

Teachers' motivation to teach national education in Singapore: a self-determination theory approach

Chee Keng John Wang^{a*} and Woon Chia Liu^b

^aPhysical Education and Sports Science, National Institute of Education, Nanyang Technological University, Singapore; ^bPsychological Studies, National Institute of Education, Nanyang Technological University, Singapore

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The National Education (NE) programme was set up in Singapore schools in 1997 to inculcate a national identity and values in the younger generation. Teachers in schools are given the important role of developing a shared sense of nationhood among their students. However, no study has yet examined the motivations for teaching NE in schools. The purpose of this study was to examine pre-service teachers' motivations, perceptions of NE, perceived competence to teach NE and feelings on the NE programme provided in their teacher training course, using the cluster analysis method. The study involved 4242 pre-service teachers (1229 males, 2986 females, 27 missing information) from the National Institute of Education (NIE) in Singapore. The results showed that 15.6% of the teachers belonged to a "high amotivation" cluster, 38.0% formed a "high externally regulated" cluster, 19.9% made up a cluster labelled as "low externally regulated", and the rest (26.5%) had an "intrinsically regulated" profile. The four clusters showed significant gender and programme differences. In summary, the results from the cluster analysis supported the concurrent validity of the clusters in terms of pre-service teachers' perceptions of their involvement in NE activities, its importance, NE as government propaganda, competence to teach NE and satisfaction with the NE programme provided in their teacher training course.

Keywords: national education; citizenship; behavioural regulation; cluster analysis; self-determination theory

Introduction

Singapore is a very small country, with approximately 4 million people living on an island of 680 km². To compensate for the lack of land and natural resources, the nation embarked on a process of globalisation to ensure its survival after it gained independence in 1965. Today, Singapore is a "First world oasis in a Third world region" (Kluver & Weber, 2003, p. 377). It has the world's most globalised economy. In recent years, the less desirable effects of globalisation and advancement in information and communications technologies have surfaced through a few phenomena, such as the migration of highly talented Singaporeans to other countries, the erosion of social cohesion, and the weakening of a national identity among Singaporeans (Kluver & Weber, 2003). To counter these issues, the National Education (NE) programme was set up in Singapore schools in 1997 to inculcate a national identity and

*Corresponding author. Email: john.wang@nie.edu.sg

national values in the younger generation. The purposes of NE (Ministry of Education, 1997) are to:

- foster a sense of identity, pride and self-respect as Singaporeans in students;
- help students get to know the Singapore story – how Singapore succeeded against the odds to become a nation;
- facilitate students' understanding of Singapore's unique challenges, constraints and vulnerabilities, which makes it different from other countries; and
- instil in students the core values of the Singaporean way of life, and the will to prevail that ensures our society's continued success and well-being.

Teachers in schools are given the important role of developing a shared sense of nationhood among their students. However, no study has yet examined the motivations for teaching NE in Singapore schools. Singapore's former Prime Minister, Mr. Goh Chok Tong, told teachers during the 1996 Teachers' Day Rally that NE cannot be instilled in our students unless it is first instilled in the teachers (Goh, 1996). Teachers must feel passionately for the country before they can teach NE with conviction. Therefore, understanding teachers' motivations for teaching NE is an important area of study. The purpose of this study was to examine pre-service teachers' motivations, perceptions of NE, perceived competences to teach NE and feelings about the NE programme provided in their teacher training course.

Past research has found that many teachers do find the subject of citizenship difficult to teach (Kerr, Cleaver, Ireland, & Blenkinsop, 2003; VanSledright, 1994; Warwick, Rivers, & Aggleton, 2004). Many teachers reported feeling unprepared to teach the subject. In general, the overall requirements of the subject were not well understood, the topics and issues were ambiguous, and the assessment criteria remained unclear. However, no studies have examined teachers' satisfaction with the content of citizenship education during their teacher preparation course. It is important to examine pre-service teachers' perceived effectiveness of the NE programme and their perceived competence in teaching NE as these will determine the way they teach the subject in schools.

Torney-Purta, Lehmann, Oswald and Shultz's (2001) research on citizenship and education highlighted the fact that while teachers across 28 countries were confident about their abilities, and that they aimed to help students develop critical thinking skills and would like to conduct analytical discussions about such issues, in practice, however, they often fell back on transmission of factual knowledge from the textbook. In Singapore, NE is compulsory at all levels, and has been established in both the formal and informal curriculum. To have a realistic chance of achieving the objectives of NE, it is important for teachers themselves to be convinced of the value of NE. If teachers are good role models for their students, the message of NE will be disseminated to them. In contrast, if teachers have negative perceptions of NE and view it as government propaganda, their scepticism will rub off on their students and they will not be able to instil the core values of the Singaporean way of life. Hence understanding teachers' motivations for teaching NE in schools is worthy of study. In this study, the self-determination theory (SDT) framework was used to examine pre-service teachers' motivations for teaching NE.

