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Teacher variables as predictors of Singaporean pre-service teachers' attitudes toward inclusive education

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Abstract—This study investigated whether the attitudes of pre-service teachers in Singapore towards inclusive education were influenced by their background variables (i.e., gender, age, educational qualifications, programme of study, prior training in special needs and contact with people with disabilities) through the use of the Attitudes Toward Inclusive Education Scale (Wilczenski, 1992). Analyses of the responses of 1538 mainstream pre-service teachers indicated that the best predictor variables of the pre-service teachers' attitudes towards inclusive education were their prior training in special needs and contact with people with disabilities. Pre-service teachers who had training in special needs and those with the most contact with people with disabilities displayed significantly more positive attitudes towards inclusive education. The variables of gender, educational qualifications and programme of study exerted no significant influence on their attitudes. While the variable of age had a statistically significant effect on the pre-service teachers' attitude toward inclusive education, this was judged to be of little practical significance because of the small difference in the mean scores between groups. Implications of the findings are discussed in relation to promoting more inclusive attitudes in Singaporean teachers.

Keywords – attitudes, inclusive education, teacher variables, pre-service teachers

1. Introduction

In the decades before 2004, the general stance taken within education in Singapore had been one that had encouraged the evolution of a dual system of education - that of mainstream schools for students without disabilities and special schools for those with disabilities. Where there were occurrences of integration of students with disabilities within mainstream settings, the prevailing expectation within the mainstream education community was that they should be able to cope with the rigorous pace of these settings without requiring accommodation beyond that present within the mainstream education system. Although this had been the stand taken, there had been efforts made over the years by the Ministry of Education (MOE) in Singapore to further facilitate the integration of students with sensory impairment and physical disabilities and provide support not only to these students but also those with learning difficulties in mainstream schools, especially in the primary school years (Quah, 2004; Quah & Jones, 2004).

Beyond these efforts, however, it appeared that Singapore was not ready to consider inclusive education from the recommendation of the Advisory Council on the Disabled (1988) in the late 1980s, set up by the government in Singapore to look into the welfare of people with disabilities, to leave the decision of the integration of students with disabilities to the discretion of individual mainstream schools and in the 1990s, in its non-participation in the ground-breaking 1994 Salamanca Conference on Special Needs Education. From this conference was promulgated the Salamanca Statement and Framework for Action on Special Needs Education (UNESCO, 1994) requiring governments who were signatories to work towards 'schools for all' and for children with special needs to have full access to regular schools and be supported in these environments. Inclusive education was seen as one of the most effective means of combating discrimination, creating more inclusive societies and ensuring equitable educational opportunities for all (UNESCO, 1994, p. ix).

This position taken by the government would shift in the new millennium. In the early 2000s, the Ministry reported that since 2004 it had been noted that 20% of the school population entering mainstream schools in Singapore had some form of learning disability (Basu, 2006). This discovery in conjunction with the vision shared by the Prime Minister of Singapore, Mr Lee Hsien Loong, in his August 2004 inauguration speech of the need to create a more inclusive society and increase efforts to integrate people with disabilities into mainstream society, starting with the integration of students with disabilities into mainstream schools (Teo, 2004) were to signal a policy change and a move towards greater acceptance of students with mild disabilities in mainstream settings and increased provisions for their needs in these settings. In 2005, two types of specialist support were introduced into the mainstream education system by MOE. The first was the Allied Educator (Learning and Behavioural Support) who would assist mainstream teachers in supporting their students with special needs and work with the students with disabilities; on average one personnel per primary school and designated secondary school (Chan, 2005). The second was the plan to train 10% of mainstream teachers in primary schools and 20% in secondary schools and Junior Colleges or their equivalent to act as resource persons and support students with disabilities in their schools (Ministry of Education, 2005).

