Can training enhance public employees' public service motivation? A pretest–posttest design

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A Pretest-Posttest Design

Abstract

Recent evidence shows public service motivation (PSM) may be unrelated to one's consideration of a public service career. In places where civil service examinations prevail, even adverse selection (selecting low-PSM individuals) can occur. This leaves public sector managers with tough questions: "Can we improve new recruits' PSM? Does training matter?" The present study attempts to answer these questions by using a case of onboard training in Taiwan. We hypothesize that PSM, along with public service-related knowledge and a positive attitude towards public service work, improves after training, and that the improvement hinges on trainees' satisfaction with training and perceived usefulness of training. Analytical results indicate that knowledge and attitudes are more "trainable" than PSM. Meanwhile, training satisfaction is associated with the growth of public service-related knowledge, while perceived training usefulness relates to a positive attitude towards public service work and PSM. Overall, these findings advance our understanding of the effectiveness of public service training, its determinants and the implications for public employees' public service orientations.

Introduction

Public service motivation (PSM), as indicated by Bozeman and Su (2015), is a concept of great importance but with little agreement on its definition because there are over twenty different definitions of PSM within the literature. Despite this, it is generally agreed upon that PSM is both prosocial and altruistic in nature, and that it is a cluster of motivations and values (Taylor, 2008; Vandenabeele, 2007). In addition, PSM positively predicts public employees' job satisfaction, performance, and ethical behavior (Christensen & Wright, 2018; Ritz, Brewer, & Neumann, 2016). Therefore, whether public service jobs can attract high-PSM individuals has raised genuine research interest among scholars. Although early evidence supports that PSM is correlated with choosing a public service career (e.g. Vandenabeele, 2008), recent studies have found mixed results in terms of the relationship between PSM and sector selection (Asseburg & Homberg, 2018; Kjeldsen & Jacobsen, 2013; Lee & Choi, 2016).

Organizations in Taiwan, where the present study is based, have recently discovered adverse selection (selecting low-PSM individuals) within the civil service system (Chen, Chen, Liao, & Kuo, 2019). The cause of this adverse selection may be rooted in the unique culture of East Asian countries. In East Asia, including Taiwan, a civil service position signifies prestige, power, and privilege. Many young people thus long for a government job even if they are not interested in public service, and parents often urge their children to take civil service exams (Su, 2010). This makes civil service exams extremely competitive and difficult. Evidence shows severe competition, along with participant's desires for power and privilege, may drive them to study hard for better exam results; however, it can crowd out their PSM at the same time (Chen et al., 2019), as suggested in motivation crowding theory (Frey & Jegen, 2001). Consequently, public managers are left with a selection of high scoring applicants who may be pursuing public

service employment more for the extrinsic benefits rather than the intrinsic and public service

orientated motivations. This tension leaves public managers in Taiwan facing tough questions:

"What should they do to improve new recruits' PSM? Does onboard training matter?"

Thus far, little evidence is available. In fact, with limited exceptions (Owens, 2006;

Seidle, Fernandez, & Perry, 2016), research on training is scant in public administration

literature. Public service training is rarely studied probably due to its individualized nature (i.e.,

training is often used to address personal performance gaps) so that the collection and assessment

of large-scale data is practically difficult. The negligence may also be related to public managers'

conservative attitudes toward training, with them thinking that things learned in training may not

catch up with constantly changing circumstances (Huque & Vyas, 2008). Training budgets are

often the first to suffer under fiscal stress (Paddock, 1997). However, training is a compulsory

practice for organizations that crave to improve employees' work morale and performance

(Landy, 1989; Landy & Conte, 2016). A recent survey by the Association for Talent

Development (2017) indicates that business organizations invested \$1,273 per employee on

training expenditure in 2016, where the average number of training hours per employee was 34.1

hours. It is unfortunate that public administration scholars fail to pay enough attention to the

impact of training.

To address the gap, this study explores whether new employees' PSM increases after they

receive onboard training. Although PSM as an individual value is rather deep-rooted, the

increase of PSM is still possible (C.-A. Chen, Hsieh, & Chen, 2014). According to the theory of

training (Warr, Allan, & Birdi, 1999), the change of trainees' values after training is grounded in

their change of knowledge and attitudes. Fostering PSM as a public service-related value thus

first requires the change of basic public service knowledge and a positive attitude towards public

service. Therefore, we state the first and second research questions as follows:

Question 1: Does PSM improve after employees receive onboard public training?

If it does,

Question 2: Is improved PSM grounded in improved basic public service

knowledge and improved positive attitude towards public service work?

To further understand training dynamics, we probe into employee reactions to training.

According to Kraiger and colleages (1993), training may not generate an actual impact until

employees react to it. Employee reactions to training are two-fold: satisfaction with training

(affective reaction) and perceived effectiveness of training (utility reaction) (Kirkpatrick, 1994;

Warr et al., 1999). If we find a change in PSM, basic public service knowledge, and a positive

attitude towards public service after training, is it because employees are satisfied with the

training, or because they think that the training is useful to their future career, or both?

Answers to this question first contribute to theory building for public service training.

Practically, since public employees are entrusted with power and authority to deliver services to

the public, employers are keen to find fertile ground where essential employee knowledge,

attitudes, and values can be developed. Our understanding of employee reactions to training will

offer guidance for training designers to collect important information pertaining to training

effectiveness, and to make modifications to better meet the objectives of the training program.

Therefore, the third research question is stated as follows:

Question 3: If PSM, public service knowledge, and a positive attitude towards

public service work improve after employees receive onboard training, is it a

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result of employees' satisfaction with training, perceived effectiveness of training,

or both?

This article begins with the literature review on training, followed by hypothesis

development. Methodologically, both a pretest-posttest design and structural equation modeling

(SEM) are employed to test hypotheses. Finally, we discuss implications and limitations.

Literature Review

Expected Training Outcomes: A Focus on Employee Learning

Humans learn a variety of skills, abilities, and attitudes from the day they are born.

Although this learning may happen in different ways and at different paces, the acquisition of

needed knowledge enables one to overcome challenges in vastly different situations in life. Thus,

the capacity to learn is connected to a person's likelihood of survival and success in a new

environment. In the workplace, learning often takes place in the form of training. Training has

long been regarded as an integral strategy of human resource development. It can be understood

as a managerial effort that seeks to facilitate the learning of specific job competencies on the part

of employees (Wexley & Latham, 1991).