Self-determination theory

SDT is an organismic meta-theory of motivation that assumes human beings are active organisms who are driven by three psychological needs (Deci & Ryan, 1985). It focuses on the development and functioning of personalities within social contexts. It posits that innate psychological needs can explain variances in human behaviour (Deci & Ryan, 1985; Ryan & Deci, 2000a, 2000b), and if all three needs are being fulfilled, optimal functioning and personal growth will occur.

The three needs are autonomy, competence and relatedness (social needs). The need for autonomy is defined as the need to feel ownership of one's behaviour. The need for competence refers to the desire for individuals to produce desired outcomes and to experience mastery and effectiveness when dealing with their environment (Harter, 1978; White, 1959). The need for relatedness is the need to feel that one can relate to others and with the social world in general (Ryan, 1993). If the needs for autonomy, competence and relatedness are satisfied, the intrinsic motivation for performing a task will increase; if not, this intrinsic motivation will be undermined. The theory focuses on the degree to which human behaviours are volitional or self-determined. The more self-determined a person is, the more he or she endorses his or her actions at the highest level of reflection and engages in these actions with a full sense of choice.

SDT views motivation as a multidimensional construct, ranging from intrinsic to extrinsic. Intrinsic motivation is the drive to pursue an activity as an end in itself. Extrinsic motivation is the impetus to pursue an activity as a means to an end, and could vary according to its degree of self-determination.

Another important construct within SDT is the perceived locus of causality, which is related to the source of motivational influence. A person has an external perceived locus of causality when he or she feels that external forces are causing him or her to act in a particular way. In contrast, when a person feels that he or she is the initiator of his or her own actions, an internal locus of causality is present. There exists a process of "internalisation" in which a person may shift from an external to an internal locus of causality (Deci & Ryan, 1991), as an individual tries to rationalise the behavioural outcomes relevant to the satisfaction of his or her needs. That is, the more internalised a behavioural regulation is, the more it will be experienced as autonomous (Ryan & Connell, 1989). These concepts are particularly useful in studying national identity. According to Muhlberger (2005):

An identity is internalised to the degree that it forms an important conceptual identity, has a developed agency-identity that automates and eases pursuit of the conceptual identity, and does not conflict with other identities possessed by the person. A particular motive, such as political motivation, is internalised to the degree that it stems from an internalised identity that places importance on this motive. (p. 15)

Therefore, the process of internalisation is a particularly important process to consider in citizenship studies.

Figure 1 shows a schematic illustration of the self-determination continuum. Ryan and Connell (1989) suggest that along the self-determination continuum or perceived locus of causality, the most non-self-determined form of motivation is *external* regulation, which refers to behaviour that is controlled by external means such as rewards or external authority. A somewhat less external, but still a controlled form of regulation, is *introjected* regulation. This refers to behaviour that is internally controlling or self-imposed, such as acting out feelings of

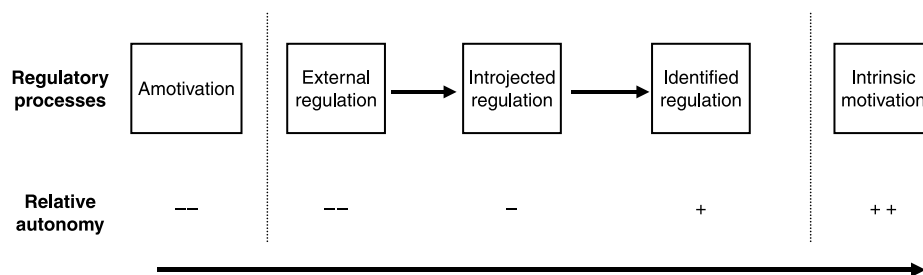


Figure 1. Schematic illustration of the self-determination continuum.

guilt avoidance, and is characterised by the feeling that one “ought to”. At the more self-determined end of the continuum, a person can be motivated by *identification*; that is, behaviour is self-determined according to one’s choices or values. It is characterised by feelings of “want to” rather than “ought to”. Finally, the most self-determined form of motivation is *intrinsic* motivation, that is, behaviour is performed solely for its own sake or enjoyment. These four behavioural regulations can be assessed using the Perceived Locus of Causality (PLOC) scale (Ryan & Connell, 1989). They form a continuum which characterises the degree of internalisation of behaviour (Deci & Ryan, 1991). Ryan and Connell showed that the four types of behavioural regulations were correlated according to a simplex-like or ordered correlation structure, supporting the underlying continuum of autonomy. That is, higher positive correlations are established between the ordered subscales that fall next to each other on the continuum, and the highest negative correlation is found between the subscales at the opposite ends of the continuum.

Deci and Ryan (1985) proposed that a state of amotivation exists where a person’s behaviour has no personal causation and he or she has no intention to act. As such, amotivation occupies a separate category at the external end of the self-determination continuum. Amotivated people perceive a lack of contingency between their own actions and outcomes, or a lack of competence.