While these were giant steps forward in terms of support for both students with disabilities and mainstream teachers in their task of catering to the needs of these students, it also implied that the professional responsibility of mainstream teachers had been broadened to include a population of students deemed by the mainstream education community in Singapore to belong to special schools. A question that thus became a concern to the researchers of this paper was how mainstream teachers in Singapore would receive this initiative by the government to create more inclusive schools. The

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findings from the small number of studies conducted on the attitudes of mainstream teachers, in-service and prospective, towards students with special needs in Singapore from the 1970s to 1990s did not appear promising. They revealed a desire not to teach students with disabilities, feelings of frustration and inadequacy (Eng et al., 1982; Quah et al., 1982), little accommodation made to cater to the needs of students with disabilities integrated in mainstream settings (West, Houghton, Taylor,& Phua, 2004) and a preference for special school placements for these students (Quah et al., 1982; Rao, Lim, & Nam, 2001).

Given the general agreement in the literature that acceptance and accommodation of students with disabilities in mainstream settings and the success of a policy of inclusion are dependent on positive attitudes of teachers (e.g., Avramidis, Bayliss, & Burden, 2000; Bender, Vail, & Scott, 1995; Scruggs & Mastropieri, 1996), it is critical to understand what might nurture more inclusive attitudes. It does appear from a number of studies investigating this question that where there was negativity toward inclusion, it was often linked to issues such as the lack of specialist and administrative support, inadequate resources, lack of training and time for planning and large class sizes (e.g., Avramidis & Norwich, 2002; Chong, Forlin, & Au, 2007; Lambe & Bones, 2006; Marshall, Ralph, & Palmer, 2002). It might, thus, be inferred that if some of these issues were resolved, more positive views of inclusion might emerge. In fact, Scruggs and Mastropieri (1996) did highlight in their research synthesis that where there were instances of successful mainstreaming, they were accompanied by administrative and specialist support, material resources, provision of planning time and instructional expertise. These findings would seem to bode well for efforts to integrate students with disabilities into Singapore's mainstream schools as the promise of support from the govenment (Ministry of Education, Sept 2004) appeared to address some of the structural and personnel issues raised in the literature as obstacles to inclusion or integration.

Aside from these, the research also indicated that teacher-related factors such as gender, age, educational qualifications, programme of study, contact with disability and training in special education could influence attitudes. Evidence of the impact of these variables on the formation of more positive attitudes, however, remain inconsistent. With regard to gender, there have been conflicting findings; with some studies reporting that female teachers showed more positive attitudes towards the inclusion of students with disabilities than male teachers (e.g., Avramidis et al., 2000; Romi & Leyser, 2006) or the reverse, that male teachers were more open to inclusion (Jobe, Rust, & Brissie, 1996), to no significant relationships between the two (e.g., Hastings & Oakford, 2003; Haq & Mundia, 2012). Likewise for the variable of age, just as there were studies that indicated that younger teachers were more positive in their attitudes toward inclusion (e.g., Avramidis & Norwich, 2002; Leyser, Kapperman, & Keller, 1994), there were others which found no significant relationship (e.g., Beattie, Anderson, & Antonak, 1997; Carroll, Forlin, & Jobling, 2003). There also seems to be conflicting findings for the variable of educational qualifications, from no significant effect on attitudes towards inclusion (e.g., Beattie et al., 1997) to more positive attitudes held by those with basic degrees compared to those with postgraduate degrees (e.g., Forlin, Loreman, Sharma, & Earle, 2009; Sharma, Moore, & Sonawane, 2009).

In the case of contact with disability, this same inconsistency emerged. Although there were studies demonstrating that contact with disability promoted more positive views of inclusion (e.g., Leyser et al., 1994; Parasuram, 2006; Vanderfaeillie, De Fever, & Lombaerts, 2003), there were still reports of doubt about the appropriacy of educating students with disabilities within mainstream settings and teachers' ability to cope (e.g., Romi & Leyser, 2006). Other studies indicated that contact with disability had no significant impact on attitudes towards inclusion (e.g., Hastings & Oakford, 2003; Marshall et al., 2002) or conversely, led to negative views (e.g., Bradshaw & Mundia, 2005; Lampropoulou & Padeliadu, 1997). In their review of literature, Avramidis and Norwich (2002) concluded that contact did not necessarily lead to positive attitudes towards inclusion. It appears that for contact with students with disabilities to be positive, it needed to be accompanied by training in special education to generate feelings of confidence and competence in working with these students (Avramidis & Kalyva, 2007). Of all the variables reviewed, extant literature (e.g., Beattie et al., 1997; Bender et al., 1995; Campbell, Gilmore, & Cuskelly 2003; Kuester, 2000; Shade & Stewart 2001; Van Reusen, Shoho, & Barker, 2001) does appear to indicate that training seems to have a greater influence on fostering more positive attitudes towards inclusion.