Undeniably, training may incur high costs; resources poured into training must be

justified. Learning attainment, both long-term and short-term, is highly anticipated and should be

one of the goals of effective training. According to Kirkpatrick (1994), long-term outcomes of

effective training include employees' behavioral change and improved performance at work.

Examining long-term outcomes is desired but also difficult, as time-series, longitudinal data is

often not readily accessible. Even in cases where such data is available, researchers may still find

it hard to eliminate the confounding effect of organizational socialization that occurs after

employees begin to work for an organization (Klein & Weaver, 2000). As a result, most training

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research focuses on short-term outcomes, namely employee learning. The present study follows

this approach as well.

Can employee learning result in the change of values of an employee, such as PSM as a

public service-related value? Scholars have argued that values reflect one's judgement of what is

important in life, and values are rather stable and deep-rooted (Robbins & Judge, 2017). Despite

this, training literature generally suggests that value change in employee learning is possible, but

it is often related to or accompanied by the change of knowledge and attitudes (Kirkpatrick,

1994).

Regarding knowledge, questions about "what" (e.g., rules, facts, and principles), "how"

(e.g., procedures), and "why" (e.g., rationales) are equally important. The increase of knowledge

and skills is an important indicator of employee work morale and productivity (Viswesvaran,

Ones, & Schmidt, 1996). The acquisition of knowledge requires trainees to pay acute attention to

training materials, and absorb a significant amount of information in a limited time period.

Regarding attitude, a positive attitude at work also makes employees a valuable asset (Judge &

Kammeyer-Mueller, 2012). Attitude is often defined as a mental and emotional state that is

inherent to or characterizes a person, and is an individual's predisposition regarding a value or

towards an object (Perloff, 2016). Eventually, we hope that knowledge and attitudes learned in

training can be internalized into an employee's value system. For example, in general service

industries, trainers may expect employees to internalize a positive attitude towards customers

and thus form a belief that "customers are always right." In public service, trainers may

anticipate that employees can internalize a positive attitude towards public service and form an

ingrained value that benevolence towards others is part of their public service duty (Frederickson,

1997).

In sum, in employee learning, the changes of (i) knowledge, (ii) attitude, and (iii) value are all crucial and desired (Kirkpatrick, 1994; Warr et al., 1999). Onboard public service training in Taiwan, the case selected for this study, has an exact aim to achieve these changes, as articulated by Chen (2014): "the training target is to equip employees with the basic knowledge, skills, attitudes, and ethical values necessary to perform public service work" (p.90). We expect that new employees' PSM may increase, along with improved basic knowledge of public service, and a positive attitude towards public service work after they receive the onboard training. In the next section, we briefly introduce the context and content of this training.

Onboard Public Service Training in Taiwan

Taiwan has a three-level, fourteen-grade civil service system. There are two major forms of civil service exams in Taiwan, namely the General Public Service Exam (GPSE) and the High Public Service Exam (HPSE). GPSE is open to citizens who have a high school diploma, whereas HPSE is open to those who have a college or university degree (and above). Onboard training contents are different based on whether an individual completes the GPSE or HPSE. Our research investigates the influence of HPSE onboard training.

HPSE onboard training, also known as the final phase of HPSE,[1] is carried out after the exam results are released. This begins with five weeks of basic training that takes place at either the National Academy of Civil Service or at designated higher education institutes.[2] As mentioned, its goal is to equip employees with the knowledge, attitudes, and ethical values necessary to perform public service work (J. Chen, 2014). To achieve this goal, the content of HPSE training is designed to include the following major elements (please refer to Appendix A for more details):[3] (i) General capability: It concerns public service ethics and values, legal knowledge, and public employees' responsibility and rights, (ii) Administrative capability: It

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focuses on employees' ability in providing high-quality public service such as policy

communication and project management, (iii) Managerial capability: It centers on mid-level

public managers' multidimensional managerial skills such as creative thinking, (iv) Five lectures

related to important public policies or national issues such as environmental protection. We

expect that new employees' PSM may increase, along with improved basic knowledge of public

service and a positive attitude towards public service work, after they receive the onboard

training.

Hypotheses

Employee Learning: Knowledge, Attitude, and PSM

As mentioned, the change in PSM hinges on the change in basic knowledge of public

service and the change of a positive attitude towards public service work. We begin with the

discussion of public service knowledge. The improvement of cognitive ability (knowledge) is a

primary factor of training outcome (Lievens, Harris, Van Keer, & Bisqueret, 2003; Ree & Earles,

1991; Salas & Cannon-Bowers, 2001). We hypothesize employees' basic knowledge of public

service will improve after they receive onboard training. Knowing whether onboard training

improves employees' basic knowledge of public service is especially crucial in the context of

Taiwan. The civil service selection practices in Taiwan require those who would like to seek

employment in the public sector to go through a centralized civil service entrance exam. This

exam-centered approach relies heavily on the paper-and-pencil-based method to assess the

academic and legal knowledge of job seekers instead of the know-how to perform a specific job.

Consequently, a high probability of mismatch may occur between the exam and the intended job

position (So, 2015). Moreover, job placement for successful candidates is done based on exam

performance. This means that the one who has scored the highest gets preference, the second

highest scorer comes next, and so on. Under these circumstances, new civil servants often lack

sufficient knowledge of their future jobs. It is thus imperative that we examine whether training

acquaints them with basic knowledge of public service work.

Basic HPSE onboard training courses require new public employees to acquire various

types of essential public service-related knowledge, including but not limited to the overall goal

of public service, the meaning of neutrality, the meaning of corruption, and the relationship

between public employees and the state. We expect that new public employees are able to

demonstrate better understanding in these fields after they receive training.

Hypothesis 1: Employees' basic knowledge of public service will improve after

they receive training.

Next, we test employees' positive attitude toward public service work. A positive attitude

towards public service refers to whether employees see public service work as a way to make

important policies that help people, show their love to the community, make a positive difference,

and bring a warm feeling to those in need. This concept differs from PSM (Perry, 1996) as it

does not ask about trainees' prosocial propensity, but instead, their perception of public service

as an occupation.