Research has shown the motivational benefits of more self-determined behavioural regulations in many diverse domains, including classrooms (e.g., Connell & Wellborn, 1991; Grolnick & Ryan, 1987; Ryan & Connell, 1989; Vallerand & Bissonnette, 1992), contexts of physical activity among young people (Chatzisarantis, Biddle, & Meek, 1997; Goudas, Biddle, & Fox, 1994; Wang & Biddle, 2001), religion (Ryan, Rigby, & King, 1993), political activity (Koestner, Losier, Vallerand, & Carducci, 1996), and the workplace (Deci et al., 2001; Gagne & Deci, 2005).

Most of the studies have provided evidence that is consistent with the theory. That is, external and introjected regulations are related to more maladaptive behaviour. In contrast, identified regulation and intrinsic motivation are positively related to adaptive behaviour. For example, studies have found that more self-determined regulations predict greater adherence to medical prescriptions (Williams, Freedman, & Deci, 1998), greater engagement in school (Connell & Wellborn, 1991), higher quality learning (Grolnick & Ryan, 1987), and higher intentions to continue with education (Vallerand, Fortier, & Guay, 1997).

To date, SDT has not been applied to the teaching of NE. Ryan contends that social development involves the “assimilation of culturally transmitted behavioural regulations and valuations that are neither spontaneous nor inherently satisfying” (1995, p. 405). The same could be said of NE as well. Not all teachers are intrinsically motivated to teach their students NE, however, they will still teach it because they feel it is important, or that they have no choice at all. Therefore, the quality of regulation in the context of NE teaching is worthy of further investigation.

The purposes of this study were to examine Singapore pre-service teachers’ behavioural regulations, and to investigate how these different types of behavioural regulations are linked to perceptions in terms of the importance of NE, involvement in NE activities, and the extent to which NE is viewed as government propaganda. In addition, this study also looked at the relationships between pre-service teachers’ behavioural regulations and their perceived competence to teach NE in school and satisfaction with the NE programme provided in their teacher training programme.

We assumed that variations in individuals in terms of their behavioural or motivational regulations and homogenous groupings could be obtained from the characteristics they possessed. We hypothesised that there would be subgroups of teachers with distinctive profiles based on the profiles of their behavioural regulations. The clusters characterised by more intrinsic or self-determined regulations would report greater involvement, higher perceived

importance and competence in teaching NE, as well as greater satisfaction with the NE programme, compared to clusters with more extrinsic or lower self-determined regulations.

Method

Participants

The study involved 4242 pre-service teachers (1229 males, 2986 females, 27 missing information) in Singapore. The pre-service teachers were from the Diploma in Education ($N = 1782$), Bachelor of Science in Education ($N = 1007$) and Post-graduate Diploma in Education (PGDE; $N = 1449$) programmes. Their ages ranged from 21 to 46 years ($M = 26.12$, $SD = 4.01$). The majority of the pre-service teachers were Chinese (80.2%), 11.6% of them were Malays, 5.8% of them were Indians, 0.9% were Eurasians, and 1.5% were from other races. All the participants were Singaporeans. They had completed their teacher training course and had received their posting to schools.

Procedures

The university's National Education Committee granted ethical approval for the study and the pre-service teachers were approached with a formal letter requesting informed consent for participation in the study. The questionnaires were administered at the end of an NE-related enrichment programme. All participants were told that their participation in the study was voluntary and that they were free to withdraw at any time. The participants took 15 minutes to complete the questionnaire, which was administered by research assistants in a quiet classroom setting. While completing the questionnaire, participants were informed that there were no right or wrong answers. They were assured of the confidentiality of their responses and were encouraged to ask questions, if necessary.

Measures

Behavioural regulation

The Academic Self-Regulation Questionnaire (SRQ-A) developed by Ryan and Connell (1989) was adapted to assess the four types of behavioural regulations. The stem for all the items was changed to "I take part in NE because ..." and "the subject" was replaced with "NE". External regulation (e.g., "because I'll get into trouble if I don't") and introjection (e.g., "because I'll feel very bad about myself if I don't") were assessed through four items each. Identification (e.g., "because it is important to me personally to teach NE") and intrinsic motivation (e.g., "because I enjoy teaching NE") were measured through three items each. In addition to the original SRQ-A, we also assessed amotivation with three items adapted from Goudas, Biddle and Fox (1994). The three items were: "... but I really don't know why", "... but I don't see why we should have NE", and "... but I really feel I'm wasting my time in NE". Answers for all the 17 items were given on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Perceptions of NE

A total of 12 items were used to assess pre-service teachers' perceptions of NE in Singapore. Specifically, three items were constructed to measure their involvement in NE (e.g., "I am keen to attend national events [e.g., National Day Parade, Racial Harmony Day, Civil Defence Exercise, etc.]"). Six items were constructed to assess their perceived importance of NE (e.g., "NE is education that every citizen should have"). Three items were used to measure their

perception of NE as a form of government propaganda (e.g., “NE is government propaganda”). Responses were made on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Perceived competence in teaching NE

The pre-service teachers’ perceived competence to teach NE in schools was assessed using four items (e.g., “I am confident that I will be able to contribute in the teaching of NE in schools”). Responses were made on a five-point scale as above.