This paper emerges from a larger study on changing attitudes of mainstream pre-service teachers towards people with disabilities and inclusive education which earlier reported the ambivalent attitudes of pre-service mainstream teachers in Singapore towards people with disabilities and lack of favourability towards the inclusion of students with physical disabilities, learning disabilities and emotional behavioural difficulties (Thaver & Lim, 2012). It seeks to share further findings from this study of the effect of teacher-related variables of gender, age, educational qualifications, programme of study, training in special needs and contact with disability on the general attitudes of mainstream pre-service teachers towards inclusive education.

2. Methodology

2.1. Participants

1769 pre-service mainstream teachersin their first semester of study at the National Institute of Education (NIE) in Singapore taking a compulsory education studies course on providing for individual differencesparticipated in the study. However, only 1538 surveys were used in the analyses because of missing data. The pre-service teachers came from three programmes of study, the Postgraduate Diploma in Education Programme, Secondary (PGDE Sec) and Primary (PGDE Pri) and the Diploma in Education Programme (Dip. Ed.). The first programme is a secondary specialisation while the latter two are primary specialisations. Pre-service teachers from the Dip. Ed. programme were generally not degree holders and possessed either a General Certificate of Education, O-level (GCE 'O' Level) or A-level (GCE 'A' Level) or were polytechnic diploma holders.

Table 1 presents the demographic characteristics of the sample. The cohort of pre-service teachers was generally youthful with 61.5% in the age range of 20 to 25 years. There were slightly more primary specialisation pre-service teachers (53.2%) compared to secondary (46.8%). Reflective of the norm in Singapore within education in terms of gender composition, one-third (33.3%) of the pre-service teachers was male and two-third, female

(66.7%). The majority of the pre-service teachers were graduates (73.4%). Almost three-quarters of the group (74.7%) appeared to have had little or no contact with people with disabilities and most of them (93.8%) had no prior training in special needs upon entry into NIE.

Table 1. Demographic characteristics of participants

Demographic Variables	Groups	*n*	%
Gender	Male	512	33.3
	Female	1026	66.7
Age	20-25	946	61.5
	26-30	451	29.3
	31-35	102	6.6
	36-40	39	2.5
Educational Qualifications	GCE 'O' Level	25	1.6
	GCE 'A' Level	139	9.0
	Diploma	245	15.9
	Bachelor's Degree	1064	69.2
	Masters' Degree	65	4.2
Programme of Study	Diploma in Education	438	28.5
	Postgraduate Diploma in Education (Pri)	380	24.7
	Postgraduate Diploma in Education (Sec)	720	46.8
Prior Training in Special	None	1442	93.8
Needs (Courses Attended)	1	76	4.9
	2	10	0.7
	3	2	0.1
	4 or more	8	0.5
Number of People with	None	228	14.8
Disabilities Encountered	1-5	921	59.9
(Contact)	6-10	192	12.5
	11-15	62	4.0
	16-20	19	1.2
	Above 20	107	7.0
	(No response)	(9)	(0.6)

2.2. Instruments

A demographic form was used to collect information on the participants' background – gender, age, educational qualifications, programme of study, training in special needs and contact with people with disabilities. The Attitudes Toward Inclusive Education Scale (ATIES) (Wilczenski, 1992) was used to assess the pre-service teachers' attitudes towards inclusive education. The ATIES is a 16-item scale designed to measure the attitudes of respondents towards the inclusion of children with social, physical, academic and behavioural difficulties in mainstream classrooms. Each item in the instrument has a six-point likert scale ranging from 1 (disagree strongly), 2 (moderately disagree), 3 (disagree slightly), 4 (agree slightly), 5 (moderately agree) to 6 (strongly agree). The total scale mean score could range from 16 to 96, with higher scores indicative of more positive attitudes towards inclusive education. A total scale mean score of 64 reveals slight agreement with the inclusion of students with disabilities in mainstream settings while a mean score of 48 shows slight disagreement. Statistical analysis carried out on the ATIES in this study indicated that the overall Cronbach alpha reliability coefficient was .88, within the range of .71 to .92 reported by different studies which had used the instrument (Chong et al., 2007; Forlin et al., 2009; Koay, 2003; Kuyini & Desai, 2007; Kuyini & Mangope, 2011).