The basic foundation of attitudinal change is persuasion. While a training program

contains persuasive attempts, its success hinges on whether trainee attitudes are modified in the

advocated direction (Petty & Brinol, 2010). As HPSE onboard training courses include related

materials such as social care, volunteering, and public service ethics, we anticipate that new

employees' attitude toward public service work improves after they receive such training.

Hypothesis 2: Employees' positive attitude toward public service work will

improve after they receive training.

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Indeed, PSM as a prosocial value is quite stable and deep-rooted (Robbins & Judge, 2017), but it does not imply that the change of PSM is impossible. Scholars find that environmental shaping, such as red tape in organizations, can compromise PSM (Moynihan & Pandey, 2007). In addition, due to the effect of "reality shock," public employees' PSM can decrease over time after they enter the public sector (Kjeldsen & Jacobsen, 2013). An environment where mutual trust is present can foster PSM (C.-A. Chen et al., 2014).

We expect that HPSE onboard training can enhance new employees' PSM, and the reason is twofold. On the one hand, public service knowledge learned in training can enhance employee competence (Woodard, 2007). According to the self-determination theory (Ryan & Deci, 2000), perceived competence can foster *autonomous work motivation*, such as PSM. On the other hand, it is reasonable that the improvement of PSM is in line with the improvement of employees' positive attitude towards public service work (i.e., they believe that public service work can make a positive difference in society). As Perloff (2016) argues, attitude is an individual's predisposition regarding a value or towards an object. Therefore, we expect value change will accompany attitude change during the training process.

Hypothesis 3: Employees' PSM will improve after they receive training.

Hypothesis 3a: Increased PSM is a result of improved basic knowledge of public service.

Hypothesis 3b: Increased PSM is a result of improved attitude toward public service work.

Employee Reactions to Training

Regarding the change of public service-related knowledge, attitude, and values, social psychologists have claimed that persuasion in training *per se* should be the main cause (Crano & Prislin, 2006; Petty & Cacioppo, 1996; Petty & Wegener, 1998). Simply put, trainers must

possess an effective combination of professional knowledge and teaching skills to facilitate and reinforce cognitive-behavioral modification in the part of trainees. However, scholars have also mentioned that the change in knowledge, attitudes, and values may be influenced by trainees' reactions to persuasive arguments and cues (e.g., the preparation of training materials and the interaction between the trainer and trainees). If training itself is understood as a form of persuasion, the effect of trainees' reactions to training should be an important predictor of learning outcomes. Similarly, the study of Warr, Allan, and Birdi (1999) reveals that training reactions significantly predict changes in trainees' knowledge, values, and perceived competence. Therefore, in theory, how well trainees react to the onboard public service training program should predict the change in their basic knowledge of public service, positive attitude towards public service work, and accordingly PSM, as seen in the research framework displayed in Figure 1. We elaborate on our hypotheses below.

[Insert Figure 1 Here]

Trainee reaction to training is first reflected in affective factors such as satisfaction with training. It is defined as "how people feel about aspects of the job training they receive" and "examines employees' feelings about the job training they receive as a whole…not simply evaluation of a single course" (Schmidt, 2007, p. 483). Therefore, training satisfaction captures trainees' general evaluation of various aspects of training, including but not limited to curriculum design, course materials, time management, and quality of teaching. Tannenbaum and associates (1991) contend that individuals who enjoy training, especially when it is designed to modify job attitudes, are likely to develop desired attitudes towards the job (e.g., job commitment and motivation). This is in line with the general ideas found in training literature that satisfaction

with training administration and delivery can influence training outcomes (Giangreco, Sebastiano, & Peccei, 2009; Latif, Jan, & Shaheen, 2013; Towler & Dipboye, 2001).

In addition to attitudinal change, Warr, Allan, and Birdi (1999) report that positive change in knowledge can be successfully predicted by the enjoyment of training. In stark contrast, however, a meta-analysis of 34 training studies conducted by Alliger and colleagues (Alliger, Tannenbaum, Bennett, Traver, & Shotland, 1997) found virtually no correlation between affective reactions and immediate knowledge learning. They justify the result by arguing that "liking does not equate to learning" (p.353). Given the discrepancy in empirical evidence, we find it interesting to test whether satisfaction with training influences the improvement of knowledge, attitudes, and PSM in onboard training.

Hypothesis 4: Employees' satisfaction with training is positively related to the improvement of basic public service-related knowledge, positive attitude towards public service work, and PSM.

Satisfaction or enjoyment may not fully depict the entire spectrum of employee reactions to training. Scholars suggest that, in addition to affective reactions, trainers and evaluators should also consider utility reactions, typically understood as perceived usefulness of training for one's job (Alliger et al., 1997; Warr et al., 1999; Warr & Bunce, 1995). Compared to satisfaction with training, perceived usefulness may be more closely related to employee learning of knowledge and attitudes (Alliger et al., 1997).

According to Giangreco, Sebastiano, and Peccei (2009), perceived training usefulness may be two-dimentional, as trainees may be concerned over whether the training program can provide them "with the knowledge and skills necessary to perform well on their job and/or improve their general efficacy within the organisation" or contribute to "their longer term career

prospects and opportunities" (p. 101). Employees often enter training with these expectations.

When training fails to meet such expectations, or the fulfillment of trainees' expectations is

unsatisfactory, employees feel displeased, leading to the provoking of negative feelings towards

the job and/or the orgainization (Giangreco et al., 2009; Tannenbaum et al., 1991). Therefore,

perceived training usefulness may prompt a trainee's cognitive change. The meta-analysis of

Alliger and colleagues (1997) renders initial support to the argument as utility reactions are

correlated with the acquisition of knowledge. The study of Warr, Allan, and Birdi (1999) also

shows that perceived usefulness of training connects to changes in knowledge and attitudes.

Based on the literature, perceived training usefulness is thought to be a potential determinant of

desired change in knowledge, attitude, and values.