Satisfaction with the NE programme

Eight items were used to measure the participants’ satisfaction with the NE programme conducted in their teacher education course (e.g., “The programme has provided me with a good understanding of NE”). Responses were indicated on the same five-point Likert-type scale mentioned earlier.

Results

Psychometric properties of the measurement tools

To examine the factorial validity of the measurement tools, we conducted confirmatory factor analyses (CFAs) on the adapted SRQ-A, perceptions of NE, perceived competence, and satisfaction with NE programme scales. EQS for Windows 6.1 was used with the Maximum Likelihood method as the estimation method. The results of the CFA on the adapted SRQ-A supported the five-factor structure: $\chi^2 = 1452.22$, $df = 104$, $p < 0.001$, $NFI = 0.936$, $CFI = 0.939$, $IFI = 0.939$, $SRMR = 0.070$, and $RMSEA = 0.055$, 90% CI of $RMSEA = 0.052$ to 0.057 . Cronbach’s alphas for external regulation, introjection, identification, intrinsic motivation, and amotivation were 0.79, 0.83, 0.76, 0.75, and 0.73, respectively, for the present sample.

For the 12-item perceptions of NE questionnaire, the results of the confirmatory factor analyses indicate that the three-factor first-order measurement model fit the data quite well ($\chi^2 = 885.36$, $df = 51$, $NFI = 0.964$, $CFI = 0.966$, $IFI = 0.966$, $SRMR = 0.034$, and $RMSEA = 0.061$, 90% CI of $RMSEA = 0.058$ to 0.065). The alpha coefficients for the measures were as follows: involvement in NE = 0.88, importance of NE = 0.88, NE as government propaganda = 0.70. The fit indices for the congeneric model of perceived competence in teaching NE were satisfactory: $\chi^2 = 38.55$, $df = 2$, $NFI = 0.991$, $CFI = 0.991$, $IFI = 0.991$, $SRMR = 0.017$, and $RMSEA = 0.064$, 90% CI of $RMSEA = 0.048$ to 0.083 . This scale was internally reliable ($\alpha = 0.77$). Finally, the results of the CFA for the satisfaction with NE programme scale also supported the congeneric model: $\chi^2 = 428.78$, $df = 20$, $NFI = 0.984$, $CFI = 0.984$, $IFI = 0.984$, $SRMR = 0.022$, and $RMSEA = 0.072$, 90% CI of $RMSEA = 0.066$ to 0.077 . In the current study, the internal consistency alpha coefficient obtained was 0.93 for this scale.

Descriptive statistics

The means, standard deviations and correlations between key variables of the overall sample are shown in Table 1. Overall, the participants had high intrinsic and identified regulations towards NE ($M = 3.50$, $SD = 0.61$ for intrinsic; $M = 3.28$, $SD = 0.62$ for identified). They also reported high involvement in NE activities ($M = 3.65$, $SD = 0.79$) and perceived NE as

Table 1. Descriptive statistics and intercorrelations between variables.

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Amotivation	2.56	0.80	1.00									
2. External regulation	2.84	0.76	0.46**	1.00								
3. Introjected regulation	2.62	0.74	-0.13**	0.16**	1.00							
4. Identified regulation	3.28	0.62	-0.45**	-0.24**	0.54**	1.00						
5. Intrinsic regulation	3.50	0.61	-0.49**	-0.25**	0.42**	0.78**	1.00					
6. Involvement in NE	3.65	0.79	-0.35**	-0.23**	0.27**	0.49**	0.50**	1.00				
7. Importance of NE	3.83	0.62	-0.40**	-0.23**	0.26**	0.53**	0.58**	0.58**	1.00			
8. Government propaganda	2.62	0.71	0.50**	0.37**	-0.17**	-0.40**	-0.43**	-0.40**	-0.46**	1.00		
9. Perceived competence	3.59	0.66	-0.49**	-0.29**	0.26**	0.55**	0.57**	0.44**	0.52**	-0.36**	1.00	
10. Satisfaction	3.30	0.71	-0.37**	-0.25**	0.37**	0.59**	0.59**	0.49**	0.55**	-0.41**	0.48**	1.00

Note: ** $p < 0.001$. SD, standard deviation.

important ($M = 3.83$, $SD = 0.62$). In addition, the pre-service teachers reported high perceived competence in teaching NE ($M = 3.59$, $SD = 0.66$), and they were satisfied with the NE programme provided in their teacher training course ($M = 3.30$, $SD = 0.71$).

Overall, correlations among the five types of behavioural regulations revealed a simplex-like pattern. That is, correlations between the adjacent scales were maximum and positive, and there was a reduction in the size of correlations for more distant scales, with scales at the opposite ends being unrelated or negatively correlated. The findings support the underlying continuum of self-determination.