2.3. Procedure

Participants were informed of the study in the first lecture of their education studies courseand that they would be invited to take a set of surveys in their tutorial classes.The surveys were packed according to tutorial classes by the researcher and handed over to the tutors during a briefing before the start of the course. These were thenadministered in the first tutorial of the course by the tutors, collected upon completion and returned to the researcher at the end of the tutorial class. The surveys were accompanied by a cover letter explaining the purpose of the study and an appeal for their help and cooperation. Participation was voluntary and anonymity of the participants was assured.

2.4. Data analysis

Descriptive statistics were used to summarise, organize and describe the data obtained from the demographic form and ATIES. The demographic variables of age, educational qualifications, prior training in special needs and contact with disability were re-grouped into broader categories because

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of the small numbers in some of the categories. One-way analysis of variance (ANOVA) was then used to examine whether the demographic variables had a significant effect on the attitudes of pre-service teachers towards inclusive education. The alpha level was set at .01 to reduce the chances of Type 1 error because of the large sample size and effect sizes, eta squared, were calculated as it was recognized that with large sample sizes, statistically significant results could be obtained with very small group differences, and that these may not have much practical or theoretical significance.

3. Findings

Examination of theATIES mean scores of the groups in the variables examined indicate that they were generally in the mid-point categories of slight disagreement and slight agreement with inclusive education, except for the group with training in special needs whose mean score was close to slight agreement,suggesting ambivalent and slightly unfavourable attitudes towards the integration of students with disabilities in mainstream settings. Table 2 presents a summary of the mean scores and standard deviations of the ATIES scores by demographic variables.

Table 2. Means and Standard Deviations of ATIES scores by demographic variables

Demographic Variable	Groups	*n*	Mean Score	Standard Deviation
Gender	Male	512	57.75	12.55
	Female	1026	58.94	11.03
Age	20-25 years old	946	59.15	11.10
	26 years and above	592	57.57	12.21
Educational Qualifications	Non-graduates	409	58.88	11.80
	Graduates	1129	58.42	11.48
Programme of Study	Dip. Ed.	438	58.97	11.83
	PGDE (Primary)	380	57.69	11.49
	PGDE (Secondary)	720	58.73	11.43
Training in Special Needs	No Training	1442	58.20	11.41
	1 or more course attended	96	63.65	12.71
Contact with People with Disabilities	None encountered	228	56.55	11.98
	1-5 persons	921	58.31	11.30
	More than 5 persons	380	60.26	11.85

The one-way ANOVA conducted showed that there was no statistically significant difference between the overall scale mean scores of male (M = 57.75, SD = 12.55) and female (M = 58.94, SD = 11.03) pre-service teachers towards inclusive education, $F(1, 1536) = 3.64$, $p = .057$. The variable of age was re-categorised from five age groups to two groups, the 20-25 year old group and 26 years and above group. The results of the one-way ANOVA showed that there were significant differences in the means of the two groups, $F(1, 1536) = 6.81$, $p = .009$. The analysis indicated that the younger pre-service teachers (M = 59.15, SD = 11.10) were significantly more positive in their attitudes towards inclusive education than the older group (M = 57.57, SD = 12.21). However, the effect size was very small, $\eta^2 = .004$, and the difference between the mean scores was only 1.58.