> *Hypothesis 5: Employees' perceived usefulness of training is positively related to the*
>
> *improvement of basic public service-related knowledge, positive attitude towards public*
>
> *service work, and PSM.*

According to earlier hypotheses H3a and H3b, the enhancement of PSM may hinge on

the improvement of public service-related knowledge and a positive attitude towards public

service work. Therefore, while we hypothesize that trainees' affective response (satisfaction with

training) and utility response (perceived usefulness of training) are positively related to the

improvement of PSM, we also expect that the improvement of public service-related knowledge

and of attitudes toward public service work may mediate this relationship. Therefore, we

postulate:

> *H6: While employees' satisfaction with training is positively related to PSM, this*
>
> *relationship is mediated by employees' improvement of public service-related*
>
> *knowledge and attitude towards public service work.*

H7: While employees' perceived usefulness of training is positively related to

PSM, this relationship is mediated by employees' improvement of public service-

related knowledge and attitude towards public service work.

Methodology

Data

We collected data in Taiwan, one of the developed, democratic countries in East Asia,

where public agencies are well-known for their responsiveness and professionalism (Sun, 2008;

Tan, 2000). As mentioned, the Taiwanese government uses a three-level, fourteen-grade public

service system, in which the lowest level consists of Grades 1-5, the middle level consists of

Grades 6-9 and the highest level consists of Grades 10-14. Similar to many Asian countries such

as China, India and Korea, civil service exams are quite competitive in Taiwan. In the case of

HPSE, the pass rate can generally be as low as 5%. In the year of 2011, two years after the

economic recession, the pass rate was even lower than the average, reaching 1.61%.[4] After

passing the exam, new public employees begin the five-week basic onboard training. The

implementation of public service exam and training is illustrated in Figure 2.

[Insert Figure 2 Here]

Data collection was carried out between November 2014 and April 2015, after the HPSE

results were released in September 2014. The 2014-2015 HPSE basic onboard training was held

across the country in the north, middle, and south of Taiwan, over four waves. Based on the

rationale of stratified sampling, we chose survey targets from all three regions and four waves. In

addition, as we intended to maximize the sample size with a limited budget, we chose the most

populated training units in each region. In order to ensure a high response rate, we asked the

survey team to hand-deliver the questionnaire. We conducted the pretest on the first day of

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training, and posttest three to five days before the end of training. In total, the response rate was

as high as 99% (n=2057) in the pretest and 97% (n=2028) in the posttest. After we excluded

invalid questionnaires (e.g. failing to match the pretest and posttest), the sample size available

for analysis reached n=1980. Upon closer look, we obtained 562 samples from the 1st wave, 832

from the 2nd wave, 459 from the 3rd wave, and 127 from the 4th wave.

<div align="center">Research design</div>

        To study the outcomes of training (Hypothesis 1, 2, 3), a traditional method is using

single-time cross-sectional data and testing whether perceived training effectiveness is positively

correlated with expected outcomes. In the present study, since we are interested in the change in

employees' PSM, basic knowledge of public service, and a positive attitude toward public

service work, before and after training, a design that allows the comparison between a pretest

result and a posttest result (a pretest-posttest comparison design) will provide a clearer time

frame and causality (Tannenbaum et al., 1991; Warr et al., 1999).

        A pure field experiment requires both (i) a random selection of treatment and control

groups and (ii) a pretest-posttest comparison for both treatment and control groups (Wellington

& Szczerbinski, 2007). In many cases, it is difficult to create a control group by withholding the

treatment. For example, in this study, it is both unethical and illegal if we create a control group

by excluding some new hires from public service training. Hence, our only option was a pretest-

posttest design without a control group. This method allows researchers to make inferences on

the impact of the intervention by looking at the difference in the pretest and posttest results.

However, interpreting the pretest-posttest difference needs special caution, since we are unable

to determine whether the pretest-posttest difference is causally correlated with the treatment

(onboard training in the present study) without a control group (Wellington & Szczerbinski, 2007).[5]

To further examine if the pretest-posttest difference is a result of training, repetition is used in the present study (Dimitrov & Rumrill Jr, 2003). That is, researchers use the same treatment repetitively for multiple target groups at different times. If the results for all target groups show a similar pattern of decrease or increase, we may be able to attribute the pretest-posttest difference to the treatment. In the present study, for example, the treatment is HPSE onboard training with a standardized curriculum. It was used repetitively to train participants at four different time points (Wave 1, Wave 2, Wave 3, and Wave 4). To further examine whether the results differ across times, scholars suggest the use of Analysis of Covariance (ANCOVA) on change scores with pretest scores as covariates (Dimitrov & Rumrill Jr, 2003). Statistically insignificant p values support the presence of a similar pattern.

To test (i) whether participants' satisfaction with training and perceived training effectiveness contribute to the development of basic knowledge of public service, a positive attitude towards public service work, and PSM (Hypotheses 4 and 5), and (ii) whether basic knowledge of public service (Hypothesis 6) and a positive attitude towards public service work (Hypothesis 7) mediate the relationship between training reactions and PSM, we employ structural equation modeling (SEM) to investigate the complicated relationships. SEM is a popular statistical tool designed for simultaneously testing structural paths among multiple unobserved and/or observed variables. Because the data were collected from four waves of training participants, multi-group SEM is performed to assess if the four groups are significantly different at the model level. Measurement invariance testing is conducted preparatory to multi-

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group SEM to ensure that we do not violate the statistical assumption of measurement invariance in our analysis.

Variables

There are three training outcomes (for Hypotheses 1-3). Regarding the major outcome, PSM, we follow Wright, Christensen, and Pandey (2013) by using the five-item scale (1=strongly disagree; 6=strongly agree; Cronbach's alpha = 0.78 for pretest and 0.82 for posttest)[6]. These items "represent the affective or normative motives most closely associated with the altruistic appeal of public sector values" (Wright et al., 2013, p. 207). The measurement of basic knowledge of public service relies on ten true or false questions. For example, "Among all core values in public service, efficiency is what people care most about." Answers to questions were available in training materials. This variable is the summation of correct answers, ranging between 0 and 10. Finally, a positive attitude toward public service work is measured with three Likert-scale items (1=strongly disagree; 6=strongly agree), where trainees were asked whether public service work would allow them to serve the country and make a difference in society (Cronbach's alpha = 0.81 for pretest and 0.86 for posttest).