Intrinsic and identified regulations were positively correlated with involvement in NE, importance of NE, perceived competence to teach NE, and satisfaction with NE programme. Both intrinsic and identified regulations were negatively correlated with the view that NE was government propaganda, amotivation and external regulation. Introjected regulation was positively related to involvement in NE, importance of NE, and competence to teach NE, but the effects were small. However, introjected regulation was moderately correlated with satisfaction with the NE programme. External regulation and amotivation were negatively correlated with involvement in NE, importance of NE, perceived competence to teach NE, and satisfaction with the NE programme, and positively related to the view that NE was government propaganda.

Cluster analysis

The aim of the cluster analysis was to identify homogeneous groups or clusters based on the characteristics the participants possessed. Cluster analysis is different from many of the more commonly applied multivariate statistical techniques, such as discriminant analysis, in that the researcher has no knowledge of the number and characteristics of the groups before applying the analysis (Hair, Anderson, Tatham, & Black, 1998). It is one of the few approaches that allows for examining differences at an intra-individual level. To identify homogenous clusters with unique behavioural regulation types among the pre-service teachers, a cluster analysis was conducted using the hierarchical clustering method (Hair et al., 1998). The five types of behavioural regulations (amotivation, external, introjected, identified, and intrinsic) were utilised as the clustering variables. Before the cluster analyses were carried out, all the variables were standardised using Z scores ($M = 0$, $SD = 1$). The purpose of this was to allow comparisons across the variable means.

One of the weaknesses of using the hierarchical method is that the solution obtained can be subjective in nature. Therefore, there is a need to validate the cluster solution. One way of doing this is to use a two-stage clustering method (Hair et al., 1998; Wang, Chatzisarantis, Spray, & Biddle, 2002), which was adopted for this study. Specifically, in the first stage, a hierarchical clustering method was used to determine the number of clusters and initial cluster centres. Dendrogram and agglomeration schedules were generated to provide a basis for determining the number of clusters. Next, the cluster centres obtained were used to conduct a k-means clustering method to refine the clusters. In this way, the non-hierarchical method was used to verify the results from the hierarchical method. Ward's method with squared Euclidean distance was used to determine the number of cluster groups (Aldenderfer & Blashfield, 1984). This method has been found to outperform other methods in marketing and social sciences research (Punj & Stewart, 1983).

The results from the agglomeration schedule showed that a four-cluster solution was suitable (see Table 2). Subsequently, the centroid values of the four clusters were used as initial cluster centres for the k-means cluster analysis. The final centroid values and the cluster sizes in the k-means cluster analysis were compared and found to be similar to those in the hierarchical analysis. Specifically, a total of 90.2% of the pre-service teachers remained in the same cluster.

Table 2. Analysis of agglomeration coefficients for hierarchical cluster analysis.

Number of clusters	Agglomeration coefficient	Percentage change in coefficient to next level
7	9686.21	6.5
6	10317.10	6.4
5	10983.17	6.3
4	11679.24	17.2
3	13691.46	15.6
2	15822.78	32.9
1	21032.69	

The cluster means, standard deviations and *Z* scores of the four-cluster solution from the hierarchical cluster analysis are shown in Table 3. The results of an ANOVA showed significant differences in all the five clustering variables across the four clusters (see Table 3). Therefore, the stability and validity of the cluster solution were supported.

Profiles of cluster groups

The graphical representation of the four cluster profiles is shown in Figure 2. The cluster size, means, standard deviations, and *Z*-scores of the four clusters obtained from the *k*-means clustering are shown in Table 4. *Z* scores of ± 0.5 or greater were used as criteria to describe whether a group scored relatively “high” or “low” in comparison with other clusters.

The first cluster comprised a group of pre-service teachers with high positive scores in amotivation and external regulation, and very low scores in intrinsic, identified and introjected regulations. This cluster contained 687 participants (15.6%), of which 32.6% were males and 67.4% females. 17.6% of the diploma programme cohort, 9.5% of the degree programme cohort and 17.0% of the PGDE programme cohort were in this cluster. This cluster was labelled as a “high amotivation” cluster.

Cluster 2 comprised pre-service teachers with high external regulation ($Z = 0.49$) and amotivation ($Z = 0.47$). This cluster comprised 38.0% of the participants ($N = 1681$). There were 25.2% males and 74.8% females. 38.5% of the diploma programme teachers, 35.0% of the degree programme teachers and 39.6% of the PGDE programme teachers made up this “high externally regulated” cluster.

