PSM.

Finally, future research could investigate whether PSM homogeneity leads to ‘groupthink’, which can yield poor performance due to inhibited decision making processes and a strong intention to maintain stability within the group (Brehm, Kassin, and Fein 2005). The expression of groupthink and blind loyalty, as well as the performance effects thereof within a public sector context, need to be better identified from an empirical perspective (Schott and Ritz 2017). One solution to this issue could be to encourage differences among teams through other diversity dimensions such as demographics, education or work experiences. This could provide enough differences and friction within a group to deter fully homogenous identities from forming within a team. In particular, negative influences of team diversity as we found in our study can be better understood by considering the influence of a number of different dimensions of diversity (or fault-lines) such as gender, age, race/ethnicity, language, or education simultaneously (van Knippenberg et al. 2011).

### *Conclusion*

The purpose of this study was to examine the link between PSM and performance at the team level. To do so, we introduced the concepts of team-level PSM and PSM differentiation. Overall, our findings showed that team-level PSM did impact team level effectiveness through the process of team identification, and that this process was strengthened when PSM differentiation was low within a team. This suggests that PSM is a factor that should be taken into consideration at the team level and offers the potential to provide a novel means of creating strong team synergies within public sector organizations.



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Table 1: Descriptive Statistics and Correlation Table

	Mean	SD	AVE	Cronbach Alpha	Team-Level PSM	PSM Differentiation	Team Identification	Team Effectiveness	Office	Tenure	Team Size
Team-Level PSM	5.45	.46	.62	.93	1						
PSM Differentiation	.61	.39	-	-	-.22*	1					
Team Identification	5.47	.78	.56	.78	.20*	-.21*	1				
Team Effectiveness	5.27	.74	.66	.88	.28**	-.24**	.59**	1			
Office	-	-	-	-	.10	.04	-.05	-.07	1		
Tenure	11.56	6.74	-	-	-.01	-.09	.25**	-.05	.17	1	
Team Size	-	-	-	-	-.07	.10	-.13	-.01	-.02	-.18*	1

\*\* $p < .01$  \* $p < .05$

Table 2: Mediation and Moderation results of PROCESS Models 4 and 7

	Step 1: PROCESS Model 4		Step 2: PROCESS Model 7	
	Team Identification <i>b</i> ( <i>SE</i> )	Team Effectiveness <i>b</i> ( <i>SE</i> )	Team Identification <i>b</i> ( <i>SE</i> )	Team Effectiveness <i>b</i> ( <i>SE</i> )
Team-level PSM	.35(.15)*	.36(.02)*	.81(.27)**	.26(.12)*
Moderators and Media- tors				
PSM Differenti- ation			-.86 (.38)*	
Team Identifi- cation		.57(.07)***		.57(.07)***
Controls				
Tenure	.03(.01)**	.03(.01)**	.03(.01)**	-.02 (.01)**
Office	.05(.14)	.05(.14)	.07(.14)	.14(.11)
Team Size	.02(.08)	.02(.08)	.04(.08)	.02(.06)
Constant	3.11 (.91)***	3.11(.91)***	.77(1.55)	.81(.73)
<i>F</i> ( <i>df</i> )	3.37 (4,117)*	16.66 (5,116)***	3.76 (6,115)**	16.66 (5,116)***
<i>R</i> <sup>2</sup>	.10	.42	.16	.42

N=122 teams \*=*p*<.05 \*\*=*p*<.01 \*\*\*=*p*<.001, unstandardized regression coefficients (*b*) are reported with standard errors (*SE*) in parentheses.

Table 3: Conditional indirect effects of team-level PSM on team effectiveness when PSM differentiation is low, average, and high

	PSM Differentiation	Estimate	Standard Error	Lower Level Confidence Interval	Higher Level Confidence Interval
	Low	.37	.15	.07	.66
	Average	.20	.11	-.02	.40
	High	-.06	.15	-.39	.22

Figure 1: Full Moderated Mediation Model, (PROCESS Model 7)

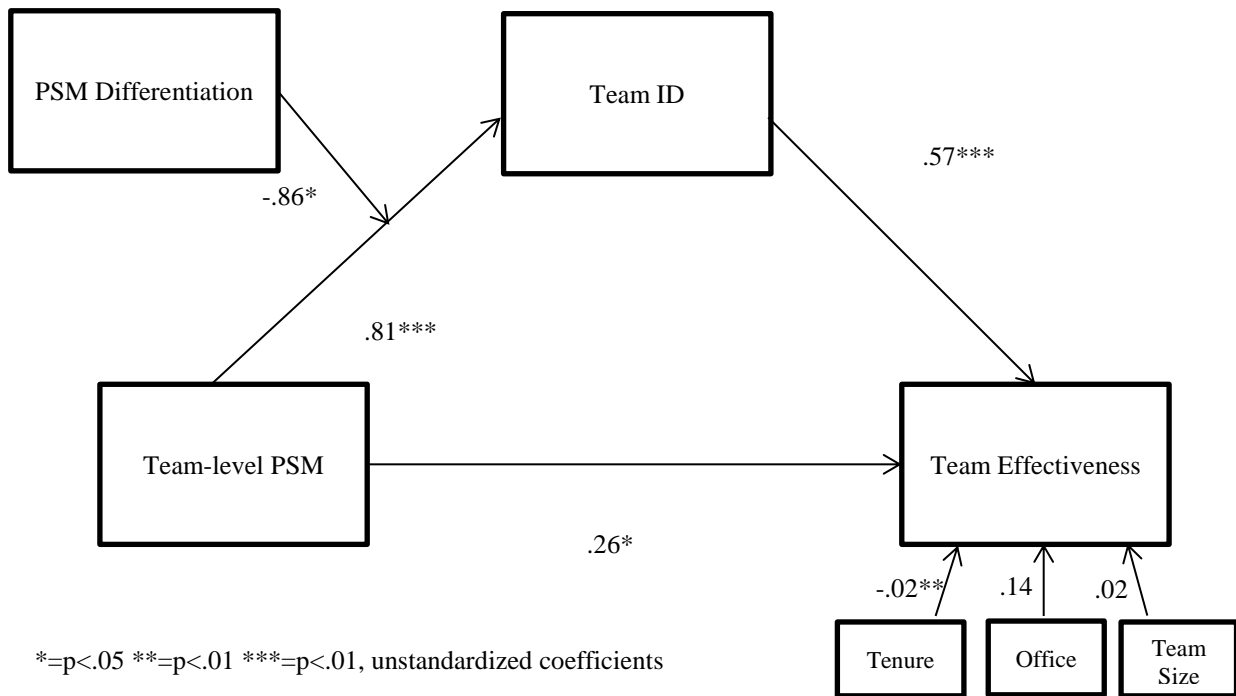




Figure 2: Graph of Moderation Effect