To test Hypotheses 4 and 5, we measure satisfaction with training and perceived usefulness of training. We measured satisfaction with training using four Likert-scale items (1=strongly disagree; 6=strongly agree), asking participants whether they were satisfied with the training content, teachers' preparation, and training schedule (Cronbach's alpha = 0.84). Perceived usefulness of training was measured with four Likert-scale items (1=strongly disagree; 6=strongly agree), asking participants whether the training would help with their work in the future, whether training inspired them to think more deeply regarding public service issues, and

whether training improved their understanding of the public sector (Cronbach's alpha = 0.90).

Please refer to Appendix B for more detailed information regarding variable measurement.

Findings

We examined pretest-posttest differences on basic knowledge of public service, positive

attitude towards public service, and PSM (Hypotheses 1, 2, and 3) using t-tests. We presented the

differences of these variables, PSM for example, with a simple equation: PSM (diff) = PSM

(after) – PSM (before). A positive value means the increase of PSM after training. First, we

found a statistically significant improvement of public service-related knowledge across four

waves, as Table 1 shows. The change scores were between 0.96 and 1.32 (over 10), and

ANCOVA results showed that the findings from the four waves did not differ significantly (p =

0.11). Therefore, the results rendered support to Hypothesis 1.

[Insert Table 1 Here]

We obtained a similar finding for the positive attitude toward public service work. We

found a statistically significant improvement across four waves, and ANCOVA results supported

that the findings from four waves did not differ significantly (p = 0.74). The change scores were

between 0.13 and 0.21, as shown in Table 2. This result supported Hypothesis 2.

[Insert Table 2 Here]

However, we failed to find statistical support for Hypothesis 3, PSM. According to

results in Table 3, the changes in PSM after training were equally negligible across all four

waves. The only significant improvement appeared in Wave-3, but the difference was as small as

0.07. ANCOVA results showed that the findings from four waves did not differ significantly (p =

0.28). Therefore, the results did not support Hypothesis 3.

[Insert Table 3 Here]

We tested Hypotheses 4, 5, 6, and 7 (as well as 3a and 3b) using multi-group SEM. Trainees' affective response (satisfaction with training) and utility response (perceived usefulness of training) were predictor variables, whereas differences in public service-related knowledge, attitude towards public service work, and PSM before and after training were the outcome variables. We performed multi-group confirmatory factor analysis to test measurement invariance of latent variables across the four waves. Measurement invariance is obtained when configural invariance, metric invariance, and scalar invariance models are all deemed invariant (Sass & Schmitt, 2013). Configural invariance indicates that the factorial structure of the basic measurement model is invariant across groups. Metric invariance indicates that all factor loadings in the measurement model are equivalent across the groups. Scalar invariance indicates that the intercepts of the observed items are relatively the same across the groups.

Based on Jilke, Meuleman, and Van de Walle (2015), we first conducted a configural invariance test with Maximum Likelihood estimation so that this may serve as the baseline model for establishing the next level of measurement invariance. Fit indices for the configural invariance test were $\chi 2$ (df = 440) = 761.666, $p < 0.001$, $\chi 2/df = 1.731$, CFI = .975, RMSEA = .020, suggesting that configural invariance is achieved. Next, we tested metric invariance by constraining all factor loadings in the model to be equal. The χ^2 difference test ($\Delta\chi^2 = 47.478$, $\Delta df = 36$, p < 0.095) indicated that the constrained model is not significantly worse than the baseline model. Therefore, we also obtained metric invariance. When we further constrained measurement intercepts to be equal, the χ^2 difference test ($\Delta\chi^2 = 77.292$, $\Delta df = 48$, p < 0.005) failed to support scalar invariance. Despite the absence of scalar invariance, we performed multi-group SEM to test the proposed relationships between trainees' responses and training outcomes

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because satisfaction of the requirement of metric invariance has allowed for a meaningful

comparison of latent variables across the groups (Jilke et al., 2015).

[Insert Figure 3 Here]

Figure 3 displays the results of multi-group SEM. Overall, the model yielded a good fit:

χ^2 (df = 110) = 239.302, p < 0.001, χ^2/df = 2.175, CFI = .990, RMSEA = .025. When further

comparing the results of hypothesis testing across groups, both Hypotheses 4 and 5 were

partially supported. Trainees' affective response (satisfaction with training) was only related to

the improvement of public service-related knowledge in Waves 1 and 4, whereas the utility

response (perceived usefulness of training) is associated with changes in their attitude towards

public service work in all four groups, and PSM in Waves 2 and 3. Because the link between

satisfaction with training and PSM was non-existent, Hypothesis 6 was unsupported. On the

contrary, Hypothesis 7 was supported as the positive attitude towards public service work

mediated the relationship between perceived usefulness of training and PSM. The mediating

effect counted 60.8%, 32.5%, 67.5%, and 60.2% of the total effect of the positive attitude

towards public service work on PSM respectively in the four groups. To test whether SEM

results are equivalent across the groups, we created a constrained model by constraining all paths

to be equal, and then compared it with the unconstrained model by performing a chi-square

difference test. The testing result indicated that the four groups displayed in Figure 3 are not

statistically different at the model level ($\Delta\chi^2$ = 51.703, Δdf = 39, p < 0.084).

Conclusion

Public service training, by its very nature, is the first and foremost step towards

developing dedicated public servants. However, contrary to popular belief, public managers'

attitudes towards training are often conservative, thinking that training may not lead to desired

outcomes (Huque & Vyas, 2008). Likewise, in the academic community, little attention has been paid to the impact of training. Therefore, whether training can make employees more public service-oriented has become one of the least explored areas in our knowledge of public service training. To fill the knowledge gap, the present study investigates whether new public service employees' PSM, along with basic knowledge of public service and positive attitude towards public service work, can improve after onboard training. If they do, is it because employees feel satisfied with the training, or perceive that training is useful, or both?

<u>Summary and interpretation of findings</u>

Findings first show that basic knowledge of public service improved significantly after employees received training, and the improvement of public service knowledge was particularly obvious when employees reported high satisfaction with training. However, did new employees' improved public service knowledge eventually lead to the increase of PSM? Not really. More specifically, PSM did *not* increase even after employees received training, which contradicts our speculation grounded in the self-determination theory (Ryan & Deci, 2000). This may be due to the fact that onboard training has never been explicitly designed to enhance newcomers' PSM. Besides, this unexpected finding actually coincides with the perspective that deep-rooted personal values are not so easily changed (Robbins & Judge, 2017). Because PSM plays an important role in enhancing public employees' job satisfaction, performance, and ethical behaviors (Christensen & Wright, 2018; Ritz et al., 2016), the result may be discouraging. Yet, it is merely a reminder that the development of PSM needs to go through long-term, sustained transformation, not short-term bursts that occur during the training period.