Cluster 3 was made up of 881 pre-service teachers (19.9%) with low amotivation, external and introjected regulations. 29.8% of the teachers were males and 70.2% females. 20.1% of the diploma programme cohort, 20.7% of the degree programme cohort and 19.3% of the PGDE cohort made up this “low externally regulated” cluster. The final cluster had high intrinsic, identified and introjected regulations, and low amotivation. There were 1,169 pre-service teachers (26.5%), and 31.2% of them males and 68.8% females. 23.8% of the diploma programme teachers, 34.8% of the degree programme teachers and 24.0% of the PGDE programme teachers belonged to this “intrinsically regulated” cluster.

Gender and programme differences among clusters

Two chi-squared tests were conducted to examine gender and programme differences. The results of the first chi-squared test indicated that there were gender differences among the clusters ($\chi^2 = (3, N = 4383) = 19.14, p < 0.01$). There were significantly more males than females in Cluster 1 ($N = 222$ observed versus 197 expected), but more females than males in Cluster 2 ($N = 1245$ observed compared to 1184 expected).

Table 3. Cluster solution obtained from hierarchical cluster analysis.

Variable	Cluster 1 (<i>N</i> = 670)			Cluster 2 (<i>N</i> = 1526)			Cluster 3 (<i>N</i> = 781)			Cluster 4 (<i>N</i> = 1243)			F3, 4414	<i>p</i>
	Mean	SD	<i>Z</i>	Mean	SD	<i>Z</i>	Mean	SD	<i>Z</i>	Mean	SD	<i>Z</i>		
1. Amotivation	3.40	0.66	1.05	2.93	0.56	0.47	2.00	0.60	-0.69	1.99	0.53	-0.70	1397.90	0.001
2. External	3.26	0.85	0.54	3.24	0.47	0.52	1.97	0.54	-1.14	2.68	0.59	-0.22	918.10	0.001
3. Introjected	1.99	0.62	-0.86	2.76	0.53	0.19	2.03	0.55	-0.81	3.17	0.59	0.74	1882.51	0.001
4. Identified	2.47	0.53	-1.31	3.23	0.36	-0.08	3.25	0.51	-0.05	3.80	0.45	0.83	1654.86	0.001
5. Intrinsic	2.71	0.53	-1.28	3.43	0.39	-0.11	3.56	0.52	0.11	3.96	0.45	0.76	1560.38	0.001

SD, standard deviation.

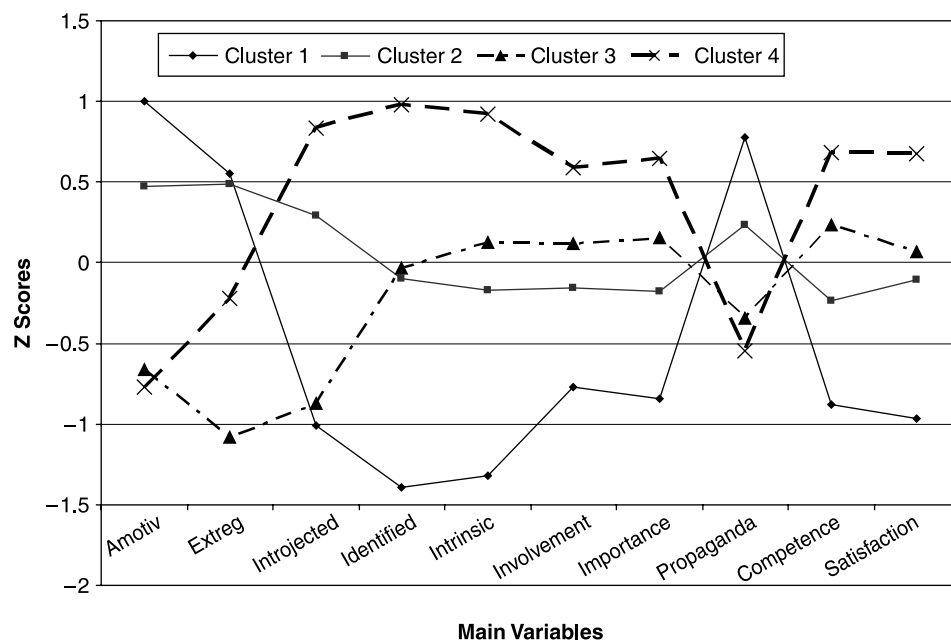


Figure 2. Cluster profiles identified by hierarchical cluster analysis.

Similarly, there were programme differences within the clusters, $\chi^2 = (6, N = 4414) = 71.27, p < 0.01$. Specifically, Cluster 1 had more teachers from the diploma ($N = 328$ observed compared to 289 expected) and PGDE (258 observed versus 235 expected) programmes. In contrast, there were fewer teachers from the degree programme ($N = 99$ observed compared to 161 expected). In Cluster 4, there were fewer teachers from the diploma ($N = 443$ observed compared to 492 expected) and PGDE ($N = 364$ versus 401 expected) programmes, but more teachers from the degree programme ($N = 361$ observed compared to 274 expected). The other two clusters seemed to have an even distribution of teachers from all three programmes.