The variable of educational qualifications was re-categorised from five groups (GCE 'O' level and 'A' level, Diploma, Bachelor's degree and Masters' degree holders) into two groups (Graduates and Non-graduates). There appeared to be little difference between the mean scores of the non-graduate teachers (M = 58.88, SD = 11.80) and graduate teachers (M = 58.42, SD = 11.48). A one-way ANOVA conducted revealed no statistically significant difference between the means of the two groups,$F(1, 1536) = .47$, $p = .493$. The analysis also disclosed that the pre-service teachers in the Dip. Ed. programme (M = 58.97, SD = 11.83) possessed the highest mean score followed by those in the PGDE Secondary programme (M = 58.73, SD = 11.43). The pre-service teachers in the PGDE Primary programme had the lowest mean score (M = 57.69, SD = 11.49). The one-way ANOVA conducted, however, showed that the differences in the mean scores were not statistically significant, $F(1, 1536) = 1.413$, $p = .244$.

The variable of training in special needs was re-categorised from five groups (no training, 1, 2, 3 or 4 or more courses in special needs attended) to two groups (no training in special needs and 1 or more course in special needs attended).Training in special needs appeared to have an impact on the attitudes of the pre-service teachers towards inclusive education. The one-way ANOVA conducted showed that there were significant differences in the attitudes of the two groups, $F(1, 1536) = 20.20$, $p = .000$. The group who had attended 1 or more courses in special needs had a higher mean score (M = 63.65, SD = 12.71) than the group who had no previous training (M = 58.20, SD = 11.41**).** The effect size was small, $\eta^2 = .01$. The difference in mean scores was 5.45, higher than those found in the analyses of the other demographic variables. The mean score of those with training approached slight agreement with inclusive education.

The variable of contact with disabilitywas re-categorised from six groups (no contact, 1-5, 6-10, 11-15, 16-20 and 20 and above persons with disabilities encountered) to three groups, (group 1 with no contact with persons with disabilities, group 2, contact with 1 to 5 persons and group 3, contact with more than 5 persons). The analyses showed that there were significant differences in the means between the groups, $F(2, 1526) = 7.806$, $p = .000$, $\eta^2 = .01$. The Scheffe post hoc test showed that that group 3 (M = 60.26, SD = 11.85) had more positive attitudes than group 1 (M = 56.55, SD = 11.98). There were no significant differences in the mean scores between group 2 (M = 58.31, SD = 11.30) and groups 1 and 3. The effect size was small, $\eta^2 = .01$. There was a difference of 3.71 points in the mean scores between the group that had the most contact (group 3) and the group that reported no contact (group 1).

Although the mean scores of the two groups who reported contact were still in the slight disagreement with the inclusion of students with disabilities category, there does seem to be increasing openness to inclusive education with greater contact with people with disabilities.

4. Discussion

The purpose of the study was to examine the influence of teacher-related variables of gender, age, educational qualifications, programme of study, training in special needs and contact with disability on the attitudes of mainstream pre-service teachers towards inclusive education. The findings revealed that the majority of the pre-service teachers had little or no contact with people with disabilities and no prior training in special needs. They also possessed generally ambivalent bordering on slightly unfavourable attitudes towards inclusive education. This finding is not surprising, as according to Baglieri and Shapiro (2012), perspectives about disability are greatly influenced by the cultural context, its value systems, beliefs and practices, and shape the responses of those who live within that context. Given the pre-service teachers' limited contact with people with disabilities and the lack of an alternative perspective of disability and inclusion that might have been gained through training in special needs, their views would naturallyhave been shaped by the way disability had been construed and treated in Singapore and the general acceptance of the dual system of education by the mainstream community.

The investigation indicated that there was no significant difference between male and femalepre-service teachers'attitudes towards inclusive education. More recent studies examining the influence of gender on attitudes disclosed similar findings(e.g., Alghazo, Dodeen, & Algaryouti, 2003; Carroll et al., 2003; Haq & Mundia, 2012; Hastings & Oakford, 2003; Jerlinder, Danermark & Gill, 2010; Parasuram, 2006) suggesting perhaps the lessening effect of this variable on attitudes. It was also revealed that educational qualifications did not seem to significantly affect the pre-service teachers'attitudes towards inclusive education. While thisis consistent with what was found in the study of Beattie and colleagues (1997), it conflicts with those of others which foundassociations between attitudes towards inclusion and educational qualifications (e.g., Forlin et al., 2009; Parasuraman, 2006; Sharma et al., 2009). This study also found that programme of study did not have a significant effect on the pre-service teachers' attitudes towards inclusive education. There was no significant difference between the attitudes of pre-service teachers inthe primary and secondary specialisations. The mean scores indicated that both groups of pre-service teachers held attitudes of slight unfavourability toward the inclusion of students with disabilities in mainstream settings. This is contrary to what has been reported in the literature (e.g., Chalmers, 1991; Schumm & Vaughn, 1991; Vaughn & Schumm, 1994) of teachers at the primary levels who evinced more positiveand accommodating attitudes towards students with disabilities in mainstream settings in comparison to their secondary level peers.