Indeed, change is often challenging but not entirely impossible. We have learned from the findings that new employees' positive attitude toward public service increased after they

received training, which is desired and consistent with our expectation. More importantly, we have also learned that a positive attitude towards public service work contributed to the rise of PSM, and PSM improved when new employees perceived that the training was useful. That is, the increase of new employees' PSM (along with a positive attitude towards public service work) is still likely, as long as trainers are able to improve training materials and enhance employees' perceived usefulness of training. This can only be achieved through deliberate training design. For instance, trainers, line managers, and trainees must effectively communicate in order to identify, assess, and review training needs. Once objectives have been determined, trainers must convey the intended outcomes to all stakeholders and design and implement the training program with precision.

<u>Theoretical and practical implications</u>

This study advances the theory of public service training by answering a critical question: "Does public service training matter in making employees more public service-oriented?" The answer is positive to a large extent, as both basic public service knowledge and a positive attitude toward public service work increased after employees received training. However, we also acknowledge that the outcome of training still has some room for improvement as the increase of new employees' PSM was not significant.

Therefore, we offer the following practical guidelines regarding training set-up, design, and implementation. First, to improve new employees' basic knowledge of public service, employees' satisfaction with training matters. Based on our survey results, trainers need to ensure that hardware, service, and schedule provided for training are adequate and satisfactory to training participants. However, knowledge alone may not contribute to PSM eventually. Second, to improve employees' PSM as well as cultivate a positive attitude towards public service,

trainers need to be more aware of employees' perceived usefulness of training. Training

materials must be made more pertinent for future public service work so as to enhance

employees' perceived usefulness, and accordingly, PSM. This is practically important given the

fact that the civil service entrance exam in Taiwan has never functioned as position-based and

adverse selection (selecting low-PSM individuals) can thus occur. If onboard training is of no

use in the sight of trainees, a commitment to serving the public will never be developed.

Eventually, citizens will suffer the most from ineffective and uncommitted public servants.

Limitations and future research directions

The present study explores onboard public service training. We acknowledge the

presence of some research limitations in this study. For example, we employed a simple pretest-

posttest design with repetition to test our hypotheses. This is not an impeccable design; the

absence of control groups does not permit us to fully attribute pretest-posttest differences to

training. Also, as this study is based in Taiwan, generalizing the findings to other contexts could

present some challenges. More similar training studies are required to improve external validity.

Despite these limitations, the findings should result in greater strides in our understanding of the

effectiveness of public service training and its determinants. The present study is not of the scope

to fully examine the four-level model by Kirkpatrick (1994). Behavioral (knowledge transfer)

and organizational outcomes are thus left out. These missing pieces await to be addressed in

future studies.

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Endnotes

[1] Only those who pass training will be certificated and officially appointed to a post, but failures are extremely rare. Please refer to the Civil Service Examinations Act of the Republic of China (Taiwan) http://law.moj.gov.tw/Eng/LawClass/LawContent.aspx?PCODE=R0030001.

[2] Basic training is followed by practical training. Practical training is carried out by each employee's affiliated agency, where the content of the training is contingent, depending on the

needs of different agencies (J. Chen, 2014). As we are interested in the impact of a standardized curriculum on new employees, practical training is excluded from the present study. The main focus of this study is basic training.

[3] http://www.csptc.gov.tw/FileUpload/513-11055/Documents/(%E6%A0%B8%E5%AE%9A)%E9%AB%98%E8%80%83%E5%8F%8A%E7%9B%B8%E7%95%B6%E7%AD%89%E7%B4%9A%E7%89%B9%E7%A8%AE%E8%80%83%E8%A9%A6%E5%9F%BA%E7%A4%8E%E8%A8%93%E7%B7%B4%E8%AA%B2%E7%A8%8B%E6%9E%B6%E6%A7%8B%E5%8F%8A%E9%85%8D%E7%95%B6%E8%A1%A8(5%E9%80%B1)(1051014).pdf

[4] Please refer to the website of the Ministry of Examination in Taiwan: http://wwwc.moex.gov.tw/main/news/wfrmNews.aspx?kind=3&menu_id=42&news_id=738

[5] Please also see http://www.nationaltechcenter.org/index.php/products/at-research-matters/quasi-experimental-study/

[6] Literal translation of "Meaningful public service is important to me" sounds awkward in Chinese. In our questionnaire, this item was slightly amended as "I am eager to know what the public need and accordingly serve them."
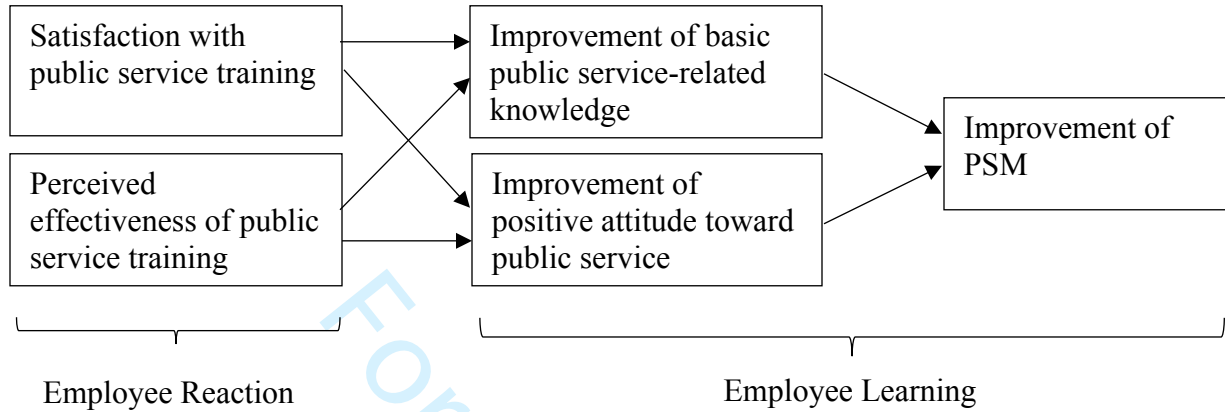
Table and Figures