Predictive validity of the clusters

In order to examine the differences among the four clusters in perceived importance of NE, involvement in NE, and the extent to which NE is viewed as government propaganda, a one-way MANOVA was conducted with the cluster as the independent variable and the three dimensions of perception as the dependent variables. The results showed that there were significant multivariate effects on the clusters (Pillai's Trace = 0.35, $F(9, 13,221) = 190.78, p < 0.001, \eta^2 = 0.11$). A follow-up ANOVA showed that the four clusters differed significantly in their perceptions of involvement in NE ($F(3, 4407) = 361.45, p < 0.001, \eta^2 = 0.20$), importance of NE ($F(3, 4407) = 409.29, p < 0.001, \eta^2 = 0.22$) and the extent to which NE is viewed as government propaganda ($F(3, 4407) = 462.97, p < 0.001, \eta^2 = 0.24$).

Tukey's honestly significant difference (HSD) tests indicated that significant differences existed among all the pair-wise comparisons among the clusters in their perceptions ($p < 0.001$). Specifically, Cluster 1 had the lowest scores for involvement in NE and perceived importance of NE, as well as the highest score for NE as government propaganda.

Table 4. Cluster profile obtained from k-means cluster analysis and perceptions of NE.

Variable	Cluster 1 (N = 687)			Cluster 2 (N = 1681)			Cluster 3 (N = 881)			Cluster 4 (N = 1169)		
	Mean	SD	Z	Mean	SD	Z	Mean	SD	Z	Mean	SD	Z
1. Amotivation	3.37	0.70	1.00	2.93	0.52	0.47	2.02	0.58	-0.67	1.94	0.57	-0.77
2. External	3.26	0.82	0.55	3.24	0.48	0.49	2.02	0.53	-1.08	2.67	0.64	-0.22
3. Introjected	1.87	0.57	-1.01	2.76	0.42	0.29	1.97	0.50	-0.87	3.24	0.59	0.83
4. Identified	2.41	0.50	-1.39	3.23	0.32	-0.09	3.26	0.47	-0.03	3.89	0.43	0.98
5. Intrinsic	2.68	0.54	-1.32	3.43	0.35	-0.17	3.57	0.48	0.13	4.07	0.42	0.92
6. Involvement	3.05	0.87	-0.77	3.54	0.67	-0.16	3.75	0.68	0.12	4.11	0.65	0.59
7. Importance	3.31	0.67	-0.84	3.72	0.51	-0.18	3.93	0.52	0.15	4.23	0.48	0.64
8. Government propaganda	3.18	0.69	0.78	2.79	0.57	0.24	2.38	0.63	-0.34	2.23	0.67	-0.54
9. Perceived competence	3.01	0.66	-0.88	3.45	0.52	-0.24	3.74	0.57	0.23	4.04	0.54	0.69
10. Satisfaction	2.62	0.71	-0.96	3.23	0.54	-0.11	3.35	0.62	0.07	3.78	0.60	0.68

SD, standard deviation.

Cluster 4 reported the highest scores for involvement in NE and perceived importance of NE, as well as the lowest score for NE as government propaganda. Cluster 3 also reported significantly higher scores for involvement in NE and perceived importance of NE, as well as a significantly lower score for NE as government propaganda when compared to Cluster 2.

Two ANOVAs were conducted, one with perceived competence to teach NE and the other with satisfaction with the NE programme as the dependent variables and the cluster as the independent variable. The results of both ANOVAs showed that the four clusters differed significantly in terms of perceived competence to teach NE ($F(3, 4416) = 564.06, p < 0.001, \eta^2 = 0.28$) and satisfaction ($F(3, 4347) = 543.98, p < 0.001, \eta^2 = 0.27$). Significant differences were also found between each pair-wise comparison of the clusters ($p < 0.001$). Specifically, Cluster 4 scored highest in both dependent variables, followed by Cluster 3 and Cluster 2. Cluster 1 scored the lowest in both competence and satisfaction.

In summary, the results of the cluster analysis by different types of behavioural regulations seem to provide distinctive cluster profiles in terms of pre-service teachers' perceptions of NE involvement, importance, NE as government propaganda, competence to teach NE, and satisfaction with the NE programme provided in their teacher training course.

Discussion

Educating the younger generation to be responsible citizens is becoming more important in a globalised world. The aims of the present study were to examine the different types of behavioural regulations among pre-service teachers in Singapore and investigate how these regulations are linked to their perceptions.

The overall findings indicate that pre-service teachers in Singapore have high intrinsic and identified regulations towards NE. A majority reported high involvement in NE activities and they perceived NE as important. This is good news for Singapore's government and the teacher training institution as these motivation regulations are known to be associated with positive outcomes (Deci & Ryan, 1985). Previous studies have shown the motivational benefits of more self-determined behavioural regulations in many diverse domains such as classrooms (Ryan & Connell, 1989) and physical activity contexts (Wang & Biddle, 2001). It appears that SDT is relevant to the study of citizenship education. The theory proposes that when people are more self-determined, they tend to value and enjoy the events more. In contrast, when they have more controlled regulations, such as introjection and external regulations, they tend to have lower motivation and greater negative emotions (Deci & Ryan, 1985).