This non-significant finding and slight unfavourablity towards inclusive education might be perhaps be explained by the pre-service teachers' background and the fact that they are products of the dual system of education in Singapore. Given that the majority of these pre-teachers have had little or no contactwith people with disabilitiesand no training in special needs, there would naturally be uncertainty of the most appropriate placement of students with disabilities and questions of their ability to copewith students considered to be problematic. Feelings of inadequacy and a lack of preparation have been shown to influence teachers' attitudes towards disability and inclusion negatively (e.g., Scruggs & Mastropieri, 1996; Subban & Sharma, 2006). Thus, in this vacuum of knowledge of and experience with disability and the lack of training, it is highly probable that these pre-service teachers would have responded from their implicit beliefs of how they had been socialised to think about the educational placement of students with disabilities.This lack of favourability towards the integration of students with disabilities in mainstream settings had also emerged in an earlier study on pre-service teachers in Singapore where it was found that while they agreed philosophically with the notion of inclusion, they still preferred a special school placement for these students (Rao et al., 2001).

The results disclosed that three variables exerted a significant influence on the pre-service teachers' attitudes; that of age, contact with people with disabilities in terms of number encountered and prior training in special needs. With regards to age, it seemed thatpre-service teachers who were younger held significantly more positive attitudes towards inclusive education than the older group. Although this findingis consistent with what has been found in some studies in the literature (e.g., Avramidis & Norwich, 2002; Leyser et al., 1994), it should be treated with caution. Aside from the way the ages were grouped (20 to 25 years of age and 26 years and above) in this study, a more crucial point to note is that the actual difference in the mean scores between the two groups was very small, rendering the result to be of little practical significance, and age judged to be an ineffective predictor of attitudes.

The findings appeared to suggest that increased contact with people with disabilities could foster greater openness to inclusive education as there was a slight increase in mean scores with greater numbers of people with disabilities encountered. The analysis showed that there was a significant difference in the attitudes of the pre-service teachers with the most contact with people with disabilities in comparison with those who had none.This is consistent with what has been generally reported in the literature regarding the effect of contact on attitudes towards inclusion (e.g., Forlin et al., 2009; Leyser et al., 1994; Parasuram, 2006; Vanderfaeillie et al., 2003).It must be noted, however,that the mean score of the group (most contact with disability) who was significantly more open to inclusive education was still in the slight disagreement range. The point made by Avramidis and Norwich (2002) in their review of literature that mere contact with people with disabilities did not necessarily lead to positive attitudes towards inclusive education would seem to ring true here. Negative experiences with people with disabilities could serve to reinforce unfavourable, stereotypic images of people with disabilities (Donaldson, 1980) and emphasisethe difficulties faced in their integration into mainstream settings. This might explain the finding of an earlier study (Rao et al., 2001) on the attitudes of Singapore pre-service teachers towards inclusionthat discovered that contact with children with disabilities did not encourage significantly more positive attitudes.

Of all the variables examined in the study, training in special needs seemed to emerge as the strongest predictor of the pre-service teachers' attitudes towards inclusive education. It was found that pre-service teachers who reported having prior training in special needs had significantly more positive

attitudes towards inclusive education compared to those with no training. The mean score of the group with training bordered on slight agreement with the inclusion of students with disabilities in mainstream settings. This finding adds to the increasing research baseof the efficacy of training in special needs in encouraging more receptive attitudes towards students with disabilities and inclusive education (e.g., Beattie et al., 1997; Campbell, et al., 2003; Dailey & Halpin, 1981; Kuester, 2000; Oswald & Swart, 2011; Shade & Stewart 2001; Van Reusen et al., 2001).