Figure 1. The Theoretical Framework
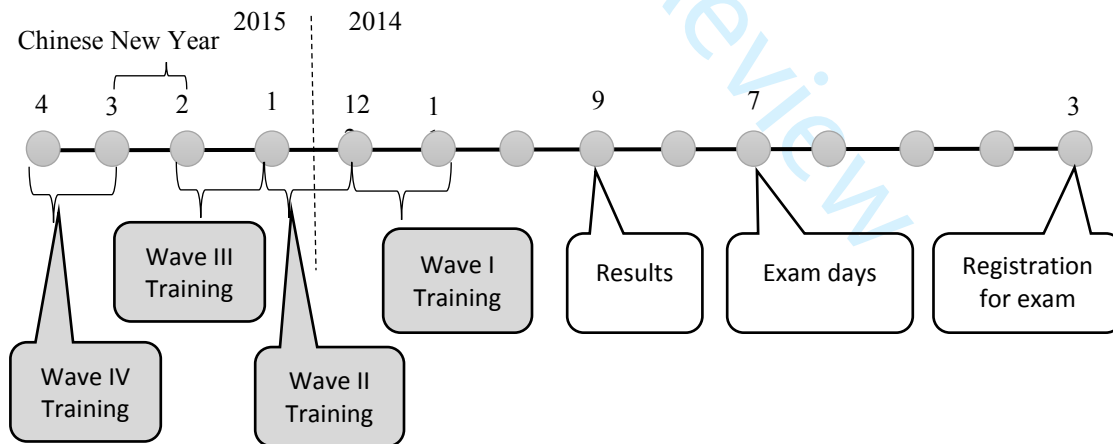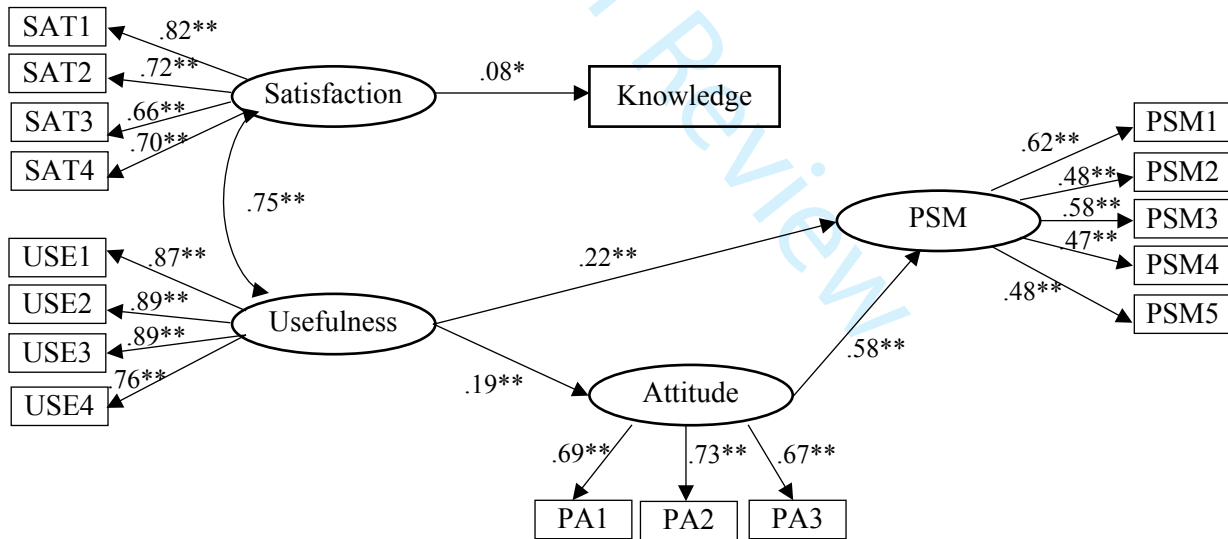