In addition, the results show that pre-service teachers with more self-determined regulations tend to have high confidence in teaching NE and are more satisfied with the NE programme provided in their teacher training course, as compared to those who are less self-determined. These findings are consistent with the SDT literature (see Chatzisarantis et al., 2003). According to Deci and Ryan (1985), effects of perceived competence on motivation can be expected when a controlling aspect or informational aspect of internal events (such as competence) is salient to the individuals. A mini-theory within SDT called cognitive evaluation theory (CET) addresses the specific conditions of the social environment of an achievement situation that influence intrinsic motivation.

In one of the propositions, CET describes the importance of the functional significance (i.e., psychological meaning) of the external events perceived by the actors. These events can be perceived as either informational, controlling or amotivating. Informational events are events that are perceived to convey feedback about the individual's competence and should, when positive, enhance intrinsic motivation. Controlling events are those that are perceived as applying pressure to act or to think in a particular way. Amotivating events are those that do not

carry any feedback about competence or autonomy. If the actor perceives external events as controlling or amotivating, his or her intrinsic motivation will be diminished. This has very important implications for teacher educators and administrators in that they should be mindful of how NE events and messages are presented to teachers, whether pre-service or experienced.

Beyond the mean values and correlational analyses, the results of the cluster analysis identified four distinct groups of pre-service teachers confounded by gender and programme differences. In general, the findings support the hypothesis that there are subgroups of teachers with distinctive profiles based on their behavioural regulations. We found 26.5% of the pre-service teachers with an “intrinsically regulated” profile (Cluster 4), with high intrinsic, identified and introjected regulations, and low amotivation. This cluster had a larger than expected proportion of degree programme teachers and lower than expected proportions of diploma and PGDE programme teachers. They had the highest scores for involvement in NE and importance of NE, and the lowest scores for NE as government propaganda. They also had the highest perceived competence to teach NE in schools and were the most satisfied with their NE programme. In contrast, this study found a cluster with the opposite profile (Cluster 1, 15.6%). This “high amotivation” cluster had higher than expected proportions of diploma and PGDE programme teachers, and a lower than expected proportion of degree programme teachers. In addition, more males were found in this cluster than females. This cluster had the lowest scores for involvement in NE and importance of NE, and the lowest score for NE as government propaganda. They also had the lowest perceived competence to teach NE in schools and were least satisfied with their NE programme.

The other two clusters are in-between profiles, with one characterised as “highly externally regulated”, which was made up of 38.0% of the sample, mostly females; and a “low externally regulated”, which was made up of 19.9% of the participants.

The results of the cluster analysis showed that differences in behavioural regulations can lead to different perceptions and satisfaction levels. For example, although the “high amotivation” (Cluster 1) and “highly externally regulated” (Cluster 2) may seem indistinguishable and belong to the same end of the self-determination continuum, the perceptions of NE, confidence to teach NE and satisfaction levels were clearly differentiated (see Figure 2). This is in line with a previous study (Wang et al., 2006), which found that variations in patriotism resulted in different perceptions in terms of citizenship, importance of NE, and the extent to which NE is viewed as government propaganda. Therefore, the second hypothesis is also supported.

The findings that more males are in the “high amotivation” cluster and more females are in the “highly externally regulated” clusters should be a concern to teacher educators and administrators. There is a need to examine the current NE programme provided for pre-service teachers during their teacher education programme. This study highlights the need for NE programmes to take into account gender and programme differences in the delivery.

Teachers play an important role in educating their students in becoming good citizens. The findings of this study suggest that not all teachers are motivated or competent to teach NE in schools. The use of SDT as a theoretical framework for studying NE provides some guidelines for intervention. In terms of motivating the pre-service teachers, the teacher as an education provider should look into imparting a strong sense of belonging and appreciation of the nation’s heritage. In addition, teachers should be given a choice as to whether they would like to teach NE in schools. Although the government may see that developing citizenship is the shared responsibility of every teacher, some teachers may do a better job in a formal classroom setting while others may do better in a less formal role. Allowing choice would increase the intrinsic motivation of teachers to teach NE in schools. Finally, there may be a need for a formal qualification for teachers to teach NE in schools. For example, in the United Kingdom, teachers of citizenship education are provided with specialised training to develop and implement

innovative approaches to teach citizenship. Once the teachers' competencies in teaching NE increase, their intrinsic motivation to teach NE will also increase.

There is much more to be explored using the SDT framework to study motivation in teaching NE. For example, further work is needed to examine what type of experiences or cognition is required to facilitate the process of internalisation. In addition, more research needs to be conducted to examine the extent each of the three needs (autonomy, relatedness, and competence) has to be fulfilled in order to see positive effects on NE. Finally, future studies may include behavioural measures as one of the outcome variables to validate the psychological variables.

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