This study has several limitations which suggest the need for caution in interpreting and generalising the results. Firstly, the participants in the study were all pre-service teachers drawn from one institution within the social-cultural milieu of Singapore. Secondly, the study utilised a self-report survey which required the pre-service teachers to evaluate and report their personal attitudes towards inclusive education. Even though anonymity was assured, it mustbe acknowledged that the pre-service teachers' responses could possibly have been affected by social desirability concerns. Thismight perhaps explain their mid-point category responses of being neither strongly for nor against the integration of students with disabilities in mainstream settings. In addition, while the findings indicated that both training in special needs and contact with disability exerted a positive effect on the pre-service teachers' attitudes toward inclusive education, the measurement of these variables was not sufficiently adequate, resulting in little knowledge of the specific type of contact and the nature of the training courses the pre-service teachers had undergone prior to their entry into NIE which could further explicate the findings. In terms of contact, there could have been examination of the quality, type and extent of the contact (e.g., level of intimacy, status of the person with disability encountered, frequency of contact, types of settings – home, classroom, social or work) rather than merely the number of persons with disabilities encountered. Questions on the specific type of training in terms of length, content and features in the training courses attended would also have allowed an exploration of the relationship between these factors and the pre-service teachers' attitudes towards inclusive education. This would have provided more information on what factors within training courses could be more effective in nurturing more open attitudes towards inclusive education.

5. Conclusion

While there are limitations to the study, this investigation does have implications for teacher educators and policy makers in Singapore. The findings revealed that pre-service teachers entering the teaching profession possessed generally ambivalent and slightly unfavourable attitudes towards inclusive education. This was not an unexpected finding given the context of Singapore which had resulted in most people within the mainstream community living, working and being schooled apart from people with disabilities. Previous studies carried out in Singapore had revealed a trend of discomfort, if not resistance, towards the inclusion of students with disabilities into mainstream settings among educators in Singapore (Eng et al., 1982; Quah et al., 1982; Rao et al., 2001; Sharma, Forlin, Loreman, & Earle,2006). These attitudes of prospective teachers entering mainstream schools, however, have become a more pressing concern in recent times with the increasing presence of students with disabilities in mainstream settings andgreater governmental support for the integration of students with mild disabilities into these settings. The fact that the attitudes of these pre-service teachers are ambivalent can be seen as promisingin terms changing attitudesin the light of research indicating that attitudes which are ambivalent and of less strength are more open to contextual influences and persuasive messages (such as in training courses) as there is less confidence in the held attitudes (Hodson, Maio, & Esses, 2001; Petty & Krosnick, 1995).

Indeed, extant literature (e.g., Campbell et al., 2003; Forlin, 2001; Leyser et al., 1994; Oswald & Swart, 2011; Scruggs & Mastropieri, 1996; Shade & Stewart, 2001; Van Reusen et al., 2001) on the impact of training on attitudes has revealed that it could contribute to the formation of more positive attitudes towards disability and inclusive education. Although the effect size was small, this was also supported by the findings of this study which indicated that training could act as a predictor as well as mediating variable for more positive attitudes towards inclusive education. This training should, ideally, involve critical examination of attitudes held of people with disabilities and inclusion and how the mainstream community in Singapore had been socialised into particular paradigms and discourses about disability as well as knowledge and practical strategies of how to accommodate students with disabilities in mainstream settings.

The study also found that contact with people with disabilities could influence more positive attitudes towards inclusive education. With research suggesting that contact could act to reduce prejudice and increase greater openness toward people with disabilities and inclusion (e.g., Forlin et al., 2009; Leyser et al., 1994; Pettigrew & Tropp, 2006; Vanderfaeillie et al., 2003), this would be an important element to include within training courses for mainstream pre-service teachers in Singapore who would typically have had little or no contact with people with disabilities. Given the increasingly diverse population of students in mainstream settings in Singapore, it is imperative that space be found within pre-service teacher education in NIE to not only increase the competency and confidence of mainstream teachers in working with students with disabilities but also nurture within them empathetic understanding of people with disabilities anda disposition open, if not committed, to inclusion.

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