Figure 2: Schedule for Exam and Training

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(A) Wave 1

(B) Wave 2
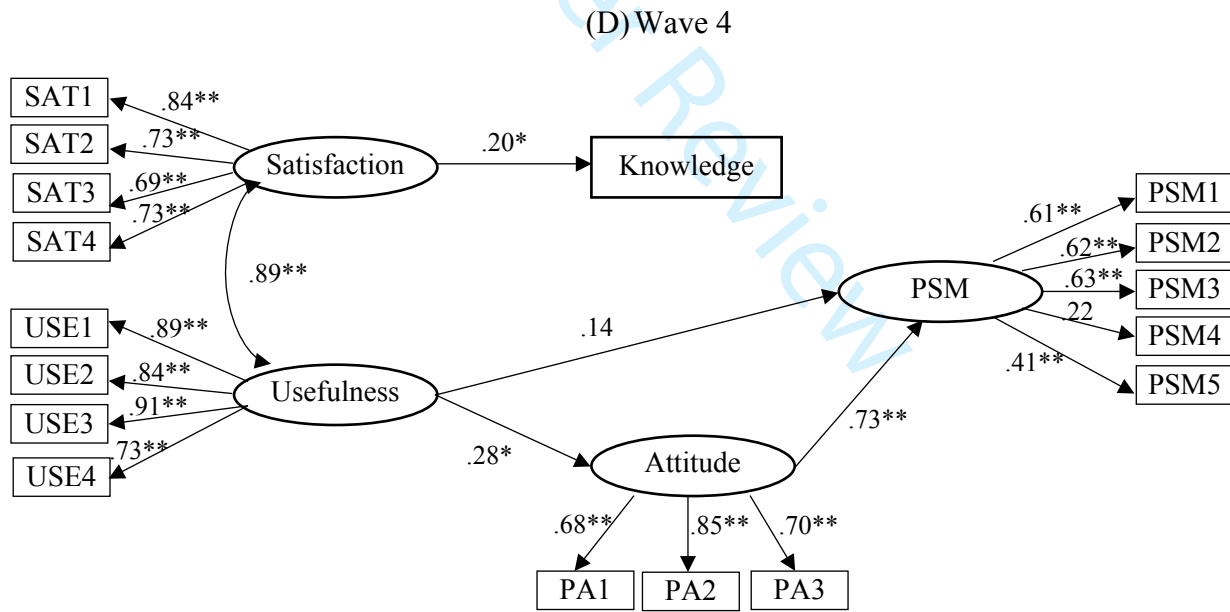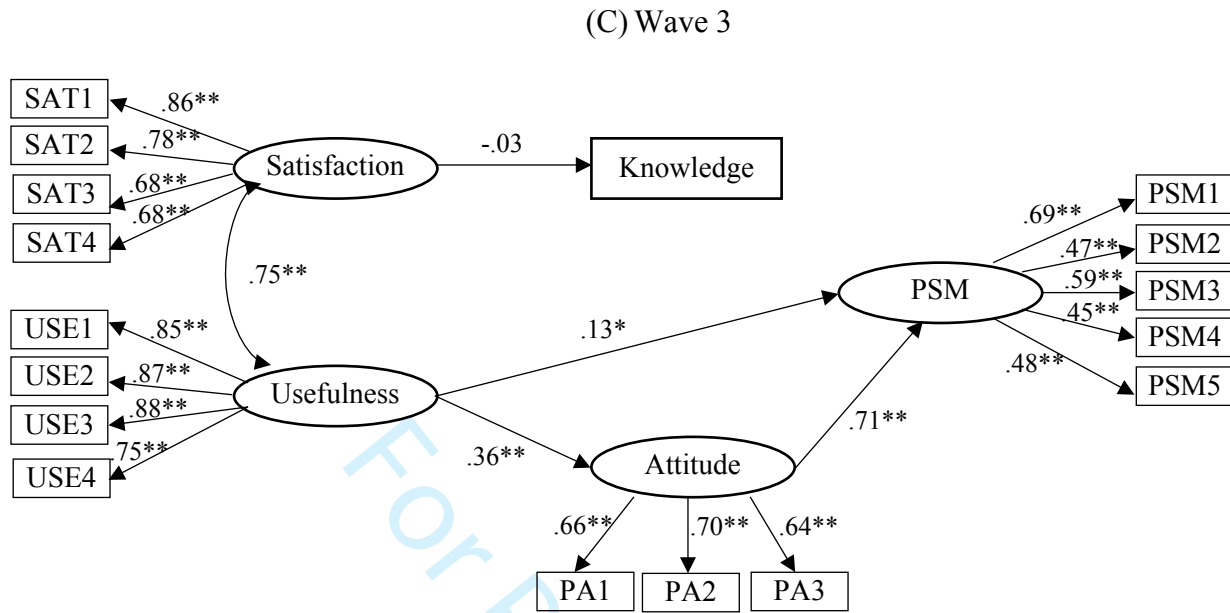
(C) Wave 3

(D) Wave 4

Figure 3. Results of Multi-Group SEM

Table 1. T-tests: Basic Knowledge in Public Service

	Before training	After training	Change	Sig	ANCOVA on change score
Wave-1 (n=537)	6.33	7.50	1.17	**	F=2.04
Wave-2 (n=800)	6.38	7.34	0.96	**	Prob>F: 0.11
Wave-3 (n=444)	6.25	7.37	1.12	**	
Wave-4 (n=111)	6.02	7.34	1.32	**	

Table 2. T-tests: Positive Attitude towards Public Service Work

	Before training	After training	Change	Sig	ANCOVA on change score
Wave-1 (n=555)	4.51	4.68	0.17	**	F=0.42
Wave-2 (n=825)	4.56	4.70	0.14	**	Prob>F: 0.74
Wave-3 (n=450)	4.53	4.73	0.20	**	
Wave-4 (n=122)	4.40	4.63	0.23	**	

Table 3. T-tests: Public Service Motivation (PSM)

	Before training	After training	Change	Sig	ANCOVA on change score
Wave-1 (n=554)	4.60	4.58	-0.02		F=1.28
Wave-2 (n=826)	4.58	4.58	0.00		Prob>F: 0.28
Wave-3 (n=456)	4.53	4.60	0.07	*	
Wave-4 (n=126)	4.43	4.49	0.06		

Appendix A: HPSE Onboard Training Design

Dimensions	Training courses	Hours
General capability		
• Public service ethics and values	• Constitution and public organizations	2
	• Public service ethics and core values	3
	• Cases of public service ethics	3
	• Team building	3
	• Social care and volunteering	3
• Legal knowledge	• The law of administrative procedure	6
	• The law of government purchase	4
	• The law of national compensation	2
	• The law of information transparency	3
	• Civil law and its application	3
• Obligations, responsibilities, and rights of public servants	• Rights and responsibilities of public servants	3
	• Political neutrality: Laws and practices	2
	• Merit protection	3
	• Anti-corruption in the criminal law	3
Administrative capability		
• High-quality public service	• Public relations and policy communication	6
	• Cases of citizen appeals	3
• Practical skills in public service	• Project management	6
	• Official writing in public service	9
	• Public service budgeting	3
	• Government information system	3
	• Practices in meetings	3
Managerial capability		
• Multidimensional management	• Creative thinking and problem solving	6
	• Change management	3
	• Performance management	6
	• Crisis management (with case studies)	6
Others		
	• Selected lectures for important policies	10
	• Research on selected topics	6
Total		117

Appendix B: Measurement of Variables

Positive attitude to public service work (PA)

- Serving in the public sector is one of the best ways to show love to our hometown.
- Public service work can make a positive difference in society.
- Public service work can bring a warm feeling to those in need.

Public service motivation (PSM)

- I am eager to know what the public need and serve them accordingly.
- I am often reminded by daily events about how dependent we are on one another.
- Making a difference in society means more to me than personal achievements.
- I am prepared to make sacrifices for the good of society.
- I am not afraid to go to bat for the rights of others even if it means I will be ridiculed.

Satisfaction with training (SAT)

- I am satisfied with the teachers' preparation for training courses.
- I am satisfied with all the services provided in training.
- I am satisfied with hardware provided for training.
- I am satisfied with the schedule of training.

Perceived usefulness of training (USE)

- The content of training can help with my future public service work.
- This training motivates me to explore more knowledge and skills in public service.
- This training gives me a new way of thinking about work-related issues.
- The content of training improves my understanding of the public sector.